Pumps.

KRAL

KRAL Pumps for Oil & Gas.

European and American standards.

Welcome to KRAL.

About us.
With headquarters in Austria, KRAL GmbH was founded in 1950 and has been an independent family enterprise ever since. We therefore think and invest long-term so that we can remain a stable and reliable business partner for our customers.

KRAL develops and produces screw pumps and flow measurement technology. In addition, we offer customer-specific solutions for systems, from the initial engineering process through to commissioning. And of course our After Sales Service is available to help you after purchase. Our primary business sectors include marine, power generation, oil and gas, mechanical engineering, and chemicals. Our customers include local businesses as well as global industrial concerns.

What you can expect from us.
Since the company was founded, KRAL has established itself as a manufacturer of quality products with a fair price/performance ratio. In order to live up to our standard, we continuously invest in our employees, our manufacturing processes, and our methodological expertise. A commitment to Total Quality Management (TQM) is a key component of our company philosophy. Furthermore, we are increasing the levels of automation and digitization in our company. Our customers claim that we can meet special needs. What's more, KRAL is greatly appreciated for its reliable partnerships and the fact that working together with us is professional and very straightforward. This makes us quite proud. We will continue to strengthen these values in the future. That's why we continuously invest in innovations, both for products as well as methodology and processes.

A key component in our approach to customer-orientation is that you can rely on excellent care from our Customer Center as well as our After Sales Service. This includes both expertise and reaction speed.

We have summarized what you can expect as a KRAL customer in our company vision:

"KRAL is quality, innovation and quick response, anytime and anywhere around the world."

Check out our services and see for yourself.
We will be happy to help you.

Otmar Kräutler

DI Otmar Kräutler
CEO

KRAL

The Pump Lineup From KRAL for Oil and Gas.

Transfer pumps, circulation pumps and lubrication oil pumps for the movement of clean and non abrasive fluids, low and high viscosity fluids such as lubricating oil, separated crude oil, heating oil and bitumen.

The transfer of extracted crude oils to downstream processes, after the oil has been cleaned of sand and moisture content, is accomplished through the loading of tanker ships and pumping in pipelines. Worldwide there are about 3.5 billion tonnes of oil at various stages to be transported to end users annually.

C series.
The all-round pump from KRAL is the outstandingly choice for handling specific customer requirements. It's a cartrigde pump design and offers a variety of options for safety or bypass valves. The outer casing can be either cast iron or fabricated steel. The steel encased version allows for almost any positioning, size and type of liquid connection.

Operation, materials, components.
- Delivery rate CK: 1,750 l/min | 460 gal/min.
- Delivery rate CL: 3,550 l/min | 940 gal/min.
- Delivery rate CG: 3,550 l/min | 940 gal/min.
- Pressure range: 70 bar; 100 bar | 1,015 psi; 1,450 psi.
- Temperature range: -20 °C to 180 °C | -4 °F to 360 °F.
- Constructed to conform with **API** (cartridge rotary seal ring, removal/extension coupling, base frame).
- Flange connections: ANSI, DIN.
- Housing: Nodular cast iron, steel, stainless steel.
- Spindles: Nitrided steel.
- Offshore certifications: ABS, BV, CCS, DNV, LRS, MRS, NK, RINA, KR.
- ATEX: Ⓔx II 2 GD b/c group II, category 2.
- Heating: Electrical or fluid.

K series.
K series pumps have a feed pressure of 16 bar | 230 psi, and the housing is made from nodular cast iron. They are outfitted with sealed, external bearings which undergo no negative affects regardless the fluid being pumped, the bearings are lifetime lubricated and require no maintenance.

Operation, materials, components.
- Delivery rate: 5 to 2,900 l/min | 1.5 to 770 gal/min.
- Delivery rate KFT: 5 to 510 l/min | 1.5 to 135 gal/min.
- Max. differential pressure: 16 bar | 230 psi.
- Temperature range: -20 °C to 180 °C | -4 °F to 360 °F.
- Flange connections: ANSI, DIN.
- Housing: Nodular cast iron.
- Spindles: Nitrided steel.
- Offshore certifications: ABS, BV, CCS, DNV, LRS, MRS, NK, RINA.
- ATEX: Ⓔx II 2 GD b/c group II, category 2.
- Heating: Electrical or fluid.

