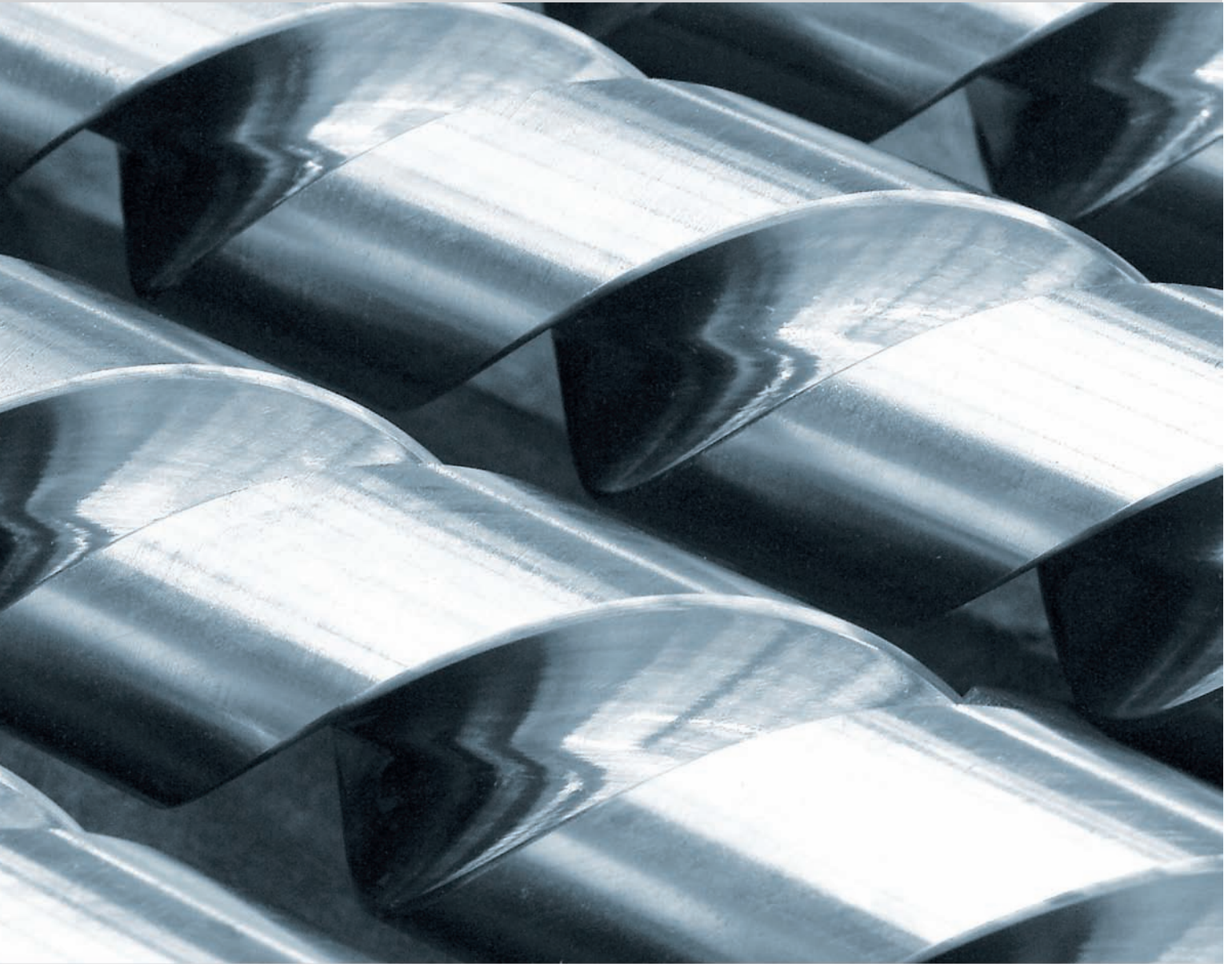


Leistritz

LEISTRITZ PUMPEN GMBH

Leistritz Screw Pumps & Systems



Shipbuilding



Leistriz Screw Pumps & Systems

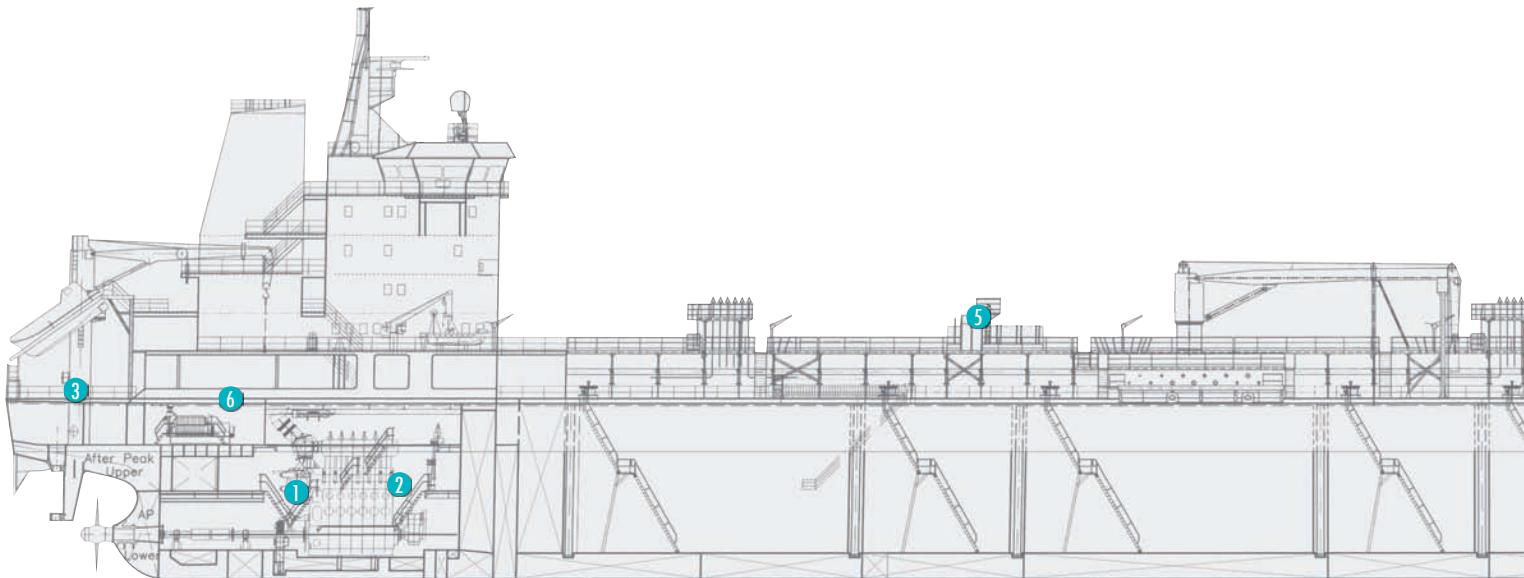
Leistriz Pumpen GmbH

Leistriz Pumpen GmbH, with its headquarters in Nuremberg/Germany, has been producing Screw Pumps for almost all application since 1924.

Today Leistriz is one of the leading manufacturers world-wide. With the widest product range of Screw Pumps, Leistriz can offer complete pump packages as a perfect partner in the shipbuilding industry.

Latest technology in combination with strictly controlled quality is the basis for the world-wide known Leistriz Screw Pump reliability.

The testing of the pumps through all well known classification societies as ABS, BV, DNV, GL, LRS, RINA and others is made on Leistriz test fields to generate contribution to international shipping safety and maritime regulation.



