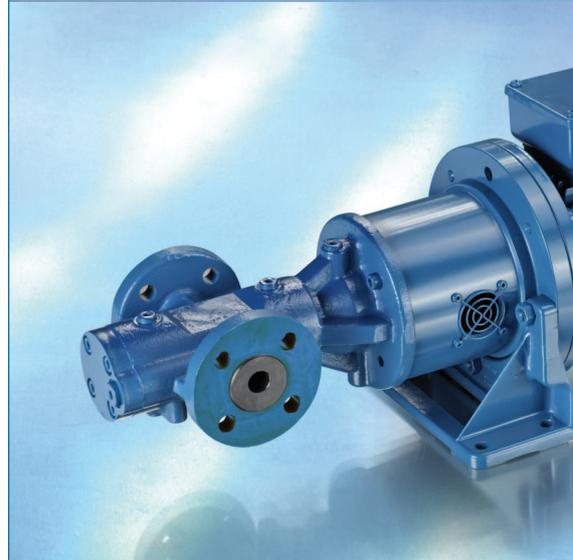


KRAL Screw Pumps.  
L Series.

**KRAL**



**The new L pump makes life easier – sturdy, with a low wear rate and easy to maintain.**



## Applications.

KRAL L series screw pumps deliver lubricating, non-abrasive and chemically neutral liquids. They are primarily used in industrial applications, such as:

- Oil burner technology, as high pressure burner pumps and double stations up to 35 bar.
- Marine applications, as lubricating oil pumps up to 63 bar.
- Mechanical engineering, as high-pressure hydraulic pumps up to 63 bar and lubricating oil pumps with a maximum intake pressure of 16 bar.
- Process engineering, particularly the production of polyurethane for highly viscous polyols and pressures up to 40 bar.

## How the L pump fits into the KRAL product range.

KRAL L series screw pumps extend the pressure range from the 16 bar limit of the K pump to 63 bar. This places the medium-pressure L series pump between the K and C series.

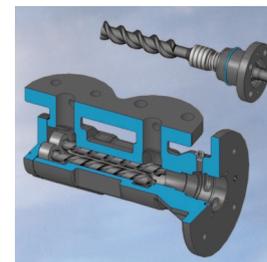
In standard applications, the L series can be a cost-effective alternative to the CG series.

The L pump takes high-pressure marine applications a step further. Its casing is made from ductile iron and is therefore approved for use on board ships.

The L pump also has a sealed, lifetime-lubricated, external bearing, which is not exposed to the pumped medium and is maintenance-free.

## Operation, materials and accessories.

Flow rates L:	5 bis 225 l/min.
Max. pressure:	63 bar.
Max. inlet pressure:	25 bar.
Temperature range:	-20 °C to 180 °C, magnetic coupling to 250 °C.
Casing:	EN-GJS-400.
Spindles:	Steel, nitration-hardened.
Accepted by:	ABS, BV, CCS, DNV, GL, LRS, MRS, NK, RINA, KR.
ATEX:	Gruppe II, Category 2 ⊠ II 2 GD b/c.
Heating:	Electric, media and steam heating.



## KISS – keep it short and simple.

The old saying is particularly true when applied to the innovative L pump.

Short and simple – clear and easy. Simple selection, easy to operate. From the smallest to the largest size, all L pumps are generally available with top and inline flanges.

Reliable starting, minimum wear and easy maintenance keep operation simple.

## Easy servicing.

The main spindle of the L pump can be disassembled together with the seal casing, as all rotating parts are pre-assembled in the removable end cover. This makes the L series particularly easy to assemble, dismantle and maintain.

# Many Advantages – an Easy Decision

**Generally available with top and inline flanges.**

From the smallest to the largest size, all L pumps are generally available with top and inline flanges.