L series.
KRAL L series pumps offer clear options and are easy to service. From the smallest to the largest size, L pumps offer integrated top and inline flanges. Reliable startup, minimal wear and ease of maintenance simplify the operation of this line of pumps.

Operation, materials, components.
- Delivery rate L: 5 to 200 l/min | 1.5 to 50 gal/min.
- Max. pressure: 63 bar | 910 psi.
- Temperature range: -20 °C to 180 °C | -4 °F to 360 °F.
- Flange connections: ANSI, DIN.
- Housing: Nodular cast iron.
- Spindles: Nitrided steel.
- Offshore certifications: ABS, BV, CCS, DNV, LRS, MRS, NK, RINA, KR.
- ATEX: Ⓔx II 2 GD b/c group II, category 2.
- Heating: Electrical or fluid.

Magnetic couplings – for high inlet pressure.
KRAL pumps are also available with magnetic couplings. KRAL magnetic coupling pumps are maintenance free, hermetically sealed and can be used at temperatures up to 300 °C | 570 °F. The magnetic coupling design eliminates the axial forces.

Operation, materials, components.
- Delivery rate: up to 3,550 l/min | 940 gal/min.
- Pressure range: 70 bar; 100 bar | 1,015 psi; 1,450 psi.
- Temperature range: -40 °C to 300 °C | -40 °F to 570 °F.
- Flange connections: ANSI, DIN.
- Housing: Nodular cast iron, silafont and steel.
- Spindles: Nitrided steel.
- Energy density: 250 kJ/m³.
- Heating: Electrical or fluid.

Applications – Transfer for Separated Crude Oil.

KRAL pumps – the economical solution for the delivery of separated crude oil.

KRAL screw pumps are in demand thanks to their compact design. In operation, our pumps are quiet and offer low pulsation. High efficiency and durability also explain their popularity.

KRAL screw pumps for the transportation and pressure build-up of separated crude oil.

Clear advantages:
- API standards.
- Economically priced.
- Quiet, no vibration.
- Low pulsation.
- Great suction lift.
- High efficiency.
- Durable.
- Simple construction.
- For low and high viscosity.
- Easy maintenance.

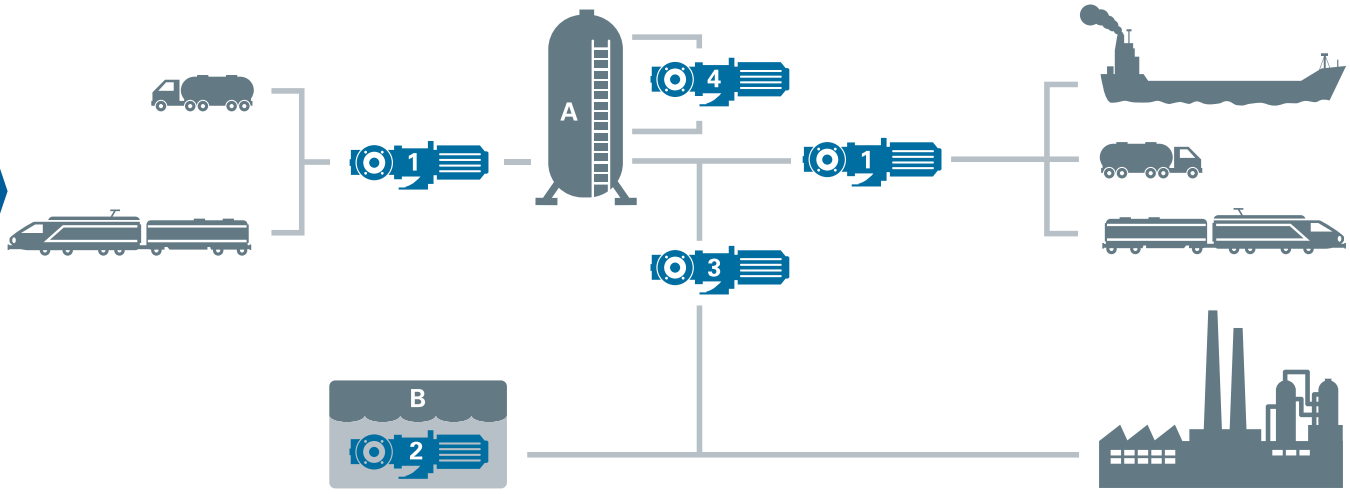
KRAL screw pumps are especially suitable for the transfer of separated crude oil. The pumps can handle a wide range of viscosities and differential pressures. With a high flow rate and an excellent NPSH value, KRAL screw pumps are manufactured in accordance with European and American standards.

