

# LMP screw pumps for delivery pressures up to 120 bar

## Technical data

- Delivery rate  
 $Q_{\max.} = 670 \text{ l/min}$
- Delivery pressure  
 $p_{\max.} = 120 \text{ bar}$
- Temperature range  
 $0 \text{ }^{\circ}\text{C}$  to  $+80 \text{ }^{\circ}\text{C}$
- Kinematic viscosity  
1 to  $2500 \text{ mm}^2/\text{s}$



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FACHHÄNDLER FÜR  
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## Primary areas of use

- Machine tools
- Machining centers
- Central and decentralized coolant and preparation systems
- Booster stations
- Lubricant and hydraulic units
- Among other things

Due to its wear-resistant design, the LMP series is especially suitable for:

- Demanding applications involved in processing difficult to mill materials such as aluminium and stainless steel
- Various precision applications such as in the aerospace industry
- Grinding applications

## Media

Fluids with lubricating properties such as

- Oil in water emulsions with at least 4 – 5 % oil
- Cooling und cutting oils

For pure fluids without abrasive or long fibre components

## Performance

The LMP screw pumps are offered in various frame sizes. Within one pump frame size, combination with various motors is possible; Performance adjustment in 10 bar increments is standard. The pump part combined with the required motor is the pump type.

**LMP:** Delivery pressure to  $p_{max.} = 120$  bar  
Delivery rates to  $Q_{max.} = 670$  l/min

The performance data is applicable to viscosities  $\nu$  to max. 20 mm<sup>2</sup>/s.

Performance data for pressures greater than 120 bar on request.

## Design features

Spindles specially hardened	●
Hydrostatic thrust compensation	●
Shaft sealing: Rotary shaft lip-type seal	●
Mechanical seal	○
Screw housing specially hardened	●
Guard ring for rotary shaft lip-type seal	●
Rotary spindle guidance in suction area	●
Leakage monitoring	●
Installation outside the reservoir with foot flange and external leakage feed-back system	○
Pressure regulating valve	●
Pressure port:	
Standard pipe thread according to DIN 3852	●
SAE flange	○
4-pole motor	○
Regulated speed motor	○

● Standard ○ Optional

## Installation and operation

As immersion pumps, the pumps have a 4-hole connection flange with standard connection dimensions for vertical container installation (inside the reservoir).

The immersion depth can be adjusted to fit the respective container sizes by attaching an intake tube.

A foot flange is attached to the pump support for horizontal positioning beside the container (outside the reservoir).

### Note:

All devices are only to be installed or mounted by a qualified person. The existing safety measures are to be taken into consideration.

Please refer to our operating manual 951-170-018 to avoid errors.

## Configuration and function



Configuration of the LMP pumps

Drive (1) and pump unit are connected using a curved-tooth coupling (2) within the pump support. The pressure housing (4) contains the bearings for the drive spindle and its sealing.

The LMP is a self-priming positive-displacement pump. The medium is pumped by a set of spindles (5) in the screw housing. This consists of a drive spindle and two screw spindles. Rotation of the spindles causes the pumped medium to move continually and without pulsation axially from the suction opening (7) in the suction housing (6) to the pressure limiting valve (up to size LMP17) (3) with pressure port.

The special profile formation of the spindles generate sealed chambers with minimum medium backflow and a high level of effectiveness.

## Mechanical design

Component	Material
Spindles (screw and spindle and drive spindle)	High performance steel Specially hardened
Screw housing	Cast iron with lamellar graphite EN-GJL-250 surface-treated
Pressure housing	Cast iron with lamellar graphite EN-GJL-250
Intake housing	Cast iron with lamellar graphite EN-GJL-250
Rotary shaft lip-type seal	PTFE
Mechanical seal	Hard metal / FKM (FPM)
O-ring seal	FKM (FPM)
Rolling bearing	With permanent lubrication
Pump support	Aluminium
Intake tube	Steel

## Operating conditions

When selecting the type, it should be taken into consideration that the pump's delivery rate is approx. 20% higher than the required system performance.

For pure fluids **none** abrasive or long-fibre components.

Generally acceptable contamination:

- Max. solids content: 40 mg/l
- Max. grain Size: 0.05 mm (50 µm) for machining (lathing, drilling, milling)

Application specific values on request.

Kinematic viscosity: 1–2500 mm<sup>2</sup>/s;  
over 2500 mm<sup>2</sup>/s on request.

Pumping temperature: 0 °C bis +80 °C

Maximum admission pressure:

- For design with rotary shaft seal: 5 bar
- For design with mechanical seal: 10 bar

Geodesic suction head max. 4 m

**Running dry and operation with closed pressure side is not permissible.** As positive-displacement pumps, screw pumps have to be protected against overpressure on the system side using a pressure regulating valve.

### Switching-on frequency:

The pumps should be used for continuous operation to the extent possible. If this is not possible due to the process, then the pump's constant flow rate should be regulated using a frequency converter or a regulating valve for example.

## Electrical specifications

The drive motors adhere to the VDE-standards as well as the European motor standards (DIN EN 60034-1) and the CE label requirements.

Designs adhering to standards outside of Europe such as **CSA**, **UL** or according to special requirements such as those in USA or Japan are possible.

Protection class . . . . . IP 55  
(DIN EN 60034-5)

Direction of rotation \* . . . . . Clockwise,  
from the top on the breather side  
of the motor.

Insulation class . . . . . F.B  
(DIN EN 60034-1)

Ambient temperature . . . . . Max. 40 °C  
(DIN EN 60034-1) at max. 1000 m o. NN

Electrical parameters \*\* . . . . . ≤ 4 kW:  
(DIN IEC 60038) 230/400 V, 50 Hz and  
265/460 V, 60 Hz

≥ 5,5 kW:  
Δ 400 V, 50 Hz and  
Δ 460 V, 60 Hz

\* *Incorrect direction of rotation (counter-clockwise) results in destruction of the pump*

\*\* *Other electrical parameters on request.*

## LMP screw pumps with frequency converters

An LMP pump with integrated frequency converter enables optimum usage depending on the application. It adjusts the electrical output to the application's requirements and thus saves energy. Adjustment can be made to various operating points in the characteristics field to configure the pump ideally for the area of application. This adjustment can be made either smoothly or with defined increments as required.

If needed, a single pump with a frequency converter can be used to accomplish the tasks of several pumps (without speed adjustment). Full separation of the motor from the pump allows integration of the speed adjustable operation for retrofitters as well.

## Advantages

- Huge output range
- Optimum adjustment to the respective machining process
- Universal adjustability of the pump speed through all pressure ranges
- Frequency converters work almost no loss and are entirely maintenance-free
- Regardless of voltage fluctuation in the power supply
- Speed adjustment ensures effective delivery rate and usage
- Economically convincing, energy efficient alternative to standard solutions
- High dependability
- Long service life
- Quick and simple commissioning
- Convenient integration in machine control
- Compact design