**Advanced surface treatment.**

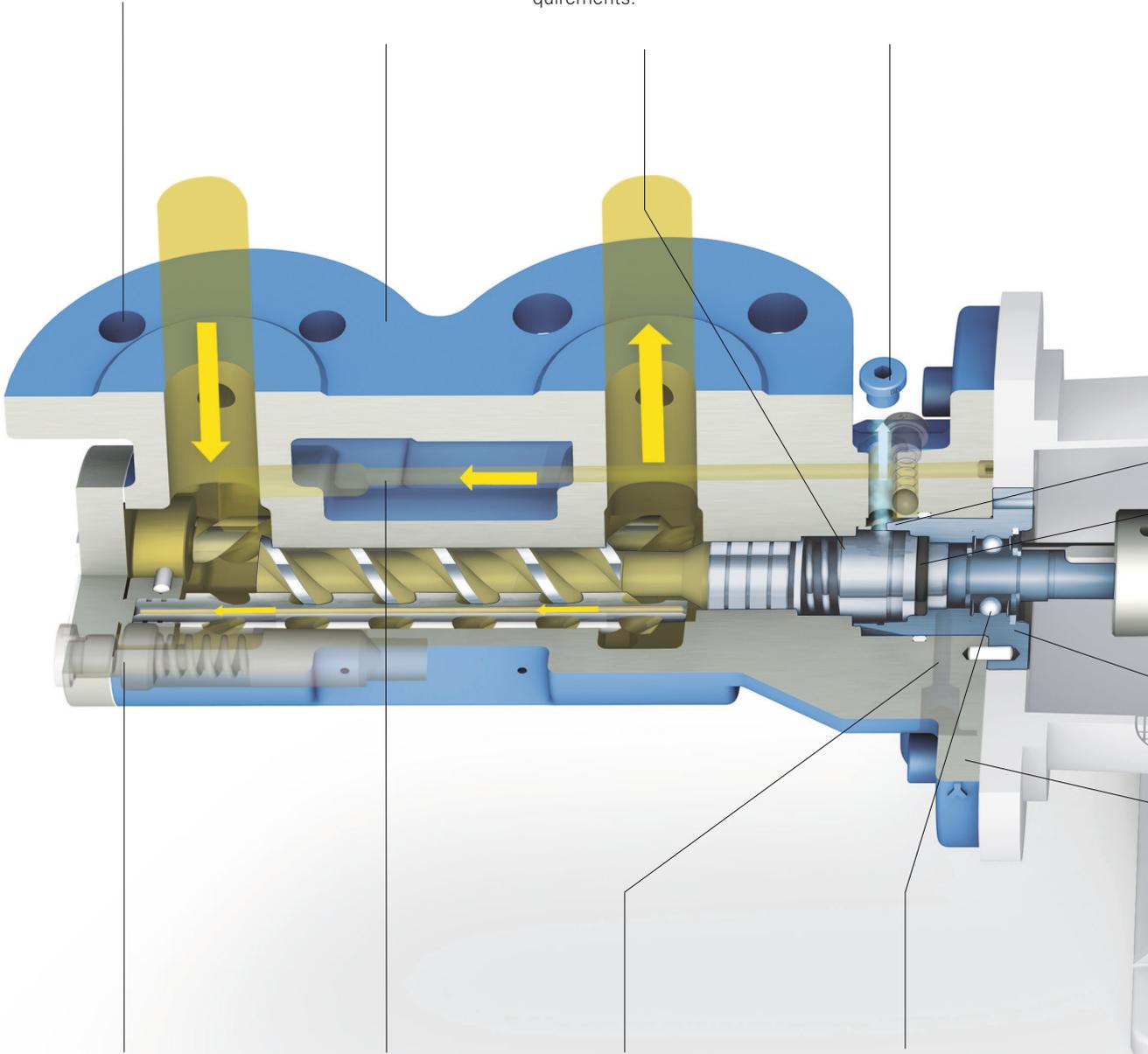
The pump casing is specially heat treated to improve its anti-friction properties and minimize wear.