KRAL three screws pumps offer a significant price advantage compared to other types of pumps.

KRAL screw pumps are used to flush the pipe system with separated crude oil from the storage tanks on a regular basis.

Our screw pumps are well suited for pipeline booster applications in pumping stations. Due to their design, KRAL pumps can handle separated crude oil with a wide range of viscosities and can generate high differential pressures even when pumping very light crudes.

Simplified presentation of transfer pumping.



1 KRAL crude unloading/loading pump.

2 KRAL crude booster pump.

3 KRAL onshore crude transfer pump.

4 KRAL crude circulation pump.

A Storage tank.

B Booster pump station.

Applications – Bitumen Production in Refineries.

Indispensable in the manufacture of asphalt.

Bitumen is primarily obtained as a vacuum residue in the vacuum distillation of petroleum. Here only special varieties of crude oil can be used – almost exclusively varieties of crude that are high in sulphur.

KRAL pumps for the transfer of bitumen.

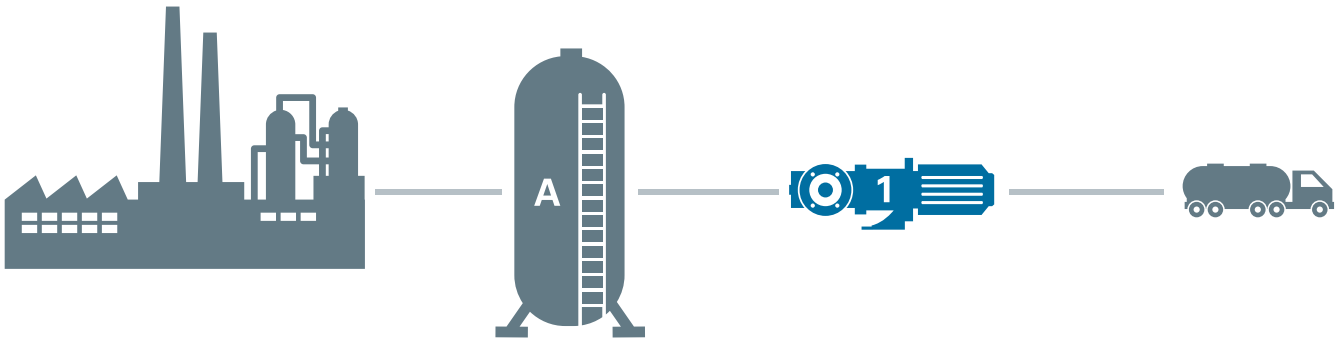
Clear advantages:
- Meet API standards.
- For high viscosity.
- Heating of casing.
- Low TCO.
- Easy maintenance.
- Temperatures up to 300 °C | 570 °F.
- Quiet, no vibration.
- Low pulsation.
- Great suction lift.
- High efficiency.
- Durability.

Bitumen mainly consists of high molecular weight hydrocarbon and contains small quantities of sulphur, oxygen and nitrogen. The medium is highly viscous and reaches a fluid consistency only under high temperatures.