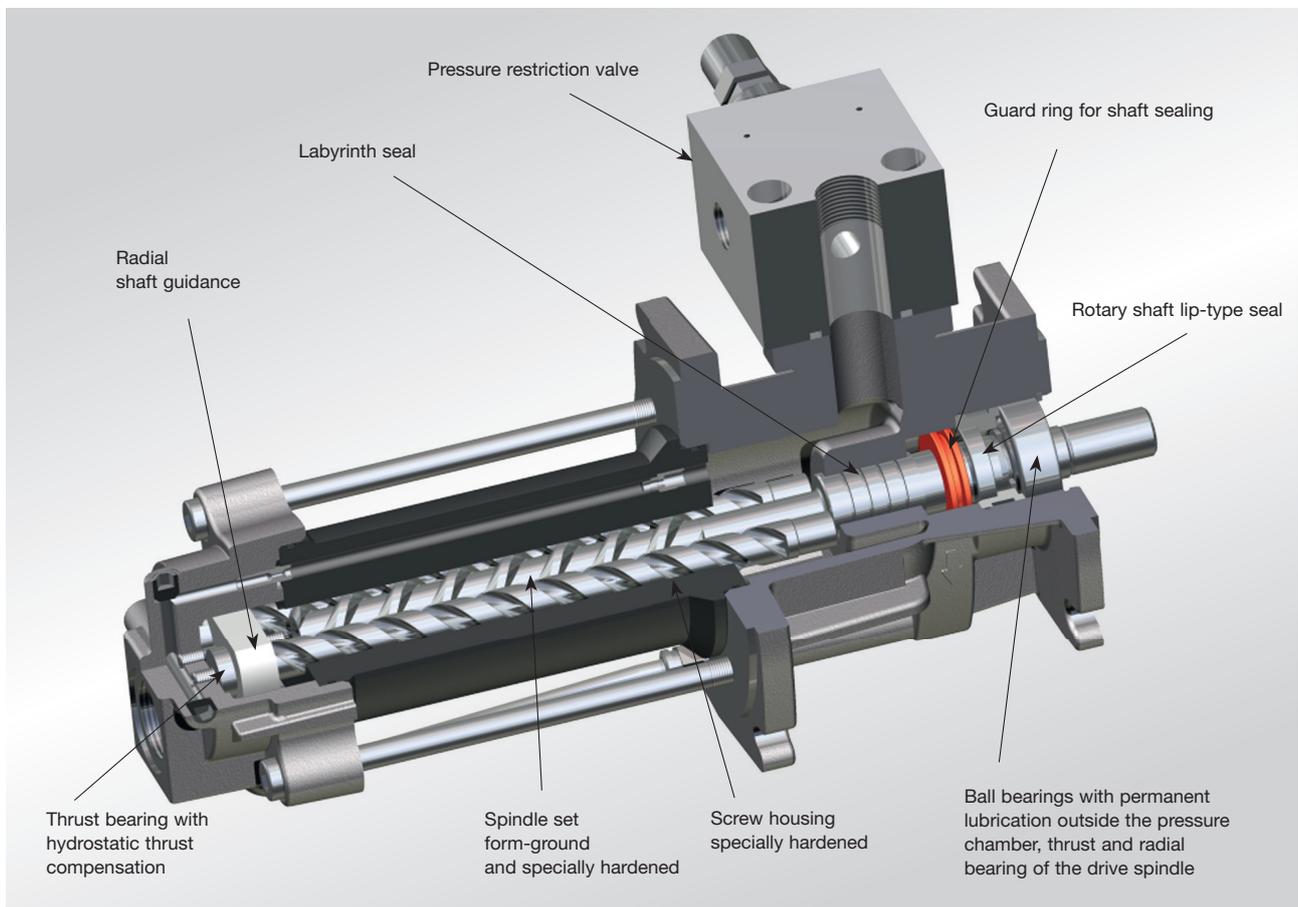
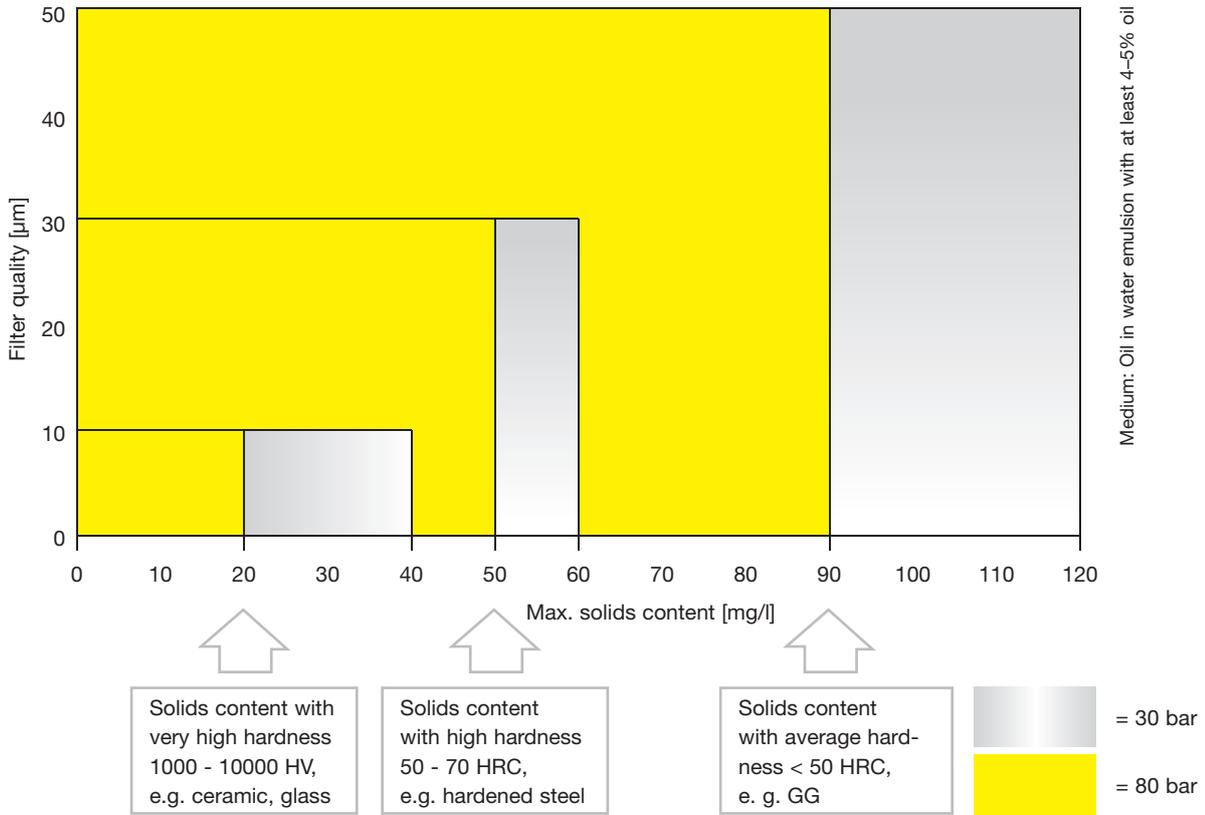
For further information, see → page 20.

## Ordering Information

Type number key	L	M	P					G						L				
Series																		
Size																		
	<p><b>10, 11, 20, 21, 22, 12, 13, 14, 15, 16, 17, 27, 28, 29, 37, 38</b></p>																	
Maximum delivery pressure																		
	<p><b>10 = 10 bar</b>  <b>20 = 20 bar</b>  <b>30 = 30 bar</b>                      ... (in increments of 10 up to)  <b>00 = 100 bar</b>  <b>11 = 110 bar</b>  <b>12 = 120 bar</b></p>																	
Material design																		
	<p><b>G = cast iron with lamellar graphite EN-GJL-250</b></p>																	
Seal type																		
	<p><b>W = rotary shaft seal</b>  <b>G = mechanical seal</b></p>																	
Pump guide																		
	<p><b>K = SAE flange + pressure regulating valve</b>  <b>T = SAE flange + pressure regulating valve + foot flange</b>  <b>F = SAE flange (without pressure regulating valve)</b></p>																	
Immersion depth in mm																		
	<p><b>219, 262, 311, 361, 381, 435</b></p>																	
Motor index*																		
	<p><b>L = 3kW at 50Hz; 3,45kW at 60Hz</b>                      ...</p>																	
Electrical supply*																		
	<p><b>01 = 230V/400V 50Hz, 460V 60Hz to 4kW (European standard)</b>  <b>02 = 400V 50Hz, 460V 60Hz from 5,5kW (European standard)</b></p>																	
Motor design* in IE2																		
	<p><b>BA = Standard (insulation class F,B, IP 55, 2-pole)</b>  <b>BC = UL/CSA design</b>  <b>BD = Industrial plug connection (DESINA)</b>  <b>BI = integrated frequency converter</b>  <b>BK = PTC thermistor</b>                      ...</p>																	
Motor design* in IE3																		
	<p><b>CA = Standard (insulation class F,B, IP 55, 2-pole)</b>  <b>CC = UL/CSA design</b>  <b>CD = Industrial plug connection (DESINA)</b>  <b>CI = integrated frequency converter</b>  <b>CK = PTC thermistor</b>                      ...</p>																	
*further designs on request																		

\* All data and measurements refer to the IE3-motors.

