

■■■■■■ Pumps.

KRAL



KRAL Screw Pumps.
L Series.

KRAL Screw Pumps L Series.

The KRAL medium-pressure pump makes things easier – robust, low-wear and easy to maintain.



Areas of application.

KRAL L series screw pumps convey lubricating, non-abrasive and chemically neutral liquids. The main areas of application are industrial sectors such as:

- Oil firing technology as burners, high-pressure pumps and double stations up to 35 bar.
- Marine as lube oil pumps up to 63 bar.
- Mechanical engineering as high-pressure hydraulic pumps up to 63 bar and lubricating oil pumps with a maximum inlet pressure of 16 bar as standard application, also 25 bar on request.
- Process technology, in particular polyurethane production for highly viscous polyols and pressures up to 40 bar.

The L pump in the KRAL program.

The KRAL L series screw pump extends the pressure range served by the K pump from 16 bar to 63 bar. This places L series as a medium-pressure pump between the K and C series.

In standard applications, the L series can be a cost-effective alternative to the CG series.

The L pump is a further development for high-pressure applications in the navy. It has a housing made of ductile iron and is therefore approved for use on board ships.

With the exception of the magnetic coupling, the L pump has a sealed, lifetime-lubricated, external ball bearing which is not loaded by the pumped liquid and is maintenance-free.

Operation, materials and accessories.

Delivery rates:	5 to 225 l/min.
Max. differential pressure:	63 bar.
Temperature range:	-20 °C to 180 °C, magnetic coupling to 300 °C.
Casing:	EN-GJS-400.
Screws:	Steel, nitrided..
Approvals:	ABS, BV, CCS, DNV, LRS, MRS, NK, RINA, KR.
ATEX:	Group II, Category 2 Ⓔ II 2 GD b/c.
Heating:	Electrical, media or steam.



KISS – keep it short and simple.

The old adage is particularly true with the innovation of the L pump.

Short and simple. Clear selection, simple operation. From the smallest to the largest size, the L pump is available in all sizes with top and inline flanges.

Reliable start-up, minimized wear and easy maintenance simplify operation.



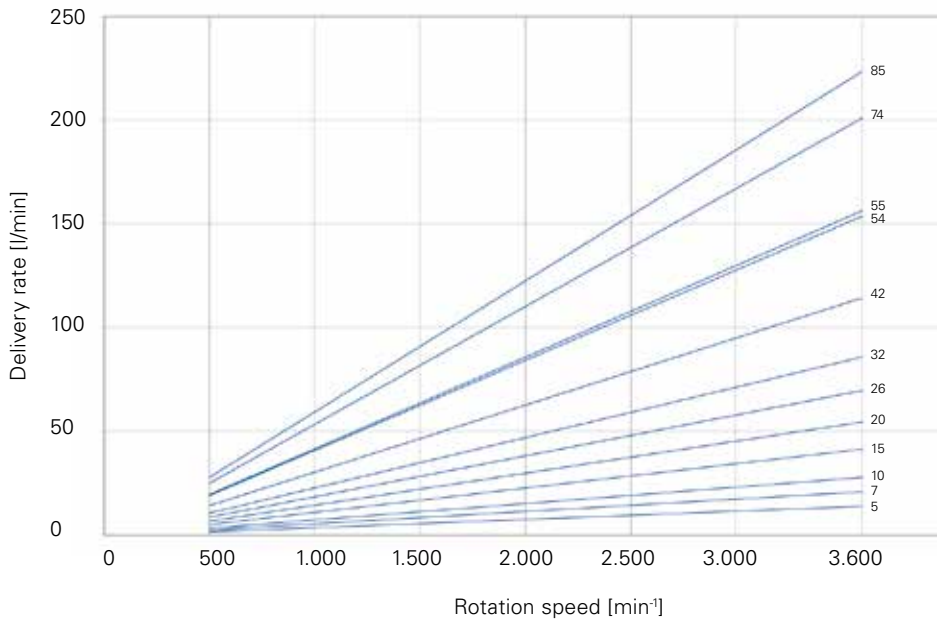
Service friendliness.

The main spindle of the L pump can be removed together with the seal housing, as all rotating parts are pre-assembled in the flange sleeve. This makes assembly, disassembly and maintenance of the L series particularly easy.

Technical Data.

Finely graduated sizes and a linear, finely adjustable flow rate characteristics.

Size 5 to 85.