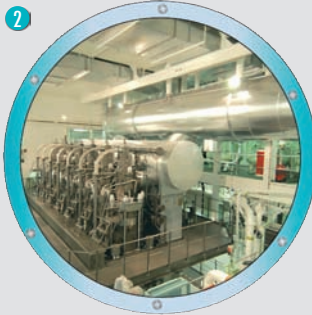
1



Lube Oil System for Engine Rooms

- Main Engine Lube Oil Pump for Diesel Engines
- Transfer Pump for Lube Oil

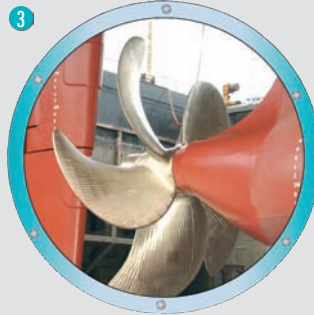
2



Fuel Oil System for Engine Rooms

- Feeder and Booster Pump for Fuel Oil Modules
- Transfer Pump for Fuel and Diesel Oil

3



Steering Gears and Pitch Propellers

- Hydraulic Pump for Steering Gears and Pitch Propellers

4



Winches

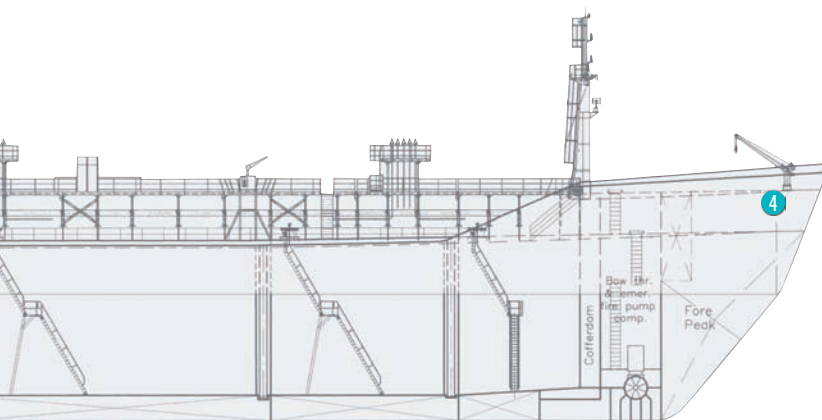
- Hydraulic Pump for Winches

Shipbuilding Industry

Shipbuilding Industry

Ships are one of the oldest means of transportation in history. Due to the globalization with its world-wide freight and goods traffic the shipbuilding industry increased constantly the past decades and the demand is still on a high level.

