Leistritz

L2 SCREW PUMP SERIES

Screw Pumps & Systems

PUMP TECHNOLOGY

With experience and passion

Leistritz is the first address when it comes to the application of screw pumps. After all, the company, with its headquarters in Nuremberg, is one of the pioneers in the field of screw pumps: more than 90 years ago, it was Paul Leistritz, who used the twin screw pump for the first time to pump lube oil for steam turbine bearings.
What started out small in 1924 is now a globally active company with more than 300 employees, which has the widest product range in the field of screw pumps. Leistritz Pump Technology has branches in all important markets, such as the USA, China, Singapore, Dubai, India and Italy. Leistritz customers benefit from valuable know-how in various industries and applications.

» *Leistritz is the only producer in the world to offer the complete range of screw pumps.*

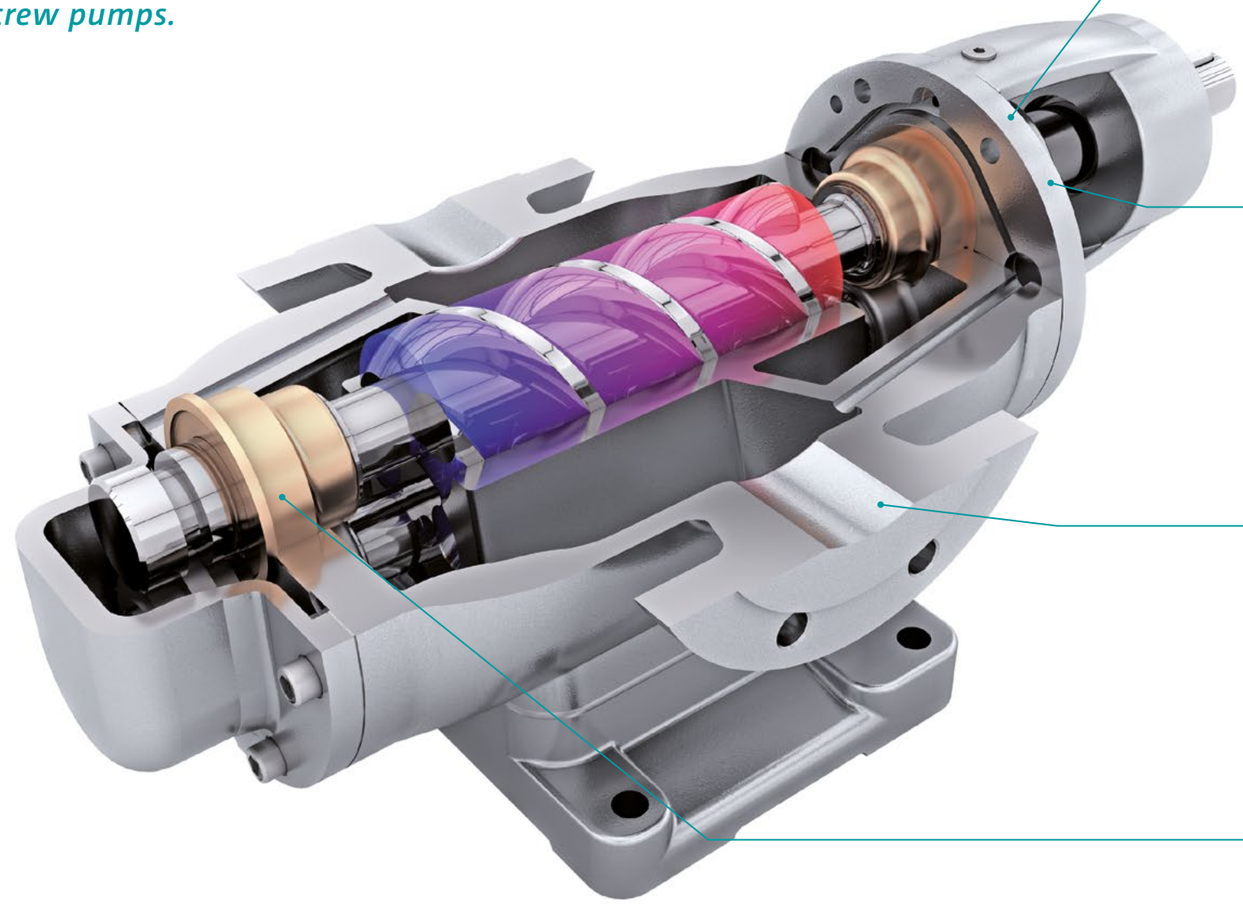
PUMP FACTS

The intelligent design of the Leistritz screw pumps offers enormous advantages over other pump technologies, like:

- ↗ low-pulsation pumping of the fluid
- ↗ extremely low vibration and noise
- ↗ high flow rates
- ↗ pumping a wide range of viscosities
- ↗ low-wear operation
- ↗ long service life

