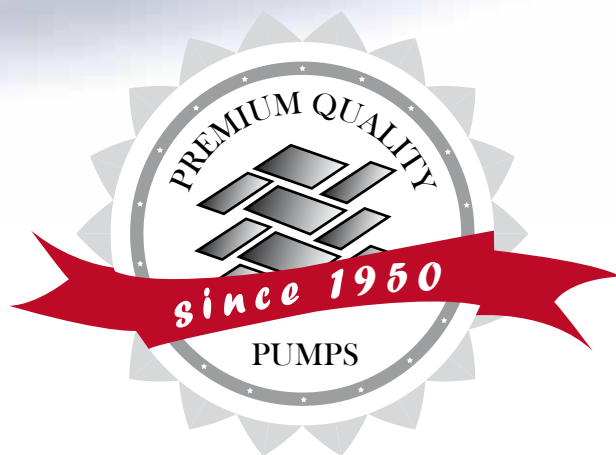




KRAL Screw Pumps.

Overview.



Welcome to KRAL.

KRAL AG is a family business. Our customers include many enterprises active worldwide.

KRAL stands for quality, innovation and quick response – anytime and anywhere around the world.

KRAL AG is headquartered in Austria. The company is the innovation leader in the specialized industrial sector including pumps and flowmeters. KRAL solutions bring our customers greater success in their competitive environments, providing the highest level of value. In close cooperation with customers, we not only focus on pumps and related technology, but also entire systems along with strategic planning. This results in the realization of customer specific solutions.

Our customers like working with KRAL. Friendliness and a positive cooperative environment have been shown in our high marks in customer satisfaction surveys. These scores represent essential success factors. They are a result of our professionalism and dedication in all areas of the business.

KRAL partners with global players. Such firms need solid, dependable partners. The AG forms the foundation of a solid and powerful market presence. The family aspect of KRAL means that you can rely on an engaged and cooperative partner in the years to come.

The human factor is at the core of our decision. Success is the result of the positive cooperative efforts of KRAL customers, distributors and personnel.



At Home in America.

For our clients in North America.



You can find your personal KRAL representative on our website:
www.kral.at/us/contact/

■■■■■■■ Pumps

Screw Pumps From KRAL.

An overview of the technological advantages.

■ **Efficiency.**

In comparison to other types of pumps, KRAL screw pumps offer a high delivery rate but don't take up a lot of space. KRAL pumps are low in pulsation and run quiet.

■ **Wear resistant surface treatment.**

A special heat treatment of the pump housing minimizes friction and wear.

■ **Optimized flange construction.**

Flanges are constructed according to ISO 3019. This means that KRAL pumps can be connected to common pump mounts. The type of construction used minimizes the size for an optional magnetic coupling.

■ **Optimal cooling and lubrication.**

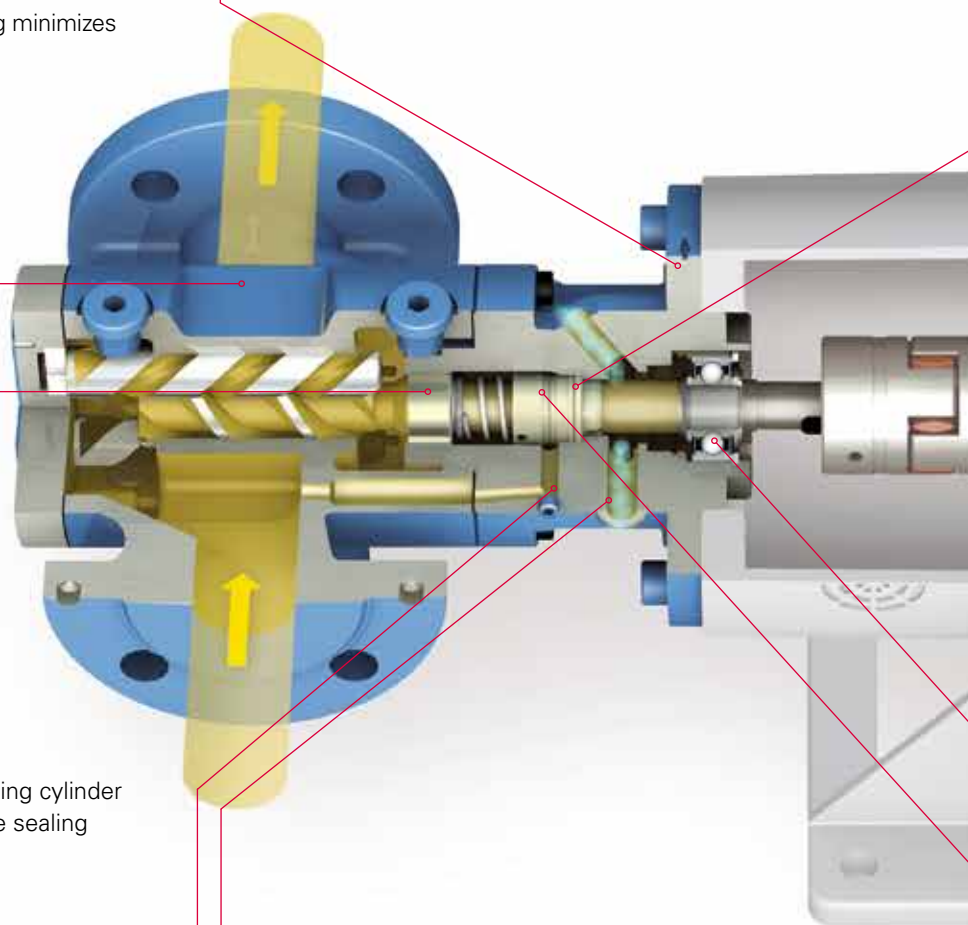
The application specific design of the balancing cylinder ensures proper cooling and lubrication of the sealing surfaces of the mechanical seals.