Throughout the world more and more larger and faster ships are necessary to satisfy the needs of the international markets.



Cruise Liner



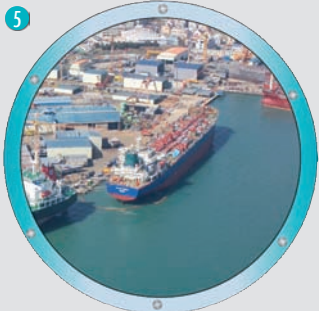
Containership



Tanker

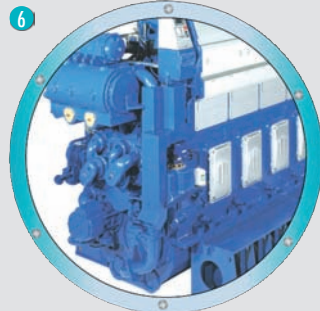


Frigate/Corvette



Loading and Unloading

- Cargo Pump for Loading and Unloading Tankers

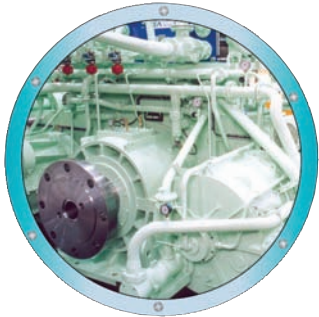


Special Applications

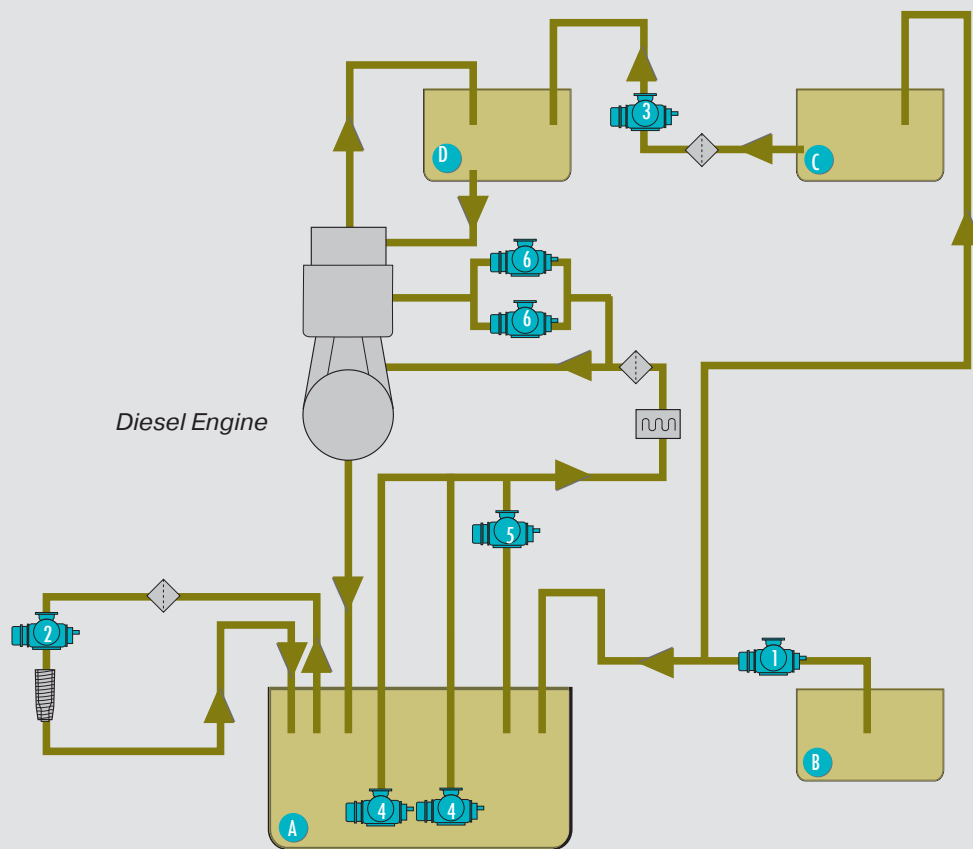
- Customized Screw Pump Solutions



Lube Oil System for Engine Rooms



Lube Oil Supply System



oversimplified illustration

- Lube Oil
- Filter
- Separator
- Cooler
- 1 Leistriz LO Transfer Pump
- 2 Leistriz LO Separator Supply Pump
- 3 Leistriz Cylinder Oil Transfer Pump
- 4 Leistriz Main Lube Oil Pump
- 5 Leistriz Pre Lube Oil Pump
- 6 Leistriz Crosshead Lube Oil Pump
- A Lube Oil Circulation Tank
- B Lube Oil Storage Tank
- C Cylinder Oil Storage Tank
- D Cylinder Oil Day Tank

