

Illustration of several shipside applications for Leistriz screw pump series L2, L3, L4 and L5

Universal cargo pumps for high- and low-viscosity products

LEISTRITZ PUMPS A wide range of screw pumps as well as complete pump systems and packages are offered by the German manufacturer Leistriz Pumpen (“Pumps”). One of its latest innovations is a submerged cargo pump that allows continuous, almost pulsation-free pumping of cargo liquids at low power consumption.

Leistriz’s screw pumps are positive displacement pumps designed to pump liquids of various viscosities. They are tested at the company’s facilities and approved by classification societies including ABS, BV, DNV, GL, LRS and RINA.

Loading and unloading

Cargo fluids ranging from low-viscous diesel oil to high-viscous bitumen, asphalt or molasses are handled with the Leistriz screw pump series L2/L4/L5. According to

Leistriz, the design and operating principle of these pumps ensure a very low noise level and almost pulsation-free delivery. Used with frequency controlled motors based on the nearly linear relation of speed and flow rate, the pumps have a delivery rate that is easily adjustable by changing the pump speed. Alternatively, Leistriz screw pumps can be driven by hydraulic motors. Depending on requirements of the application and cargo products, the available pump casing materials are cast iron, nodular cast iron,

cast steel and stainless steel. The pumps are available either as submerged unloading and stripping pumps or for dry installation on the tank top. For hazardous zones – the motor installed in a safe area – Leistriz offers gastight bulkhead seals (type-approved).

One of Leistriz’s latest developments is a submerged cargo pump series that allows continuous, almost pulsation-free pumping of cargo liquids at low power consumption. Deck installations of

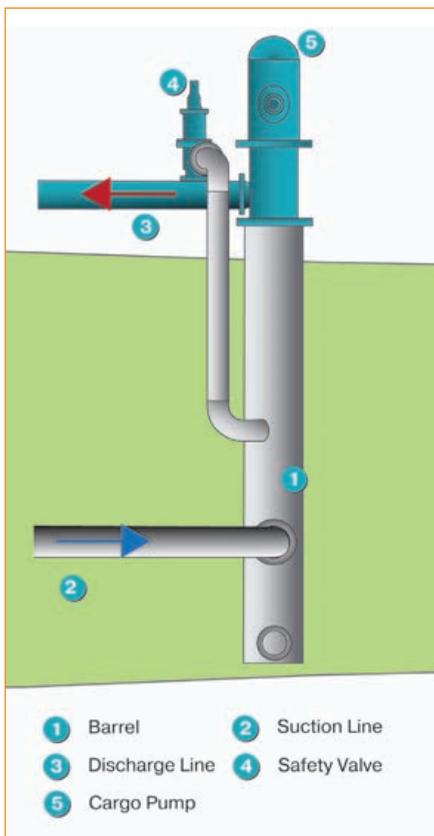
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cargo screw pumps are typically unable to satisfactorily unload the full range of cargo viscosities in tanks deeper than 7m to 8m, Leistriz points out. And they cannot provide the suction conditions necessary to avoid cavitation effects during unloading and stripping. Furthermore, standard submerged pump types are normally unable to provide proper stripping and draining of the tank and suction lines, the company adds. To overcome this challenge, Leistriz has developed the submerged cargo pump series L2NT/LSNT. The pumps are installed in a separate barrel, usually hanging from the deck in the aft cargo tank, doing away with the need for a pump room. The barrel acts as a large suction chamber, providing the pump with additional suction ability. The pumps have only one shaft seal (stuffing box or mechanical seal) to the atmosphere. They are suitable for handling hydrocarbon products and other viscous liquids, including slightly abrasive and corrosive fluids. Their special screw profile allows continuous, almost pulsation-free pumping of cargo liquids at low power consumption, Leistriz says. When the barrel installation with the suction line flange



Side view of a cargo pump

connection is placed above the inlet to the pump, the entire pump is flooded with the pumped liquid even without tank filling levels. Due to this configuration, the pump handles entrained air and gases without vapour locking or losing prime. For pumps in asphalt operation, Leistriz recommends heating coils in the suction area of the barrel, and a heating jacket for the stuffing box. With at least two pumps normally installed in a barge, each can be designed with full unloading capacity to achieve system redundancy. Thanks to the layout of the suction piping system, each pump can service any of the cargo tanks. The pumps can be driven either by a diesel engine through a right-angle gear connected to the vertical drive shaft or by an electric motor. The pump flow can be controlled by varying the pump speed. This helps strip the line and tanks to optimise the total cargo discharge time. An electric motor with frequency control can also be used. Leistriz says its cargo pump is up to 40% more efficient than a centrifugal pump. It can be supplied for both retrofits and newbuilds and is suitable for several viscosities, ranging from kerosene to asphalts.