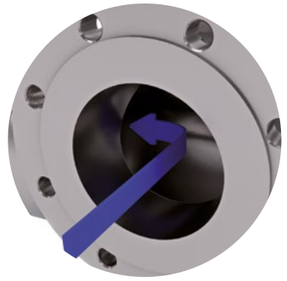
L2 SCREW PUMP

Superior technology & intelligent design



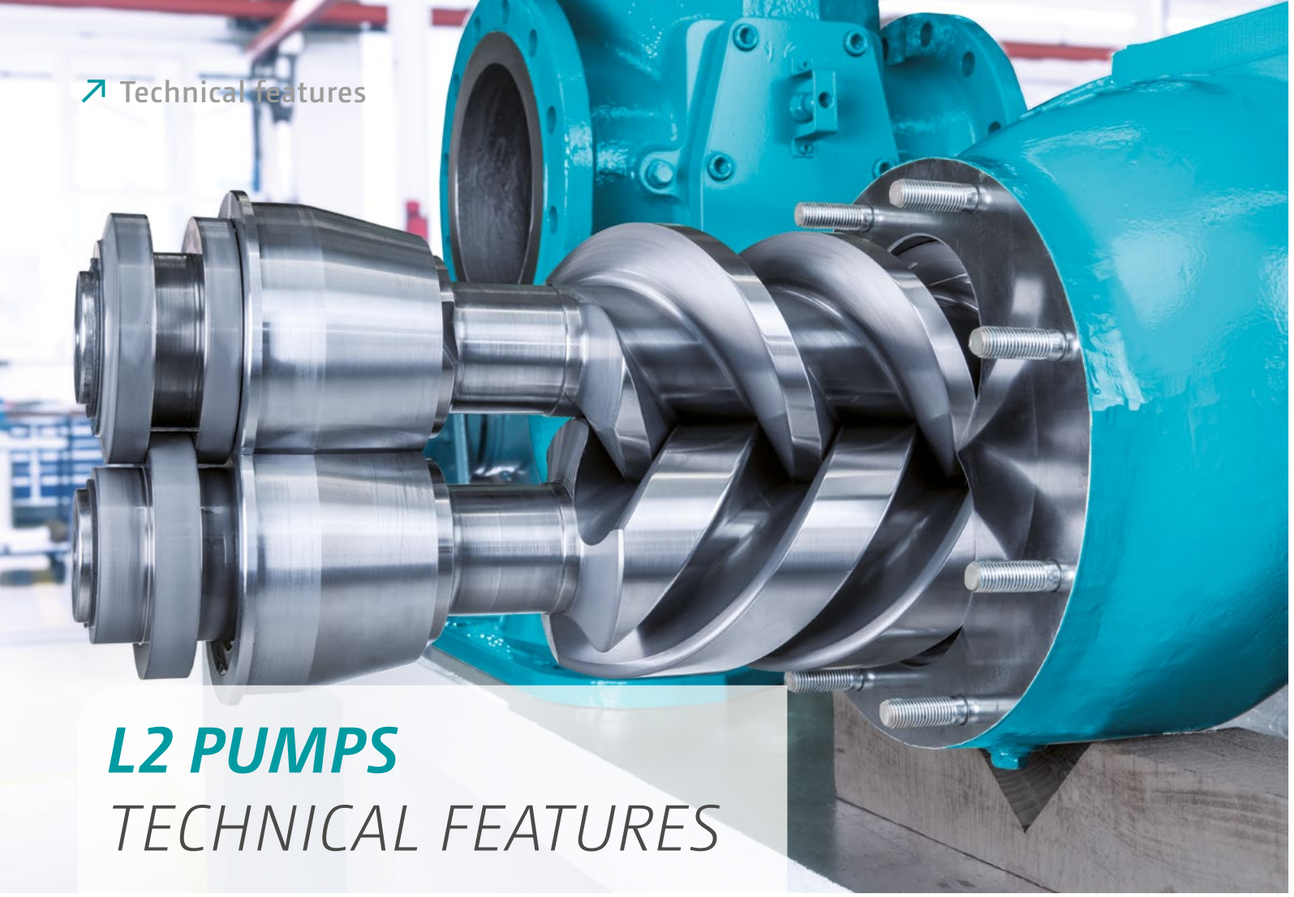
↗ Only one shaft seal

↗ Alternative:
Shaft sealing by magnetic coupling



↗ Self priming

↗ Bearing bushes in different material combinations for all kind of fluids

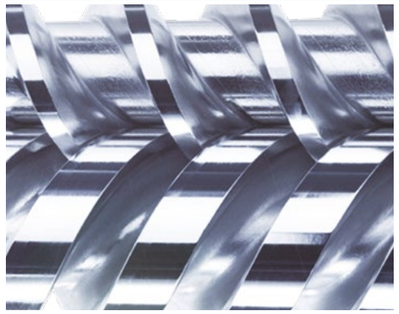


L2 PUMPS
TECHNICAL FEATURES

PUMP CASING

- ↗ Casted design with materials from grey cast iron to nodular cast iron and up to cast steel
- ↗ Welded design with materials from carbon steel to stainless steel
- ↗ Economic and slim design for reduced weight
- ↗ ANSI & DIN flanges possible
- ↗ Drain and vent connections
- ↗ Pump heating available by foot/cover heating for casted design or full jacket heating for steel welded design

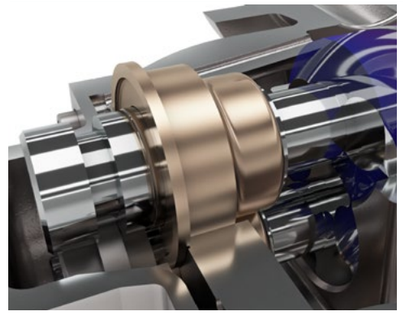
SPINDLES



- ↗ Single bar stock for maximum stiffness
- ↗ Case-hardened steel (1.7139), nitrided for max. hardness
- ↗ Optional material steel (1.8550) and chrome steel (1.4122) available
- ↗ Smooth running with reduced bearing load due to hydraulic balance of the spindle set

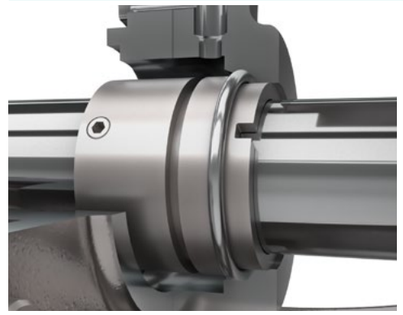
↗ Technical features

BEARING BUSHES



- ↗ Spindle guidance by bearing bushes - no contact between spindle and pump housing
- ↗ Different material combinations for all kind of fluids
- ↗ Pump flushing with low viscose fluids possible
- ↗ Spiral groove design for high viscose fluids