Lube Oil System for Engine Rooms



1 5 LO Transfer and Pre Lube Oil Pump L3NG



2 3 6 LO Separator Supply, Cylinder Oil Transfer and Crosshead Lube Oil Pump L3NG



4 Main Lube Oil Pump L2, L3, L5NT

Leistritz Transfer Pump L3NG for Lube Oil

Leistritz Screw Pumps series L3NG for lube oil transfer have to fulfil various applications around the ship engine. This series is available in foot, flange and pedestal version for horizontal or vertical installation. With one pump design but different housing materials and seals all different kind of lube oils can be handled.

According to Leistritz standard the Screw Pump series L3NG is equipped with a mechanical shaft seal.

Leistritz Main Lube Oil Pump L2, L3 and L5

Leistritz Screw Pumps series L2, L3 and L5 are used as Main Lube Oil and Pre Lube Oil Pumps for diesel engines. Besides submerged versions for tank installation (series L2NT, L3NT, L5NT) and dry mounted versions for horizontal/vertical installation (foot/pedestal mounting), also flanged versions, directly driven by the engine, are available depending on the general design of the ship. The submerged version with the space saving design and the trouble free starting at cold conditions is preferable. Special tailor made designs can be supplied in cooperation with the engine manufacturer (see page 11).

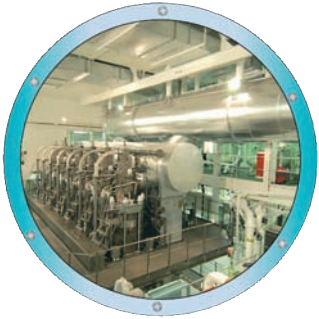
Leistritz Screw Pumps are known for excellent NPSH values and noiseless running.

They are properly designed to accept high percentages of dissolved air in lube oil.