■ **Self-venting.**

Venting between suction and discharge side happens directly at the mechanical seal. This way it is ensured that all air is removed through the vent line, even in vertical installations.

■ **No accumulation of residue.**

Leakage from the mechanical seals is directly diverted from the stationary seal ring via a vent hold. There is no unnoticed accumulation of residue that might damage the bearings.



■ Top quality SiC materials.

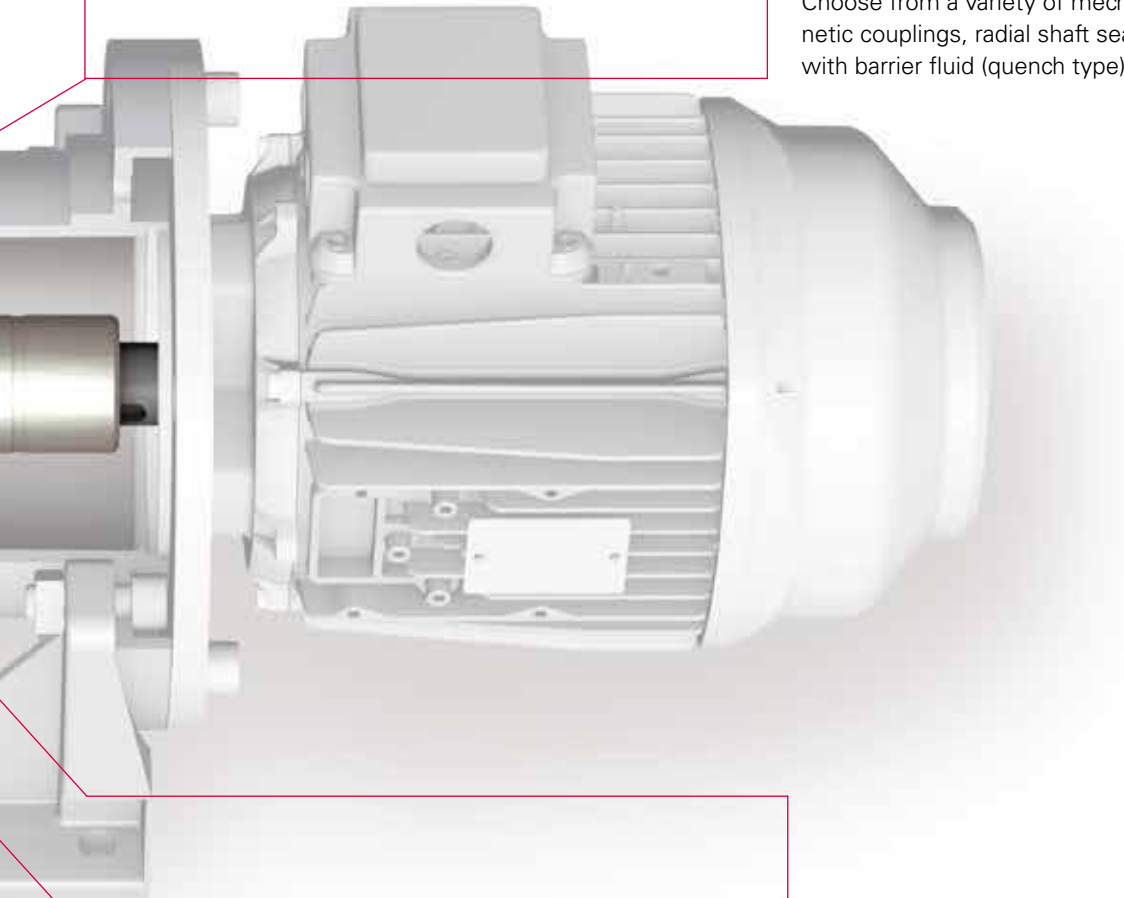
Outstanding SiC quality of our mechanical seals that also contain graphite as a dry lubricant. This reduces damaging friction during dry running.

■ Standard seals.

Depending on the requirements of the application, various types of mechanical seals are available that conform to DIN 24960.

■ Seal options.

Choose from a variety of mechanical seals. Optionally magnetic couplings, radial shaft seal rings and mechanical seals with barrier fluid (quench type) are available.



■ Durable o-rings.

High quality o-rings are chemically stable and can withstand high temperatures of up to 360 °F.

■ High quality bearings.







KRAL pumps are equipped with lifetime lubricated and sealed bearings. This increases the lifespan and reduces maintenance costs.

■■■■■■ Pumps



The Right Pump Series for Your Needs.

Here you'll find an overview of the most important information.

 Delivery Rate.	 Pressure.	 Temperature.	 Series.	 Position in the KRAL product line.	 Page.
1.5 to 770 GPM	230 PSI	-5 to 360 °F	K	This economical, most sold KRAL pump can be used at pressures up to 232 psi.	8-9
1.5 to 50 GPM	900 PSI	-5 to 360 °F	L	The mid-pressure pump from KRAL. Robust, low wear and easy to maintain.	10-11
1.5 to 940 GPM	1,450 PSI	-5 to 360 °F	C	The all-rounder – when needs exceed the standard K or L series pumps.	12-13
5 to 80 GPM	1,740 PSI	-5 to 360 °F	W	The pump for special applications, for example contaminated, abrasive or low viscosity media.	14-15
1.5 to 940 GPM	1,450 PSI	-5 to 570 °F	Magnetic coupling	KRAL magnetic couplings are maintenance free, hermetically sealed and can be used at temperatures up to 572 °F.	16-17
1.5 to 75 GPM	580 PSI	-5 to 360 °F	Compact Station EK, EL	This is a commercial/economical oil burner pump with additional functions.	18-19
1.5 to 75 GPM	580 PSI	-5 to 360 °F	Compact Station DKC, DLC, DS/L	Dual pumps are ideal when redundancy and greater safety are needed.	20-21
1.5 to 940 GPM	1,450 PSI	-5 to 360 °F	Single Station	Available in a standard design, or can be set up according to specific customer needs.	Information available on request.
1.5 to 940 GPM	1,450 PSI	-5 to 360 °F	Double Station	Available in a standard design, or can be set up according to specific customer needs.	Information available on request.