MECHANICAL SEAL



- ↗ Only one mechanical seal required
- ↗ Design as single or double mechanical seal
- ↗ Combination with simple Plan 53 A, other seal supply systems possible
- ↗ Steam quench for high viscose fluids possible
- ↗ Alternative with magnetic coupling

MAGNETIC COUPLING

- ↗ Critical pumping mediums with toxic substances are not released into the environment
- ↗ No waste of valuable fluids
- ↗ Sensitive pumping mediums are not exposed to aerial oxygen and therefore the pumping process remains uninterrupted
- ↗ At overload the magnetic rotors act like a sliding clutch; the parts will not be destroyed

INSTALLATION / DRIVE

Delivery of complete skids incl.:

- ↗ Common baseplate
- ↗ Electric motors, hydraulic motors or combustion engines
- ↗ Flexible spacer type couplings
- ↗ Variable speed drive
- ↗ Seal supply systems
- ↗ Instrumentation

↗ Overview L2 pumps

DESIGN AND OPERATION *L2 PUMPS*

Self-priming screw pump with two spindles. The double-threaded main spindle rotates hermetically sealed with the triple-threaded idler spindle in the spindle holes drilled into the pump casing, which encloses the spindle set with small tolerances, but without any contact.

Sealed areas are formed through the special spindle shape, and their enclosed volumes are moved continuously by rotation in an axial direction from the pump suction port to the pump discharge port without turbulence and squeezing of the pumped fluid.

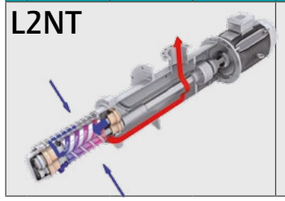
The drive- and the idler-spindle are mounted in interchangeable bearing bushes on both sides, so that the spindles do not touch the spindle bore as long as the maximum delivery pressure of 16 bar is observed. Thus wear as a result of metallic contact between the casing and the spindles is avoided. All four bearing points simultaneously form choke points between the inlet and delivery chambers and thus are always subject to the differential pressure of the pumped fluid. This guarantees good lubrication of these bearing seats and ensures adequate removal of the heat produced by the friction.

Also the Leistritz Screw Pumps, series L2, are of hydraulically balanced design, means the axial force on the spindles as a result of the produced discharge pressure is hydraulically compensated through internal drillings in the pump housing.

L2 PUMPS *TYPE CODE & DESIGN*

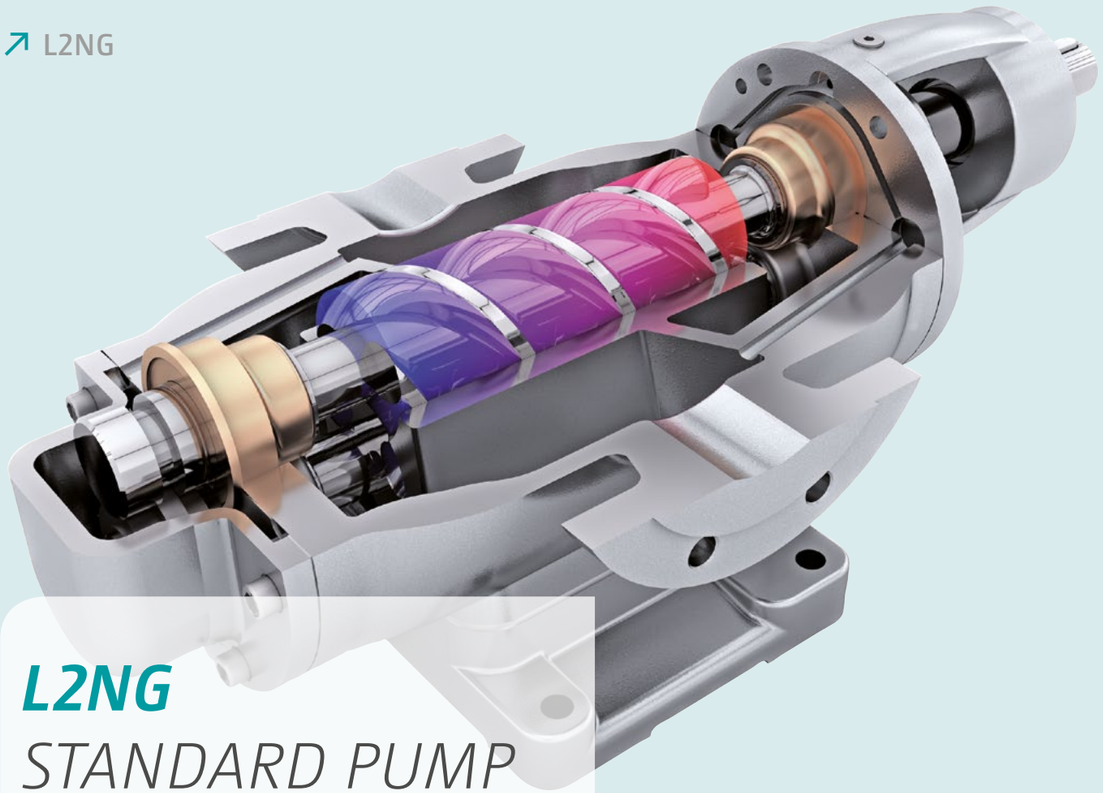
Pump type					Pump size	Options design code																						Seal			
	No. of spindles	Pressure ranges	Design		OD Drive screw	Roller bearing			Mounting			Heating						Mount. flange		Inlet-Outlet			Relief valve		Shaft sealing			
Leistritz	2-Spindle set	Low pressure	Pump casing			Internal	External	Reinforced	Mounting foot	Flange mounted	Mounting pedestal	Without heating	Foot heating		Jacket Heating	Foot/End cover	Pedestal	Mounting flange: small	Mounting flange: large	Inline	Staggered	Side in top out	Without valve	Top mounted valve		Mechanical seal	Radial seal	Without seal	Magnetic drive
L	2	N	G	-	OD / Pitch	I	A	V	H	F	S	O	H		M	D	S	K	G	I	V	R	O	A	-	G	W	O	M
L2NG					030 / 42 54 040 / 52 66 048 / 60 80 062 / 72 78 104 070 / 96 118 082 / 114 140 096 / 132 160 106 / 140 150 180 116 / 164 180 190 126 / 180 210 140 / 180 196 230 164 / 140 170 190 210 186 / 170 186 200 210																								
Casted pump casing																															
Welded pump casing					OD / Pitch Pump sizes 30 - 186 as above 220 / on request 270 / on request	I	A	V	H	F	S	O	H		M	D	S	K	G	I	V	R	O	A	-	G	W	O	M

