

KRAL Pumps with Magnetic Coupling  
and Standard Marine Flanges.

**KRAL**



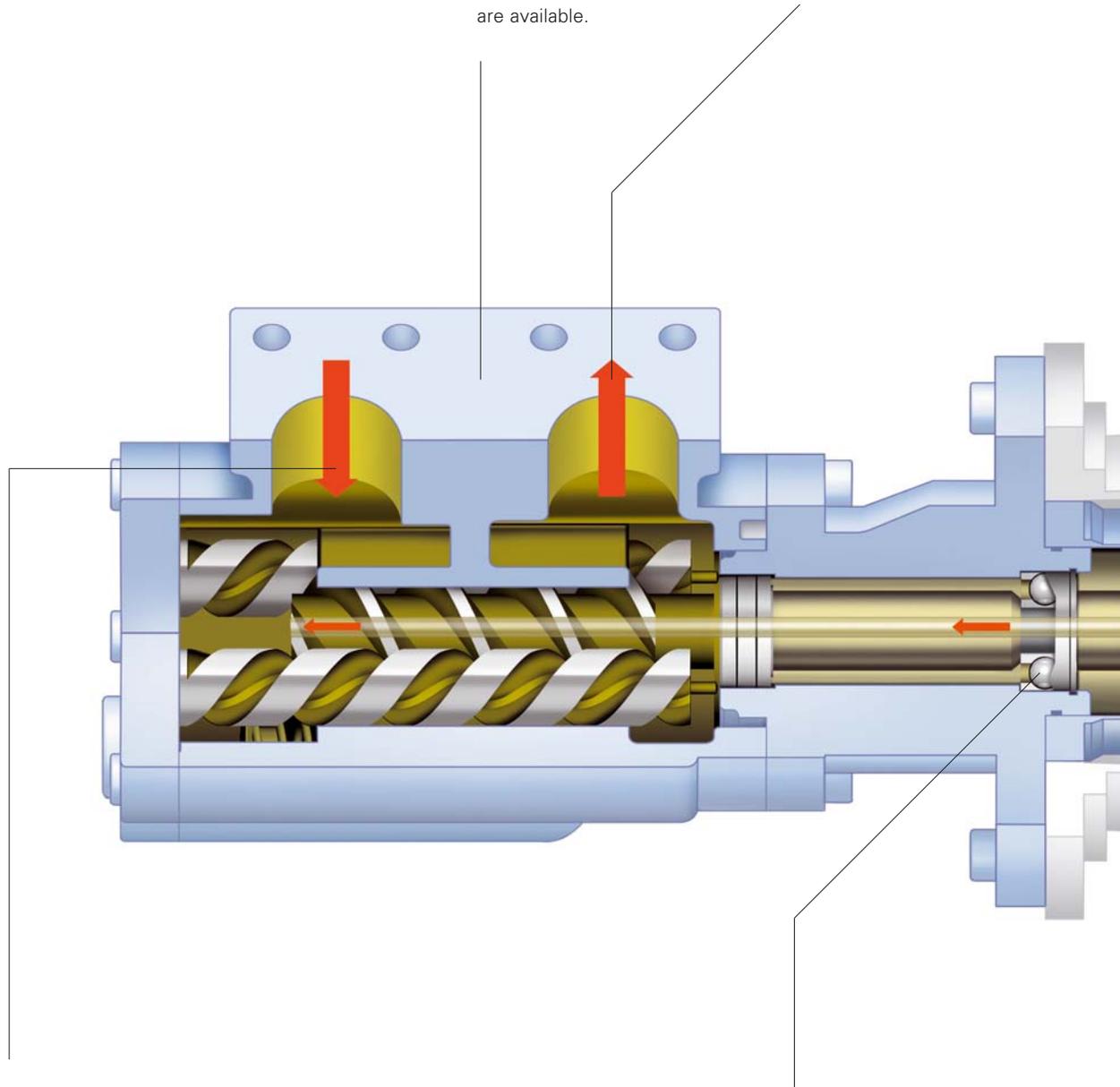
**Optimum safety and significantly reduced operating costs.**

**Standard marine flanges.**

To prevent additional pipe work when changing from other screw spindle pump brands to KRAL, the most common standard marine flanges are available.

**High capacity rates.**

KRAL pumps with magnetic couplings and parallel-port flanges are available for flow rates up to 53 gpm.



**Temperature capability to 480 °F.**

Compared to mechanical seals, the materials of the magnetic coupling have far better high temperature capability. High viscosity heavy fuel oils that must be preheated to 360 °F can be pumped without risk.