■■■■■■■ Pumps

K Series.

The economical, most sold KRAL pump.



Operation, materials, components.

- Delivery rate: 1.5 to 770 gpm.
- Delivery rate KFT: 1.3 to 135 gpm.
- Max. differential pressure: 230 psi.
- Temperature range: -5 °F to 360 °F, magnetic coupling to 570 °F.
- Housing: Nodular cast iron EN-GJS-400.
- Spindles: Steel, nitrided.
- Certifications: ABS, BV, CCS, DNV, GL, LRS, MRS, NK, RINA.
- ATEX:  II 2 GD b/c group II, category 2.
- Heating: Electrical, fluid media and steam.

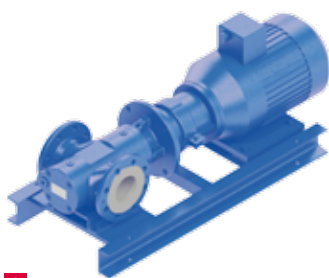
Universal use up to 230 psi.

K series pumps are universal screw pumps, making them the most sold KRAL pump. The K pumps have a discharge pressure of 230 psi and housing made from nodular cast iron. They are approved for use onboard ships. In addition, they are equipped with sealed and maintenance free external bearings that are pre-lubricated for their lifetime. Bearing life is therefore not influenced by the pumped medium.

Models and installation variants.



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1 The **KF flange pump** is the universal pump for horizontal installation.

2 **KH foot pump** – mounted onto base frames.

3 The **KV vertical, pedestal pump** is the right choice to achieve a small footprint if there is not enough available space for large, horizontal pumps.

4 **KVT pumps** have top flanges on the same plane for horizontal or vertical installation.

Industrial uses.



Marine.

- Delivery and circulation of fuel and lubricants.
- Increasing pressure and circulation for booster modules.
- Increasing pressure and circulation in lubrication systems.
- Tank system support.
- Increasing pressure and circulation for separators.
- Burner pump for boilers.
- Supplying fuel to diesel engines.



Oil & Gas.

- Transfer of separated crude oil.
- Increasing pressure and circulation for lubrication systems.
- Tank system support.
- Compressor lubrication.
- Filling and draining of tanks and transfer facilities.
- Pumping of bitumen, crude oil, diesel and HFO.



Power Generation.

- Burner technology for ring lines and transfer pumping.
- Supplying lubrication oil for large diesel engines.
- Supplying fuel for diesel engines.
- Increasing pressure and circulation in booster modules.
- Increasing pressure and circulation in lubrication systems.
- Tank system support.
- Increasing pressure and circulation for separators.
- Compressed oil shaft seals for hydrogen cooled generators.



Mechanical Engineering.

- Lubrication pumping for gears, motors, turbines and hydraulic systems.
- Increasing pressure and circulation in lubrication systems.
- Bench testing.
- Burner and transfer pumping.
- Lubrication oil applications.



Chemical Engineering.

- Plastics processing, in particular polyurethane applications.
- Drainage pumping in tank systems for adhesives, wax, resins and PUR.
- Increasing pressure and circulation in lubrication systems.
- Apportioning of fluids.
- Tank system support.
- Drum discharge pump.
- Filling and draining of tanks.


■■■■■■■ Pumps

L Series.

Our medium pressure pump.



Operation, materials, components.

- Delivery rate: 1.5 to 770 gpm.
- Max. pressure: 900 psi.
- Temperature range: -5 °F to 360 °F, magnetic coupling to 570 °F
- Housing: Nodular cast iron EN-GJS-400.
- Spindles: Steel, nitrided.
- Certifications: ABS, BV, CCS, DNV, GL, LRS, MRS, NK, RINA, KR.
- ATEX:  II 2 GD b/c group II, category 2.
- Heating: Electrical, fluid media and steam.

Robust, low wear and easy to maintain.

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.

Models and installation variants.



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1 The **LFI flange pump** is the universal pump for horizontal installation.

2 **LFT pumps** have top flanges for horizontal installation.

3 The **LVI vertical, pedestal pump** is the right choice if the installation area is limited or if there is not enough available space for large pumps.

4 Space saving **LVT vertical, pedestal pumps** are for vertical installation.

Industrial uses.



Marine.

- Burner pump for boiler systems.
- Delivery and circulation of fuel and lubricant.
- Increasing pressure and circulation in lubrication systems.
- Rudder adjustment.
- Propeller blade adjustment.



Oil & Gas.

- Increasing pressure and circulation in lubrication systems.
- Compressor lubrication.



Power Generation.

- Burner technology for ring line and transfer pumping.
- Supplying lubrication oil for large diesel engines.
- Increasing pressure and circulation in lubrication systems.
- Compressed oil shaft seals for hydrogen cooled generators.



Mechanical Engineering.