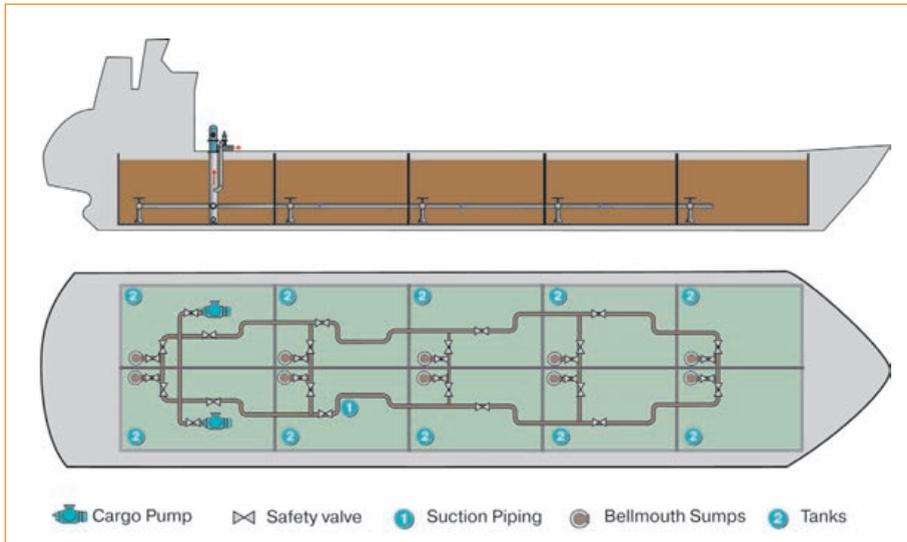


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Typical suction piping arrangement for application „submerged cargo pump“

Lube oil system in engine rooms

Leistritz screw pump series L3NG for lube oil transfer is available in foot, flange and pedestal version for various installations in an engine room. The L3NG series features different housing materials and seals, is equipped with a mechanical shaft seal and can be used for different kinds of lube oils.

In main- and pre-lube oil applications for diesel engines, Leistritz screw pump series L2, L3 and L5 can be used. Available besides submerged versions for tank installation and dry-mounted versions are flanged pumps directly driven by the main engine. Submerged pump versions save space and ensure trouble-free starting in cold conditions, Leistritz says. Tailor-made designs can be supplied in cooperation with the engine manufacturer. According to Leistritz, the pumps feature excellent NPSH values, noiseless running and accept high percentages of dissolved air in lube oil.

Fuel oil system in engine room

Fuel oil modules for the supply of diesel engines are operated by Leistritz screw pump series L3NG as feeder and booster

pumps in flange or pedestal design. Parallel to conventional mechanical shaft sealing systems for these pumps, magnetic couplings are being increasingly used. Particularly when heavy fuel oil with temperatures above 120°C is to be handled,

this sealing system provides zero leakage and a maintenance-free design, Leistritz says.

Steering gears and pitch propellers

Central hydraulic systems, e.g., for the supply of hydraulic motors, hydraulic driven propellers and steering gears, are among the application areas for screw pumps on ships. Leistritz L3MF screw pumps in duty or standby configuration provide proper fluid delivery and pressure to the actuator. A 100-hour test of the pumps for steering gears was successfully conducted under classification supervision to prove their reliability under different working conditions.

Winches

Various winches are used on vessels, for example to pull anchors or mooring lines. Winches with gear assemblies are often powered by special hydraulic drives. Leistritz pump series L3MF reliably supplies fluid to the components of the system. The pressure demand in the system reacts directly to the workload.



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Established in 1905 and headquartered in Nuremberg, Leistritz Pumpen GmbH is one of the largest global manufacturers of screw pumps. Its product portfolio includes single- and double-volute twin-screw pumps, triple-screw pumps and five-screw pumps. www.leistritz.com