### Recommended filter quality with use of LMP-pumps

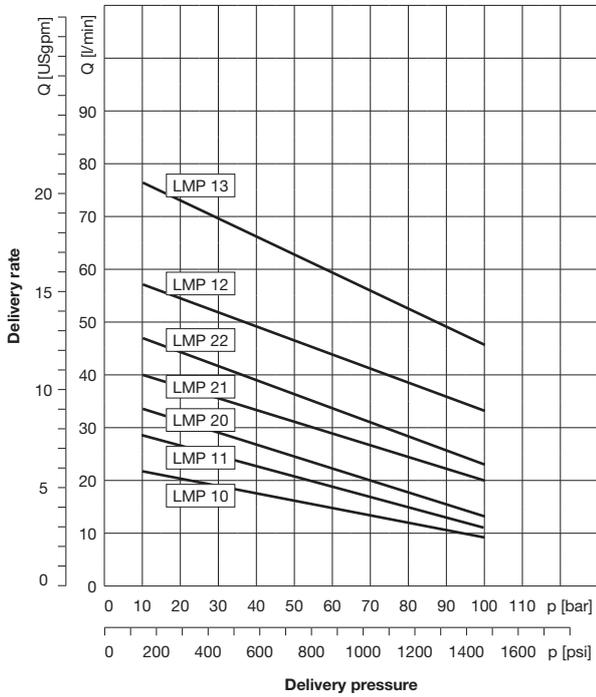


### LMP 10, 11, 20, 21, 22, 12, 13 – delivery rates and power requirement

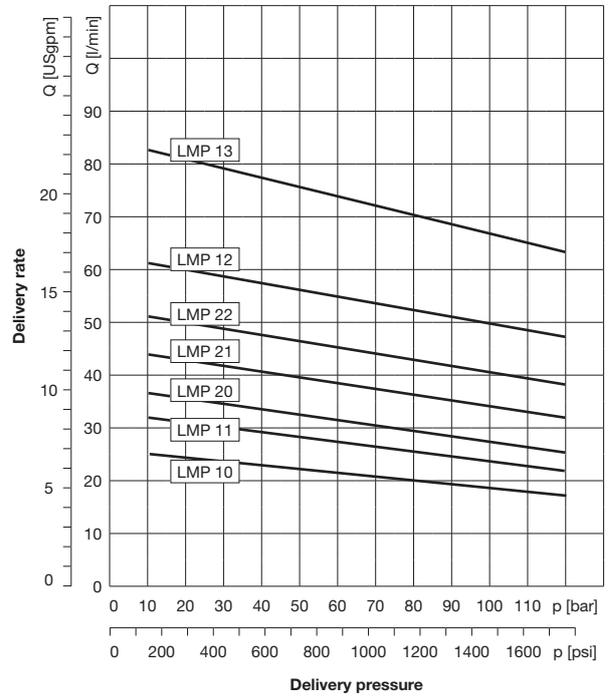
			Speed [min <sup>-1</sup> ]	Viscosity 1 mm <sup>2</sup> /s Pressure [bar]										Viscosity 20 mm <sup>2</sup> /s Pressure [bar]											
				10	20	30	40	50	60	70	80	90	100	10	20	30	40	50	60	70	80	90	100	110	120
Delivery rate Q [l/min], power requirement P [kW]	LMP 10	Q	2900	23	22	20	18	17	15	14	12	11	9	26	25	24	23	23	22	21	20	20	19	18	17
			3500	29	27	26	24	23	21	19	18	16	15	31	31	30	29	28	28	27	26	25	25	24	23
		P	2900	0.6	1.1	1.6	2	2.5	3	3.5	3.9	4.4	4.9	0.7	1.1	1.6	2.1	2.6	3	3.5	4	4.5	4.9	5.4	5.9
			3500	0.8	1.4	1.9	2.5	3.1	3.6	4.2	4.8	5.3	5.9	0.8	1.4	2	2.5	3.1	3.7	4.3	4.8	5.4	6	6.6	7.1
	LMP 11	Q	2900	29	27	25	24	21	19	17	15	13	11	32	31	30	29	28	27	26	25	24	23	22	21
			3500	36	34	32	30	28	26	24	22	20	18	39	38	37	36	35	34	33	32	31	30	30	29
		P	2900	0.8	1.4	1.9	2.5	3.1	3.7	4.3	4.9	5.4	6	0.8	1.4	2	2.6	3.2	3.7	4.3	4.9	5.5	6.1	6.7	7.3
			3500	1	1.7	2.4	3.1	3.8	4.5	5.2	5.9	6.6	7.3	1	1.7	2.4	3.1	3.9	4.6	5.3	6	6.7	7.4	8.1	8.8
	LMP 20	Q	2900	34	32	29	27	25	22	20	18	15	13	38	37	35	34	33	32	31	30	29	28	27	26
			3500	43	40	38	35	33	31	29	26	24	22	46	45	44	43	42	41	39	38	37	36	35	34
		P	2900	0.9	1.6	2.3	3	3.7	4.4	5.1	5.8	6.5	7.2	1	1.7	2.4	3.1	3.8	4.5	5.2	5.9	6.6	7.2	8	8.6
			3500	1.1	2	2.8	3.7	4.5	5.3	6.2	7	7.9	8.7	1.2	2.1	2.9	3.7	4.6	5.4	6.3	7.1	8	8.8	9.6	10.5
	LMP 21	Q	2900	40	38	36	34	32	29	27	25	23	21	43	42	41	40	39	38	37	36	35	34	33	32
			3500	50	47	45	43	41	39	37	35	33	31	53	52	51	50	49	48	47	46	45	44	43	42
		P	2900	1	1.8	2.6	3.4	4.2	4.9	5.7	6.5	7.3	8.1	1.1	1.9	2.7	3.4	4.2	5	5.8	6.6	7.4	8.2	9	9.7
			3500	1.3	2.2	3.2	4.1	5.1	6	7	7.9	8.8	9.8	1.3	2.3	3.2	4.2	5.1	6.1	7.1	8	9	9.9	10.9	11.8
	LMP 22	Q	2900	48	45	43	40	38	35	33	30	27	25	52	50	49	48	47	46	44	43	42	41	40	39
			3500	59	56	54	51	49	46	44	41	39	36	63	62	60	59	58	57	56	55	53	52	51	50
		P	2900	1.2	2.2	3.1	4	5	5.9	6.8	7.7	8.7	9.6	1.3	2.2	3.2	4.1	5	6	6.9	7.8	8.8	9.7	10.6	11.6
			3500	1.5	2.6	3.8	4.9	6	7.1	8.3	9.4	10.5	11.7	1.6	2.7	3.9	5	6.1	7.3	8.4	9.5	10.7	11.8	12.9	14.1
	LMP 12	Q	2900	57	54	52	49	47	44	42	39	37	34	61	60	58	57	56	55	54	52	51	50	49	48
			3500	70	68	65	63	60	57	55	52	50	47	74	73	72	70	69	68	67	66	65	63	62	61
		P	2900	1.4	2.5	3.6	4.7	5.8	6.9	7.9	9	10.1	11.2	1.5	2.6	3.7	4.8	5.9	7	8.1	9.1	10.2	11.3	12.4	13.5
			3500	1.7	3.1	4.4	5.7	7	8.3	9.6	11	12.3	13.6	1.8	3.2	4.5	5.8	7.1	8.5	9.8	11.1	12.4	13.8	14.9	16.2
LMP 13	Q	2900	76	72	69	66	62	59	56	52	49	46	81	79	78	76	75	73	71	70	68	67	65	64	
		3500	94	90	87	83	80	77	73	70	67	63	99	97	96	94	92	91	89	88	86	84	83	81	
	P	2900	1.9	3.3	4.8	6.2	7.7	9.1	10.6	12.1	13.5	15	2	3.4	4.9	6.4	7.8	9.3	10.7	12.2	13.7	15.1	16.6	18.0	
		3500	2.3	4.1	5.8	7.6	9.3	11.1	12.9	14.6	16.4	18.1	2.4	4.2	6	7.7	9.5	11.3	13	14.8	16.6	18.3	20.1	21.9	