**Standard mechanical seals.**

There are different types of DIN 24960-compliant mechanical seals to choose from, depending on the operational requirements.

**Venting the seal chamber.**

The seal chamber has a dedicated vent hole. This simplifies correct pump venting during startup.



**Protection from overpressure.**

A built-in overflow valve protects the pump from overpressure.

**Self-venting.**

Venting between the pressure and suction side starts directly at the mechanical seal. This ensures that even if the pump is mounted vertically, any trapped air will be displaced through the vent line.

**Residue does not collect.**

Any mechanical seal leakage drains through a weep hole immediately after the stationary seal face. Residue which could damage the ball bearing cannot collect unnoticed.

**High-quality external bearing.**

KRAL L pumps use life-time-lubricated, external ball bearings. FKM sealing discs with high temperature stability prevent wash out. This increases the life of the bearing and reduces maintenance costs.

**A choice of shaft seals.**

Standard is a mechanical seal in different variations. The hard face mechanical seal option contains graphite for reduced friction in dry running conditions. Also available are magnetic coupling and radial shaft seals.

**Resistant O-rings.**

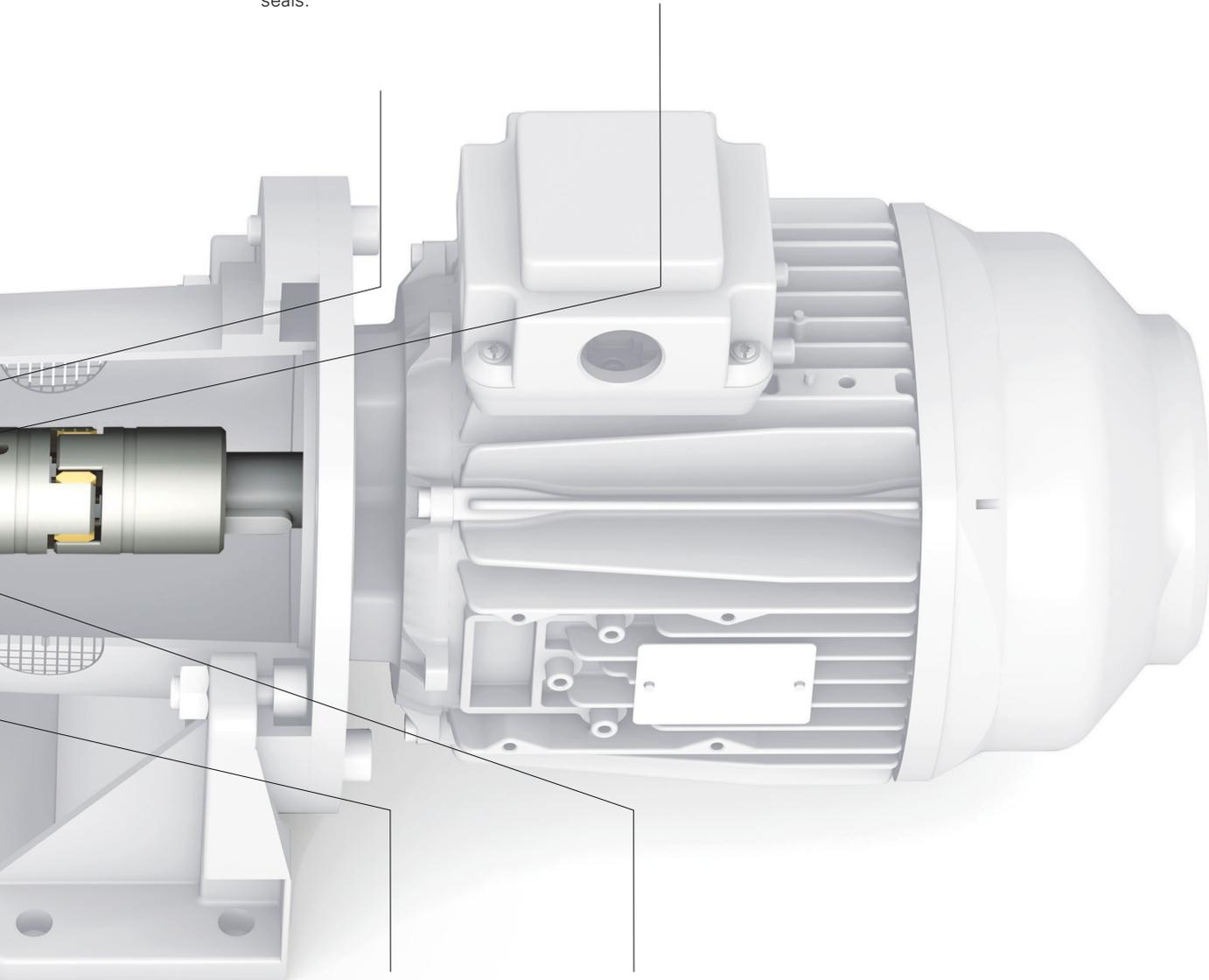
The O-rings of the hard face mechanical seal have a high fluorine content. This high quality material is chemically stable and can tolerate high temperatures without lasting deformation.