Pump type					Pump size	Options design code							Seal	
	No. of spindles	Pressure ranges	Design		OD Drive screw	Roller bearing	Mounting	Heating	Mount. flange	Inlet-Outlet	Relief valve		Shaft sealing	
Leistritz	2-Spindle set	Low pressure	Submerged pump			Internal	Flange mounted	Without heating	Mounting flange: large	Inletstrainer	Without valve	Top mounted valve	Without seal	Throttel Bush
L	2	N	T	-	OD / Pitch	I	F	O	G	A	O	V	G	W
L2NT					062 / 072 078 104 070 / 096 118 082 / 114 140 096 / 132 160 106 / 140 150 180 116 / 164 180 190 126 / 180 210 140 / 180 196 230 164 / 140 170 190 210 186 / 170 186 200 210									Sealing above Tank Plate



Example Typecode:

L2NG–062/078–AHOKIO–G



L2NG
STANDARD PUMP

GENERAL USE

Leistritz screw pumps of the L2NG series, are self-priming positive displacement pumps for a pressure range up to 16 bar (232 psi), suitable for transport of light abrasive and corrosive, high or low viscous fluids with poor or good lubricity.

USER ADVANTAGES

- ↗ Radial slight bearings → long service life
- ↗ High efficiency → low operating costs
- ↗ Axially balanced rotors → no axial forces to bearings
- ↗ Low axial flow velocity → excellent priming
- ↗ Only one shaft seal → easy maintenance, low costs
- ↗ Resistant against aeration → low noise, minimized vibration
- ↗ Availability of sealless design by magnetic drive

Performance data

Flow rate:	Max. 900 m3/h (3,960 GPM)	0 200 400 600 800 1000 1500 2000 3000 4000 5000
Differential pressure:	Max. 16 bar (232 psi)	0 10 20 30 40 50 100 150 200 250
Viscosity:	Max. 100,000 cSt	0 25000 50000 75000 100000 125000 150000
Pumping temperature:	Max. 280°C (536°F)	0 50 100 150 200 250 300 350

Optimized Total Cost of Ownership (TCO)

Leistritz screw pumps of the L2NG series need only one mechanical seal and one bearing.
This leads to considerable advantages compared to external time-geared, double volute twin screw pumps, which need four (4) seals and four (4) bearings, such as:

- ↗ Reduced purchasing costs (CAPEX) by compact design and only one seal/bearing
- ↗ Reduced service costs (OPEX) with less number of wear parts
- ↗ Less mechanical losses increase the efficiency and lower the power consumption up to 20%

Flexible Sealing Solution

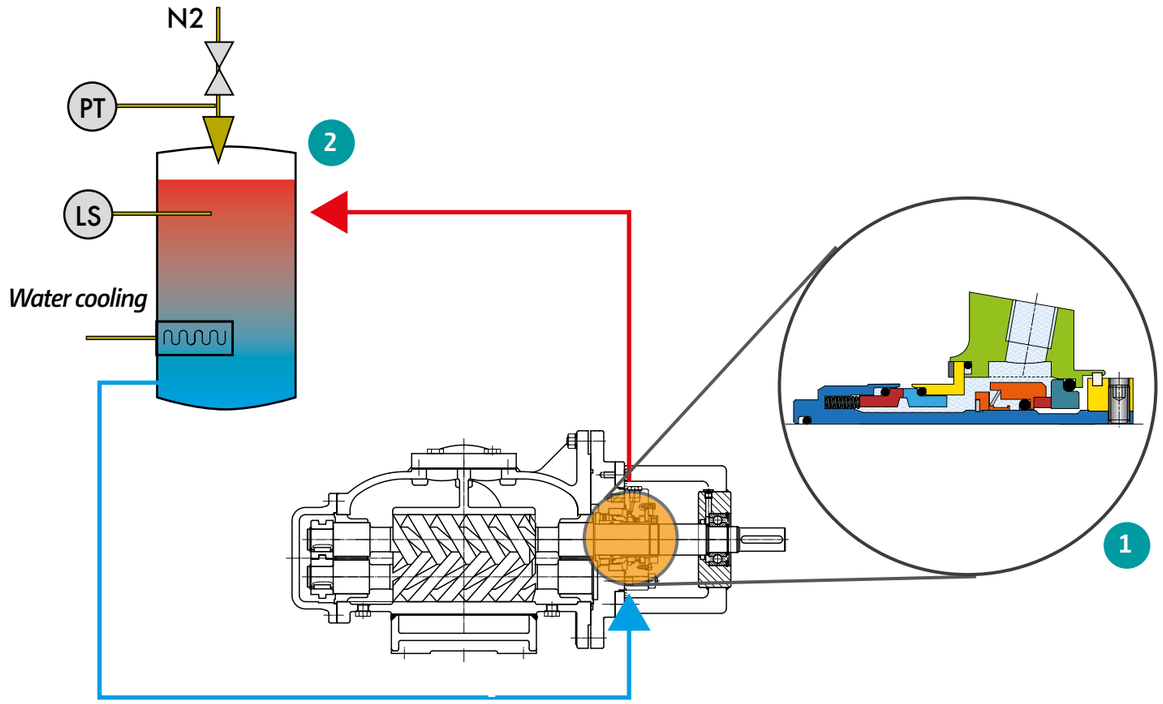
L2 pumps from Leistritz can be equipped with standard component seals or cartridge seals in line with API 682 latest edition. Depending on the product to be pumped, single or double acting seals together with buffer-, barrier- or quench systems can be used.