### LMP 10, 11, 20, 21, 22, 12, 13 – characteristics

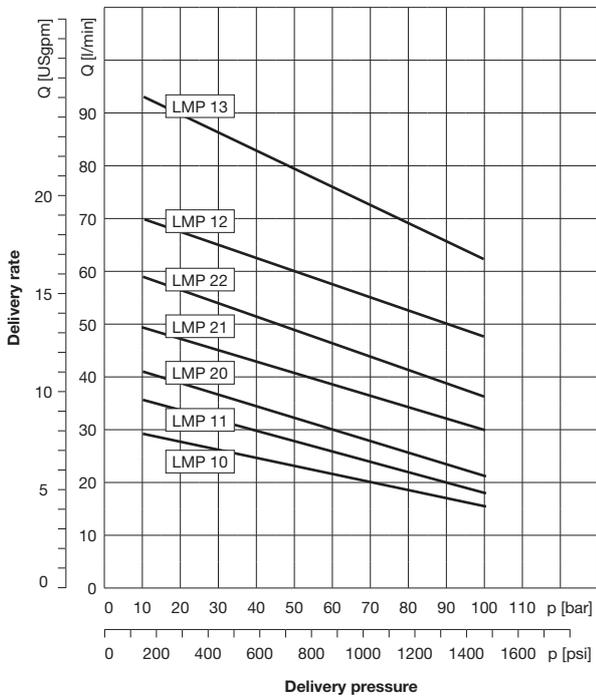
Speed 2900 min.<sup>-1</sup>, 50 Hz, 1 mm<sup>2</sup>/s



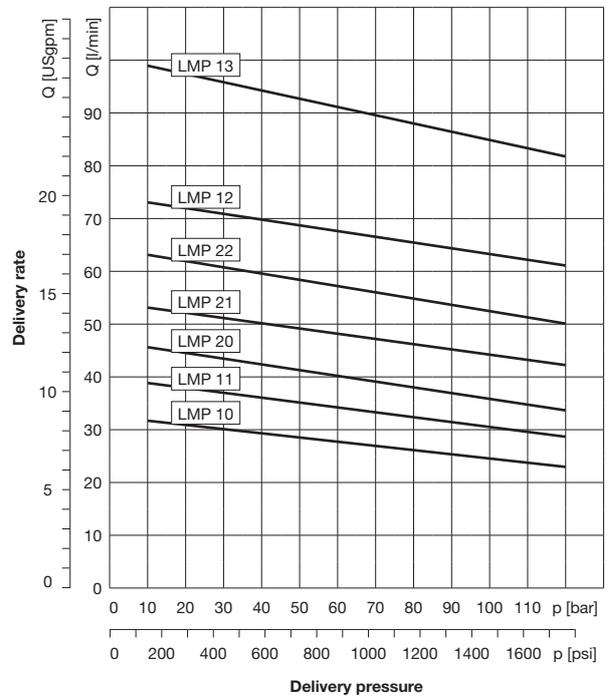
Speed 2900 min.<sup>-1</sup>, 50 Hz, 20 mm<sup>2</sup>/s



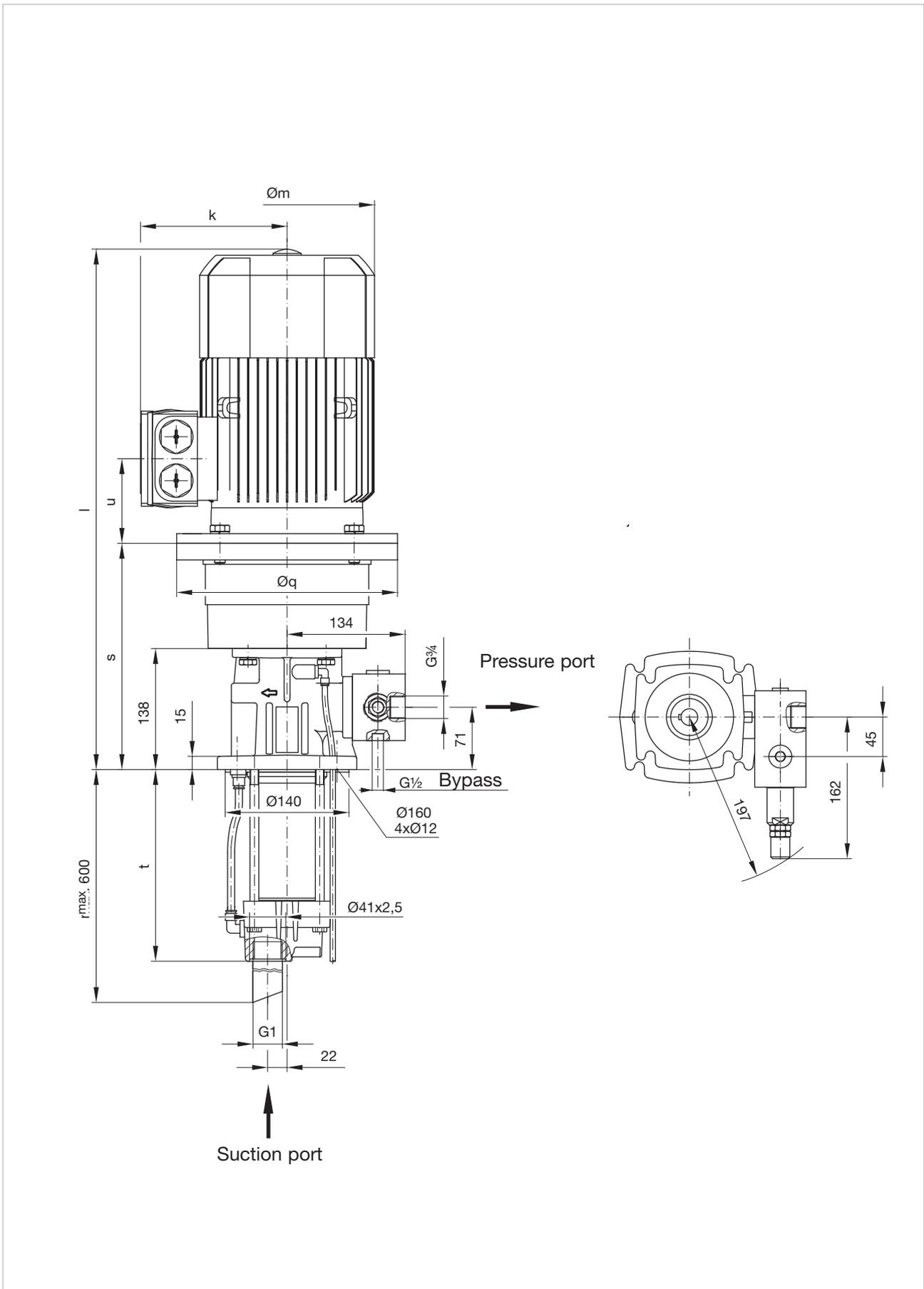
Speed 3500 min.<sup>-1</sup>, 60 Hz, 1 mm<sup>2</sup>/s