**No fuel residue.**

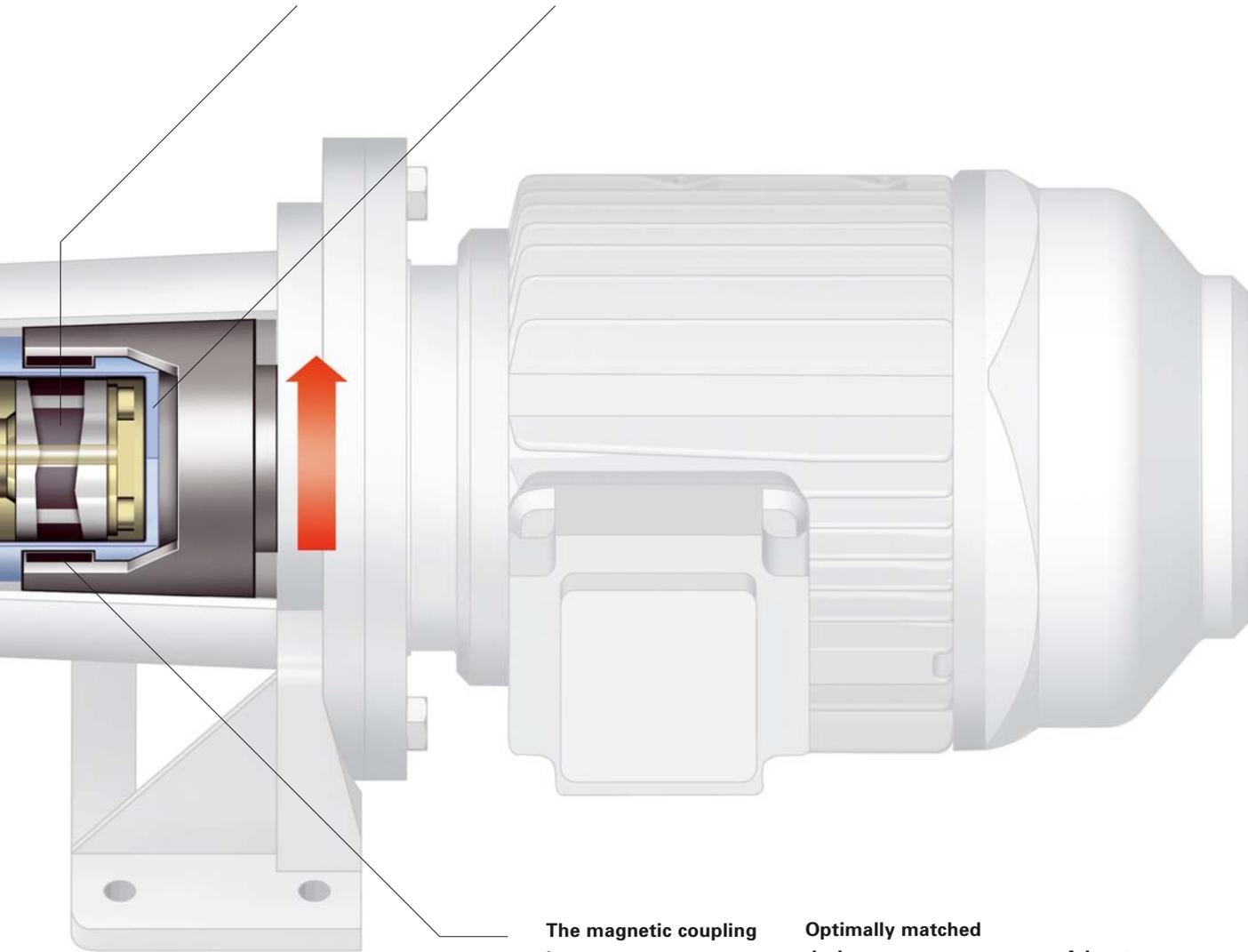
Because the magnetic coupling is sealed, the fuel does not come into contact with the atmosphere. The heavy fuel oil cannot react with the oxygen in the air to form carbon deposits that can damage the ball bearing. This eliminates one of the major causes of pump failure.

**Function.**

The rotation of the electric motor is transferred through the magnetic coupling to the pump spindles without contact. The electric motor and the pump shaft each have a rotor with several magnets. During operation, the two rotors run in synchronized rotation.

**Hermetically sealed.**

The containment can is the sealing element of the KRAL pump. It encapsulates the pump shaft and inner magnet hub. If, in the illustration, you cover the outer rotor on the shaft of the electric motor, the fully-encapsulated nature of the pump becomes apparent.



**The magnetic coupling has no wear.**

The magnetic coupling is a contact free component. The pump spindles are driven without contact by the magnets on the outer and inner rotor. As there is no friction, there is no wear.