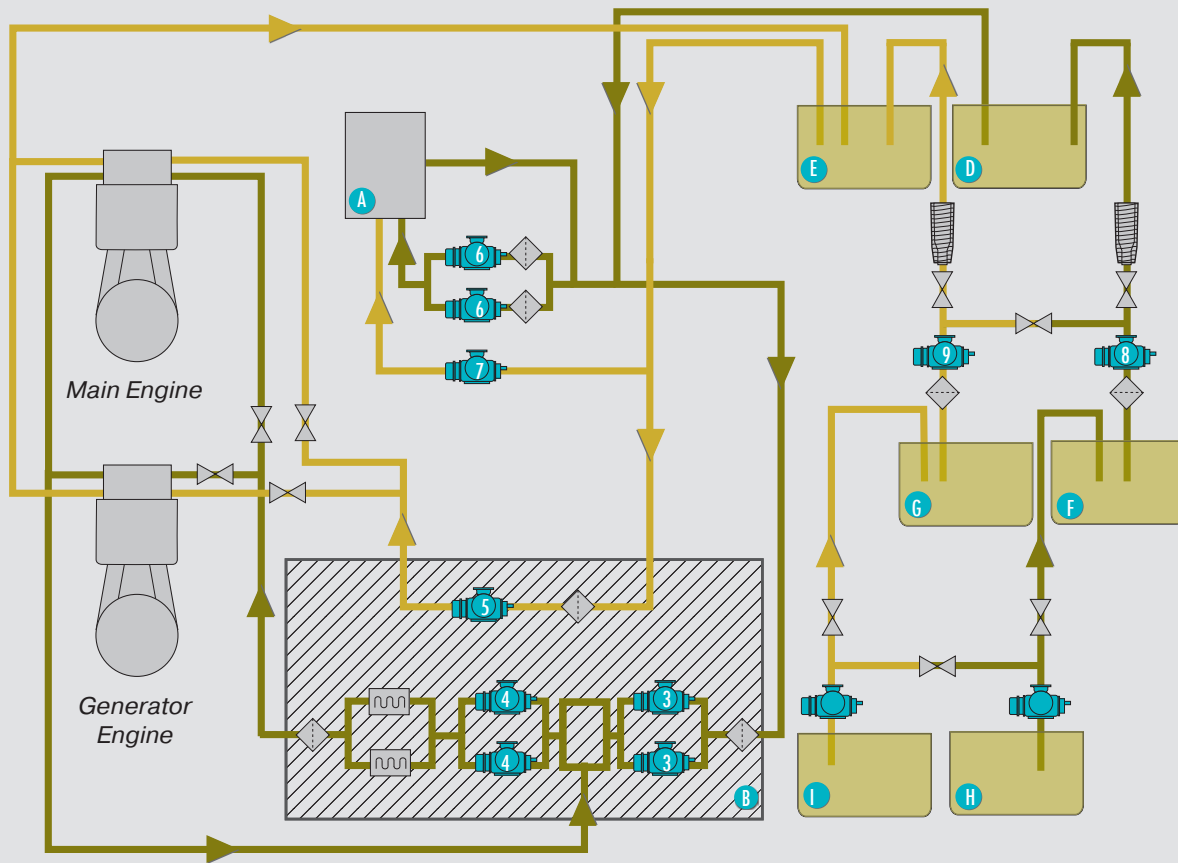




Fuel Oil System for Engine Rooms



Fuel Oil Supply System



oversimplified illustration

- Diesel Oil
- Fuel Oil
- Filter
- Separator
- Heater
- Valve

- 1** Leistrizt FO Transfer Pump
- 2** Leistrizt DO Transfer Pump
- 3** Leistrizt FO Feeder Pump
- 4** Leistrizt FO Booster Pump
- 5** Leistrizt DO Booster Pump
- 6** Leistrizt FO Boiler Supply Pump
- 7** Leistrizt DO Boiler Supply Pump
- 8** Leistrizt FO Separator Supply Pump
- 9** Leistrizt DO Separator Supply Pump

- A** Boiler
- B** FO module
- C** Mixing Unit, heated and insulated
- D** FO Day Tank
- E** DO Day Tank
- F** FO Settling Tank
- G** DO Settling Tank
- H** FO Storage Tank
- I** DO Storage Tank

Fuel Oil System for Engine Rooms



1 2 Fuel Oil and Diesel Oil Transfer Pump L3NG

Leistritz Feeder and Booster Pump L3NG for Fuel Oil Modules

Fuel oil modules for supply of diesel engines are operated by Leistritz Screw Pumps series L3NG as Feeder and Booster Pumps in flange or pedestal design.

Parallel to conventional mechanical shaft sealing systems for these pumps also magnetic couplings are more and more used. Especially when heavy fuel oil with temperatures above 120°C will be handled, this sealing system guarantees zero leakage and a maintenance free design.

Leistritz Transfer Pump L3NG for Fuel and Diesel Oil

Leistritz Screw Pumps are applicable in different locations of the fuel oil system.

As Fuel Oil Supply and Transfer for boilers and separators the Leistritz Screw Pumps are installed in vertical or horizontal position.

With one pump design but different housing materials and seals all possible fluids from light diesel oil to heavy fuel oil can be handled.



3 4 Fuel Oil Feeder and Booster Pump L3NG with Magnetic Coupling



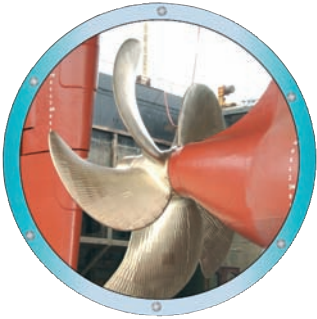
5 7 Diesel Oil Booster and Boiler Supply Pump L3NG



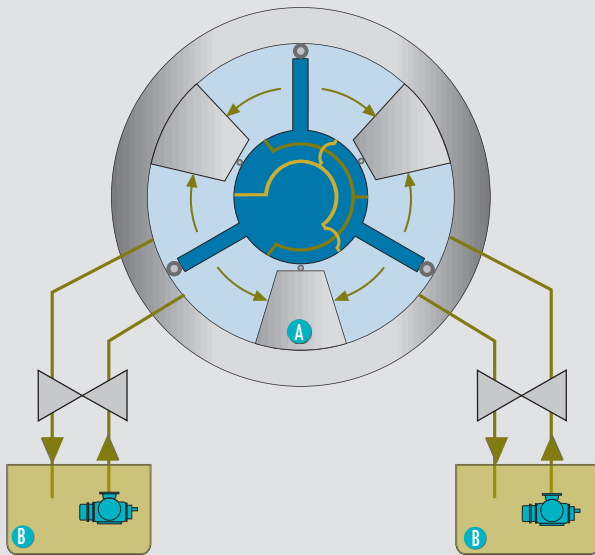
6 8 9 Fuel Oil, Diesel Oil Boiler and Separator Supply Pump L3NG



Steering Gears and Pitch Propellers



Hydraulic Oil Supply System



oversimplified illustration



Valve

A Steering Gear
B Tank



Leistriz Hydraulic Pump

Leistriz Hydraulic Pump L3MF for Steering Gears and Pitch Propellers

In all different locations for hydraulics on ships are applications for Leistriz Screw Pumps. Central hydraulic systems, e.g. for the supply of hydraulic motors, hydraulic driven propellers and steering gears are only a few examples. Steering gears have an important function for ships and therefore reliable parts must be used. Leistriz Screw Pumps are in duty/standby configuration and give pressure to the actuator.