- Lubrication pumping for gears, motors, turbines and hydraulic systems.
- Increasing pressure and circulation in lubrication systems.
- Increasing pressure of refrigerants.
- Bench testing.
- Burner pump for industrial applications.
- Lubrication and hydraulic pump for plant facilities.



Chemical Engineering.

- Plastics processing, in particular polyurethane applications.
- Drainage pumping in tank systems for adhesives, wax, resins and fuel, PUR or coloring agents.
- Increasing pressure and circulation in lubrication systems.
- Apportioning of fluids.
- Process engineering.


■■■■■■■ Pumps

C Series.

For pressures of up to 1450 psi.



Operation, materials, components.

- Delivery rate CK: 460 gpm.
- Delivery rate CL: 940 gpm.
- Delivery rate CG: 940 gpm.
- Temperature range: -5 °F to 360 °F; magnetic coupling to 570 °F.
- Pressure range: 1,015 psi; 1,450 psi.
- Housing: Nodular cast iron, steel and aluminium.
- Spindles: Steel, nitrided.
- Certifications: ABS, BV, CCS, DNV, GL, LRS, MRS, NK, RINA, KR.
- ATEX:  II 2 GD b/c group II, category 2.
- Heating: Electrical, fluid media and steam.
- Manufactured to conform with API.
- Approvals: API, CE, GOST.

The all-rounder – when needs exceed the standard K or L series pumps.

The main components of the C series pumps are the same – the CK, CL and CG pumps differ in the details, delivering the right pump to match more demanding applications. These pumps are primarily used in industry. The CK line is used in hydraulics as a tank pump. The CL line is put to use in the plastics industry as a high pressure feeder pump for polyurethane components like polyols and isocyanates. CG pumps are utilized in all the same areas of industry as the K and L line when higher pressures and delivery rates are required.

Models and installation variants.



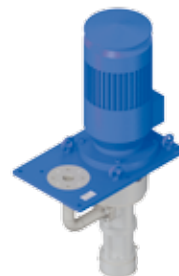
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1 The **flange pump CGF** is the universal pump for horizontal installation.

2 **Pump CGH** – mounted onto base frames.

3 Space saving **CG pedestal pumps** are for vertical installation.

4 **CK/CL pumps** are suitable for in-tank installation.

5 The **CK/CL flange pump line** – universal horizontal installation pumps.

Industrial uses.



Oil & Gas.

- Transfer of separated crude oil.
- Increasing pressure and circulation in lubrication systems.
- Tank system support.
- Compressor lubrication.



Mechanical Engineering.

- Lubrication pumping for gears, motors, turbines and hydraulic systems.
- Increasing pressure and circulation in lubrication systems.
- Bench testing.
- Burner and transfer pump.
- Lubrication oil applications.
- Industrial burners.



Power Generation.

- Burner technology for ring line and transfer pumping.
- Supplying lubrication oil for large diesel engines.
- Increasing pressure and circulation in lubrication systems.
- Tank system support.
- Increasing pressure in hydraulic turbine controllers.
- Compressed oil shaft seals for hydrogen cooled generators.
- Raising turbine bearings.
- Industrial burners.



Marine.

- Providing service for hydraulic drives.
- Increasing pressure in lubrication systems.
- Tank system support.
- Burner pump, boiler pump.



Chemical Engineering.

- Plastics processing, in particular polyurethane applications.
- Drainage pumping in tank systems for adhesives, wax, resins and fuel, PUR or coloring agents.
- Increasing pressure and circulation in lubrication systems.
- Tank system support.
- Drum discharge pump.
- Filling and draining of tanks.

■■■■■■■ Pumps

W Series.

The KRAL pump for special requirements.



Operation, materials, components.

- Delivery rate: 5 to 80 gpm.
- Max. differential pressure: 1,740 psi.
- Viscosity: > 1 cSt.
- Max. temperature: to 360 °F, magnetic coupling to 570 °F.
- Installation: Wet or dry.
- Spindle housing: Nodular cast iron EN-GJS-400, polymer coated or other material options.
- Spindles: Steel, nitrided.

The pump for special requirements.

KRALs W series pump is mainly used wherever a dirty or abrasive media is required.

The cartridge case is coated with a resilient polymer. The coating is able to absorb limited amounts of particles.

Models and installation variants.



The **W flange pump** is the universal pump for horizontal installation.



In-tank W pumps are for in tank installation. Pressure port outside of the tank.

Industrial uses.



Mechanical Engineering.

- Hydraulic pumping up to 1,740 psi.
- Cool lubricant pumping for gears, motors, turbines and hydraulic systems.
- Test stands.
- Lubrication oil applications.
- Cool lubricant pump for machine tools.



Chemical Engineering.

- Processing of abrasive polyols.
- Plastics processing, in particular polyurethane applications.
- Drainage pumping in tanks systems for adhesives, wax, resins and fuel, PUR or coloring agents.
- Apportioning of fluids.
- Drum discharge pump.



Power Generation.