KRAL screw pumps have the capacity to operate within a wide range pressures and product viscosities. These are excellent features when it comes to pumps used in the loading and unloading of bitumen. KRAL screw pumps are very safe and offer full control in all types of operational modes. The pumps have a linear delivery rate characteristic with fine adjustment. With KRAL pumps, you can reduce maintenance costs and optimise the total cost of ownership.

For bitumen production, KRAL offers solutions with conventional seals, and pumps with magnetic couplings are also available to provide solutions for specific customer requirements.

Simplified representation of bitumen filling.



1 KRAL bitumen unloading/loading pump.

A Storage tank.

Applications – Compressor Lubrication.

Lubrication oil pumps for the optimal utilisation of compressor efficiency.

Compressors are known for high efficiency and dependability, thus ensuring productive processes for the long term.

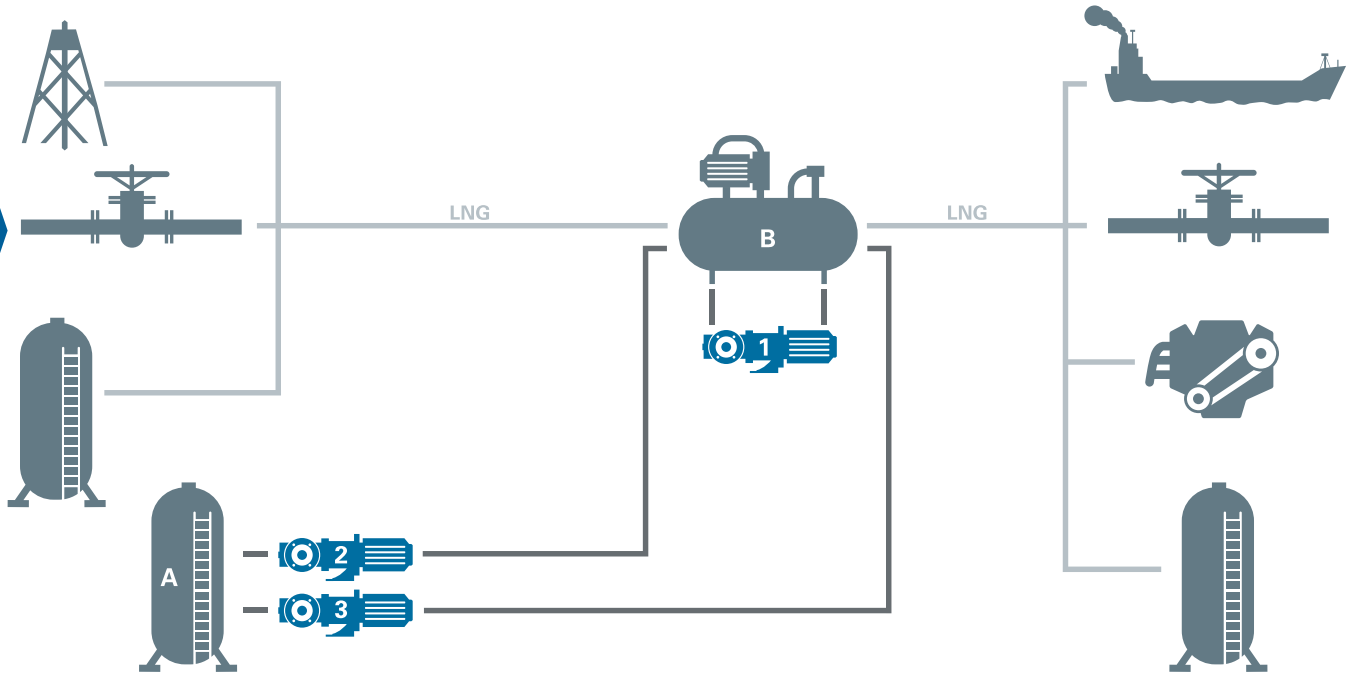
KRAL lubrication oil pumps for compressors, gear assemblies and turbines.

Clear advantages:
- Meet API standards.
- Thrust compensation.
- High efficiency.
- For high inlet pressure.
- Compact.
- Quiet, no vibration.
- Low pulsation.
- Great suction lift.
- Durability.
- Simple construction.