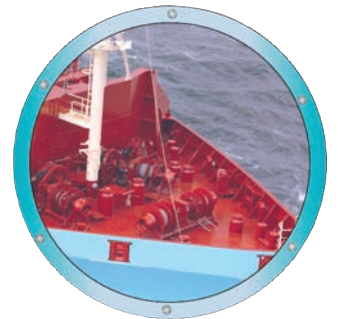
For steering gears a 100 hour test of Leistriz Screw Pumps was made successfully under classification supervision in order to prove the reliability of Leistriz Screw Pumps under different working conditions.



A Steering Gear



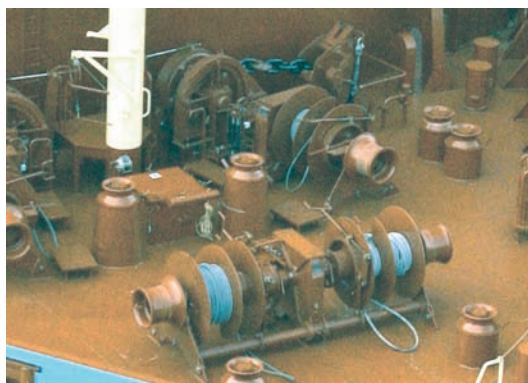
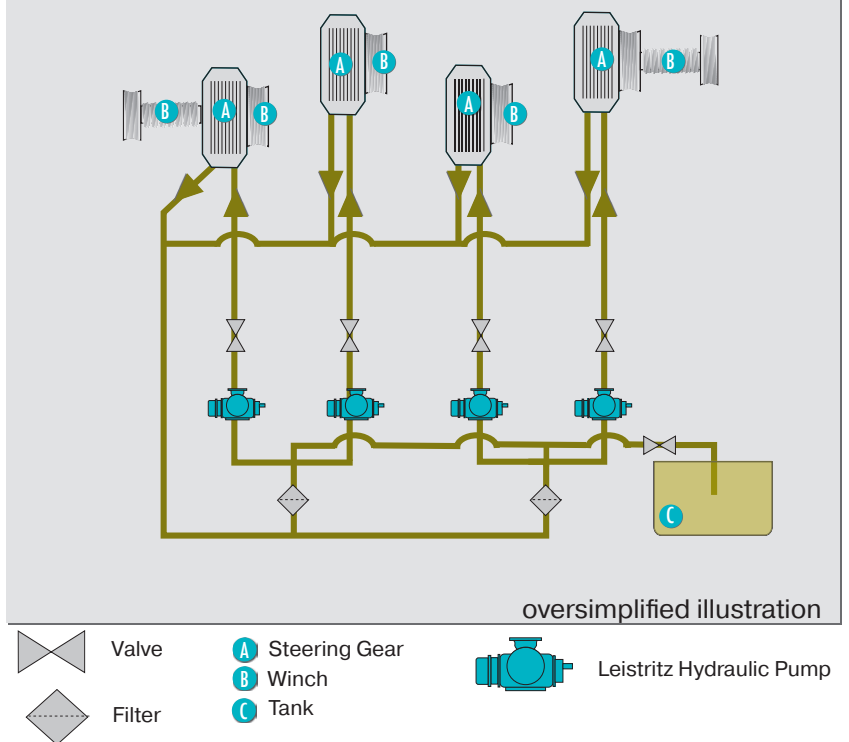
B Tank with Hydraulic Oil Pumps L3MF



Leistritz Hydraulic Pump L3MF for Winches

Several winches are in use for pulling anchors or mooring lines. Winches with gear assemblies are powered by hydraulic drives. Leistritz Hydraulic Pumps supply fluid to the components of the system. Pressure in the system develops as a reaction to the workload.

Hydraulic Oil Supply System



Winches



Forecastle with Hydraulic Winches



Loading and Unloading



Leistriz Cargo Pump L4 for Loading and Unloading Tankers

All different fluids from low viscose diesel oil to high viscose bitumen or molasses are handled with Leistriz Loading and Unloading Screw Pumps.

The design principle and operation of these pumps ensure a very low noise level and almost pulsation free delivery.