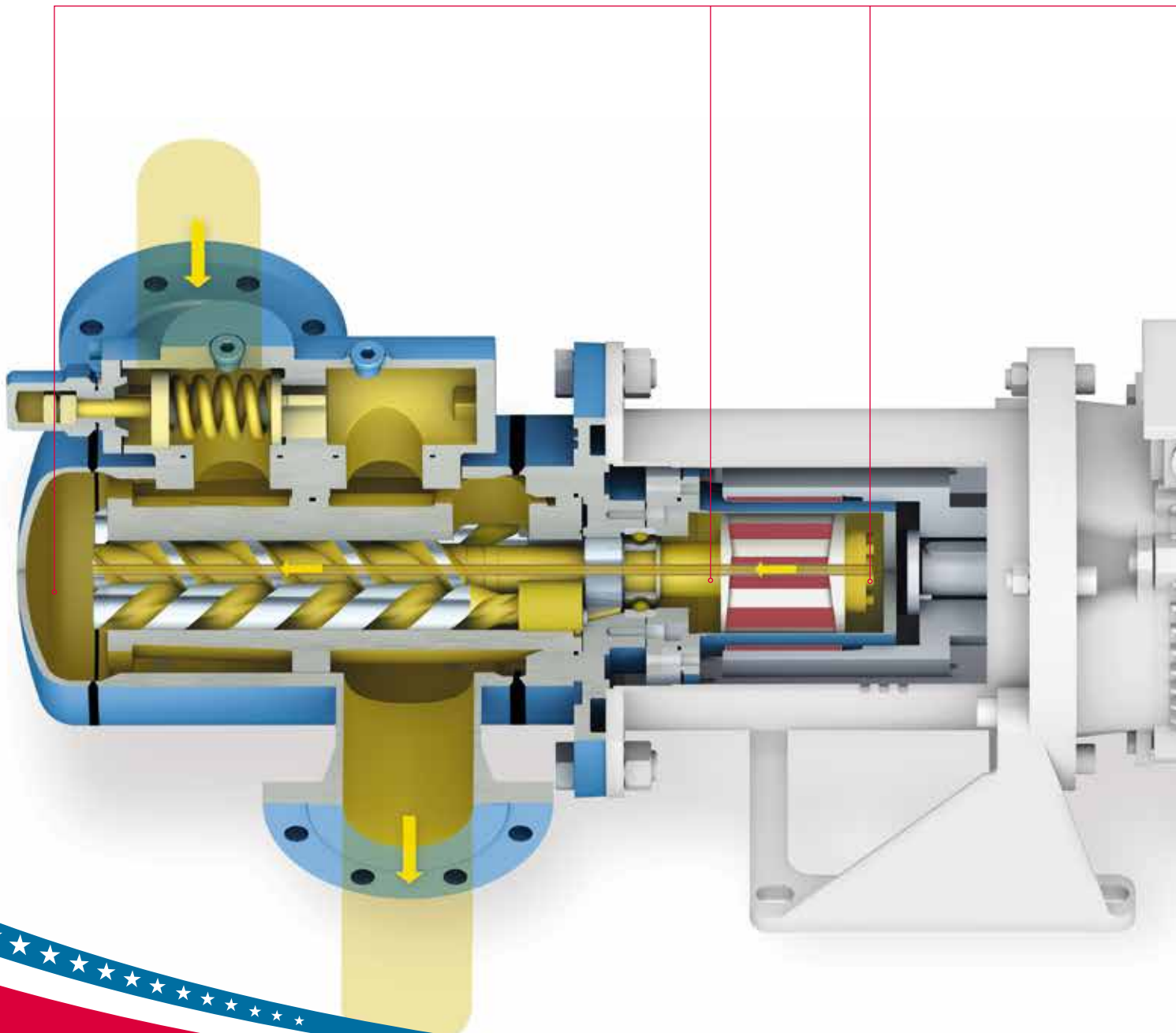
- Raising turbine bearings.
- Increasing pressure and circulation in lubrication systems.

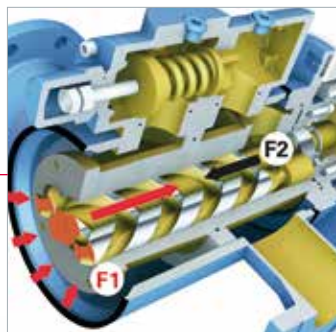
■■■■■■■ Pumps

KRAL Magnetic Coupling Pumps.

No more mechanical seal problems.

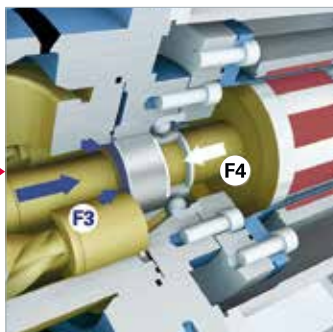
KRAL pumps are also available with magnetic coupling. Magnetic coupled pumps from KRAL are maintenance free, hermetically sealed and can be used at temperatures of up to 570 °F. Additionally, the lifespan of the ball bearings is considerably extended.





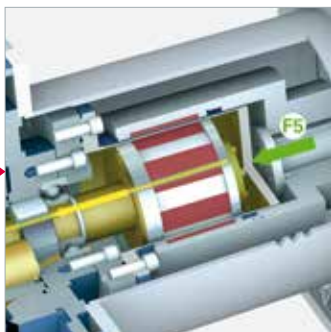
Drive screw.

High inlet pressure acts directly on the surface of the main drive screw as well as the idler screws (F1). Some



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.



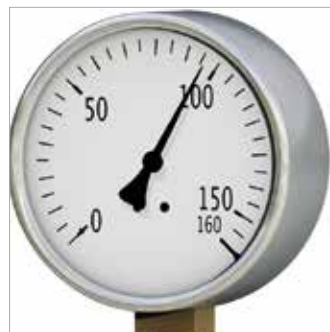
Magnetic coupling.

Thanks to an opening 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 minimized 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.