Technical Data.		5-10	15-26	32-54	55-85
Q_{th} (1.450 min ⁻¹ , 0 bar)	l/min	5 to 10	15 to 26	32 to 57	58 to 84
Max. feed pressure	bar	63	63	63	63
Temperature	°C				
with radial seal ring NBR		80	80	80	80
with radial seal ring FKM		150	150	150	150
with standard mechanical seal		150	150	150	150
with SIC-SIC mechanical seal		180	180	180	180
with magnetic coupling		300	300	300	300
Viscosity	mm ² /s				
min.		1.5	1.5	1.5	1.5
max.		7,000	7,000	7,000	7,000
Max. feed pressure	bar				
with radial seal ring NBR		6	6	6	6
with radial seal ring FKM		6	6	6	6
with standard mechanical seal		6	6	6	6
with SIC-SIC mechanical seal		16	16	16	16
with magnetic coupling		16	16	16	16

Many Advantages – Simple Decision.

■ Throughout with top and inline flanges.

From the smallest to the largest size, the L pump is available with top and inline flanges in all sizes.

■ Wear-reducing surface treatment.

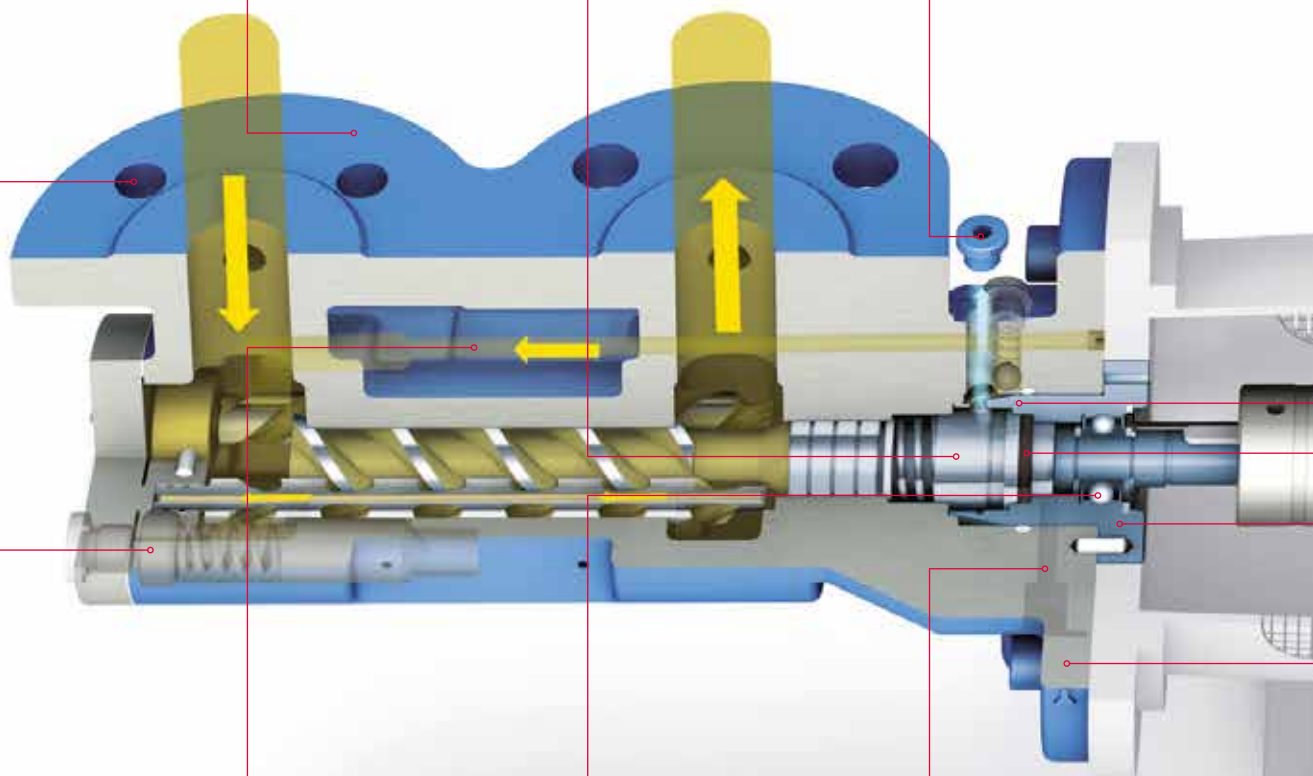
A special heat treatment of the pump housing improves the sliding properties and minimizes wear.

■ Standard mechanical seals.

Depending on the operating requirements, different types of mechanical seals can be selected in accordance with DIN 24960.

■ Ventilation of the sealing space.