Speed 3500 min.<sup>-1</sup>, 60 Hz, 20 mm<sup>2</sup>/s



LMP 10, 11, 20, 21, 22, 12, 13 – dimensions



**LMP 10, 11, 20, 21 – technical data at a viscosity of 1 mm<sup>2</sup>/s**

Type of pump			Immer- sion depth t [mm]	Rated motor values					Dimensions [mm]					Weight [kg]*	Sonic pressure dBA 50/60 Hz	Pressure port acc. to ISO 228	
Series	Frame size	Delivery pressure [bar]		Frequency f [Hz]	Voltage Δ/Y U [V]	In- dex	Output P <sub>N</sub> [kW]	Current Δ/Y I <sub>N</sub> [A]	Speed n [min <sup>-1</sup> ]	øm*	k*	l*	øq				s
LMP	10	10	219	50	230/400	G	0,75	2,75/1,56	2850	163	120	499	200	247	64	31	60/64
				60	Y 460		0,86	Y 1,63	3450								
		20		50	230/400	J	1,5	5,2/3,0	2910	180	128	544	200	247	80	35	65/69
				60	Y 460		1,75	Y 2,95	3510								
		30		50	230/400	K	2,2	7,4/4,2	2910	178	126	584	200	247	80	39	65/69
				60	Y 460		2,54	Y 4,2	3510								
		40		50	230/400	L	3	9,9/5,6	2920	198	166	629	250	258	97	46	67/71
				60	Y 460		3,45	Y 5,6	3515								
		50		50	230/400	L	3	9,9/5,6	2920	198	166	629	250	258	97	46	67/71
				60	Y 460		3,45	Y 5,6	3515								
		60		50	230/400	M	4	12,7/7,3	2945	222	177	612	250	258	96	54	69/73
				60	Y 460		4,55	Y 7,2	3550								
		70		50	230/400	M	4	12,7/7,3	2945	222	177	612	250	258	96	54	69/73
				60	Y 460		4,6	Y 7,2	3550								
		80		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
		90		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
100	50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72			
	60	Δ 460		6,3	Δ 9,8	3545											
LMP	11	10	219	50	230/400	H	1,1	3,95/2,25	2885	159	121	534	200	247	73	32	60/64
				60	Y 460		1,27	Y 2,25	3480								
		20		50	230/400	K	2,2	7,4/4,2	2910	178	126	584	200	247	80	39	65/69
				60	Y 460		2,54	Y 4,2	3510								
		30		50	230/400	K	2,2	7,4/4,2	2910	178	126	584	200	247	80	39	65/69
				60	Y 460		2,54	Y 4,2	3510								
		40		50	230/400	L	3	9,9/5,6	2920	198	166	629	250	258	97	46	67/71
				60	Y 460		3,45	Y 5,6	3515								
		50		50	230/400	M	4	12,7/7,3	2945	222	177	612	250	258	96	54	69/73
				60	Y 460		4,55	Y 7,2	3550								
		60		50	230/400	M	4	12,7/7,3	2945	222	177	612	250	258	96	54	69/73
				60	Y 460		4,55	Y 7,2	3550								
		70		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
		80		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
		90		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
100	50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72			
	60	Δ 460		8,6	Δ 13,0	3550											
LMP	20	10	219	50	230/400	H	1,1	3,9/2,25	2885	159	121	534	200	247	73	32	60/64
				60	Y 460		1,27	Y 2,25	3480								
		20		50	230/400	K	2,2	7,4/4,2	2910	178	126	584	200	247	80	39	65/69
				60	Y 460		2,54	Y 4,2	3510								
		30		50	230/400	L	3	9,9/5,6	2920	198	166	629	250	258	97	39	65/69
				60	Y 460		3,45	Y 5,6	3515								
		40		50	230/400	M	4	12,7/7,3	2945	222	177	612	250	258	96	54	69/73
				60	Y 460		4,55	Y 7,2	3550								
		50		50	230/400	M	4	12,7/7,3	2945	222	177	612	250	258	96	54	69/73
				60	Y 460		4,55	Y 7,2	3550								
		60		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
		70		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
		80		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
		90		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
100	50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77			
	60	Δ 460		12,6	Δ 19,5	3555											
LMP	21	10	219	50	230/400	J	1,1	3,9/2,25	2885	159	121	534	200	247	73	32	60/64
				60	Y 460		1,27	Y 2,25	3480								
		20		50	230/400	K	2,2	7,4/4,2	2910	178	126	584	200	247	80	39	65/69
				60	Y 460		2,54	Y 4,2	3510								
		30		50	230/400	L	3	9,9/5,6	2920	198	166	629	250	258	97	39	65/69
				60	Y 460		3,45	Y 5,6	3515								
		40		50	230/400	M	4	12,7/7,3	2945	222	177	612	250	258	96	54	69/73
				60	Y 460		4,55	Y 7,2	3550								
		50		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	612	300	282	116	54	69/73
				60	Δ 460		6,3	Δ 7,2	3550								
		60		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
		70		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
		80		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
		90		50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77
				60	Δ 460		12,6	Δ 19,5	3555								
100	50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77			
	60	Δ 460		12,6	Δ 19,5	3555											

\* Depending on motor make

**LMP 22, 12, 13 – technical data at a viscosity of 1 mm<sup>2</sup>/s**

Type of pump			Immer- sion depth t [mm]	Rated motor values					Dimensions [mm]					Weight [kg]*	Sonic pressure dBA 50/60 Hz	Pressure port acc. to ISO 228	
Series	Frame size	Delivery pressure [bar]		Frequency f [Hz]	Voltage Δ/Y U [V]	In- dex	Output P <sub>N</sub> [kW]	Current Δ/Y I <sub>N</sub> [A]	Speed n <sub>N</sub> [min <sup>-1</sup> ]	øm*	k*	l*	øq				s
LMP	22	10	219	50	230/400	J	1,5	5,2/3,0	2910	178	126	544	200	247	80	35	65/69
				60	Y 460		1,75	Y 2,95	3510								
		20		50	230/400	L	3	9,9/5,6	2920	198	166	629	250	258	97	39	65/69
				60	Y 460		3,45	Y 5,6	3515								
		30		50	230/400	M	4	12,7/7,3	2945	222	177	612	250	258	96	54	69/73
				60	Y 460		4,55	Y 7,2	3550								
		40		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
		50		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
		60		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
		70		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
		80		50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77
				60	Δ 460		12,6	Δ 19,5	3555								
		90		50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77
				60	Δ 460		12,6	Δ 19,5	3555								
100	50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77			
	60	Δ 460		12,6	Δ 19,5	3555											
LMP	12	10	262	50	230/400	K	2,2	7,4/4,2	2910	178	126	584	200	247	80	39	65/69
				60	Y 460		2,54	Y 4,2	3510								
		20		50	230/400	L	3	9,9/5,6	2920	198	166	629	250	258	97	39	65/69
				60	Y 460		3,45	Y 5,6	3515								
		30		50	230/400	M	4	12,7/7,3	2945	222	177	612	250	258	96	54	69/73
				60	Y 460		4,55	Y 7,2	3550								
		40		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
		50		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
		60		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
		70		50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77
				60	Δ 460		12,6	Δ 19,5	3555								
		80		50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77
				60	Δ 460		12,6	Δ 19,5	3555								
		90		50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77
				60	Δ 460		12,6	Δ 19,5	3555								
100	50	Δ 400	Q	15	Δ 27	2960	314	237	820	350	326	155	107	70/77			
	60	Δ 460		17,3	Δ 27	3555											
LMP	13	10	262	50	230/400	K	2,2	7,4/4,2	2910	178	126	584	200	247	80	39	65/69
				60	Y 460		2,54	Y 4,2	3510								
		20		50	230/400	M	4	12,7/7,3	2945	222	177	612	250	258	96	54	69/73
				60	Y 460		4,55	Y 7,2	3550								
		30		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	677	300	282	116	63	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
		40		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	727	300	282	116	77	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
		50		50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77
				60	Δ 460		12,6	Δ 19,5	3555								
		60		50	Δ 400	P	11	Δ 19,6	2955	314	237	820	350	326	155	97	70/77
				60	Δ 460		12,6	Δ 19,5	3555								
		70		50	Δ 400	Q	15	Δ 27	2960	314	237	820	350	326	155	107	70/77
				60	Δ 460		17,3	Δ 27	3555								
		80		50	Δ 400	Q	15	Δ 27	2960	314	237	820	350	326	155	107	70/77
				60	Δ 460		17,3	Δ 27	3555								
		90		50	Δ 400	Q	15	Δ 27	2960	314	237	820	350	326	155	107	70/77
				60	Δ 460		17,3	Δ 27	3555								
100	50	Δ 400	R	18,5	Δ 32	2955	314	237	880	350	326	155	117	70/77			
	60	Δ 460		21,3	Δ 32	3555											