Simple and easy maintenance

Not only the need of only one seal makes this pump series very service friendly. The design itself, with a noticeable reduced number of parts compared to double volute twin screw pumps ensure an extremely short downtime for service activities.

Leistritz L2 design does not require any gear box, timing gears, liners or clamping devices. Easy and fast dismantling and re-assembly increases availability and keeps the life cycle costs as low as possible.

SINGLE VOLUTE SCREW PUMP WITH API PLAN 53 A



1 *1 Double acting mechanical seals*
2 *Barrier fluid tank*

L2NG
APPLICATIONS

APPLICATIONS

↗ Chemical & Petrochemical Industry
unloading pump · stripping pump · circulating pump · transfer pump · blending pump
export pump

↗ Oil & Gas
unloading pump · stripping pump · circulating pump · transfer pump · blending pump
export pump · water turbines in fire-fighting systems

↗ Power & Energy and Fuel Oil Systems
unloading pump · transfer pump · charging pump

↗ Shipbuilding
Use as (main) lube pump · transfer pump · control pump · hydraulic pump ·
cooling/circulating pump · fuel oil pump · diesel pump · ship-loading/unloading pump

↗ Rotating & General Machinery
lube oil pump · seal oil pump · control pump · oil pump · hydraulic pump · cooling/
circulating pump · fuel oil/diesel pump

TECHNICAL INSTALLATIONS

PETROCHEMICAL

Used as:
↗ Unloading pump
Pumped liquid:
↗ Bitumen
Flow rate:
↗ Q = 300 m³/h [1,320 GPM]
Differential pressure:
↗ ΔP = 8.6 bar [125 psi]

CHEMICAL INDUSTRY

Used as:
↗ Process pump
Pumped liquid:
↗ Polyether
Flow rate:
↗ Q = 12 m³/h [52 GPM]
Differential pressure:
↗ ΔP = 7 bar [102 psi]

CHEMICAL INDUSTRY

Used as:
↗ Circulation pump
Pumped liquid:
↗ Silicon-oil-acetat
Flow rate:
↗ Q = 14 m³/h [63 GPM]
Differential pressure:
↗ ΔP = 6 bar [87 psi]

POWER & ENERGY

Used as:
↗ Lube oil pump
Pumped liquid:
↗ Lube oil
Flow rate:
↗ Q = 61 m³/h [270 GPM]
Differential pressure:
↗ ΔP = 10 bar [145 psi]

TECHNICAL INSTALLATIONS

SHIPBUILDING

Used as:
↗ Loading pump
Pumped liquid:
↗ HFO, Crude Oil
Flow rate:
↗ Q = 400 m³/h [1760 GPM]
Differential pressure:
↗ ΔP = 4 bar [58 psi]

CHEMICAL INDUSTRY

Used as:
↗ Transfer pump
Pumped liquid:
↗ Additives
Flow rate:
↗ Q = 35 m³/h [154 GPM]
Differential pressure:
↗ ΔP = 4 bar [58 psi]

CHEMICAL INDUSTRY

Used as:
↗ Circulation pump
Pumped liquid:
↗ Silicon-oil-acetat
Flow rate:
↗ Q = 295 m³/h [1300 GPM]
Differential pressure:
↗ ΔP = 7 bar [102 psi]

POWER & ENERGY

Used as:
↗ Lube oil pump
Pumped liquid:
↗ Lube oil
Flow rate:
↗ Q = 105 m³/h [460 GPM]
Differential pressure:
↗ ΔP = 12 bar [174 psi]

SPECIAL APPLICATION

L2NG Pump for military application

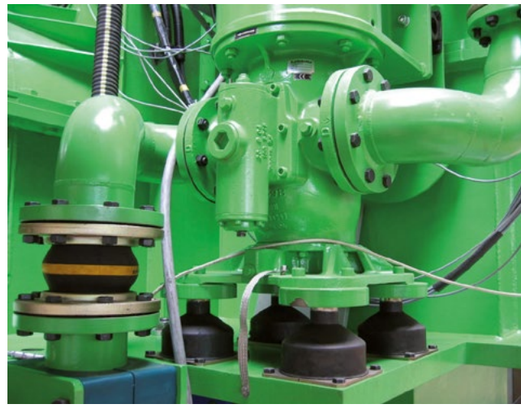
For the Naval industry Leistritz delivers direct gear driven pumps and electrically driven pre lube oil pumps. The pumps are designed to withstand high shock loads and being build according to the rules of military applications like BV 043/044.

Typical applications are the lube oil pumps for gear boxes and motors/turbines. Additional all kind of transfer pumps being used for lube and fuel oil in the machine room of the vessels. Special dampers for the foot mounting and the connection pipes are used to reduce the shock levels.