A challenge in compressor design is the high feed pressure to which the pumps are exposed. This in turn represents an enormous demand in terms of selecting sealing methods as well as the overall construction of the pump. High input pressures can also lead to great stress on the bearings and seals in many pump designs, negatively impacting the lifetime of pumps and seals. KRAL magnetic coupling pumps overcome these challenges. Magnetic couplings can eliminate stress on bearings, and additionally such seals guarantee operation free of leaks.

For standard use in compressor lubrication, we also offer solutions with conventional seals.

Simplified representation of compressor lubrication.



1 KRAL main lube oil pump.

2 KRAL emergency lube oil pump.

3 KRAL auxiliary lube oil pump.

A Lube oil tank.

B Gas compressor.

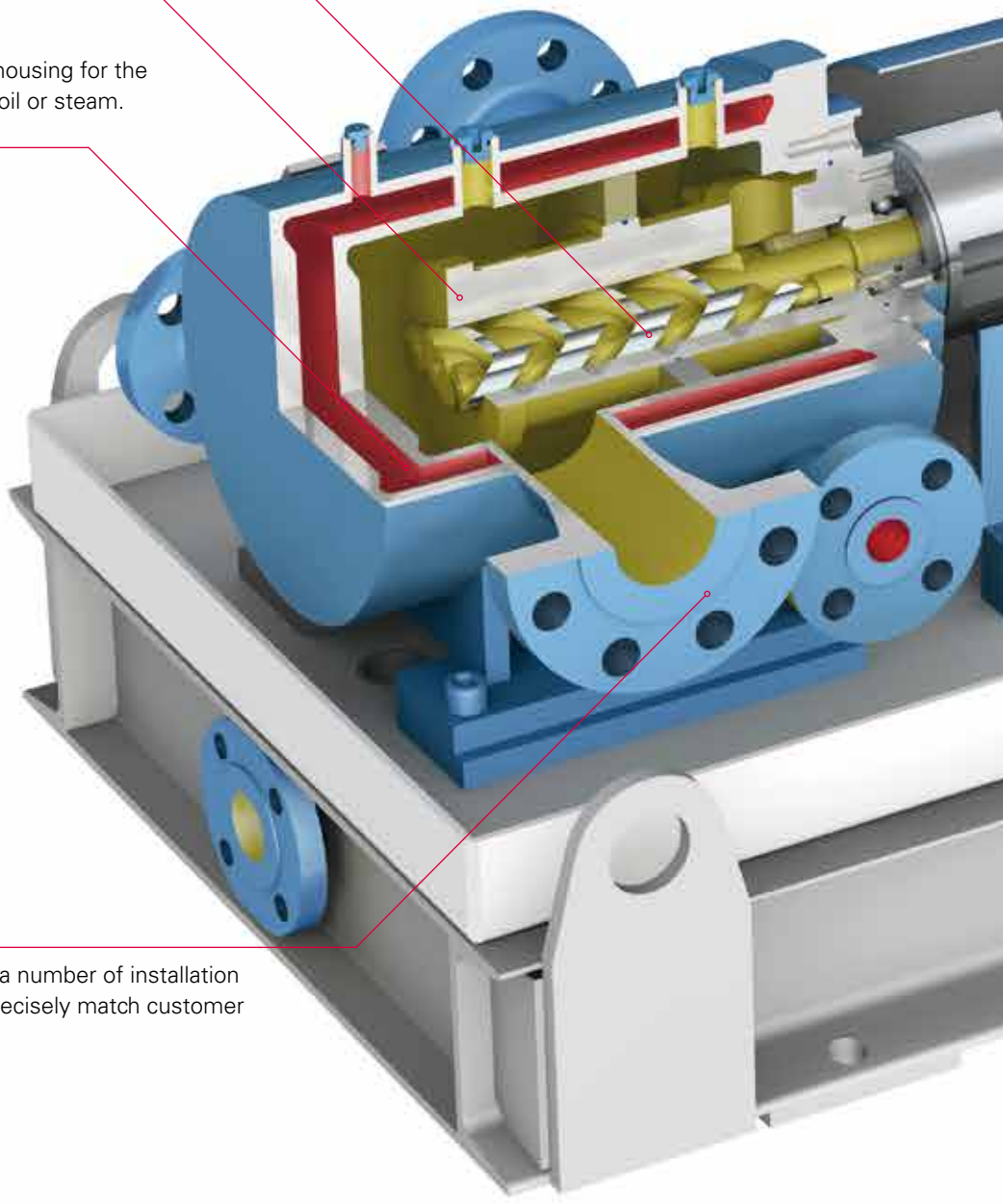
KRAL CG Series Conforms With API 676.