**Heating option.**

Pump heating is available as an option and ensures easy startup, even at low ambient temperatures.

**One-piece casing.**

The innovative one-piece casing design guarantees that pressure-side leakages are a thing of the past.



**ISO flange.**

The flange is designed in compliance with ISO 3019. This allows the pump to be connected with conventional standard pump brackets. This design minimizes the volume required by the magnetic coupling option.

**Detachable end cover assembly.**

All rotating parts such as bearing, seal and balance piston, are pre-assembled in the special designed end cover. This end cover assembly can be easily removed to simplify assembly, dismantling and maintenance.

**Long construction.**

The L series gets its name from its long construction. The long spindles allow a discharge pressure of up to 63 bar.

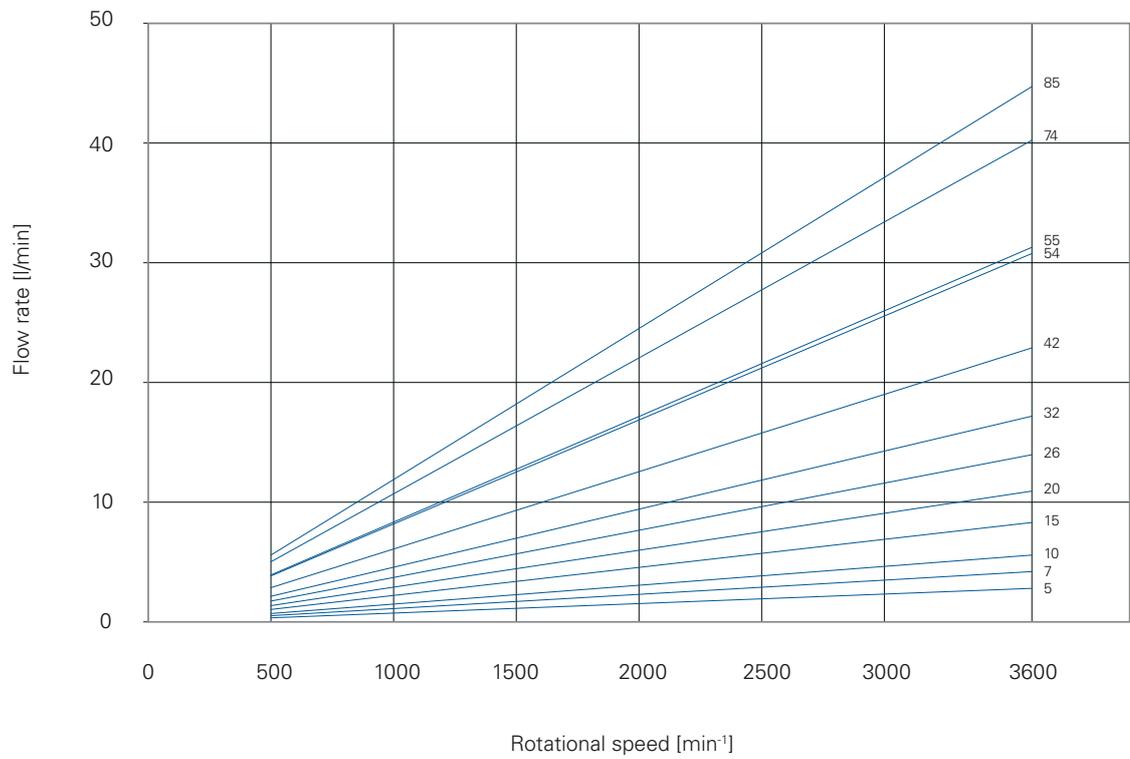
**Ductile iron casing.**

The casing of the L pump is made from ductile iron and is therefore approved for use on board ships.

# Technical Data

**Large variety of sizes for perfectly matching flow rates. Precise linear flow characteristics for variable speed applications.**

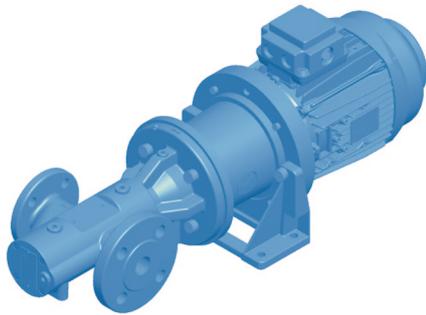
## Sizes 5 through 85



## Technical data.

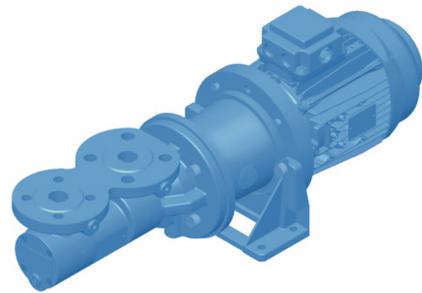