The sealing space has its own vent hole. This enables simple, professional venting during commissioning.



■ Protection against over-pressure.

Internal overflow valve protects against over-pressure in the event of operating errors on the system side.

■ Self-venting.

The venting between the pressure and suction side starts directly at the mechanical seal. This ensures that air cushions are displaced into the vent line by the medium, even when installed vertically.

■ High-quality external bearings.

KRAL L series pumps use lifetime-lubricated, externally mounted ball bearings. High-temperature-resistant sealing washers made of FKM prevent washout. This increases the bearing service life and reduces maintenance costs.

■ No accumulation of residues.

The leakage from the mechanical seal is discharged immediately after the counter ring via a hole. There is no unnoticed accumulation of residue that could damage the ball bearing.

■ Optional shaft seals.

The mechanical seal is available in different qualities as standard. The highly developed hard material quality contains graphite as a dry lubricant. This reduces harmful friction during dry running. A magnetic coupling and radial shaft seal are optionally available.

■ Resistant O-rings.

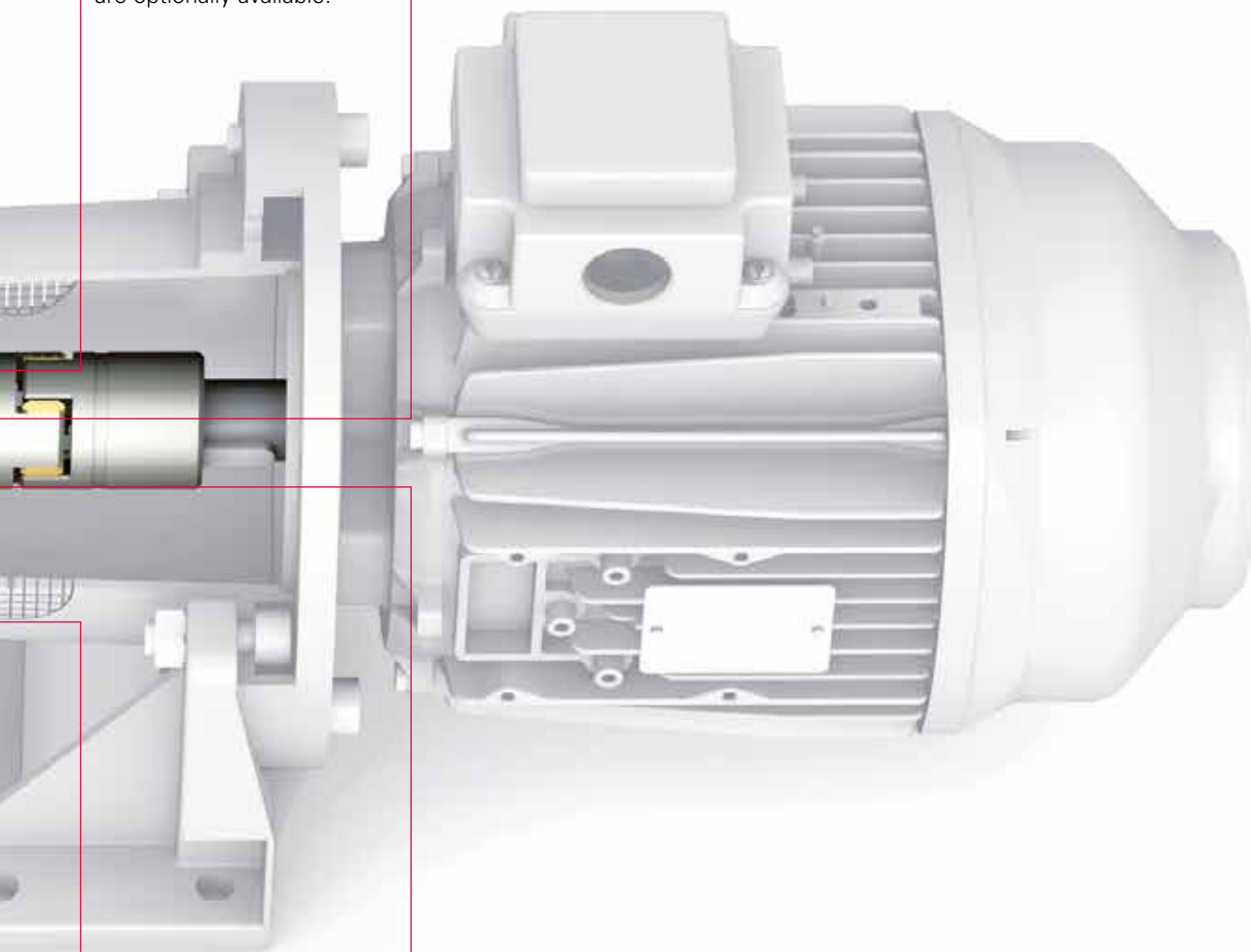
The O-rings of the hard material mechanical seals have a high fluorine proportion. This quality is chemically resistant and can withstand high temperatures without permanent deformation.