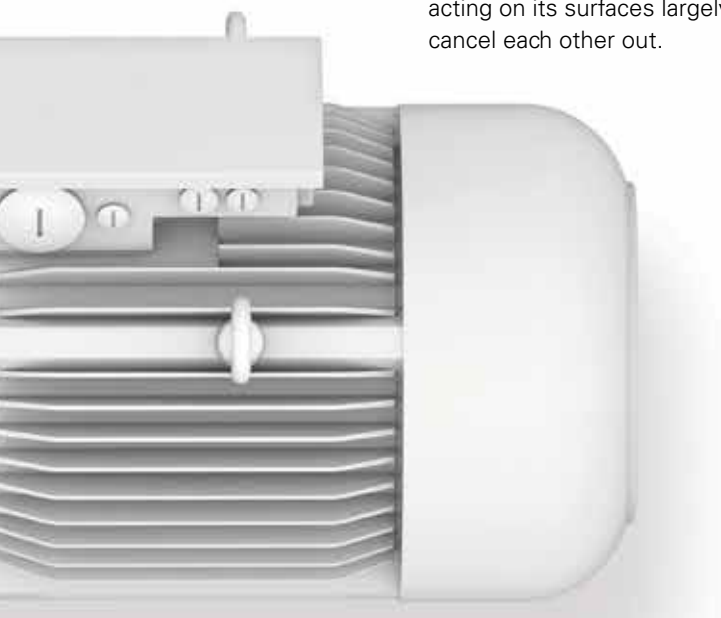


High inlet pressure.

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 given 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.



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.

■■■■■■■ Pumps

KRAL Compact Stations EK/EL.

Oil burner supply station –
oil burner pump with additional functions.

■ Expansion valve.

Expansion valve with timer.

■ KRAL Volumeter®.

For highly precise flow metering.

■ Differential pressure monitoring.

An optical display or an electrical differential monitor with signal can be used.

■ Pump variations.

Single stations can be set up with KRAL KFT series pumps for pressures up to 230 psi or LFM series pumps for up to 580 psi.

■ KRAL electronics.

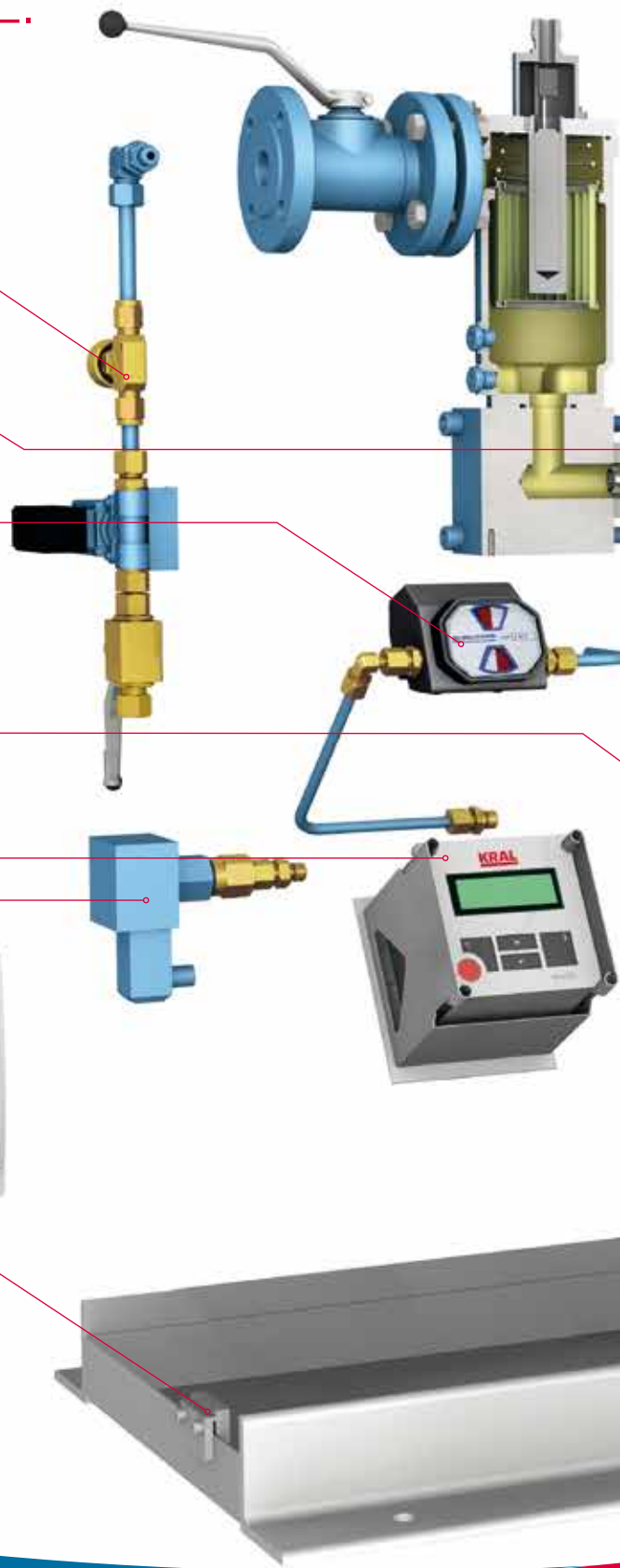
Error free operation, informative monitoring.

