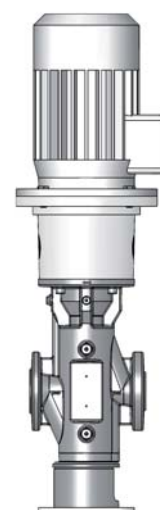
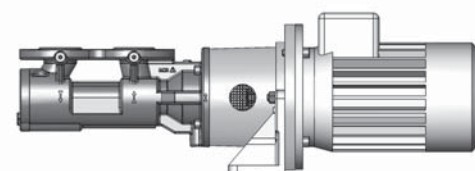
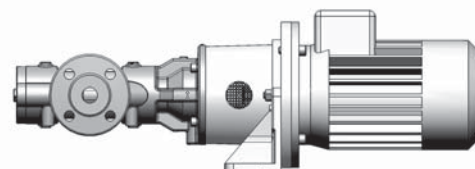


KRAL Screw Pumps.
L Series.

KRAL

Catalog



L Series
Edition 05/2011
Subject to change.



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Type code

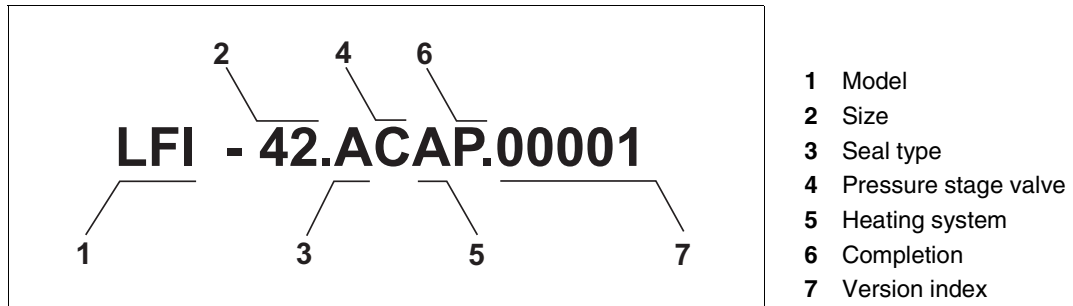


Fig. 1 Type code

Item	Designation	Type
1	Model	LFI: <input type="checkbox"/> Pump with free shaft end <input type="checkbox"/> Pump housing with flanges in inline configuration <input type="checkbox"/> Pump unit with or without pump bracket foot
		LFT: <input type="checkbox"/> Pump with free shaft end <input type="checkbox"/> Pump housing with flanges on top <input type="checkbox"/> Pump unit with or without pump bracket foot
		LVI: <input type="checkbox"/> Pump with free shaft end and pedestal <input type="checkbox"/> Pump housing with flanges in inline configuration <input type="checkbox"/> Pump unit pump on pedestal for vertical mounting
		LVT: <input type="checkbox"/> Pump with free shaft end and pedestal <input type="checkbox"/> Pump housing with flanges on top <input type="checkbox"/> Pump unit on pedestal for vertical mounting
2	Size	Corresponds to flow rate in [l/min] at 1450 min ⁻¹
3	Seal type	A: Standard mechanical seal
		B: Mechanical seal of hard material
		C: Standard radial shaft seal
		D: Magnetic coupling
		F: Radial shaft seal, high temperature
		H: Mechanical seal balanced
		X: Special seal
4	Pressure stage valve	A: Pressure stage 3–19.9 bar
		B: Pressure stage 20–39.9 bar
		C: Pressure stage 40–64 bar
		X: Without valve
5	Heating system	A: Without heating system
		B: Electric heating system
		C: Fluid heating system
		X: Special heating system
6	Completion	P: Pump with free shaft end
		F: Pump unit with pump bracket foot
		V: Pump unit without pump bracket foot
7	Version index	For internal administration

Tab. 1 Type code

Structure

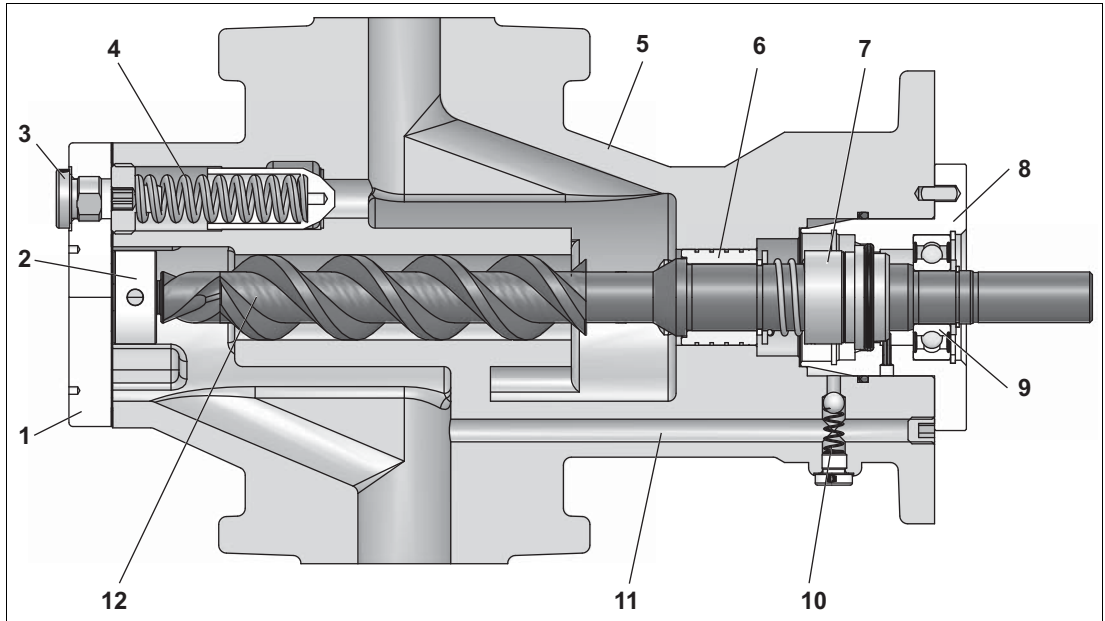


Fig. 2 Structure of L-pump with mechanical seal

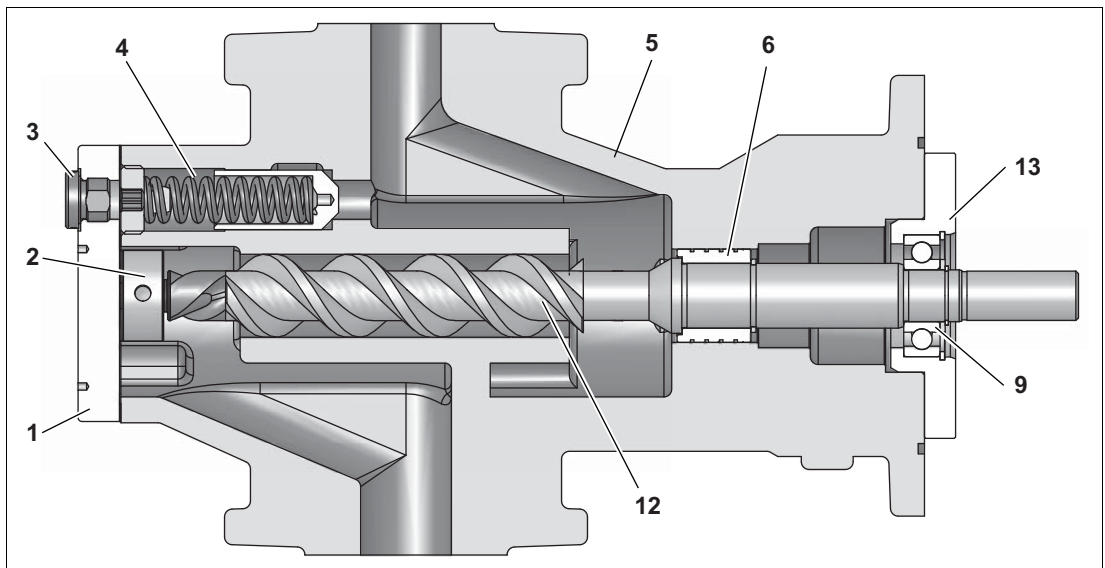


Fig. 3 Structure of L-pump magnetic coupling type

- | | | |
|------------------|----------------------|------------------------|
| 1 End cover | 6 Balancing cylinder | 10 Back pressure valve |
| 2 Balancing bush | 7 Mechanical seal | 11 Relief line |
| 3 Screw plug | 8 Seal housing | 12 Main screw |
| 4 Overflow valve | 9 Ball bearing | 13 Bearing cover |
| 5 Pump housing | | |