Technical data.	5-10	15-26	32-54	55-85
<b>Q<sub>th</sub></b> (1.450 min <sup>-1</sup> , 0 bar)    l/min	5-10	15-26	32-57	58-84
<b>Max. pressure at pressure flange</b> bar	63	63	63	63
<b>Temperature</b> °C				
with radial shaft seal NBR	80	80	80	80
with radial shaft seal FKM	150	150	150	150
with standard mechanical seal	150	150	150	150
with mechanical seal of hard material	180	180	180	180
with magnetic coupling	250	250	250	250
<b>Viscosity</b> mm <sup>2</sup> /s				
min.	1,5	1,5	1,5	1,5
max.	7.000	7.000	7.000	7.000
<b>Max. pressure at suction flange</b> bar				
with radial sealing ring	6	6	6	6
with standard mechanical seal	6	6	6	6
with mechanical seal of hard material	6	6	6	6
with balanced mechanical seal	16	16	16	16
with magnetic coupling	16	16	16	16

**Large variety of KRAL pump models and arrangements open up numerous installation options.**



**LFI flange mounted pump.**

The flange pump is the universal close coupled pump for horizontal installation. Other mounting positions are also possible.



**LFT pump with with flanges on top.**

The pump with top flanges for horizontal installation.



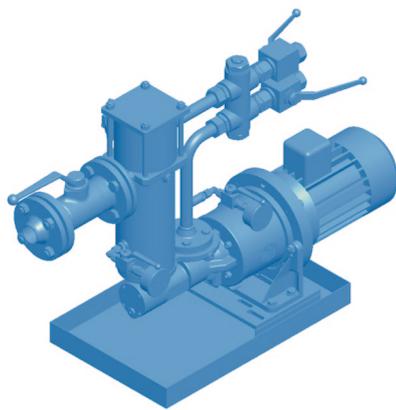
**LVI vertical pump.**

A vertical pump is a great choice if space is tight at the installation location or if a large, heavy pump is required.