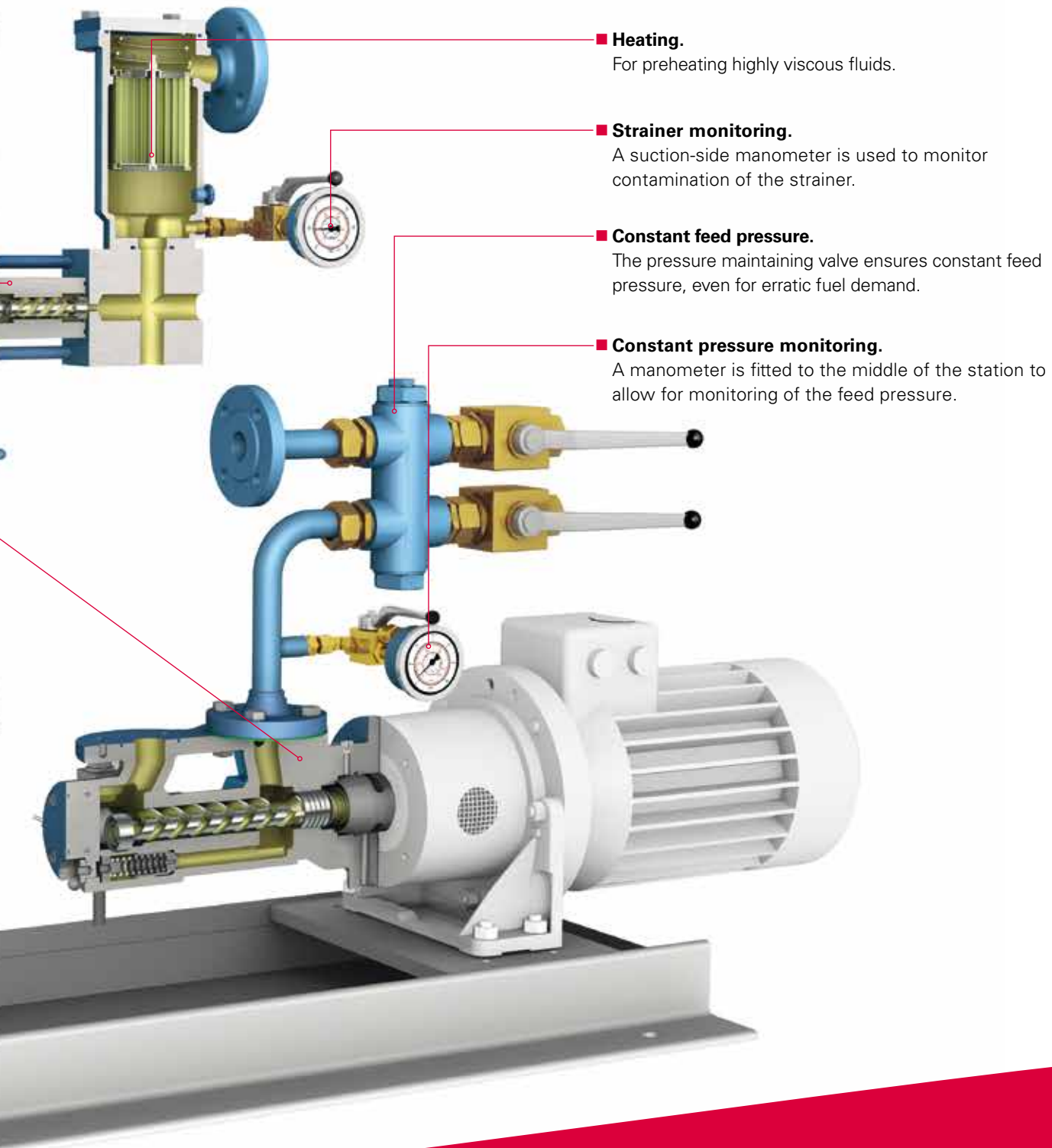
■ Pressure switch.

A pressure switch serves as an additional pressure monitor.

■ Leak oil monitoring.

A leak oil monitoring system is available for installation in an oil pan.





■■■■■■■ Pumps

KRAL Compact Stations DKC, DLC, DS/L.

Two pumps provide more than double the advantages.

■ **Heating.**

Electrical or medium heating for the preheating of highly viscous fluids.

■ **Pump selection valve lever.**

Used to switch to the standby pump or when cleaning the filter.

■ **Constant feed pressure.**

The pressure maintaining valve ensures constant feed pressure, even for erratic fuel demand.

■ **Simple connection.**

Easy piping and plumbing connection with suction and discharge connection accessible on the front side.

■ **Expansion valve.**

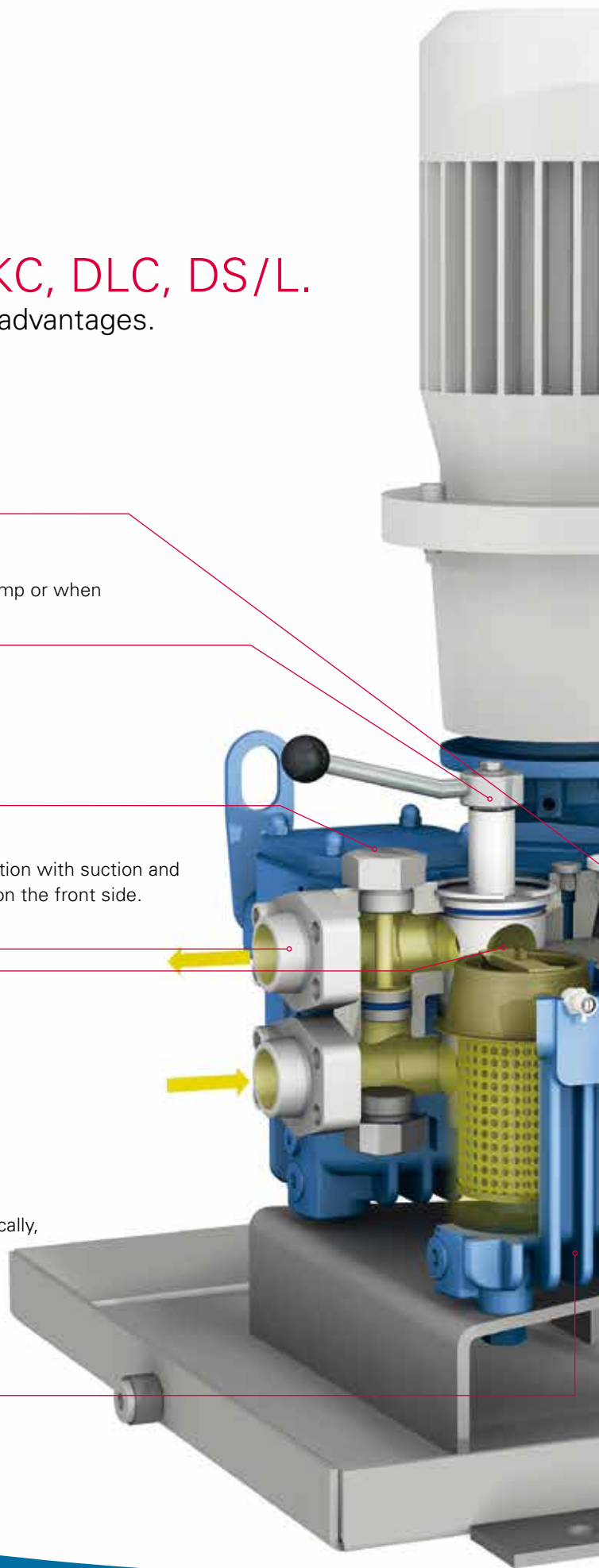
To prevent unacceptably high internal pressure within the turned off, standby parts of the block due to thermal expansion, the switch valve cylinder has two small expansion valves.