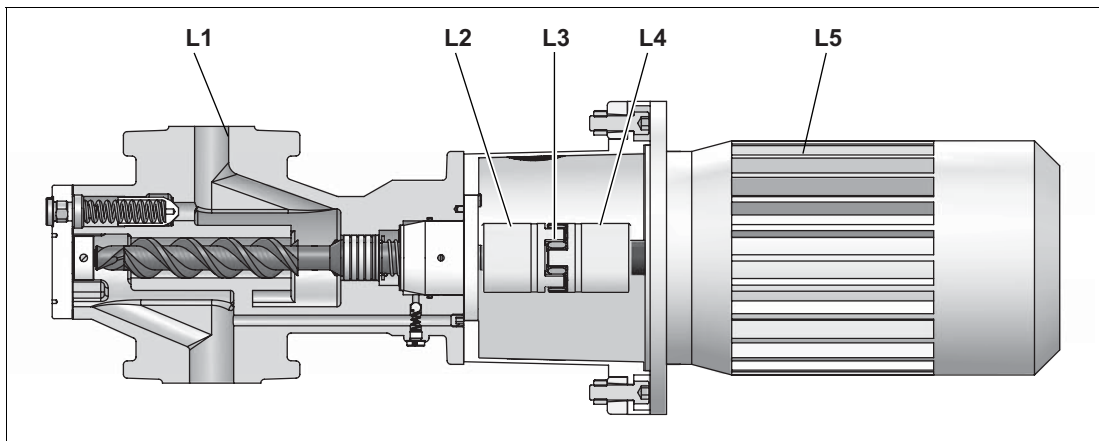


Fig. 4 Structure of L-pump with elastomer coupling and motor

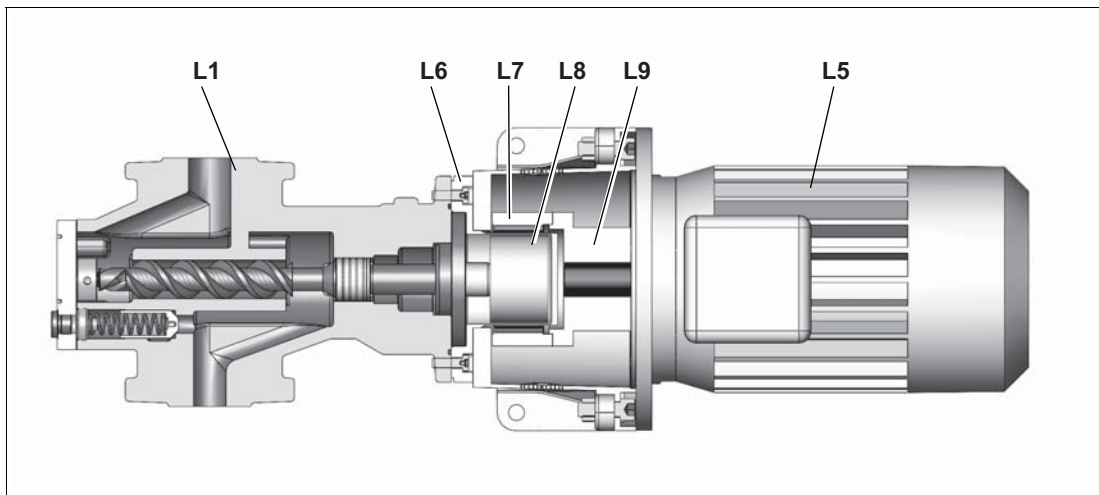


Fig. 5 Structure of L-pump with magnetic coupling and motor

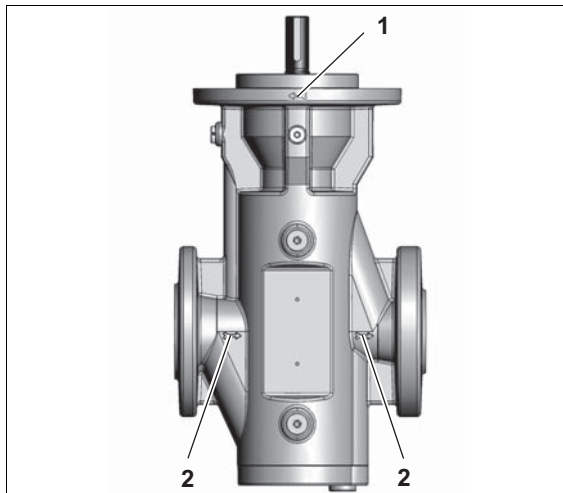
- | | |
|--------------------------------------|---------------------------|
| L1 Pump | L6 Containment can |
| L2 Pump-side coupling half | L7 Outer rotor |
| L3 Coupling intermediate ring | L8 Inner rotor |
| L4 Motor-side coupling half | L9 Coupling hub |
| L5 Motor | |

Screw pumps are rotating displacement pumps whose displacement effect results from the meshing of three rotating screws and the enclosing housing **5**. The radial support of the screws is effected by the sliding contact in the housing which requires lubrication by the pumped liquid. Screw pumps are therefore not suitable for dry running and can only be used up to specific pressure and viscosity limits. Due to the narrow tolerances, pumping of suspended solids is not possible.

Axial support of the main screw **12** is carried out by a lifetime lubricated deep-groove ball bearing **9**. Different shaft seals **7** are available for sealing the main screw at the outlet from the housing. In order to reduce the pressure at the shaft seal a balancing cylinder **6** is mounted at the main screw. The sealing chamber is connected to the suction chamber via a relief line **11**. The idle screws also have an axial thrust relief through balancing bushes **2** at suction-side end of the screws and core drilled holes to the pressure chamber. An internal overflow valve **4** protects against excessive pressure that could cause housing parts to burst.

Direction of rotation and flow direction

Direction of rotation and flow direction



- 1 Arrow for direction of rotation
- 2 Arrow for flow direction

Fig. 6 Identifying direction of rotation and flow direction

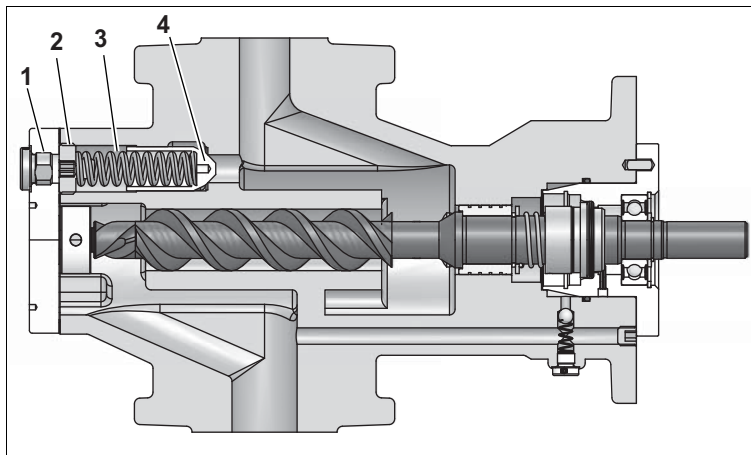
Standard direction of rotation: clockwise, seen from the drive

marked on the housing by an arrow, see Fig. 6, page 8

Direction of flow:

marked on the housing by two arrows, see Fig. 6, page 8

Overflow valve



- 1 Screw plug
- 2 Adjusting screw
- 3 Spring
- 4 Valve body

Fig. 7 Overflow valve mounting position

The integrated overflow valve prevents very high pressures which could result in housing parts bursting. The valve is purely there as a safety element and should not be used for control or regulation such as maintaining pressure. If the valve is kept open for too long under adverse operating conditions (high differential pressures and/or low viscosities) it will only take a few minutes for the valve and the valve seating to become damaged. As a result, the valve will leak permanently and there will be a corresponding reduction in the delivery rate. In addition to this, circulation through the overflow valve for too long heats the pump to excess. This reduces viscosity and can ultimately lead to pump failure.

Factory setting:

- 110% of the nominal pressure

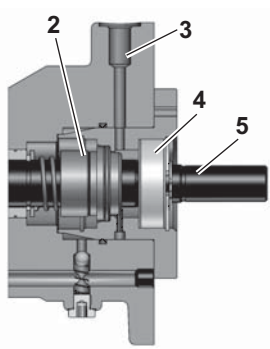
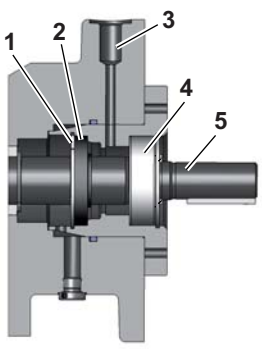
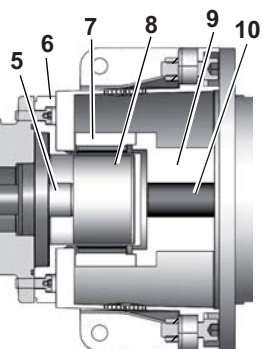
The valve is accessible via a screw plug 1 in the end cover and can be adjusted from the outside.

Shaft seal

Shaft seal

The following types of shaft seals are used:

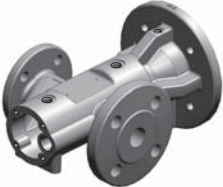
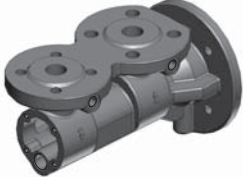
- Mechanical seal, standard or hard material
- Radial shaft seal, standard or high temperature
- Magnetic coupling

Seal variant	Description
<p>Mechanical seal</p>  <ul style="list-style-type: none"> 2 Mechanical seal 3 Leakage vent holes 4 Ball bearing 5 Main screw 	<p>The lubrication of the mechanical seal inevitably results in minimal leakage that as a rule evaporates and is therefore not conspicuous. However, with low-volatility liquids such as heavy oil, the leakage will be visible. The included leakage vent hole allows draining of this leakage. The drainage through this hole has to be kept free. Dry running must be avoided at all costs, as the seal will over-heat and be destroyed in a matter of minutes.</p>
<p>Radial shaft seal</p>  <ul style="list-style-type: none"> 1 Circlip 2 Radial seal ring 3 Leakage vent hole 4 Ball bearing 5 Main screw 	<p>Radial shaft seals can be used for temperatures up to 80 °C or 150 °C, depending on the material. Each seal ring used has a lip for sealing against the loss of liquid and the entry of air.</p>
<p>Magnetic coupling</p>  <ul style="list-style-type: none"> 5 Main screw 6 Containment can 7 Outer rotor 8 Inner rotor 9 Coupling hub 10 Motor shaft 	<p>The shaft end of the main screw 5 is enclosed by a containment can 6, that is connected hermetic airtight with the motor-side flange of the pump. Special rotors equipped with powerful permanent magnets are used for transfer of torque from the motor to the pump. The inner rotor 8 is fixed at the shaft end and driven from the outer rotor 7, which in turn is fixed to the shaft of the motor. The torque is thus transferred contact-free by means of magnetic field between the outer and inner rotor.</p> <p>The containment can is made of a non-magnetic stainless steel which does not impede the forming of magnetic flux lines between the rotors. The pressure discharge of the containment can occurs via a core drilled hole in the main screw. Therefore, it can be assumed that the pressure in the containment can approximately corresponds to the pressure on the suction-side of the pump.</p> <p>Magnetic couplings can be used for temperatures of -40 °C up to 250 °C.</p>

Tab. 2 Seal variants

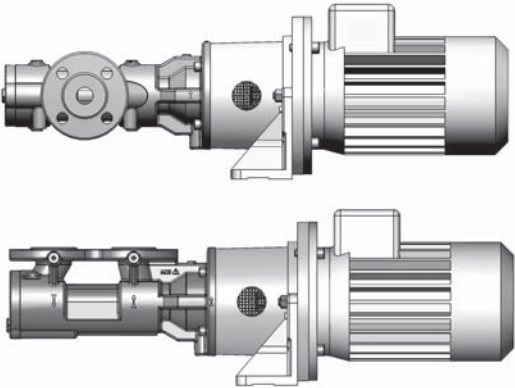
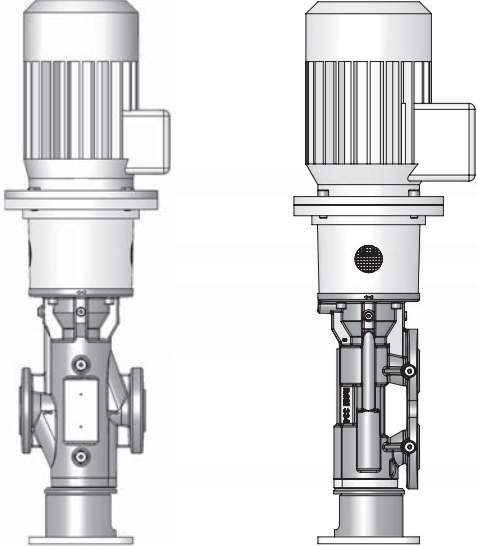
Housing variants

Housing variants

Figure	Series	Description
	LFI / LVI	<input type="checkbox"/> Pump housing with flanges in inline configuration PN25/PN63
	LFT / LVT	<input type="checkbox"/> Pump housing with flanges on top PN25/PN63

Tab. 3 Housing variants

Models

Figure	Series	Description
	LFI / LFT	<input type="checkbox"/> Flange type <input type="checkbox"/> with or without pump bracket foot <input type="checkbox"/> for horizontal mounting <input type="checkbox"/> other mounting positions possible
	LVI / LVT	<input type="checkbox"/> Vertical type <input type="checkbox"/> with pedestal <input type="checkbox"/> for vertical mounting