**Optimally matched design.**

KRAL has been making magnetically coupled pumps for many years. We manufacture the components to our design standards. This means that the magnetic coupling perfectly matches the requirements of the KRAL screw pump.

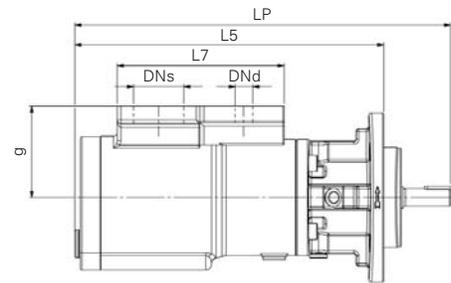
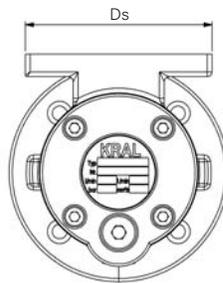
**Advantages.**

Compared to other types of pump, KRAL screw spindle pumps provide large flow rates with minimal installation space. Delivery is low in pulsation and quiet.

# Technical Data, Dimensions and Weights

KFA technical data.		5-20	32-42	55-85
<b>Q</b> (3,500 rpm, 0 psig)	gpm	3.3 to 13.0	20.4 to 27.2	37.3 to 53.2
<b>Max. discharge pressure</b>	psig	230	230	230
<b>Temperature</b>	°F	480	480	480
<b>Viscosity</b>	cSt			
min.		2	2	2
max.		10,000	10,000	10,000
<b>Speed</b>	rpm			
50 Hz		2,900	2,900	2,900
60 Hz		3,500	3,500	3,500
<b>Max. inlet pressure</b>	psig	230	230	230

Dimensions [inch] / Weights [lb].	DNd	DNs	Ds	L5	L7	LP	g	lb
KFA 5-20	0.98	0.98	3.23	7.99	4.33	9.96	2.87	15.4
KFA 32-42	0.98	1.57	4.53	9.69	5.24	11.77	2.87	24.3
KFA 55-85	1.57	1.57	4.53	11.42	5.94	13.74	3.27	39.7



We will be happy to send you brochures for the KRAL K Series pumps on request, as well as product brochures for our other series.

## Easy conversion to magnetically coupled pumps to increase safety.



### More safety on board.

If the booster module pumps fail, diesel engines can cut out and the ship will be unable to maneuver. Leakage can lead to fire.

The mechanical seal relies upon the pumped fluid for lubrication. At the mechanical seal HFO forms carbon deposits, which can build up and cause damages to the bearing. The bearing runs hot, the elastomeric ring of the coupling melts and the pump fails. There is a trend to 500 cSt HFO, which needs to be preheated up to 360 °F instead of 300 °F common with 380 cSt fuel. The higher temperature will damage mechanical seals. The danger of fire increases.

KRAL magnetic couplings are hermetically sealed and can be used at temperatures up to 480 °F.



### Easy conversion.

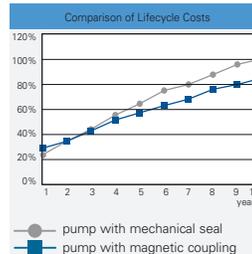
If more safety on board is an issue but if you want to prevent additional pipe work, KRAL can assure ease in the conversion from other screw spindle brands to KRAL pumps with magnetic coupling.

KRAL provides the most common standard marine parallel-port flanges as well as the inline flanges.



## Comparing a maintenance free magnetic coupling with a mechanical seal.

	Magnetic coupling	Mechanical seal
Maintenance interval:	Only Bearing 40,000 hours	10,000 hours
Temperature:	480 °F	360 °F
Easy to convert:	KRAL standard marine flanges are common with other screw pump brands, too. Conversion is quick and easy, because the pipe work stays the same.	
Costs:	It takes a maximum of three years to amortize the additional costs for magnetic coupling.	



### Reduced lifecycle costs.

Spare parts and maintenance costs of mechanical seals increase lifecycle costs.

The use of high quality mechanical seals in KRAL screw pumps is the standard. Even when properly applied, mechanical seals are subject to wear. Spare parts and maintenance costs arise.

KRAL magnetic couplings are maintenance free. The cost premium of a pump with a magnetic coupling will be typically amortized after only three years of operation.



### Prevent pump damage due to incorrect startup.

Running the pump dry will damage the mechanical seal and result in leakage.

Each mechanical seal needs positive lubrication. Venting and filling are an essential part of startup. If the system is not vented, the mechanical seal will quickly run dry and may start to leak.

KRAL magnetic couplings provide additional security if the pump is not started properly and help to avoid expensive lay-off periods.



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