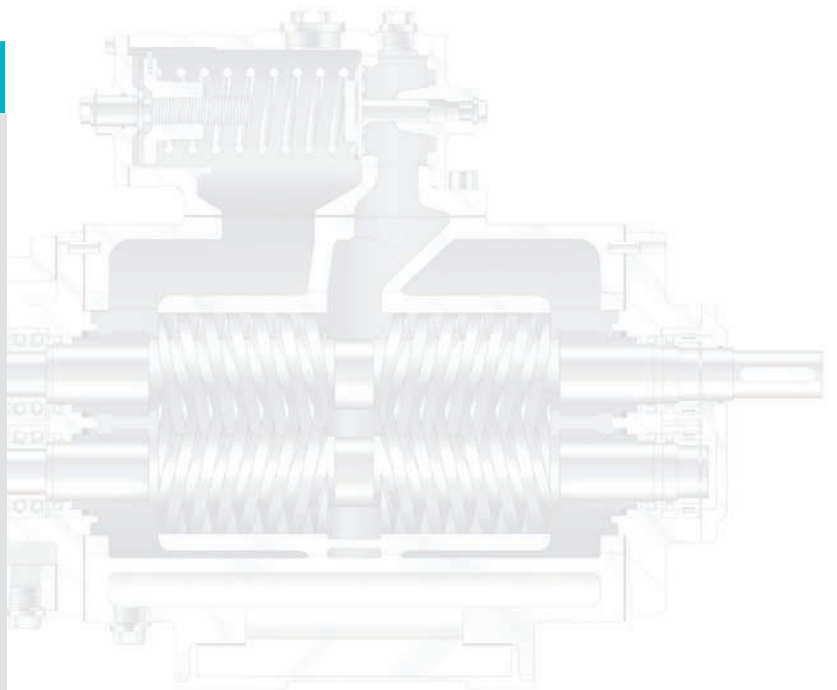
With the use of frequency controlled motors and nearly linear relation of speed and flow rate the delivery can be adjusted easily by changing the speed of the pump.

As alternative, Leistriz Screw Pumps are driven by hydraulic motors as well.

Available materials for pump casings are cast iron, nodular cast iron, cast steel and stainless steel for handling all different kind of fluids.

Leistriz Screw Pumps series L4 in semi-submersible design are available for the use as stripping pump or for suction conditions where installations on top of the tank are not possible.

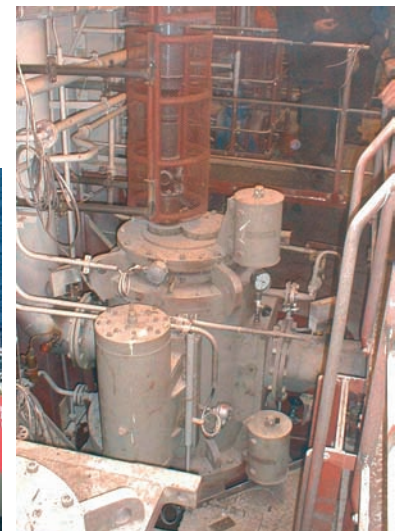
For hazardous areas Leistriz offers gastight bulk-head seals (with type approval) where the motor is installed in the safe area.



Cargo Pump L4NG for Molasses

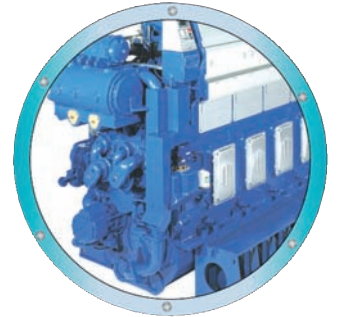


Tanker



Loading Pump L4MG

Special Applications



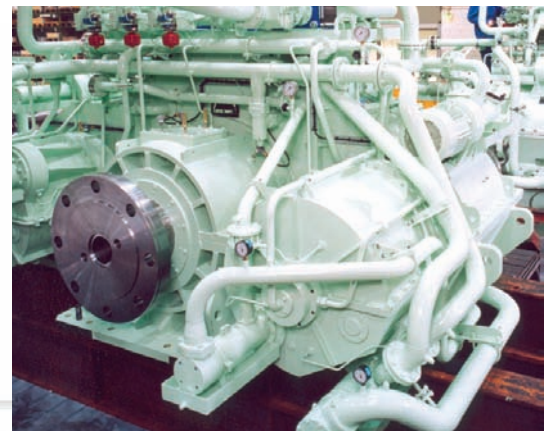
Customized Screw Pump Solutions

Leistritz offers a wide range of tailor made Screw Pump designs.

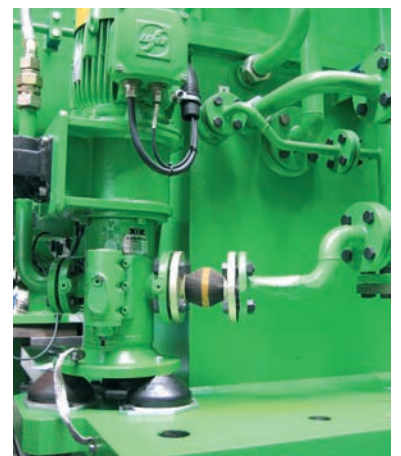
- 1 Directly flanged Leistritz Main Engine Lube Oil Pumps for diesel engines are used by all well-known four stroke engine manufacturers.
- 2 Special Leistritz Screw Pump designs are made for manufacturers of gear boxes for ships. These pumps are flanged on gear boxes and driven directly through gears.
- 3 For the Naval Industry Leistritz delivers gear driven and electrically driven pumps which are non-magnetic and shock-resistant, being built according to the rules of BV043/044. These pumps are operating in submarines as well.