Tab. 4 Models

Operational limits
Operational limits

Size	
L 5 – 85	
Operating pressure max. [bar]	
<input type="checkbox"/> Pump housing	63
Temperature max. [°C]	
<input type="checkbox"/> Standard mechanical seal	150
<input type="checkbox"/> Mechanical seal of hard material	180
<input type="checkbox"/> Standard radial shaft seal	80
<input type="checkbox"/> Radial shaft seal, high temperature	150
<input type="checkbox"/> Magnetic coupling	Customer-specific, contact KRAL
Temperature min. [°C] for pump materials	-20
Viscosity [mm²/s] min.–max.	1.5*–7 000 * in agreement with KRAL
Drehzahl [min⁻¹]	
<input type="checkbox"/> at 50 Hz	2 900
<input type="checkbox"/> at 60 Hz	3 500
Feed pressure [bar]	
<input type="checkbox"/> Standard mechanical seal	6
<input type="checkbox"/> Mechanical seal of hard material	6
<input type="checkbox"/> Mechanical seal, balanced	20
<input type="checkbox"/> Standard radial shaft seal	6
<input type="checkbox"/> Radial shaft seal, high temperature	6
<input type="checkbox"/> Magnetic coupling	Customer-specific, contact KRAL

Tab. 1 Operational limits

Materials

	Material	Material no.
Housing	EN-GJS-400-15	EN-JS 1030
Screw set	16MnCrS5	1.7139
End cover	EN-GJS-400-15	EN-JS 1030
Bearing housing	EN-GJS-400-15	EN-JS 1030

Tab. 2 Materials

Noise levels

 Guide values at 1 m distance, 1450 min⁻¹, 20 bar, 21 mm²/s

	Noise level max. ±3 [dB(A)]	
	L 5 – 54	L 55 – 85
Pump	59	65
Motor max.	66	77
Pump + motor	67	78

Tab. 3 Noise levels

Required NPSH values

Required NPSH values

The following table lists the required NPSH values during operation with a low-volatility pumped liquid such as lubricating oil or hydraulic liquid. When pumped liquids have a readily volatile component content, the required NPSH values increase notably:

- Fuel oil requires an NPSH value of at least 6 mWC.
- When the pumped liquid contains water (e.g. heavy fuel oil), the values in the table have to be increased by the vapor pressure of the water at the specified operating temperature.

The required NPSH values also need to be increased if there are gas contents, regardless of whether it is dissolved or not. In case of any doubt, please contact KRAL.

Size	Viscosity [mm ² /s]	NPSH value [mWC] at Rotation speed [min ⁻¹]				Size	Viscosity [mm ² /s]	NPSH value [mWC] at Rotation speed [min ⁻¹]			
		1450	1750	2900	3500			1450	1750	2900	3500
L 5	6	2.0				L 32	6	2.0			
	37	2.0					37	2.0			
	152	2.0					152	2.0	2.3	2.7	
	380	2.0					380	2.1	2.2	3.0	3.5
L 7.5	6	2.0				L 42	6	2.0			
	37	2.0					37	2.0			
	152	2.0					152	2.0			
	380	2.0	2.3	2.5	380		2.3	2.6	3.9	4.8	
L 10	6	2.0	2.1	2.0	L 54	6	2.0	2.1	3.0	3.7	
	37	2.0				37	2.0	2.3	3.4	4.2	
	152	2.0				152	2.5	2.7	4.1	5.1	
	380	2.0	2.3	2.5		380	2.9	3.2	5.0	6.3	
L 15	6	2.0				L 55	6	2.0			
	37	2.0					37	2.0			
	152	2.0					152	2.0	2.6	3.1	
	380	2.0	2.6	2.9	380		2.2	2.4	3.4	4.1	
L 20	6	2.0				L 74	6	2.0			
	37	2.0					37	2.0			
	152	2.0	2.4	2.8	152		2.0	2.1	3.3	4.1	
	380	2.1	2.3	3.1	3.7		380	2.5	2.8	4.4	5.6
L 26	6	2.0	2.2	2.7	L 85	6	2.0				
	37	2.0				37	2.0				
	152	2.0				152	2.0	2.3	3.7	4.7	
	380	2.3	2.6	3.9		4.8	380	2.6	3.0	5.0	6.5

Tab. 4 Required NPSH values

Weights – Elastomer coupling type

Weights – Elastomer coupling type

Weight table for Type LFI/LFT

Motor size	Motor weight [kg]	Size				
		5	15	32	55	
		7,5	20	42	74	
		10	26	54	85	
		Weight of pump with free shaft end [kg]				
		9.0	16.0	20.0	33.0	
		Weight of pump bracket with pump bracket foot, coupling and screws [kg]				
71	6.0	2.0	—	—	—	
80	10.0	2.5	3.0	—	—	
90S	12.0	2.5	3.5	3.5	—	
90L	14.0	2.5	3.5	3.5	—	
100L	21.0	4.0	4.5	4.5	5.5	
112M	28.0	4.0	4.5	4.5	5.5	
132S	39.0	—	7.0	7.0	7.0	
132M	45.0	—	7.0	7.0	7.0	
160M	110.0	—	9.0	9.0	10.0	
160L	120.0	—	9.0	9.0	10.0	

Tab. 5 Weights for LFI/LFT

Weight table for Type LVI/LVT

Motor size	Motor weight [kg]	Size				
		5	15	32	55	
		7,5	20	42	74	
		10	26	54	85	
		Weight of pump with free shaft end [kg]				
		9.0	16.0	20.0	33.0	
		Weight of the pedestal [kg]				
		2.0	2.0	3.0	3.0	
		Weight of pump bracket with coupling and screws [kg]				
71	6.0	1.5	—	—	—	
80	10.0	1.5	2.0	—	—	
90S	12.0	1.5	2.5	2.5	—	
90L	14.0	1.5	2.5	2.5	—	
100L	21.0	3.0	3.5	3.5	4.5	
112M	28.0	3.0	3.5	3.5	4.5	
132S	39.0	—	5.0	5.0	5.0	
132M	45.0	—	5.0	5.0	5.0	
160M	110.0	—	6.0	6.0	7.0	
160L	120.0	—	6.0	6.0	7.0	

Tab. 6 Weights for LVI/LVT

Weights – Magnetic coupling type

Weights – Magnetic coupling type

Weight table for Type LFI/LFT

Motor size	Motor weight [kg]	Magnet power [Nm]	Size			
			5	15	32	55
			7,5	20	42	74
			10	26	54	85
			Weight of pump with free shaft end [kg]			
			9.0	14.0	17.5	33.0
			Weight of pump bracket with pump bracket foot, magnetic coupling and screws [kg]			
80	10	10	5.5	6.5	—	—
90S	12	10	5.5	6.5	—	—
		20	6.0	7.0	—	—
90L	14	10	5.5	6.5	—	—
		20	6.0	7.0	—	—
100L	21	10	—	—	—	—
		20/22	—	10.0	13.5	14.5
		30	—	11.0	—	—
112M	28	10	—	—	—	—
		20/22	—	10.0	13.5	14.5
		30	—	11.0	—	—
132S	39	20/22	—	10.0	—	16.0
		30	—	11.0	—	—
		40	—	11.5	—	—
		50	—	16.0	18.0	20.0
		80	—	—	19.0	22.0
132M	45	20/22	—	10.0	—	16.0
		30	—	11.0	—	—
		40	—	11.5	—	—
		50	—	16.0	18.0	20.0
		80/85	—	—	19.0	22.0
160M	110	40	—	—	—	—
		50	—	—	20.5	20.5
		80	—	—	21.0	25.5
160L	120	40	—	—	—	—
		50	—	—	20.5	20.5
		80/85	—	—	21.0	25.5

Tab. 7 Weights for LFI/LFT

Weights – Magnetic coupling type

Weight table for Type LVI/LVT

Motor size	Motor weight [kg]	Magnet power [NM]	Size			
			5	15	32	55
			7,5	20	42	74
			10	26	54	85
			Weight of pump with free shaft end [kg]			
			9.0	14.0	17.5	33.0
			Weight of the pedestal [kg]			
			2.0	2.0	3.0	3.0
			Weight of pump bracket with magnetic coupling and screws [kg]			
80	10.0	10	5.0	5.5	—	—
90S	12.0	10	5.0	5.5	—	—
		20	5.5	6.0	—	—
90L	14.0	10	5.0	5.5	—	—
		20	5.5	6.0	—	—
100L	21.0	10	—	—	—	—
		20/22	—	8.5	12.0	13.0
		30	—	9.5	—	—
112M	28.0	10	—	—	—	—
		20/22	—	8.5	12.0	13.0
		30	—	9.5	12.0	—
132S	39.0	20	—	8.5	—	14.0
		30	—	9.5	—	—
		40	—	10.0	—	—
		50	—	14.5	16.0	18.0
		80	—	—	17.5	20.0
132M	45.0	20	—	8.5	—	14.0
		30	—	9.5	—	—
		40	—	10.0	—	—
		50	—	14.5	16.0	18.0
		80	—	—	17.5	20.0
160M	110.0	40	—	—	—	—
		50	—	—	18.5	18.5
		80	—	—	19.0	23.5
160L	120.0	40	—	—	—	—
		50	—	—	18.5	18.5
		80	—	—	19.0	23.5

Tab. 8 Weights for LVI/LVT

Weights – Magnetic coupling type

Model LFI

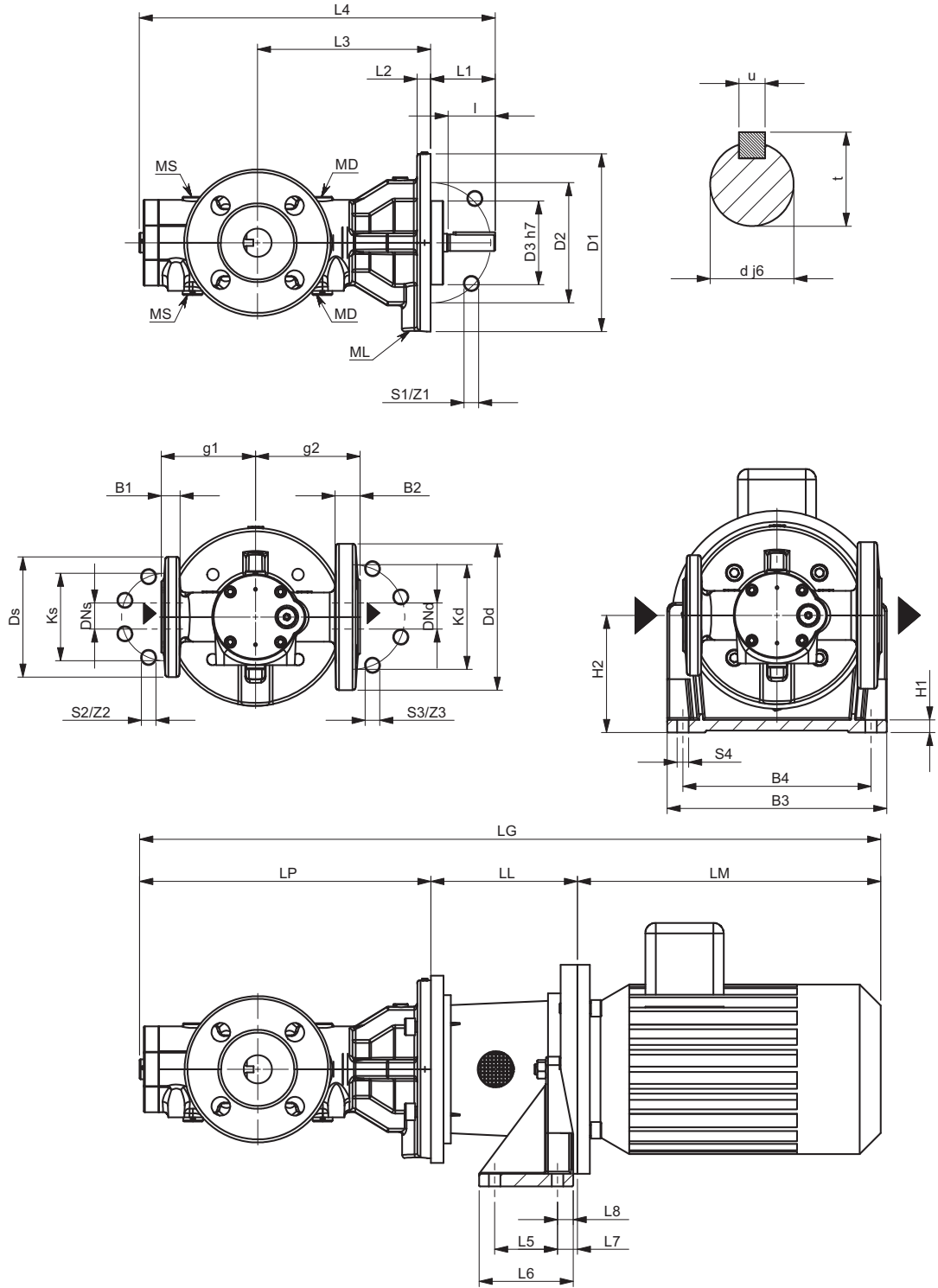


Fig. 1 Dimensional drawing of LFI-pump and pump unit

Model LFI

Size	Pump									Shaft end			
	L1	L2	L3	L4	D1	D2	D3	S1	Z1	d	l	t	u
5-10													
15-26	62	13	166	340	170	115	80	11	4	16	45	18	5
32-54	60	13	200	391	170	130	100	11	4	19	45	21.5	6
55-85													