Manufactured according to API.

Pump module.
Cartridge pump design and construction makes easy maintenance of the pump without disconnection of the flanges possible.

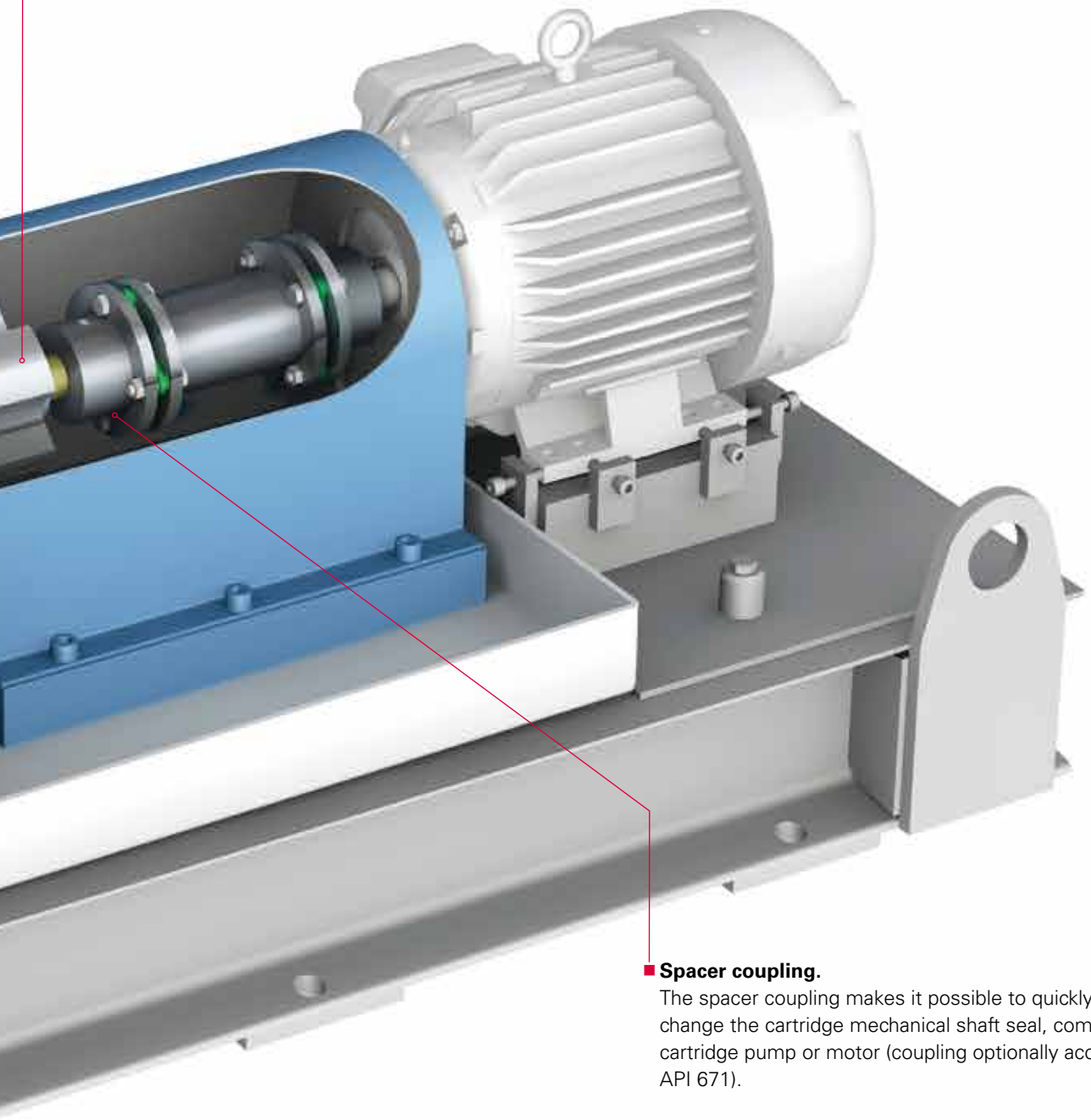
Screw set.
Special hardened or hard-coated spindle made from steel guarantees a long lifespan and low wear.