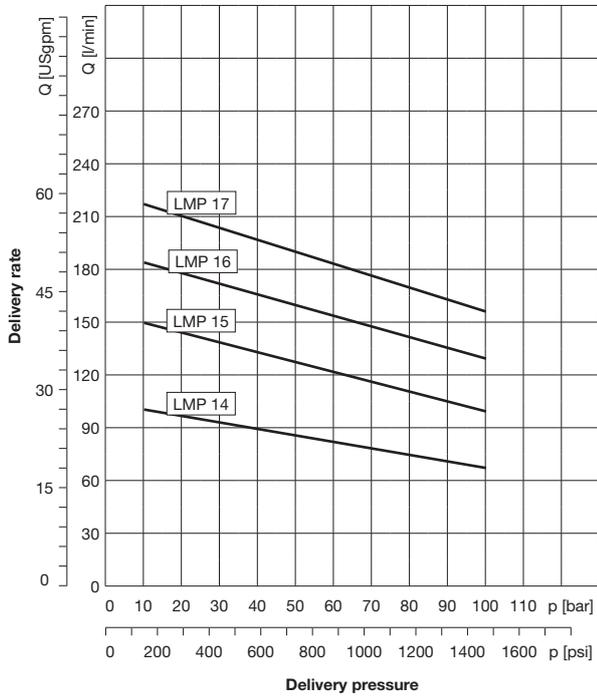
\* Depending on motor make

## LMP 14, 15, 16, 17 – delivery rates and power requirement

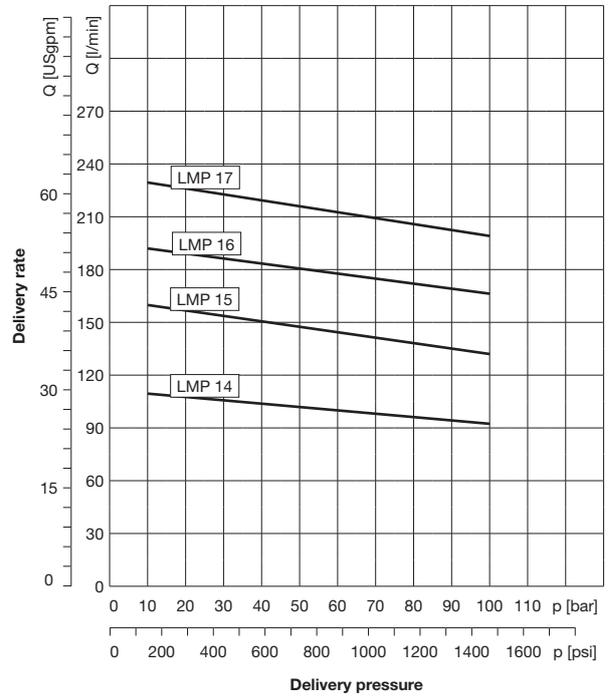
		Speed [min <sup>-1</sup> ]	Viscosity 1 mm <sup>2</sup> /s Pressure [bar]										Viscosity 20 mm <sup>2</sup> /s Pressure [bar]										
			10	20	30	40	50	60	70	80	90	100	10	20	30	40	50	60	70	80	90	100	
			Delivery rate Q [l/min], power requirement P [kW]																				
LMP 14	Q	2900	106	101	97	94	90	86	82	78	74	70	112	109	107	105	103	101	99	97	95	93	
		3500	130	126	122	118	114	110	106	102	98	94	136	133	131	130	128	126	124	122	120	118	
	P	2900	2.5	4.5	6.5	8.5	10.4	12.4	14.4	16.4	18.4	20.4	2.7	4.7	6.7	8.7	10.7	12.7	14.7	16.7	18.7	20.7	
		3500	3.1	5.5	7.9	10.3	12.7	15.1	17.5	19.9	22.3	24.7	3.3	5.7	8.2	10.6	13	15.4	17.8	20.3	22.7	25.1	
	LMP 15	Q	2900	151	145	139	134	128	122	117	111	105	100	159	156	153	150	148	145	142	139	136	133
			3500	186	179	174	168	163	157	151	146	140	134	194	191	188	185	182	179	176	174	171	168
		P	2900	3.6	6.4	9.2	12.1	14.9	17.8	20.6	23.4	26.3	29.1	3.8	6.7	9.5	12.4	15.3	18.1	21	23.8	26.7	29.5
			3500	4.4	7.8	11.3	14.7	18.1	21.6	25	28.4	31.9	35.3	4.7	8.2	11.6	15.1	18.6	22	25.5	28.9	32.4	35.9
LMP 16	Q	2900	185	179	173	167	162	156	150	145	139	133	193	190	187	184	181	178	176	173	170	167	
		3500	227	220	214	209	203	197	192	186	180	175	235	231	229	226	223	220	217	214	211	209	
	P	2900	4	8	11	15	18	21	25	28	32	35	5	8	11	15	18	22	25	29	32	36	
		3500	5.2	9.3	13.5	17.6	21.7	25.9	30	34.1	38.2	42.4	5.6	9.8	13.9	18.1	22.2	26.4	30.5	34.7	38.9	43	
LMP 17	Q	2900	219	211	205	198	191	185	178	171	164	158	229	225	221	218	215	211	208	204	201	198	
		3500	269	261	254	247	241	234	227	220	214	207	278	274	271	267	264	261	258	254	250	247	
	P	2900	5	9	13.1	17.1	21.2	25.2	29.3	33.3	37.4	41.4	6.3	11.1	16	20.8	25.7	30.6	35.4	40.3	45.2	50	
		3500	6.2	11.1	15.9	20.8	25.7	30.6	35.5	40.4	45.3	50.2	6.6	11.6	16.5	21.4	26.3	31.2	36.2	41.1	46	50.9	

### LMP 14, 15, 16, 17 – characteristics

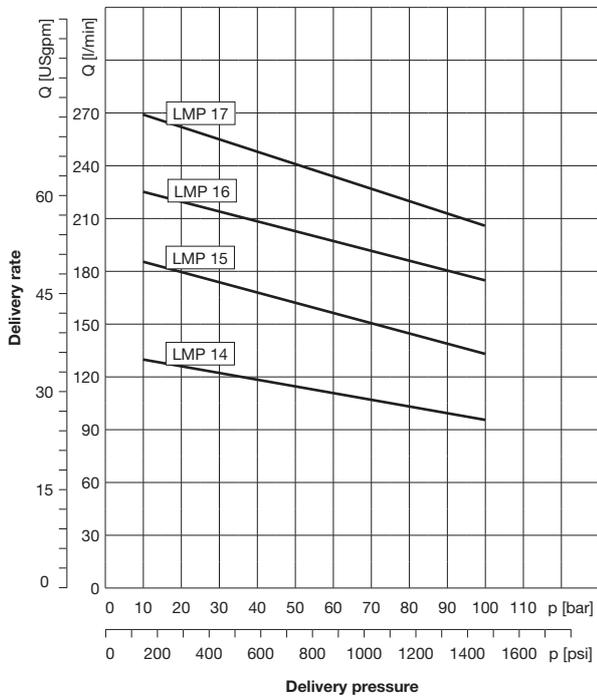
Speed 2900 min.<sup>-1</sup>, 50 Hz, 1 mm<sup>2</sup>/s



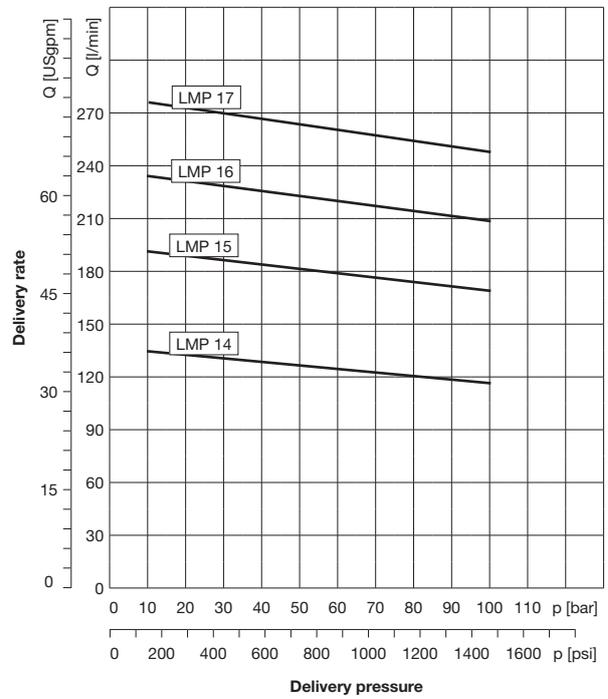
Speed 2900 min.<sup>-1</sup>, 50 Hz, 20 mm<sup>2</sup>/s