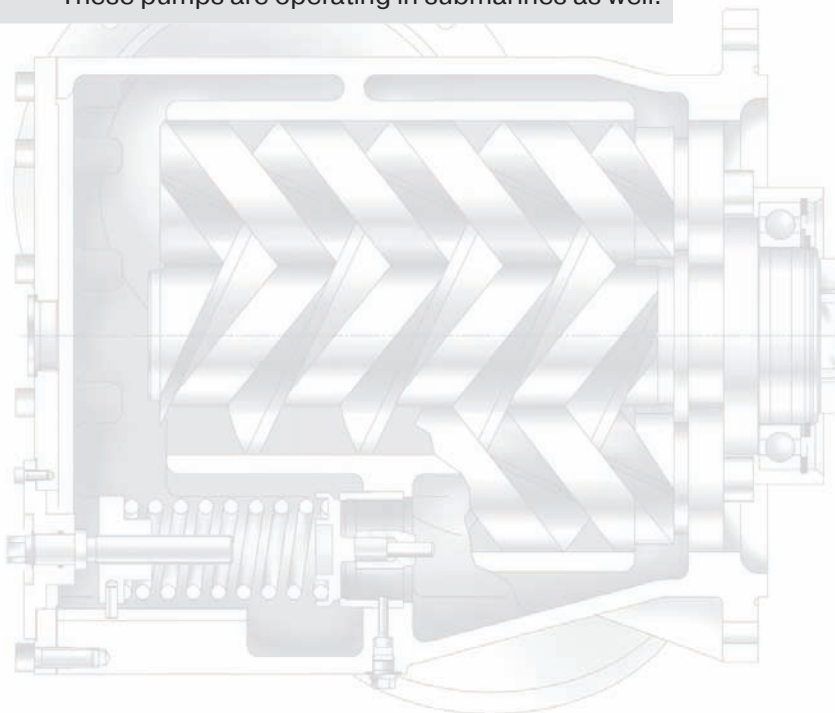
1 Engine driven Main Lube Oil Pump L3NG



2 Gear box with Lube Oil Pumps L3MF

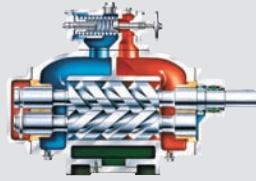
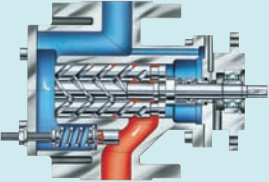
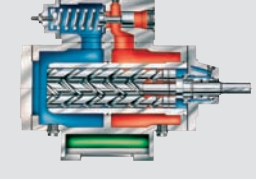
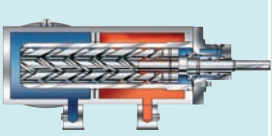
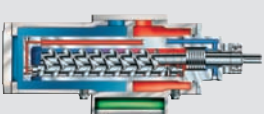
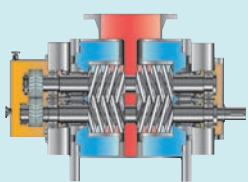
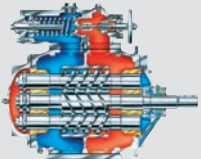


3 Socket Pump L3MG with Shock Absorbers





Leistriz Screw Pump Programm

Series	Use for	Leistriz Screw Pump	Maximal Performance Data			
			Capacity	Differential Pressure	Viscosity	Pumping Temperature
L2	Low pressure duty, suitable for transport of light abrasive and corrosive, high or low viscous fluids with poor or good lubricity.		900 m ³ /h [3,960 gpm]	16 bar [232 psi]	100,000 cSt	280°C [536°F]
L3N	Low pressure duty, suitable for transport of non abrasive lubricating fluids.		700 m ³ /h [3,100 gpm]	16 bar [232 psi]	15,000 cSt	180°C [356°F]
L3M	Medium pressure duty, suitable for transport of non abrasive lubricating fluids.		300 m ³ /h [1,320 gpm]	80 bar [1,160 psi]	10,000 cSt	280°C [536°F]
L3H	High pressure duty, suitable for transport of non abrasive lubricating fluids.		200 m ³ /h [880 gpm]	160 bar [2,320 psi]	10,000 cSt	280°C [536°F]
L3V/U	Ultra high pressure duty suitable for transport of light abrasive and corrosive, high or low viscous fluids with poor or good lubricity.		180 m ³ /h [792 gpm]	280 bar [4,060 psi]	1,000 cSt	280°C [536°F]
L4	Low, medium and high pressure duty, suitable for transport of abrasive/non abrasive, corrosive/non corrosive, lubricating/non lubricating, high or low viscous fluids.		5,000 m ³ /h [22,000 gpm]	150 bar [2,175 psi]	150,000 cSt	350°C [662°F]
L5	Low pressure duty, suitable for transport of light abrasive and corrosive, high or low viscous fluids with poor or good lubricity.		1,700 m ³ /h [7,500 gpm]	10 bar [145 psi]	100,000 cSt	280°C [536°F]

Exceeding operating conditions upon request.

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