Tab. 1 Dimensions pump

Size	Motor size	Pump unit												
		LP	LL	LM*	LG**	L5	L6	L7	L8	H1	H2	B3	B4	S4
15	80	279	124	*	**	60	90	19	15	12	112	210	180	11
	90S/L	279	140	*	**	60	90	19	15	12	112	210	180	11
20	100/112M	279	148	*	**	60	97	39	21	15	132	250	220	13
26	132S/M	279	168	*	**	80	116	39	20	18	160	290	260	13
	160M/L	279	204	*	**	110	150	45	20	22	180	340	300	18
32	90S/L	331	140	*	**	60	90	19	15	12	112	210	180	11
	100/112M	331	148	*	**	60	97	39	21	15	132	250	220	13
42	132S/M	331	168	*	**	80	116	39	18	18	161	290	260	13
		331	204	*	**	110	150	45	20	22	180	340	300	18
54	160M/L	331	204	*	**	110	150	45	20	22	180	340	300	18

Tab. 2 Dimensions pump unit with elastomer coupling

Size	Motor size	Magnet power	Pump unit													
			LP	LL	LM*	LG**	L5	L6	L7	L8	H1	H2	B3	B4	S4	
15	90S/L	75/10 Nm	279	137	*	**	60	90	19	15	12	112	210	180	11	
	90S/L	75/20 Nm	279	137	*	**	60	90	19	15	12	112	210	180	11	
	100/112M	75/20 Nm	279	148	*	**	60	97	39	21	15	132	250	220	13	
	100/112M	75/30 Nm	279	163	*	**	60	97	39	21	15	132	250	220	13	
	20	132S/M	75/20 Nm	279	181	*	**	80	116	39	20	18	160	290	260	13
		132S/M	75/30 Nm	279	209	*	**	80	116	39	20	18	160	290	260	13
		132S/M	75/40 Nm	279	209	*	**	80	116	39	20	18	160	290	260	13
		132S/M	110/50 Nm	279	181	*	**	80	116	39	20	18	160	290	260	13
26	160M/L	110/50 Nm	279	217	*	**	110	150	45	20	22	180	340	300	18	
32	100/112M	110/22 Nm	331	161	*	**	60	97	39	21	15	132	250	220	13	
	100/112M	110/50 Nm	331	161	*	**	60	97	39	21	15	132	250	220	13	
	42	132S/M	331	181	*	**	80	116	39	18	18	161	290	260	13	
			331	241	*	**	110	150	45	20	22	180	340	300	18	
54	160M/L	110/80 Nm	331	241	*	**	110	150	45	20	22	180	340	300	18	

Tab. 3 Dimensions pump unit with magnetic coupling

* Depends on motor model.

** LG=LP+LL+LM

Size	Suction flange PN 25							Pressure flange PN 63						
	DNs	Ds	Ks	B1	S2	Z2	g1	DNd	Dd	Kd	B2	S3	Z3	g2
5-10														
15-26	25	115	85	18	14	4	90	25	140	100	24	18	4	100
32-54	32	140	100	18	18	4	100	25	140	100	24	18	4	105
55-85														

Tab. 4 Dimensions pump flanges

Dimension unit: mm

	Connection	Thread
MS	Pressure gauge suction-side	G1/4"
MD	Pressure gauge pressure-side	G1/4"
ML	Leakage line	G1/4"

Tab. 5 Connections

Model LFT

Model LFT

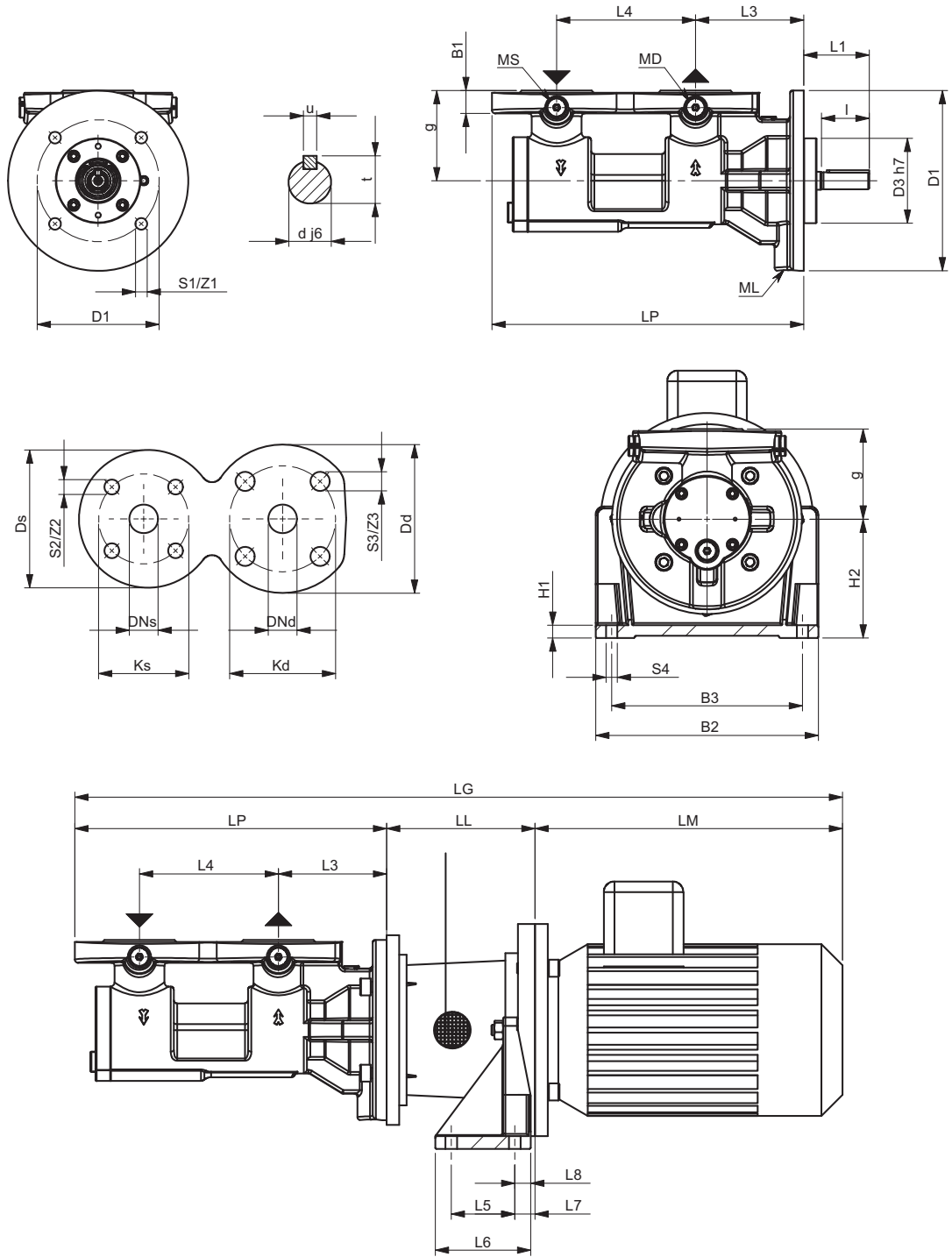


Fig. 2 Dimensional drawing of LFT-pump and pump unit

Size	Pump											Shaft end			
	g	B1	L1	L2	L3	L4	D1	D2	D3	S1	Z1	d	l	t	u
5-10															
15-26	85	22	62	13	102	131	170	115	80	11	11	16	45	18	5
32-54	85	21	60	13	130	127	170	130	100	11	11	19	45	21,5	6
55-85															

Tab. 6 Dimensions pump

Size	Motor size	Pump unit													
		LP	LL	LM*	LG**	L5	L6	L7	L8	H1	H2	B2	B3	S4	
15 20 26	80	294	124	*	**	60	90	19	15	12	112	210	180	11	
	90S/L	294	140	*	**	60	90	19	15	12	112	210	180	11	
	100/112M	294	148	*	**	60	97	39	19	15	132	250	220	13	
	132S/M	294	168	*	**	80	116	40	18	18	160	290	260	13	
32 42 54	160M/L	294	204	*	**	110	150	45	20	22	180	340	300	18	
	90S/L	331	140	*	**	60	90	19	15	12	112	210	180	11	
	100/112M	331	148	*	**	60	97	39	21	15	132	250	220	13	
	132S/M	331	168	*	**	80	116	40	20	18	161	290	260	13	
32 42 54	160M/L	331	204	*	**	110	150	45	20	22	180	340	300	18	

Tab. 7 Dimensions pump unit with elastomer coupling

Size	Motor size	Magnet power	Pump unit												
			LP	LL	LM*	LG**	L5	L6	L7	L8	H1	H2	B3	B4	S4
15 20 26	90S/L	75/10 Nm	294	137	*	**	60	90	19	15	12	112	210	180	11
	90S/L	75/20 Nm	294	137	*	**	60	90	19	15	12	112	210	180	11
	100/112M	75/20 Nm	294	148	*	**	60	97	39	21	15	132	250	220	13
	100/112M	75/30 Nm	294	163	*	**	60	97	39	21	15	132	250	220	13
	132S/M	75/20 Nm	294	181	*	**	80	116	39	20	18	160	290	260	13
	132S/M	75/30 Nm	294	209	*	**	80	116	39	20	18	160	290	260	13
	132S/M	75/40 Nm	294	209	*	**	80	116	39	20	18	160	290	260	13
	132S/M	110/50 Nm	294	181	*	**	80	116	39	20	18	160	290	260	13
32 42 54	160M/L	110/50 Nm	294	217	*	**	110	150	45	20	22	180	340	300	18
	100/112M	110/22 Nm	331	161	*	**	60	97	39	21	15	132	250	220	13
	100/112M	110/50 Nm	331	161	*	**	60	97	39	21	15	132	250	220	13
	132S/M	110/50 Nm	331	181	*	**	80	116	39	20	18	160	290	260	13
32 42 54	160M/L	110/80 Nm	331	241	*	**	110	150	45	20	22	180	340	300	18

Tab. 8 Dimensions pump unit with elastomer coupling

* Depends on motor model.