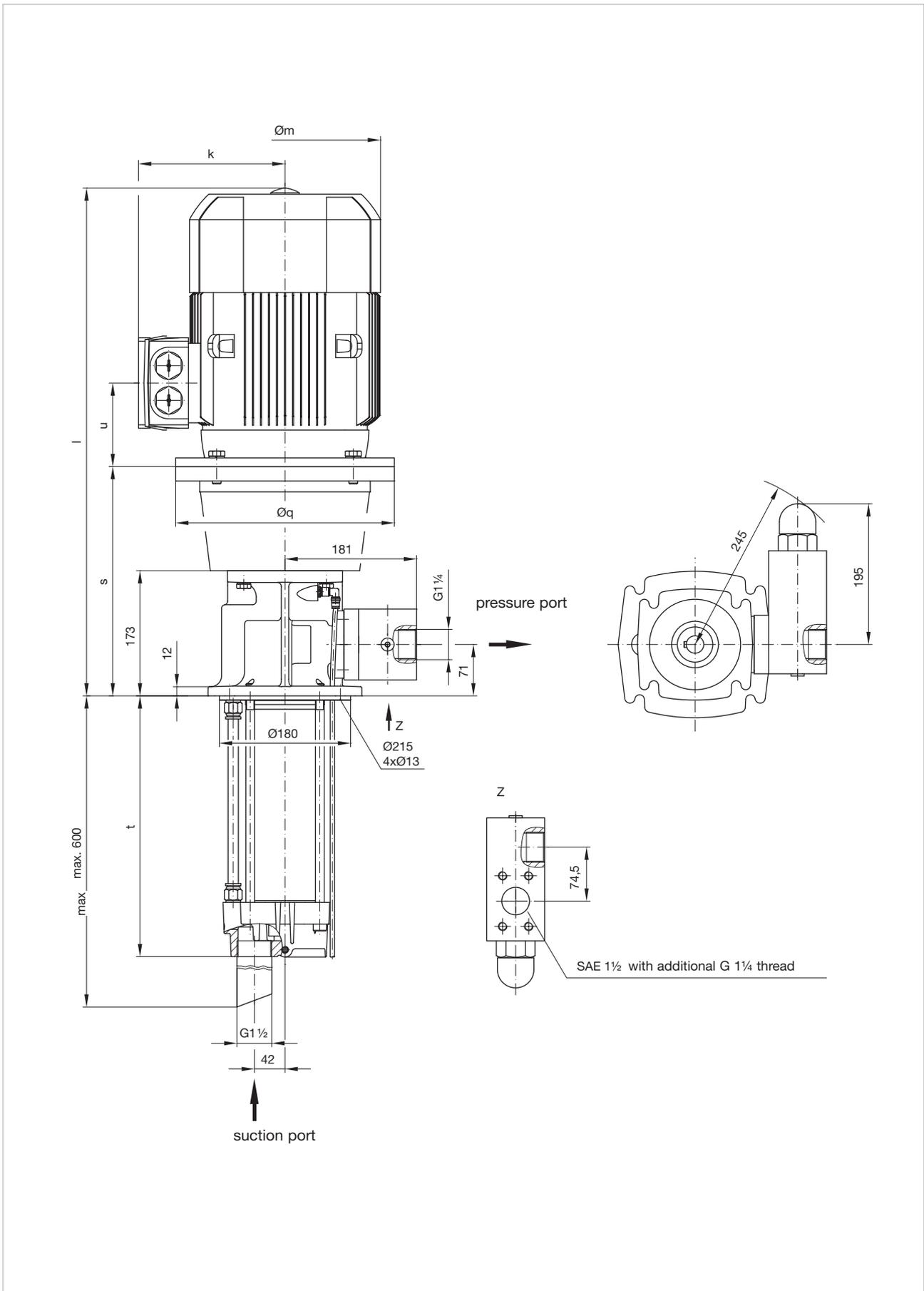
Speed 3500 min.<sup>-1</sup>, 60 Hz, 1 mm<sup>2</sup>/s



Speed 3500 min.<sup>-1</sup>, 60 Hz, 20 mm<sup>2</sup>/s



**LMP 14, 15, 16, 17 – dimensions**



**LMP 14, 15, 16, 17 – technical data at a viscosity of 1 mm<sup>2</sup>/s**

Type of pump			Immer- sion depth t [mm]	Rated motor values					Dimensions [mm]						Weight [kg]*	Sonic pressure dBA 50/60 Hz	Pressure port acc. to ISO 228
Series	Frame size	Delivery pressure [bar]		Frequency f [Hz]	Voltage Δ/Y U [V]	In- dex	Output P <sub>N</sub> [kW]	Current Δ/Y <sub>N</sub> [A]	Speed n <sub>N</sub> [min <sup>-1</sup> ]	øm*	k*	l*	øq	s			
LMP	14	10	311	50	230/400	L	3	9,9/5,6	2920	198	166	679	250	308	97	68	65/69
				60	Y 460		3,45	Y 5,6	3515								
		20		50	Δ 400	N	5,5	Δ 9,9	2950	262	202	713	300	317	116	85	68/72
							60	Δ 460	6,3								
		30		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	762	300	317	116	99	68/72
							60	Δ 460	8,6								
		40		50	Δ 400	P	11	Δ 19,6	2955	314	237	855	350	361	155	119	70/77
							60	Δ 460	12,6								
		50		50	Δ 400	Q	15	Δ 27	2960	314	237	855	350	361	155	119	70/77
							60	Δ 460	17,3								
		60		50	Δ 400	Q	15	Δ 27	2960	314	237	855	350	361	155	119	70/77
							60	Δ 460	17,3								
		70		50	Δ 400	R	18,5	Δ 32	2955	314	237	915	350	361	155	138	70/77
							60	Δ 460	21,3								
		80		50	Δ 400	S	22	Δ 38,5	2950	356	286	949	350	361	155	204	73/78
							60	Δ 460	24,5								
		90		50	Δ 400	S	22	Δ 38,5	2950	356	286	949	350	361	155	204	73/78
							60	Δ 460	24,5								
100	50	Δ 400	T	30	Δ 53	2955	396	315	968	400	357	164	270	73/78			
				60	Δ 460	33,5									Δ 52	3555	
LMP	15	10	311	50	230/400	M	4	12,7/7,3	2945	222	177	662	250	308	96	76	69/73
				60	Y 460		4,55	Y 7,2	3550								
		20		50	Δ 400	O	7,5	Δ 13,1	2950	262	202	762	300	317	116	99	68/72
							60	Δ 460	8,6								
		30		50	Δ 400	P	11	Δ 19,6	2955	314	237	855	350	361	155	119	70/77
							60	Δ 460	12,6								
		40		50	Δ 400	Q	15	Δ 27	2960	314	237	855	350	361	155	128	70/77
							60	Δ 460	17,3								
		50		50	Δ 400	R	18,5	Δ 32	2955	314	237	915	350	361	155	138	70/77
							60	Δ 460	21,3								
		60		50	Δ 400	S	22	Δ 38,5	2950	356	286	949	350	361	155	204	73/78
							60	Δ 460	24,5								
		70		50	Δ 400	T	30	Δ 53	2955	396	315	968	400	357	164	270	73/78
							60	Δ 460	33,5								
		80		50	Δ 400	T	30	Δ 53	2955	396	315	968	400	357	164	270	73/78
							60	Δ 460	33,5								
		90		50	Δ 400	T	30	Δ 53	2955	396	315	968	400	357	164	270	73/78
							60	Δ 460	33,5								
100	50	Δ 400	U	37	Δ 65	2955	396	315	993	400	357	164	295	74/79			
				60	Δ 460	41,5									Δ 63	3555	
LMP	16	10	361	50	Δ 400	N	5,5	Δ 9,9	2950	262	202	713	300	317	116	92	68/72
				60	Δ 460		6,3	Δ 9,8	3545								
		20		50	Δ 400	P	11	Δ 19,6	2955	314	237	855	350	361	155	125	70/77
							60	Δ 460	12,6								
		30		50	Δ 400	Q	15	Δ 27	2960	314	237	855	350	361	155	134	70/77
							60	Δ 460	17,3								
		40		50	Δ 400	R	18,5	Δ 32	2955	314	237	915	350	361	155	144	70/77
							60	Δ 460	21,3								
		50		50	Δ 400	S	22	Δ 38,5	2950	356	286	949	350	361	155	210	73/78
							60	Δ 460	24,5								
		60		50	Δ 400	T	30	Δ 53	2955	396	315	968	400	357	164	276	73/78
							60	Δ 460	33,5								
		70		50	Δ 400	T	30	Δ 53	2955	396	315	968	400	357	164	276	73/78
							60	Δ 460	33,5								
		80		50	Δ 400	U	37	Δ 65	2955	396	315	993	400	357	164	301	74/79
							60	Δ 460	41,5								
		90		50	Δ 400	U	37	Δ 65	2955	396	315	993	400	357	164	301	74/79
							60	Δ 460	41,5								
100	50	Δ 400	V	45	Δ 78	2960	449	338	1067	450	349	164	368,4	73/75			
				60	Δ 460	51									Δ 77	3560	
LMP	17	10	361	50	Δ 400	O	7,5	Δ 13,1	2950	262	202	762	300	317	116	106	68/72
				60	Δ 460		8,6	Δ 13,0	3550								
		20		50	Δ 400	P	11	Δ 19,6	2955	314	237	855	350	361	155	125	70/77
							60	Δ 460	12,6								
		30		50	Δ 400	Q	15	Δ 27	2960	314	237	855	350	361	155	134	70/77
							60	Δ 460	17,3								
		40		50	Δ 400	S	22	Δ 38,5	2950	356	286	949	350	361	155	210	73/78
							60	Δ 460	24,5								
		50		50	Δ 400	T	30	Δ 53	2955	396	315	968	400	357	164	276	73/78
							60	Δ 460	33,5								
		60		50	Δ 400	T	30	Δ 53	2955	396	315	968	400	357	164	276	73/78
							60	Δ 460	33,5								
		70		50	Δ 400	U	37	Δ 65	2955	396	315	993	400	357	164	301	74/79
							60	Δ 460	41,5								
		80		50	Δ 400	V	45	Δ 78	2960	449	338	1067	450	349	164	368,4	73/75
							60	Δ 460	51								
		90		50	Δ 400	V	45	Δ 78	2960	449	338	1067	450	349	164	368,4	73/75
							60	Δ 460	51								
100	50	Δ 400	V	45	Δ 78	2960	449	338	1067	450	349	164	368,4	73/75			
				60	Δ 460	51									Δ 77	3560	