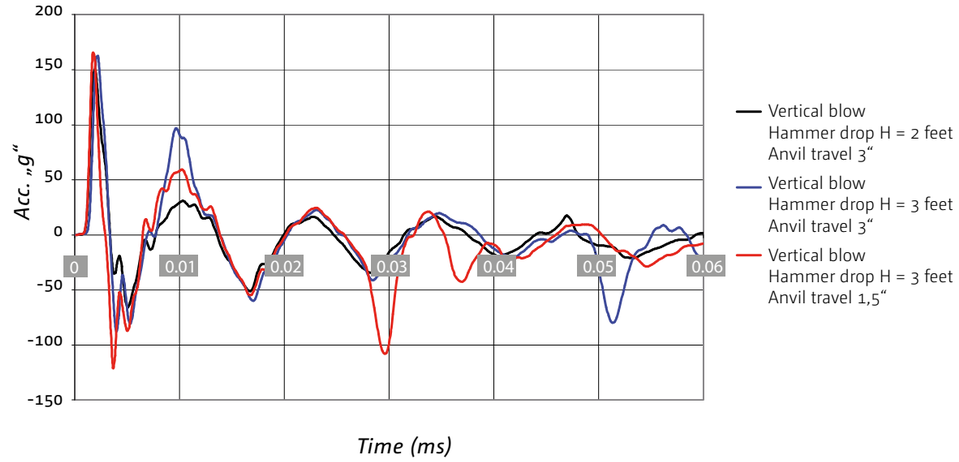
Extraordinary pump designs in non-magnetic materials for submarine applications are available as well.

USER ADVANTAGES

- ↗ Designed according to military rules like BV 043/044
- ↗ Pump design to withstand high shock loads
- ↗ Customer orientated solutions
- ↗ Installation of shock dampers
- ↗ Detailed stress- calculation of flanges and connections
- ↗ Electric driven as pre lube oil pump
- ↗ Directly flanged on gear boxes, motors or turbines



Acceleration time history from shock tests on Leistritz L2NG-116 pump (acceleration peak of 165 g in less than 0,01 ms)



L2NG-MAK WITH MAGNETIC DRIVE

DESIGN AND OPERATION

Leistritz pumps with magnetic drive are used in many fields of application such as oil firing-, energy-, ship-, and offshore-technology as well as in the chemical and petrochemical industry. Hot heavy fuel oils and a wide variety of chemicals can be pumped by this hermetically sealed aggregate without any problem. Due to our extensive modular principle a wide range of customer demands can be met.

USER ADVANTAGES

- Pedestal aggregate
- Base aggregate on base frame
- Wall mounted aggregate with steelwelded intermediate bracket
- Execution with / without safety valve
- Safety valve with / without handwheel
- Cast pump casing of different materials
- Steel welded pump casing with almost any flange position and flange size
- Steel welded heatable pump casing in double casing execution
- Driving side cover steel welded with ring channel heating
- Separate casing insert for steel welded pumps

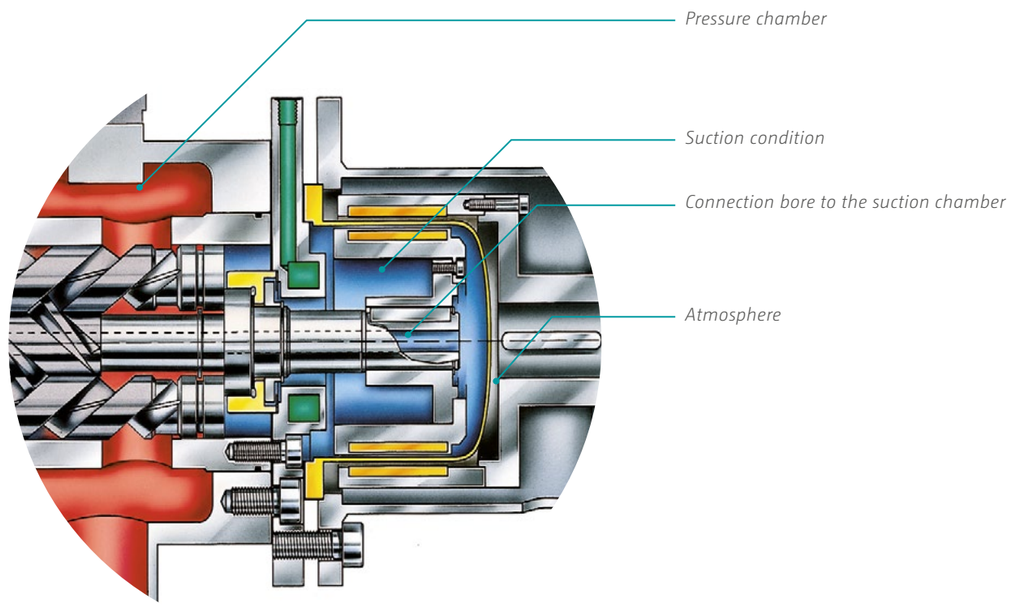
Performance data L2NG 40 - 220/... - MAK/ chemical and petrochemical industry

Flow rate:	Max. 900 m3/h (3,960 GPM)	0 200 400 600 800 1000 1500 2000 3000 4000 5000
Differential pressure:	Max. 16 bar (232 psi)	0 10 20 30 40 50 100 150 200 250
Viscosity:	Max. 100,000 cSt	0 25000 50000 75000 100000 125000 150000
Pumping temperature:	Max. 180°C (356°F)	0 50 100 150 200 250 300 350

Our leakage free L2NG / pumps avoid high operating costs

- Critical pumping mediums with toxic substances are not released into the environment
- No waste of valuable fluids
- Sensitive pumping mediums are not exposed to aerial oxygen and therefore the pumping process remains uninterrupted
- At overload the magnetic rotors act like a sliding clutch; the parts will not be destroyed