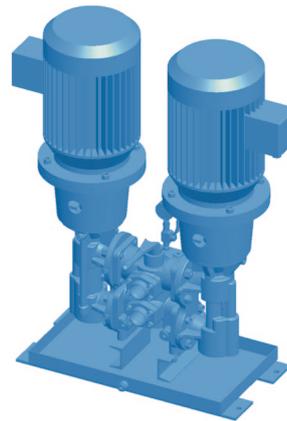
**LVT vertical pump with flanges on top of each other.**

This space-saving, vertically mounted pump is also available with top flanges.



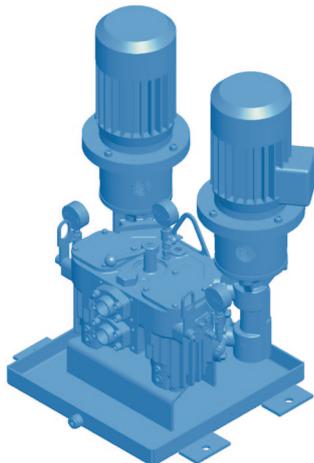
**ELL / ELS.**

Thanks to the modular system, the single station provides various options and arrangements to perfectly suit your application. The compact design is more cost effective compared to an individually piped solution and can be adapted to any oil burner or other application.



**DLB.**

In critical applications two pumps are often required for redundancy. The double pump station DLB ensures reliable continuous operation and safety.



**DLC.**

Operational reliability and safety through a standby pump and added functionality. The compact DLC series saves valuable space and eliminates expensive piping and plumbing work. Lots of functionality and expandable options in a very small footprint.

## Practical examples.

### Piston dosing system.



Pumps: L 20 with magnetic coupling.  
 Pressure: approx. 12 bar.  
 Viscosity:  
 Polyol 2.000 mm<sup>2</sup>/s.  
 Isocyanate 500 mm<sup>2</sup>/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 goes through heated filters and the mixing head, to keep a constant mixing head temperature and viscosity. Excess quantity goes back to the tanks. Recirculation is stopped by pressing the trigger button. The dosing pumps switch to high pressure. The mixing head opens and the liquid mixture is injected into the mold.

### Oil burner technology.



Series: ELL / ELS.  
 Model: ELS for heavy fuel oil.  
 Model: ELL for light fuel oil.  
 Discharge pressure: 40 bar.  
 Flow rate: 300 bis 6.500 l/h.

Because this is a modular concept, various versions are possible. Each type of burner has to meet different requirements, depending on the system concept. The KRAL oil burner supply station can be extended by adding individual functions, such as:

- pressure control
- deaeration
- flow measurement
- filtration
- gas/air separation

Indicators and instrumentation can be rotated. Installation orientation left/right can be adapted on site. KRAL provides the optimum solution for every customer request.

### Marine boilers for steam generation.



Pump station: DLC.  
 Medium: heavy fuel oil/ light fuel oil (MGO).  
 Pressure: 40 bar.  
 Flow rate: 240 bis 9.000 l/h.

KRAL pumps and stations are well known in the market for the highest quality. DLC pump stations allow boiler manufacturer to achieve their high quality goals. These are characterized by:

- highly efficient
- modular
- light weight
- durable
- low maintenance costs

The boilers are supplied as a complete unit, with a burner and a burner control.

KRAL DLC pump stations are used in this application as feed pumps. They deliver fuel to the burners. Double pump stations are installed for reliability of operation.

### Ship equipment supplier.



Screw pumps for the ship pump package:

- feed pumps
- circulation pumps
- lubrication oil pumps
- hydraulic pumps

KRAL works together in partnership with the world's most notable ship suppliers. Complete pump programs, optimum pricing, quality and know-how are all particularly important to them.

KRAL strives to provide excellent customer service and quick on-time deliveries.



# KRAL



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