Double walled housing.
Optional double-walled external housing for the heating of the pump via thermal oil or steam.



Connection options.
The CG series from KRAL offers a number of installation and connection possibilities to precisely match customer requirements.

Cartridge mechanical shaft seal.
All sizes are available with cartridge rotary seal rings.

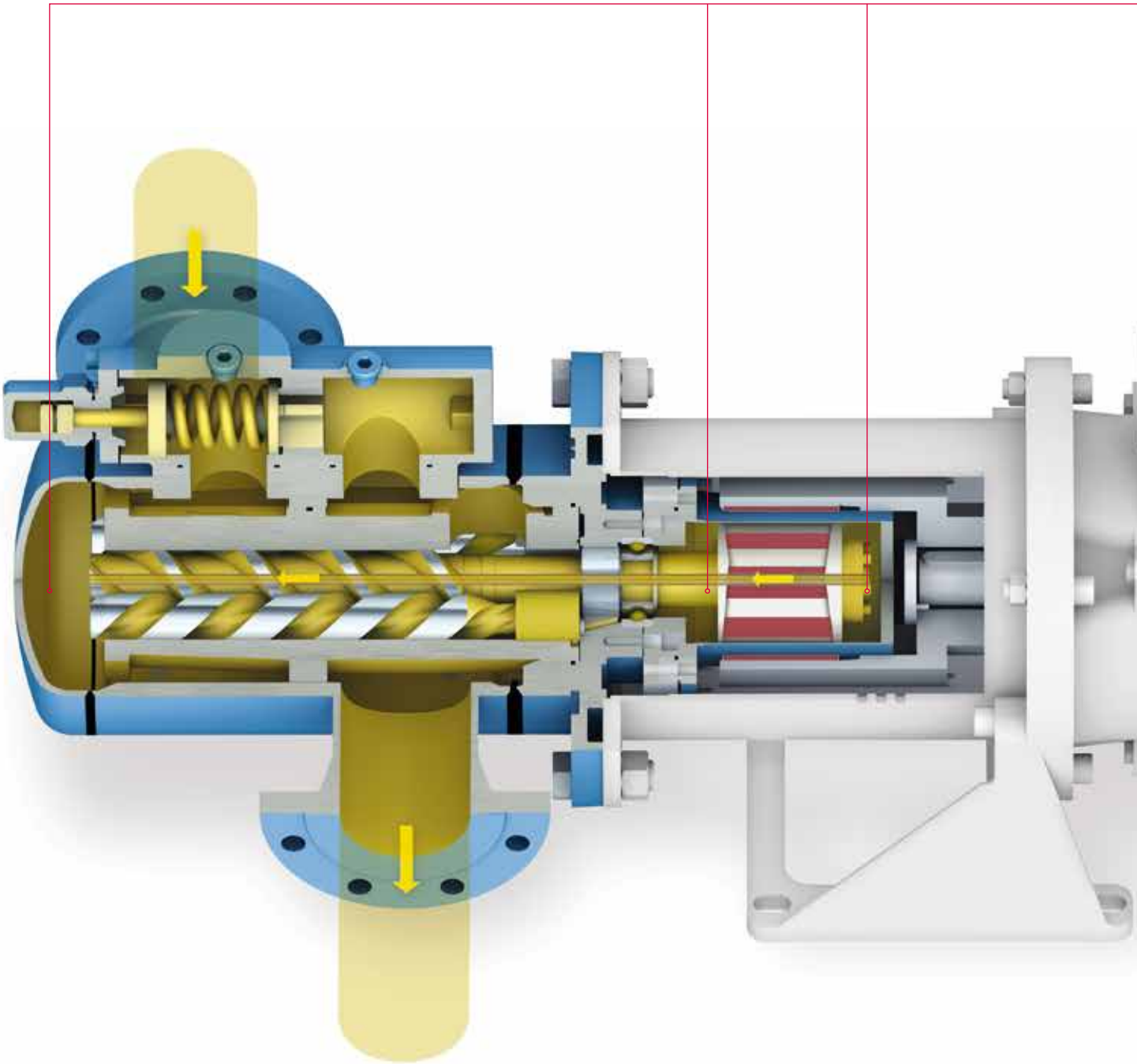


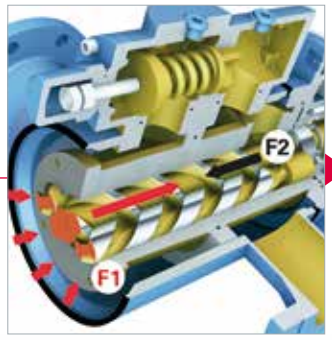
Spacer coupling.
The spacer coupling makes it possible to quickly and easily change the cartridge mechanical shaft seal, complete cartridge pump or motor (coupling optionally according to API 671).

KRAL Magnetic Coupling Pumps.

No more mechanical seal problems.

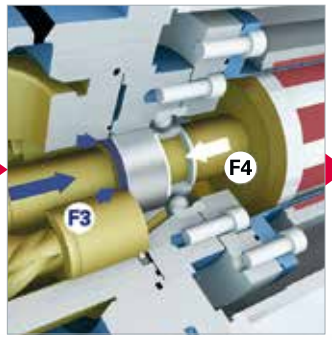
KRAL pumps are also available with magnetic seals. Magnetic coupled pumps from KRAL are maintenance free, hermetically sealed and can be used at temperatures of up to 300 °C | 570 °F. Additionally, the lifespan of the ball bearings is considerably extended.





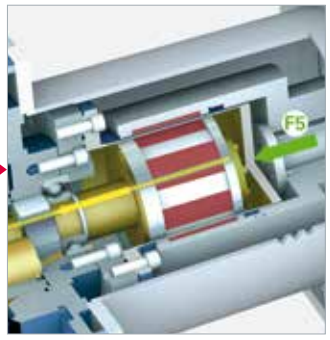
Drive screw.

High inlet pressure acts directly on the surface of the main drive screw as well as the idler screws (F1). Some of the force is compensated for on the pressure side of the main screw (F2), however the resulting axial force would normally create a high axial load on the bearings. This is not the case with a magnetic coupling.



Balancing cylinder.

The balancing cylinder is precisely dimensioned so that the axial forces (F3 and F4) resulting from the pressures acting on its surfaces largely cancel each other out.



Magnetic coupling.

Thanks to a core drilled hole through the centre of the drive screw, the suction side pressure conditions are also present within the containment can of the magnetic coupling. Due to this special design, a force is created (F5) that compensates for the axial thrust on the main spindle. The load on the bearings is minimised leading to longer and more trouble-free operation.

Best material quality.

Highest quality materials can withstand high pressures and guarantee minimal eddy current losses at the magnetic coupling.

High inlet pressure.

High inlet pressure can cause enormous load on the ball bearings as well as the mechanical seal.

A conventional pump with high inlet pressure requires expensive mechanical seal solutions, structural reinforcement and liquid channels for hydraulic balancing.

The magnetic coupling design eliminates the axial forces, resulting in only minimal load on the ball bearings due to the geometrical conditions. The life expectancy of the ball bearings is thus independent of the inlet pressure, and the magnetic coupling replaces a costly mechanical seal. This means a better pump solution.

Pumps.

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