L2NG-MAK HYDRAULIC BALANCED



CHEMICAL INDUSTRY

Used as:
- Transfer pump

Pumped liquid:
- Bitumen

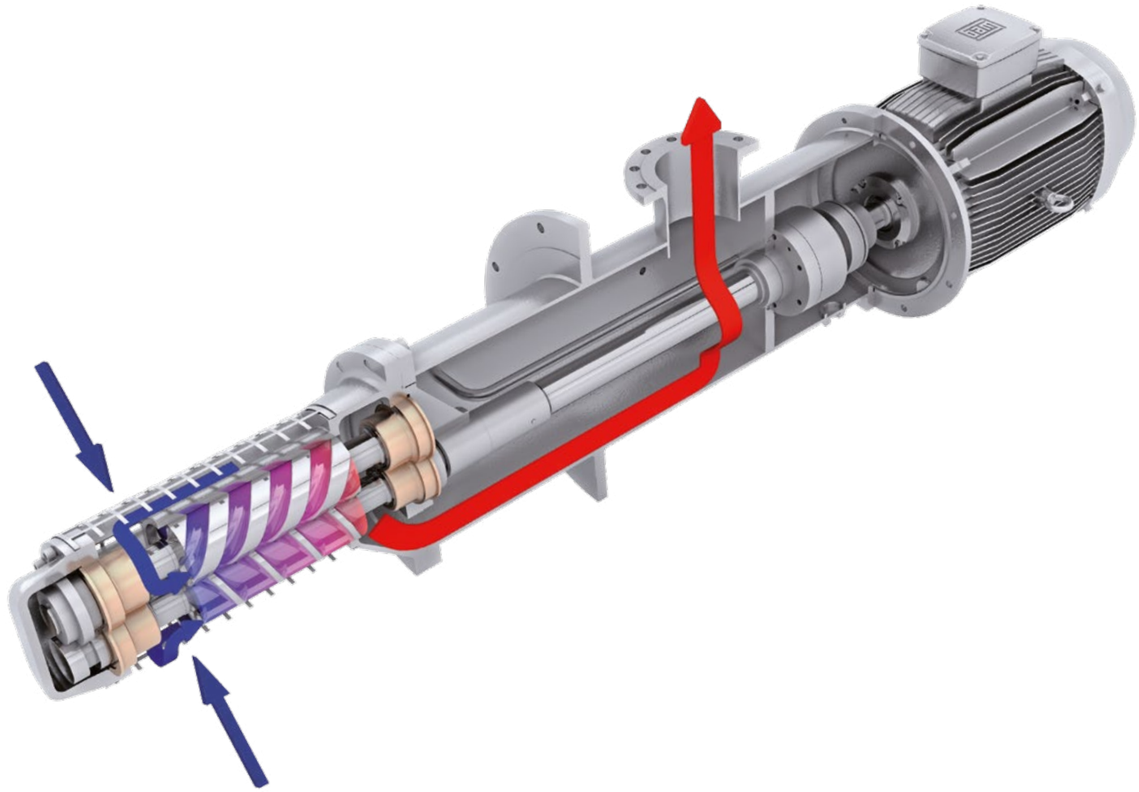
Flow rate:
- Q = 235 m³/h [1035 GPM]

Differential pressure:
- ΔP = 8.5 bar [123 psi]

L2NT *SEMI SUBMEGED PUMP*

L2 cargo pump for high and low viscosity cargos

Leistritz screw pumps arranged as vertical submerged pump can be installed e.G. Inside barrel with suction piping between the tanks of the asphalt carrier. Cargo of nearly all viscosities – from kerosene to asphalt – can be unloaded and effectively stripped from tanks and suction lines. The pumps are designed as two-screw single flow pumps for high-capacity unloading and stripping. Drives are suitable as electrical- or hydraulic motor.