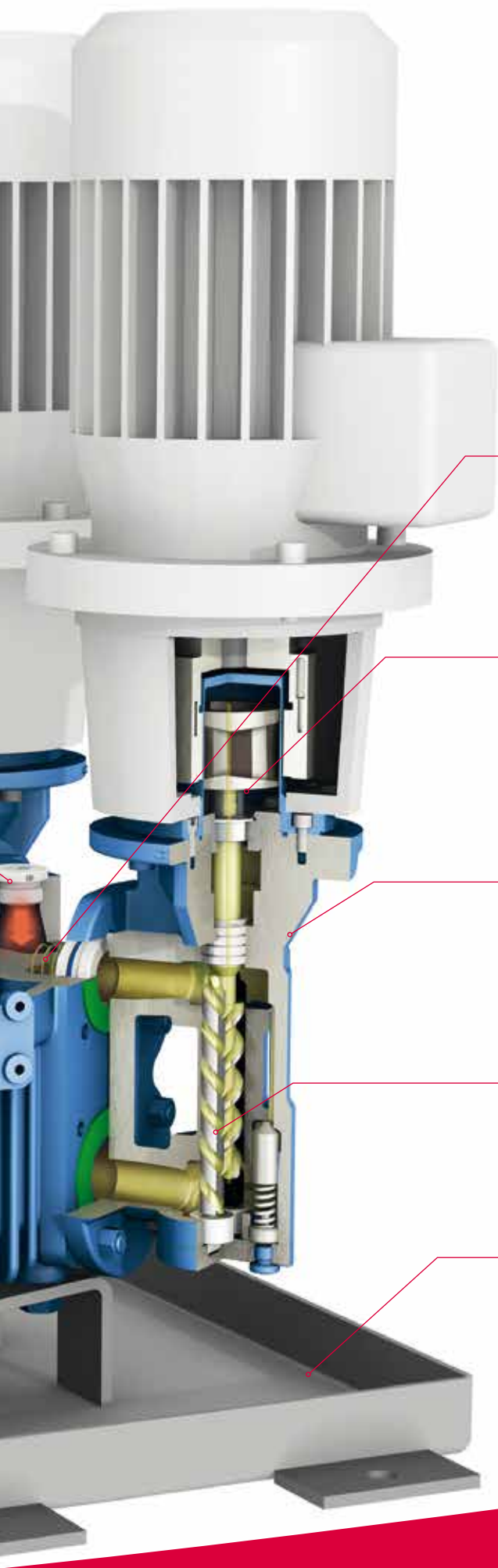
■ **Different fluids.**

A two-way valve can be switched manually, electrically or pneumatically, allowing for switching between two types of fuel.

■ **Cooling fins.**

For cooling the access overflow fuel.





■ **Non-return valve.**

To prevent fluid from flowing back into the standby pump.

■ **Seal options.**

A variety of shaft seals are available; hermetically sealed magnetic couplings offer especially high safety.

■ **Pump variations.**

Double stations can be set up with KRAL KFT series pumps for pressures up to 230 psi or LFM series pumps for up to 580 psi.

■ **Spindles.**

For pumping low sulfur fuels that are low viscosity, the surfaces of the spindles and housing are coated and hardened.

■ **Leak oil monitoring.**

A leak oil monitoring system is available for installation in an oil pan.

■ **Differential pressure monitoring.**

An optical display or an electrical differential monitor with signal can be used.

■■■■■■■■ Pumps

KRAL AG.

Additional Products and Services.



KRAL ■■ Special Projects

As pump specialists, we manufacture the core elements of our pump modules ourselves. This level of knowledge clearly sets KRAL apart from equipment manufacturers that only handle the pipework and fail to consider the effects of the pumps on the system as well as the influences that the system has on the pumps.



KRAL ■ Flow Measurement

KRAL flowmeters offer the highest precision in fluids measurement. The application spectrum is broad from low viscosity fluids like gasoline, acids and alkaline solutions to highly viscous fluids like fuel oil and printing ink.



KRAL ■ Services

Through the expert installation, commissioning and maintenance of your KRAL products, you'll be increasing their lifespans and minimising operational costs while also limiting downtime.