** LG=LP+LL+LM

Model LFT

Size	Suction flange PN 25					Pressure flange PN 63				
	DNs	Ds	Ks	S2	Z2	DNd	Dd	Kd	S3	Z3
5-10										
15-26	25	130	85	18	4	25	140	100	18	4
32-54	32	140	100	18	4	25	140	100	18	4
55-85										

Tab. 9 Dimensions pump flanges

Dimension unit: mm

	Connection	Thread
MS	Pressure gauge suction-side	G1/4"
MD	Pressure gauge pressure-side	G1/4"
ML	Leakage line	G1/4"

Tab. 10 Connections

Model LVI

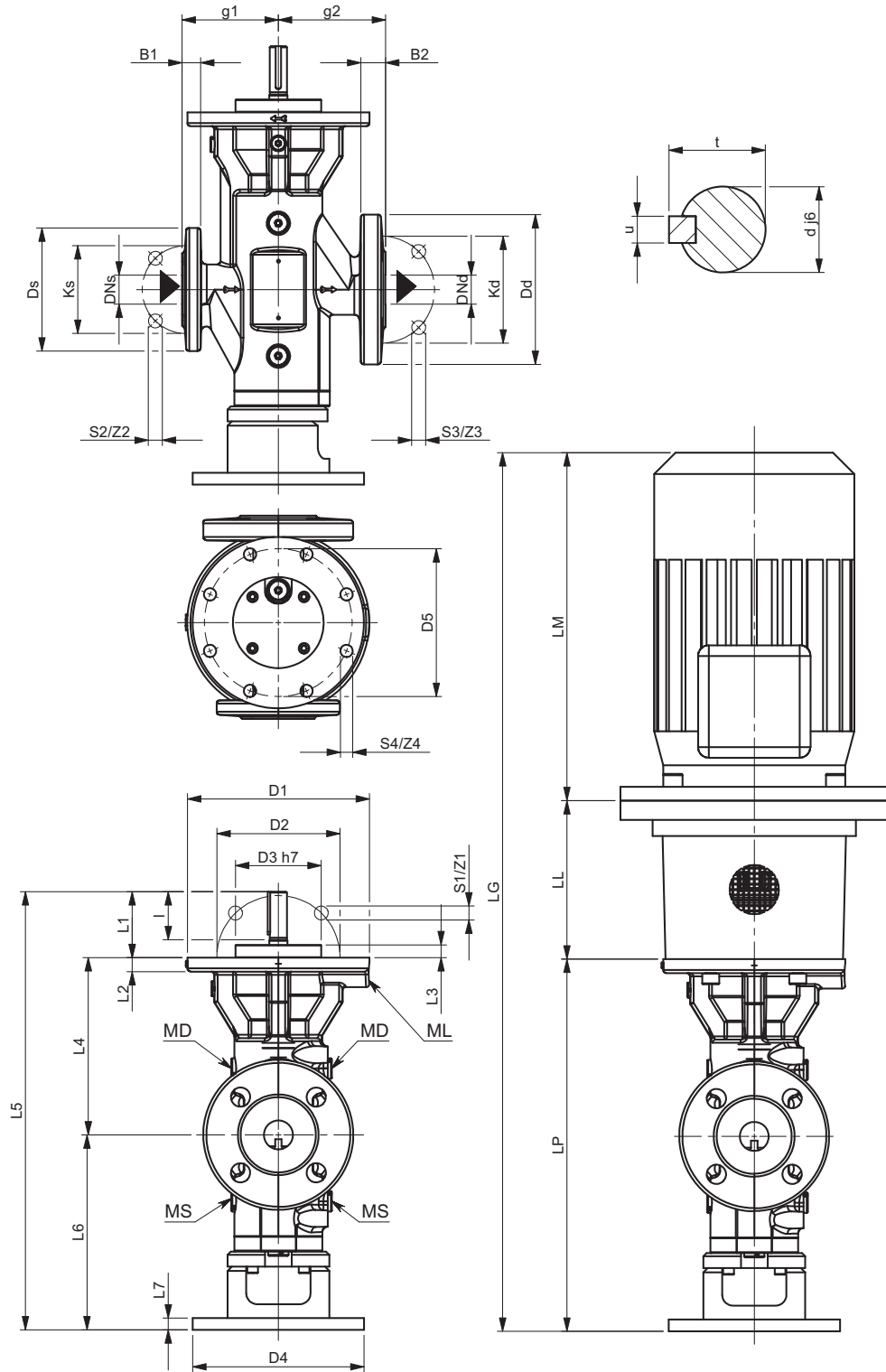


Fig. 3 Dimensional drawing of LVI-pump and pump unit

Model LVI

Size	Pump																Shaft end			
	L1	L2	L3	L4	L5	L6	L7	D1	D2	D3	D4	D5	S1	Z1	S4	Z4	d	l	t	u
5-10																				
15-26	62	13	12	166	409	182	11	170	115	80	160	138	11	4	11.5	8	16	45	18	5
32-54	60	13	12	200	479	219	12	170	130	100	170	152	11	4	11.5	8	19	45	22	6
55-85																				

Tab. 11 Dimensions pump

Size	Motor size	Pump unit			
		LP	LL	LM*	LG**
15 20 26	80	348	124	*	**
	90S/L	348	140	*	**
	100/112M	348	148	*	**
	132S/M	348	168	*	**
32 42 54	160M/L	348	204	*	**
	90S/L	419	140	*	**
	100/112M	419	148	*	**
	132S/M	419	168	*	**
	160M/L	419	204	*	**

Tab. 12 Dimensions pump unit with elastomer coupling

Size	Motor size	Magnet power	Pump unit			
			LP	LL	LM*	LG**
15 20 26	90S/L	75/10 Nm	348	137	*	**
	90S/L	75/20 Nm	348	137	*	**
	100/112M	75/20 Nm	348	148	*	**
	100/112M	75/30 Nm	348	163	*	**
	132S/M	75/20 Nm	348	181	*	**
	132S/M	75/30 Nm	348	209	*	**
	132S/M	75/40 Nm	348	209	*	**
	132S/M	110/50 Nm	348	181	*	**
32 42 54	160M/L	110/50 Nm	348	217	*	**
	100/112M	110/22 Nm	419	161	*	**
	100/112M	110/50 Nm	419	161	*	**
	132S/M	110/50 Nm	419	181	*	**
	160M/L	110/80 Nm	419	241	*	**

Tab. 13 Dimensions pump unit with magnetic coupling

* Depends on motor model.

** LG=LP+LL+LM

Size	Suction flange PN 25							Pressure flange PN 63						
	DNs	Ds	Ks	B1	S2	Z2	g1	DNd	Dd	Kd	B2	S3	Z3	g2
5-10														
15-26	25	115	85	18	14	4	90	25	140	100	24	18	4	100
32-54	32	140	100	18	18	4	100	25	140	100	24	18	4	105
55-85														

Tab. 14 Dimensions pump flanges

Dimension unit: mm

	Connection	Thread
MS	Pressure gauge suction-side	G1/4"
MD	Pressure gauge pressure-side	G1/4"
ML	Leakage line	G1/4"

Tab. 15 Connections

Model LVT

Model LVT

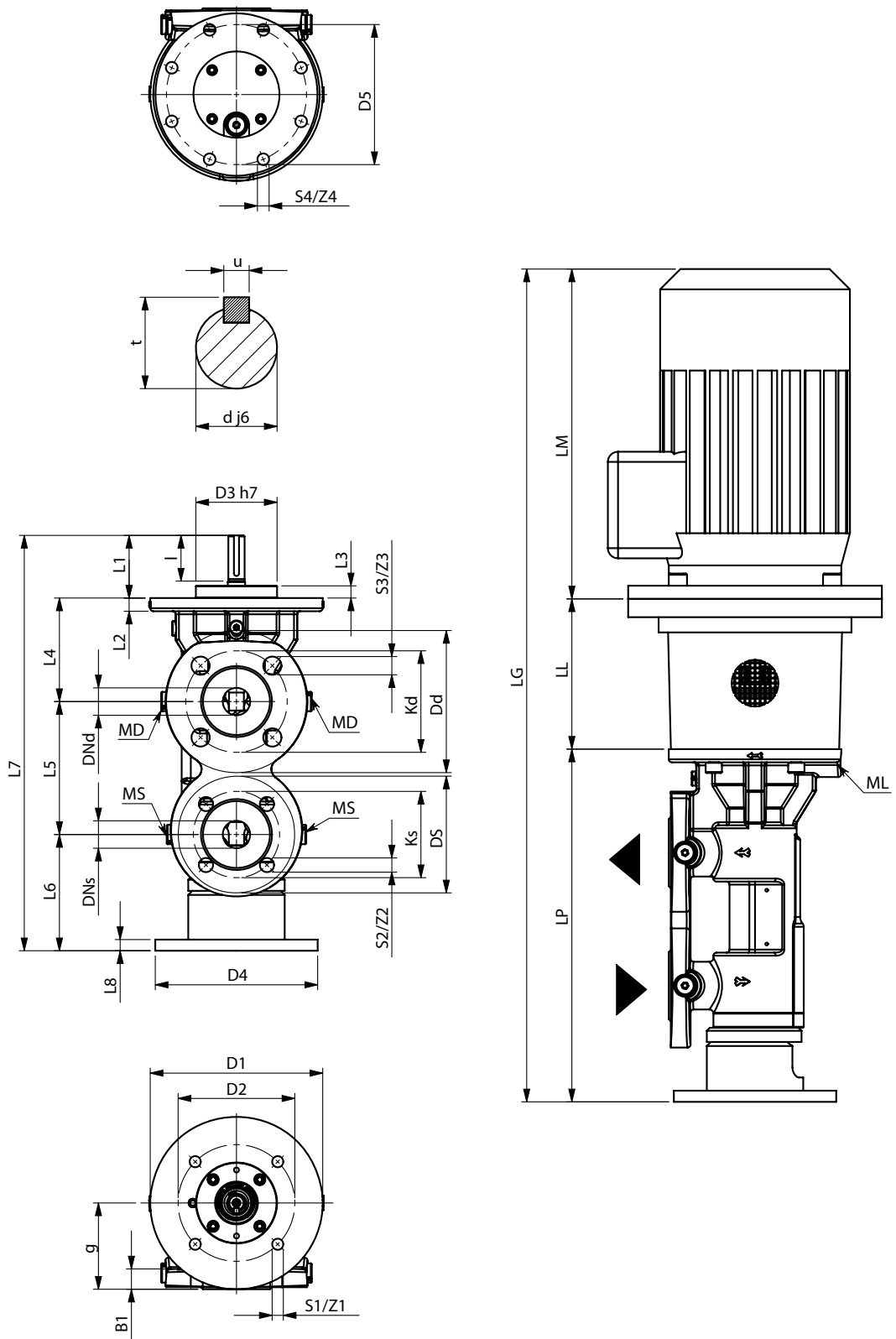


Fig. 4 Dimensional drawing of LVT-pump and pump unit

Size	Pump																	Shaft end						
	g	B1	L1	L2	L3	L4	L5	L6	L7	L8	D1	D2	D3	D4	D5	S1	Z1	S4	Z4	d	l	t	u	
5-10																								
15-26	85	22	62	13	12	102	131	115	409	11	170	115	80	160	138	11	4	11,5	8	16	45	18	5	
32-54	85	21	60	13	12	130	127	162	479	12	170	130	100	170	152	11	4	11,5	8	19	45	21,5	6	
55-85																								