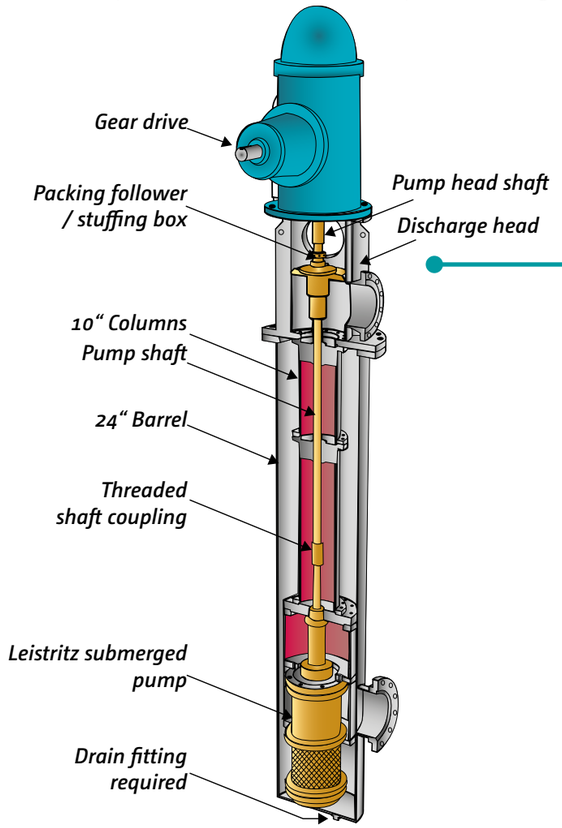


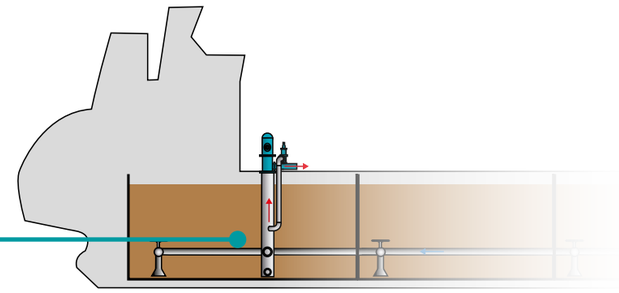
Performance data

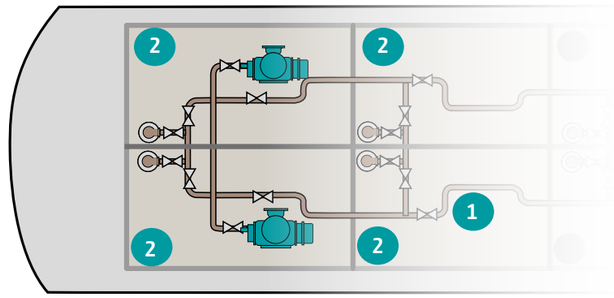
Flow rate:	Max. 900 m³/h (3,960 GPM)	0 200 400 600 800 1000 1500 2000 3000 4000 5000
Differential pressure:	Max. 16 bar (232 psi)	0 10 20 30 40 50 100 150 200 250
Viscosity:	Max. 100,000 cSt	0 25000 50000 75000 100000 125000 150000
Pumping temperature:	Max. 280°C (536°F)	0 50 100 150 200 250 300 350

Typical suction piping arrangement

Leistritz has developed a submerged cargo pump, which can be installed in a separate barrel, normally hanging from the deck in the aft cargo tank. The installation inside the barrel replaces an otherwise required pump room. The barrel works as a large suction chamber providing the pump with additional suction ability. The Leistritz cargo pump has only one shaft seal (stuffing box or mechanical seal) to the atmosphere and is suitable for handling hydrocarbon products and other viscous liquids including slightly abrasive and corrosive fluids.





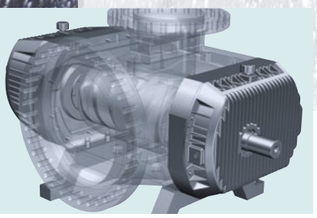


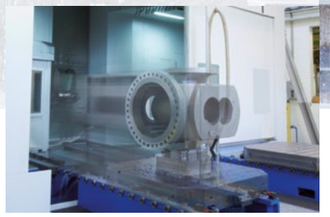
Cargo pump
Safety valve
1 Suction piping
Bellmouth sumps
2 Tanks

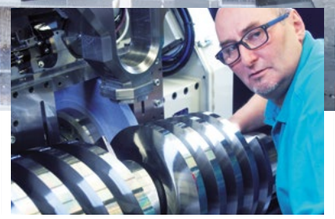
SHIPBUILDING

Used as:
↗ Cargo pump
Pumped liquid:
↗ Bitumen/asphalt
Flow rate:
↗ Q = 900 m³/h [3,962 GPM]
Differential pressure:
↗ ΔP = 16 bar [232 psi]
Viscosity:
↗ Max. 100,000 mm²/s
Temperature:
↗ Max. 280°C [536°F]

MANUFACTURING KNOW-HOW





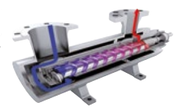


» *Leistritz pumps are manufactured with expertise and passion.*

Rising demands on pump manufacturers regarding wear protection, service life or flow rate require the use of state-of-the-art machine technology and process chains that are ideally coordinated with one another. These are the prerequisites to facilitate the high-quality manufacturing of pump components.

To accomplish this high standard, we produce the screws and housings, i.e. the core elements of the Leistritz pumps, ourselves in Germany - under the aspect of the ultimate precision and with a high level of production knowledge vertical integration. This is particularly due to the symbiosis of the various products of the Leistritz Group in the form of superior materials know-how and in-house metal processing technologies, such as whirling. In addition to our numerous machines, it is particularly our team that convinces our customers with its well-founded expertise and extensive manufacturing know-how.

PUMP RANGE

SERIES	USE FOR	PUMP TYPE	PERFORMANCE DATA			
			Flow rate	Pressure	Viscosity	Temperature
L2N	Low pressure duty, suitable for transport of slightly abrasive and corrosive, high or low viscous fluids with poor or good lubricity.		900 m³/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 m³/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 m³/h 1,320 GPM	80 bar 1.160 psi	10,000 cSt	280°C 536°F
L3H L3V L3U	High and ultra high pressure duty, suitable for transport of non-abrasive, slightly abrasive and corrosive, high or low viscous fluids with poor or good lubricity.		200 m³/h 880 GPM	280 bar 4,060 psi	10,000 cSt	280°C 536°F
L4N L4M L4H	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 m³/h 22,000 GPM	150 bar 2,175 psi	150,000 cSt	350°C 662°F
L5N	Low pressure duty, suitable for transport of slightly abrasive and corrosive, high or low viscous fluids with poor or good lubricity.		1.700 m³/h 7,500 GPM	10 bar 145 psi	100,000 cSt	280°C 536°F

This list offers a general overview of the standard pump range by Leistritz. Various options and systems are individually configured according to customer requirements and tested on our test bench (drive power up to 4 MW) in Nuremberg.

PUMP TECHNOLOGY

Available for you all over the world

USA

Leistritz Advanced Technologies Corp., Allendale

GERMANY

Headquarters
Leistritz Pumpen GmbH, Nuremberg

CHINA

Leistritz Machinery (Taicang), Co., Ltd., Taicang

ITALY

Leistritz Italia srl., Milan

UNITED ARAB EMIRATES

Leistritz Middle East FZE, Dubai

INDIA

Leistritz India Pte. Ltd., Chennai

SINGAPORE

Leistritz SEA, Pte. Ltd., Singapore

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