■ Optional heating.

The optional pump heater ensures easy start-up even at low ambient temperatures.

■ One-piece housing design.

Thanks to the innovative one-piece housing design, leaks on the pressure side are a thing of the past.



■ ISO flange.

The flange is designed in accordance with ISO 3019. This allows the pump to be connected to standard bellhousings. This design minimizes the installation volume of an optional magnetic coupling.

■ Removable flange sleeve.

All rotating parts such as bearings, seals and balancing cylinders are pre-assembled in the flange sleeve, which can be removed for easy assembly, disassembly and maintenance.

■ Long design.

The L series takes its name from the long design. Long spindles enable a feed pressure of up to 63 bar.

■ Nodular cast iron housing.

The housing of the L pump is made of spheroidal nodular cast iron and is therefore approved for use on board ships.

Models.

The various models of KRAL pumps enable numerous types of installation.



LFI flange screw pump.

This is the universal pump for horizontal installation. Other installation options are also possible.



LFT screw pump.

The pump with top DIN flanges PN16 for horizontal installation.



LVI pedestal screw pump.

The right choice if the installation area is narrow or if there is not enough space available.



LVT pedestal pump with overlying DIN flanges.

The space-saving pump, which can be installed vertically, is also available with top flanges.



Single station ELL, ELS.

Thanks to the modular system, the single station offers various options for the respective application. It is more cost-effective than self-piping and can be individually extended for the respective burner type.



Double station DLC, DLB..

Operational reliability thanks to an extended version of the standby pump that is always available. More functionality with regard to the heating variants for heating highly viscous liquids. The DLC series saves expensive working space and time-consuming piping work.

In some critical applications, a second pump is required. The DLB double station ensures greater safety in continuous operation thanks to a second pump.

Practical Examples.

KRAL applications.



Piston dosing system.

Pumps: L 20
with magnetic coupling.
Pressure: approx. 12 bar.
Viscosity:
Polyol 2.000 mm²/s.
Isocyanat 500 mm²/s.

Polyol and isocyanate are stirred and heated in pressure vessels. During recirculation, the magnetically coupled screw pumps convey the components gently and evenly. The medium is fed through the heated filters and the mixing head to keep the mixing head temperature and viscosity constant. The excess is returned to the tanks. The recirculation is stopped by pressing the release button. The dosing pumps switch to high pressure. The mixing head opens and the liquid mixture is shot into the mold.

Oil combustion technology.

Series: ELL/ELS.
Type: ELS for heating oil heavy.
Type: ELL for heating oil extra light.
Pressure rating: 40 bar.
Delivery rate:
300 to 6,500 l/h.

The modular system enables various designs. Each burner type has to meet different requirements depending on the system concept. The KRAL oil burner supply station can be individually extended with functions such as:

- Pressure regulation.
- Degassing.
- Flow measurement.
- Filters.
- Gas/air separator.

The display instruments can be rotated. They can be set up left/right on site. KRAL offers the optimum solution for every customer requirement.

Marine boilers for steam generators.

Pumping station: DLC.
Medium: Heavy fuel oil/
extra light heating oil.
Pressure: 40 bar.
Delivery rate:
240 to 9,000 l/h.

KRAL pumps and stations are known on the market for the highest quality. With the DLC stations, boiler manufacturers achieve their high quality goals. These are characterized by:

- High efficiency.
- Modular design.
- Low weight.
- Long service life.
- Low maintenance costs.

The boilers are supplied as a complete unit with burner and burner control. KRAL DLC pumping stations work as feeder pumps in this application. They deliver the fuel to the burners. Double stations are installed for operational safety.

Ship suppliers.

Screw pumps
in the ship package:

- Feeder pumps.
- Circulation pumps.
- Lubricating oil pumps.
- Hydraulic pumps.

KRAL works in partnership with the world's most important ship suppliers. Complete pump programs, optimum pricing, quality and know-how are particularly important to them. If a supplier delivers late, the ship chandler must pre-finance the other suppliers. Customers repeatedly attest to KRAL's excellent adherence to delivery dates and delivery reliability, which is unrivaled by its competitors.



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