Tab. 16 Dimensions pump

Size	Motor size	Pump unit			
		LP	LL	LM*	LG**
15 20 26	80	348	124	*	**
	90S/L	348	140	*	**
	100/112M	348	148	*	**
	132S/M	348	168	*	**
	160M/L	348	204	*	**
32 42 54	90S/L	419	140	*	**
	100/112M	419	148	*	**
	132S/M	419	168	*	**
	160M/L	419	204	*	**

Tab. 17 Dimensions pump unit with elastomer coupling

Size	Motor size	Magnet power	Pump unit			
			LP	LL	LM*	LG**
15 20 26	90S/L	75/10 Nm	348	137	*	**
	90S/L	75/20 Nm	348	137	*	**
	100/112M	75/20 Nm	348	148	*	**
	100/112M	75/30 Nm	348	163	*	**
	132S/M	75/20 Nm	348	181	*	**
	132S/M	75/30 Nm	348	209	*	**
	132S/M	75/40 Nm	348	209	*	**
	132S/M	110/50 Nm	348	181	*	**
32 42 54	160M/L	110/50 Nm	348	217	*	**
	100/112M	110/22 Nm	419	161	*	**
	100/112M	110/50 Nm	419	161	*	**
	132S/M	110/50 Nm	419	181	*	**
	160M/L	110/80 Nm	419	241	*	**

Tab. 18 Maße Dimensions pump unit with magnetic coupling

* Depends on motor model.

** LG= LP+LL+LM

Model LVT

Size	Suction flange PN 25					Pressure flange PN 63				
	DNs	Ds	Ks	S2	Z2	DNd	Dd	Kd	S3	Z3
5-10										
15-26	25	115	85	14	4	25	140	100	18	4
32-54	32	140	100	18	4	25	140	100	18	4
55-85										

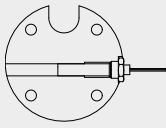
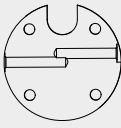
Tab. 19 Dimensions pump flanges

Dimension unit: mm

	Connection	Thread
MS	Pressure gauge suction-side	G1/4"
MD	Pressure gauge pressure-side	G1/4"
ML	Leakage vent hole	G1/4"

Tab. 20 Connections

Overview

Option	Option
Electric heating system see "Electric heating system", page 29 	Fluid heating system see "Fluid heating system", page 30 

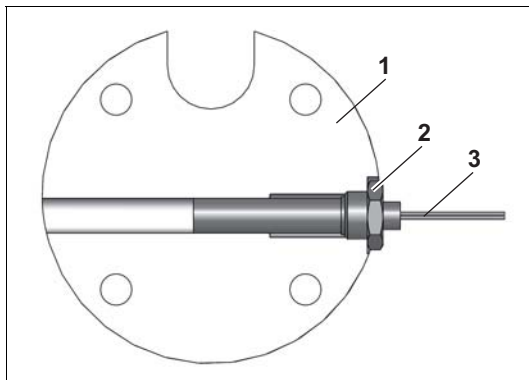
Heating system

The pumps can be equipped with an optional heating system. We recommend heating systems for high-viscosity liquids that do not flow sufficiently if not heated. This can result in excessive power consumption or lead to problems with cavitation or sealing.

Method of heating:

- Electric heating system
- Fluid heating system

Electric heating system



- 1** Heating cover
- 2** Heating element
- 3** Connecting cable

Fig. 1 Electric heating system

The electric heating system consists of one heating element **2** that is integrated in a heating cover **1** attached additionally to the end cover. The output of the heating element corresponds to the radiation and convection losses of the pump in the required temperature range so that overheating is not possible.

Operating data:

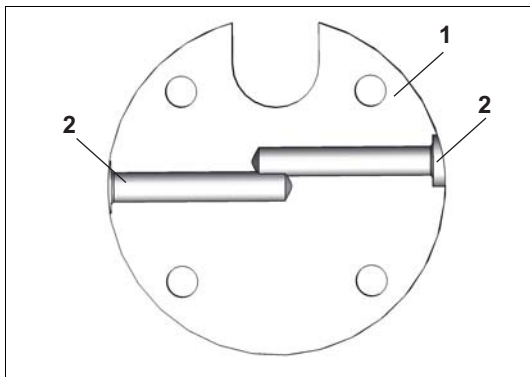
- Voltage: 230 V
- Frequency: 50/60 Hz
- Wire cross-section: 2 x 1 mm²

Scope of delivery:

Sizes L 5–85	
<ul style="list-style-type: none"> <input type="checkbox"/> 1 Heating element <input type="checkbox"/> 1 Heating cover <input type="checkbox"/> 4 Socket screws 	

Heating system

Fluid heating system



- 1 Heating cover
- 2 Piping connections

Fig. 2 Fluid heating system

The fluid heating system consists of a heating cover 1 attached additionally to the end cover through which a heating fluid (e.g. vapor, thermal oil) flows.

Operating data:

- Maximum pressure: 16 bar
- Maximum fluid temperature: 200 °C

Scope of delivery:

Sizes L 5–85

- 1 Heating cover
- 2 Screw plugs
- 4 Socket screws

General drawings

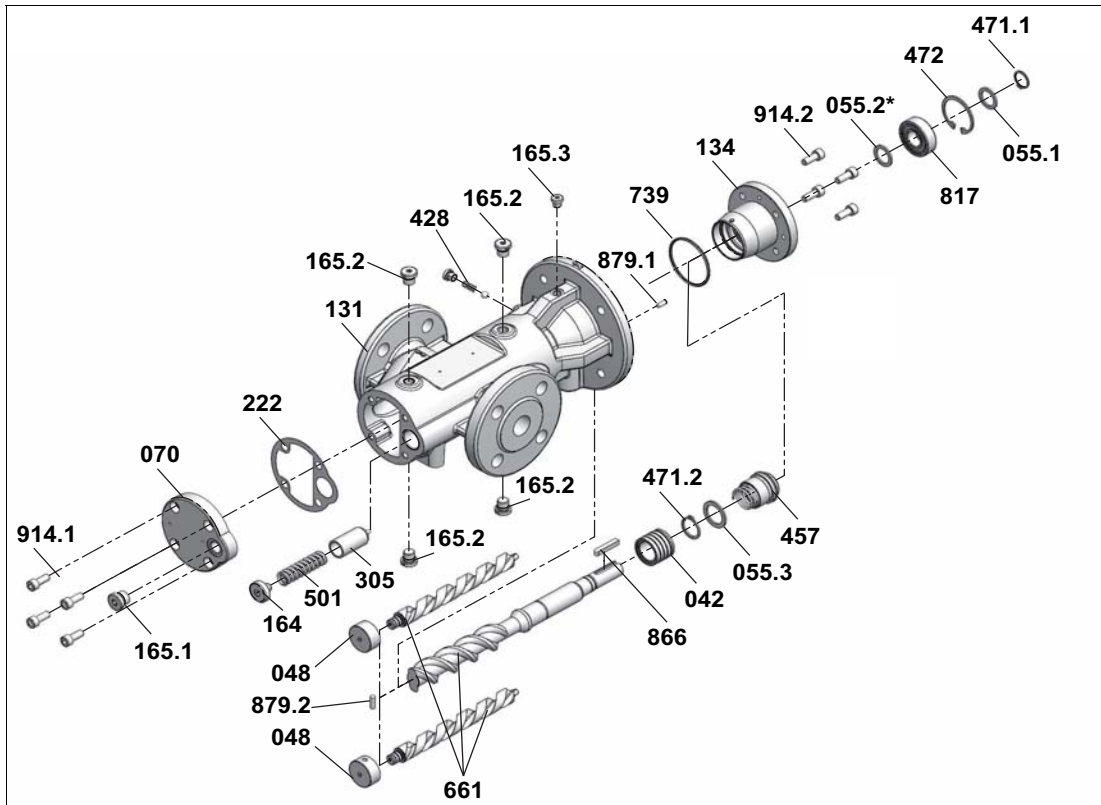


Fig. 1 LFI 5-85 with mechanical seal

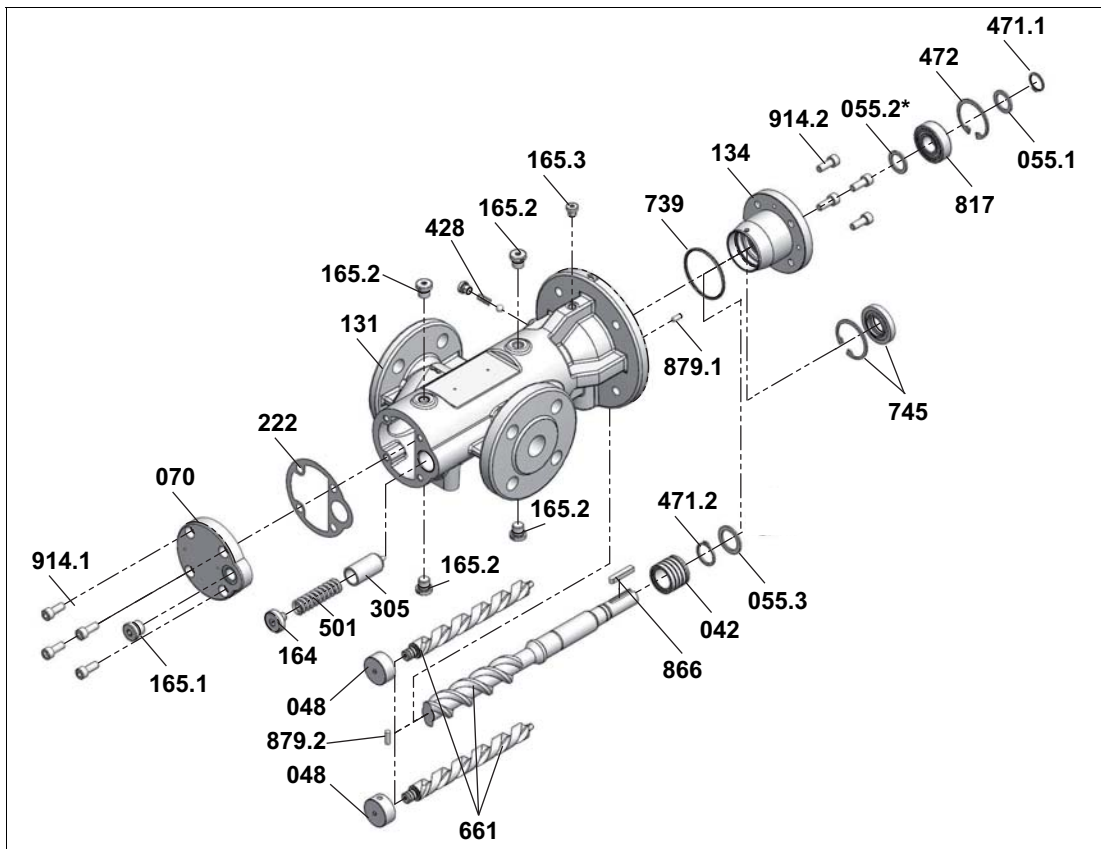


Fig. 2 LFI 5-85 with radial shaft seal

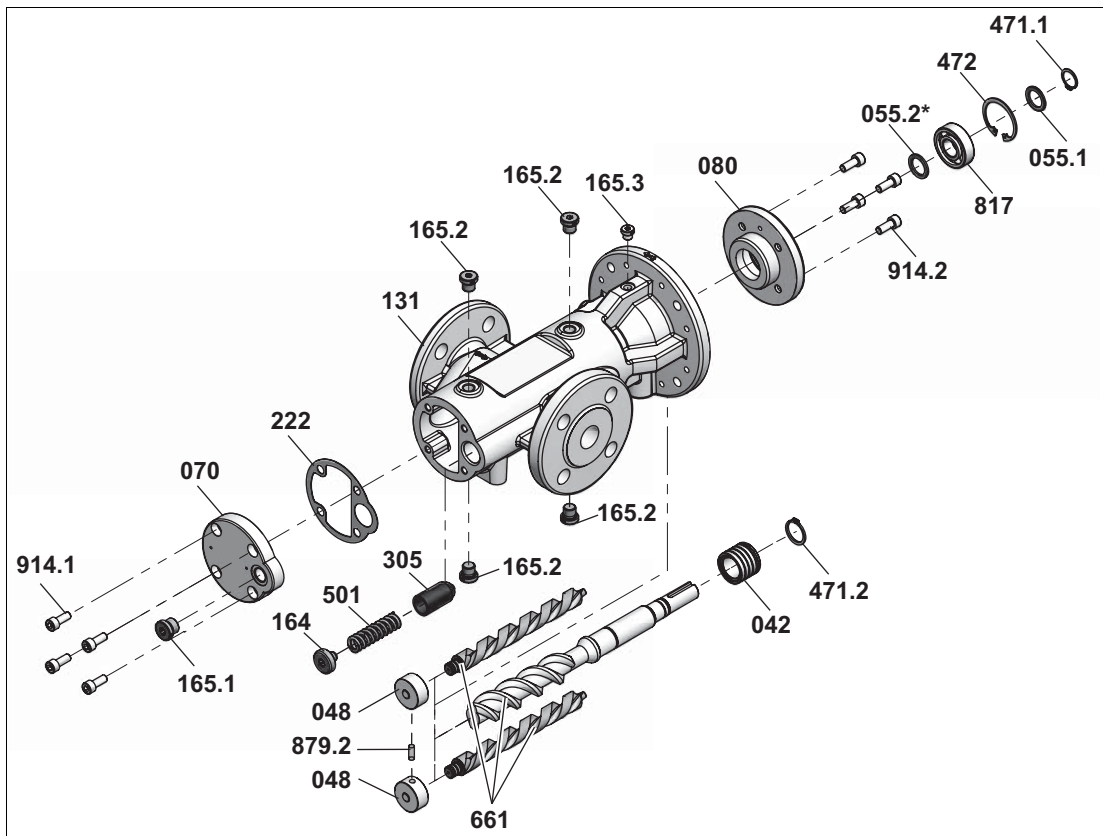


Fig. 3 LFI 5-85 magnetic coupling type

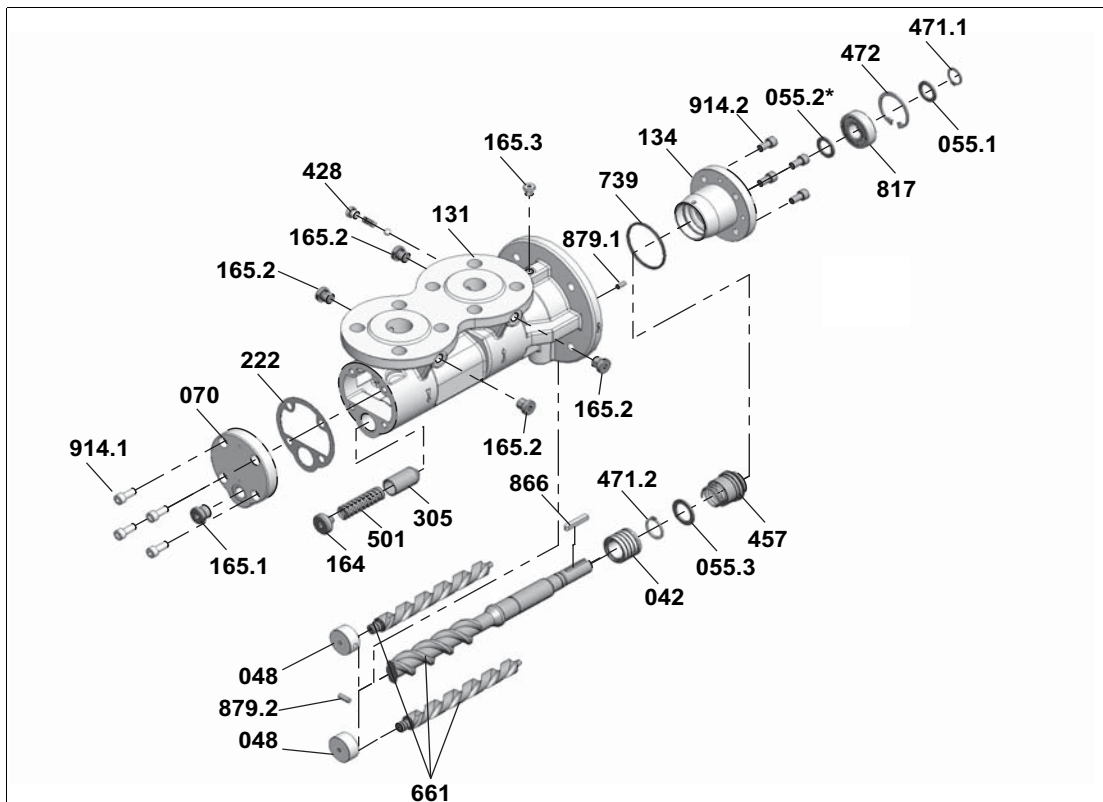


Fig. 4 LFT 5-85 with mechanical seal

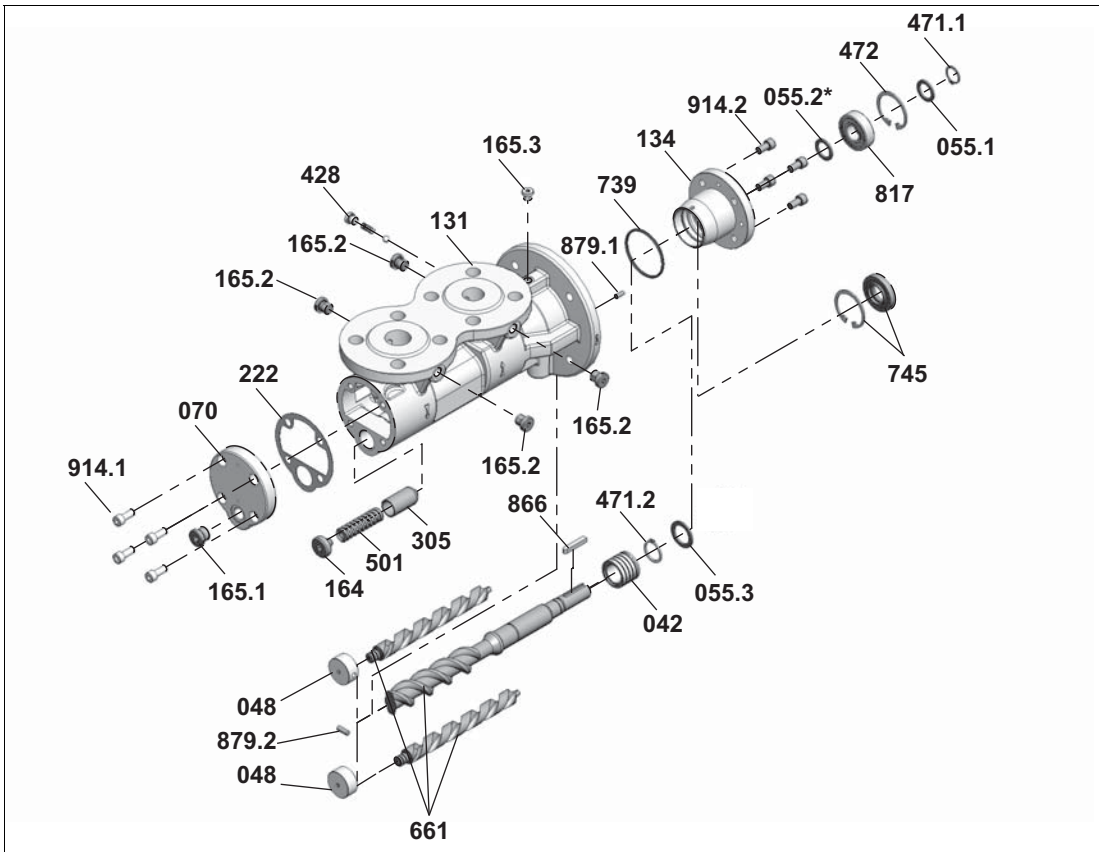


Fig. 5 LFT 5-85 with radial shaft seal

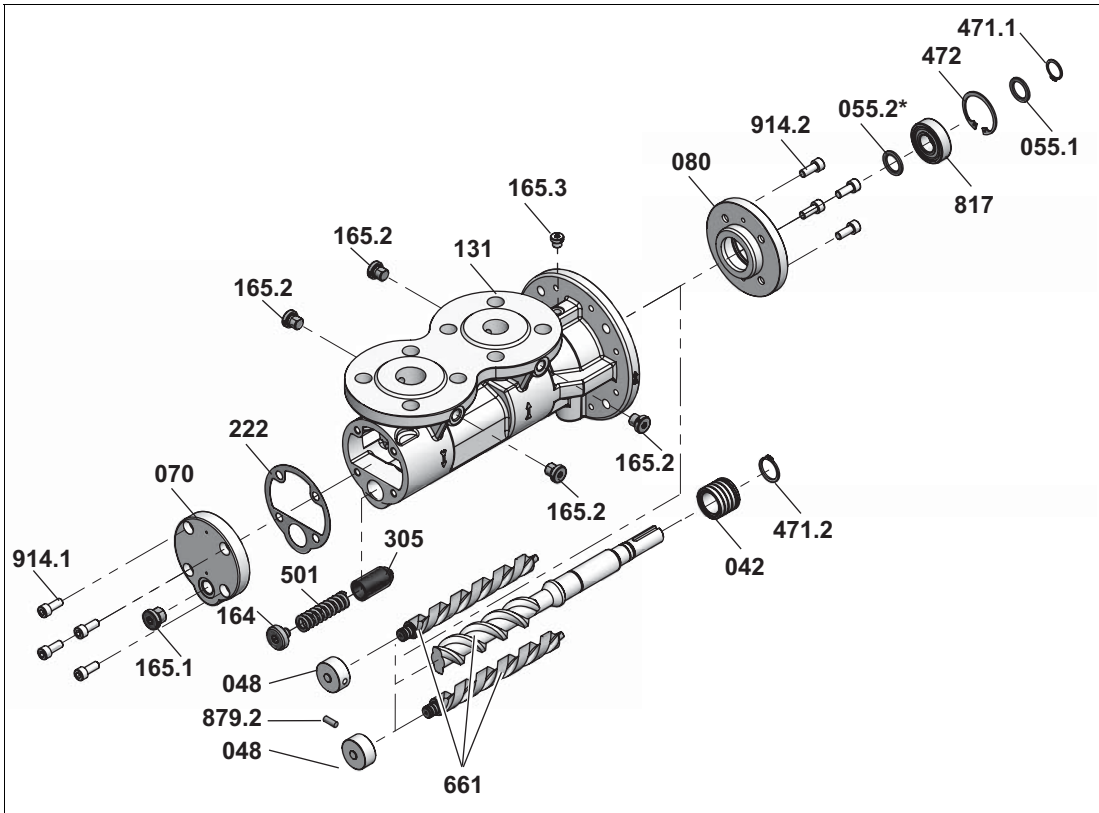


Fig. 6 LFT 5-85 magnetic coupling type

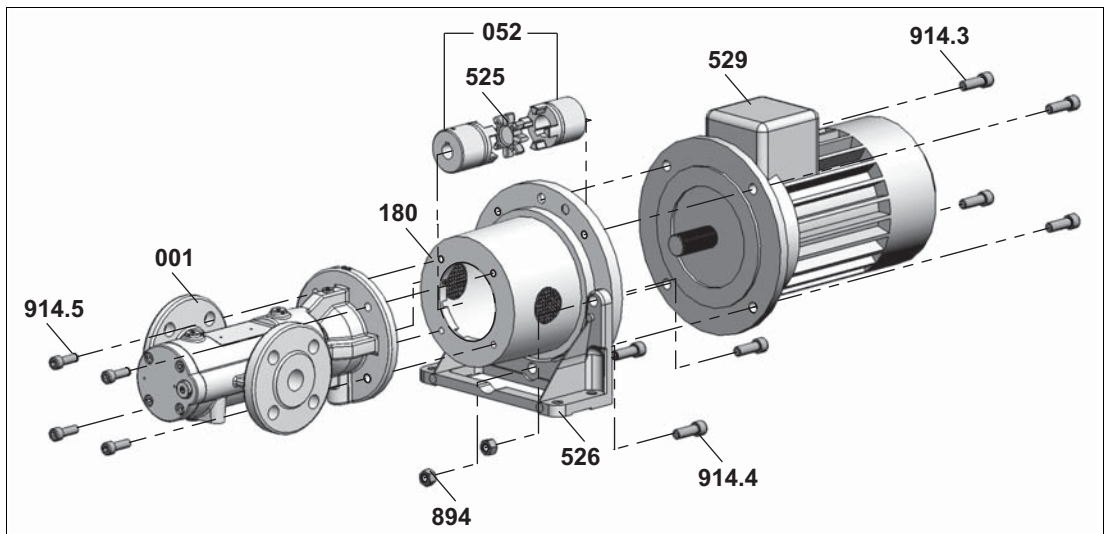


Fig. 7 Completion elastomere coupling LFI 5-85

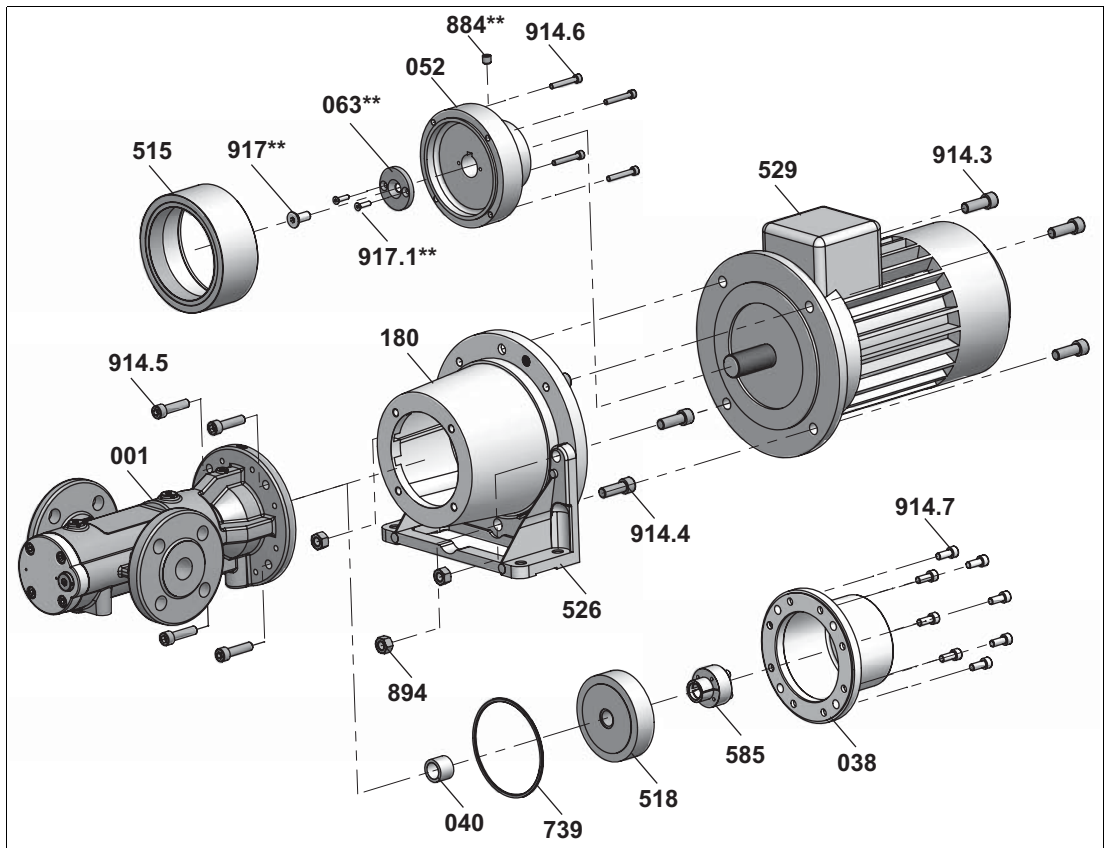


Fig. 8 Completion magnetic coupling LFI 5-85

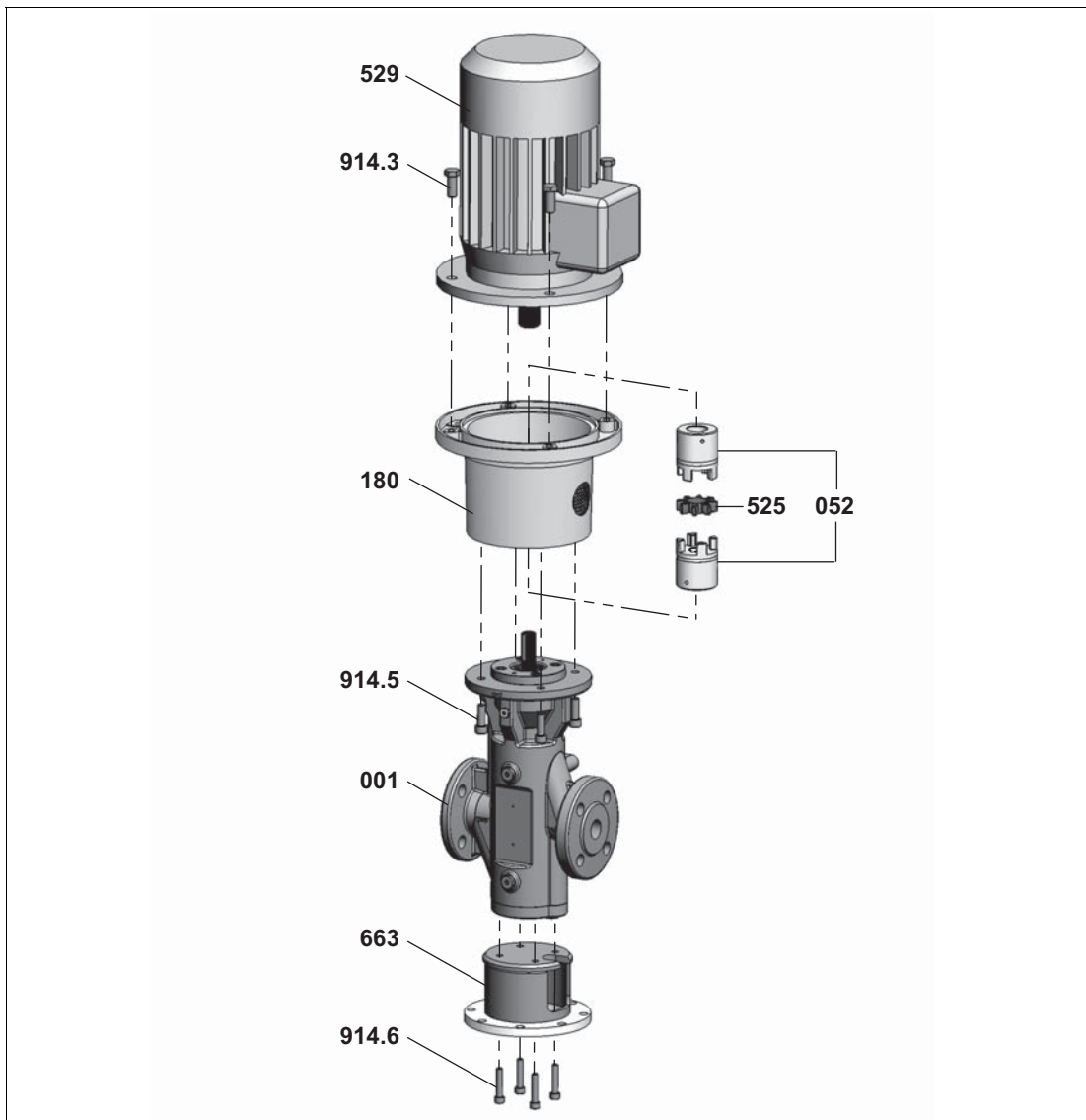


Fig. 9 Completion elastomere coupling LVI 5-85

Spare parts

Spare parts

Spare part number	Part	Spare part number	Part
001	Pump	501	Spring
038	Containment can	515	Outer rotor
040	Distance sleeve	518	Inner rotor
042	Balancing cylinder	525	Coupling intermediate ring
048	Balancing bush	526	Pump bracket foot
052	Coupling/Coupling hub	529	Motor
055.1	Supporting ring	585	Conical hub connector
055.2*	Supporting ring	661	Screw set
055.3	Supporting ring	739	O-ring
063**	Supporting ring	745	Radial shaft seal
070	End cover	817	Ball bearing
080	Bearing cover	866	Feather key
131	Pump housing	879.1	Straight pin
134	Seal housing	879.2	Straight pin
164	Adjusting screw	884**	Threaded pin
165.1	Screw plug	894	Hexagon nuts
165.2	Screw plug	914.1	Socket screws
165.3	Screw plug	914.2	Socket screws
180	Pump bracket	914.3	Socket screws
222	flat gasket	914.4	Socket screws
305	Valve body	914.5	Socket screws
428	Back pressure valve	914.6	Socket screws
457	Mechanical seal	914.7	Socket screws
471.1	Circlip	917**	Countersunk screw
471.2	Circlip	917.1**	Countersunk screw
472	Circlip		
*	not for sizes 32–54		
**	depends on motor size		

Tab. 1 Spare part numbers