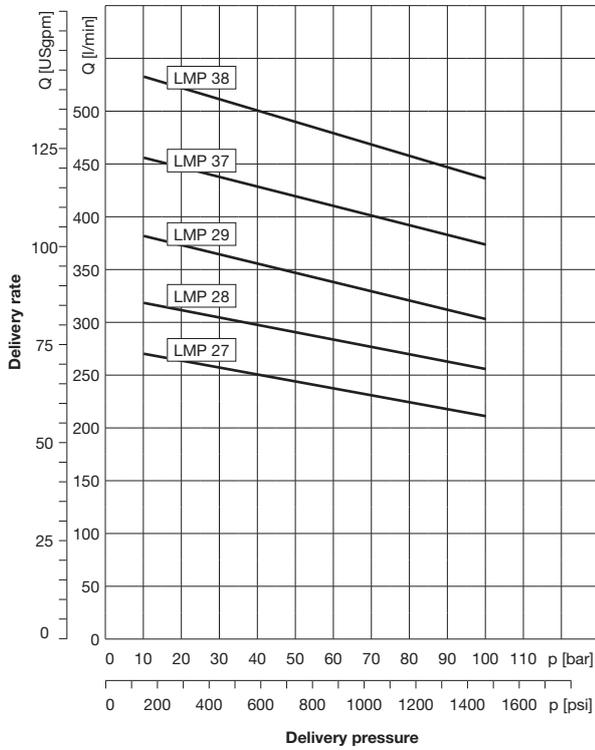
\* Depending on motor make

**LMP 27, 28, 29, 37, 38 – delivery rates and power requirement**

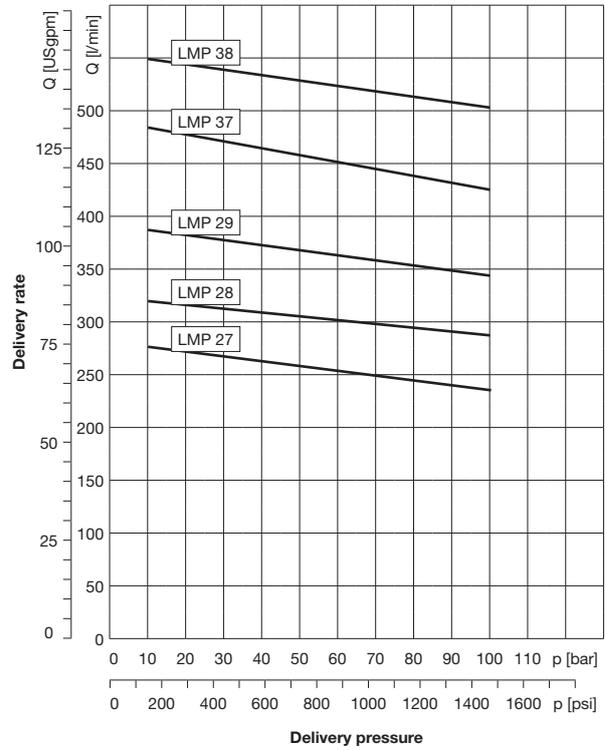
			Speed [min <sup>-1</sup> ]	Viscosity 1 mm <sup>2</sup> /s Pressure [bar]										Viscosity 20 mm <sup>2</sup> /s Pressure [bar]									
				10	20	30	40	50	60	70	80	90	100	10	20	30	40	50	60	70	80	90	100
				Capacity, delivery rate Q [l/min], Power requirement P [kW]																			
LMP 27	Q	2900	268	261	255	249	243	237	231	225	219	213	276	273	270	267	264	261	258	255	252	249	
		3500	327	320	314	308	302	296	290	284	278	272	335	332	329	326	323	320	317	314	311	308	
LMP 27	P	2900	5.9	10.7	15.5	20.4	25.2	30	34.9	39.7	44.5	49.4	6.3	11.1	16	20.8	25.7	30.6	35.4	40.3	45.2	50	
		3500	7.2	13.1	18.9	24.8	30.6	36.4	42.3	48.1	54	59.8	7.7	13.6	19.5	25.4	31.3	37.2	43	48.8	54.8	60.7	
LMP 28	Q	2900	320	312	305	298	290	283	276	269	262	255	330	326	322	319	315	312	308	304	301	297	
		3500	390	382	375	368	361	354	347	340	332	325	400	396	393	389	385	382	378	375	371	368	
LMP 28	P	2900	7	12.8	18.6	24.3	30.1	35.9	41.7	47.4	53.2	59	7.5	13.3	19.1	24.9	30.7	36.5	42.3	48.1	53.9	59.8	
		3500	8.6	15.6	22.6	29.6	36.5	43.5	50.5	57.5	64.5	71.4	9.2	16.3	23.3	30.3	37.3	44.4	51.4	58.4	65.5	72.5	
LMP 29	Q	2900	380	370	361	353	344	336	328	319	311	302	391	386	382	378	374	369	365	361	357	353	
		3500	463	453	445	436	428	419	411	403	394	386	475	470	466	461	457	453	448	444	440	436	
LMP 29	P	2900	8.3	15.2	22	28.9	35.7	42.6	49.4	56.2	63.1	69.9	8.9	15.8	22.6	29.5	36.4	43.3	50.2	57.1	64	70.9	
		3500	10.2	18.5	26.8	35.1	43.3	51.6	59.9	68.2	76.5	84.7	11	19.3	27.6	36	44.3	52.6	61	69.3	77.6	86	
LMP 37	Q	2900	455	445	436	427	418	410	401	392	383	375	467	462	458	453	449	445	440	436	431	427	
		3500	554	544	535	527	518	509	500	491	483	474	567	562	557	553	548	544	540	535	531	526	
LMP 37	P	2900	9.8	18	26.1	34.3	42.4	50.6	58.7	66.9	75	83.2	10.5	18.7	26.9	35.1	43.3	51.5	59.7	67.9	76.1	84.3	
		3500	12.1	21.9	31.8	41.6	51.5	61.3	71.2	81.1	90.9	100.8	12.9	22.8	32.8	42.7	52.6	62.5	72.4	82.4	92.3	102.2	
LMP 38	Q	2900	535	523	513	502	492	482	472	461	451	441	550	544	539	533	528	523	518	513	507	502	
		3500	652	640	630	619	609	599	588	578	568	558	667	661	655	650	645	640	635	630	624	619	
LMP 38	P	2900	11.6	21.2	30.7	40.3	49.9	59.5	69.1	78.7	88.3	97.8	12.3	21.9	31.6	41.2	50.9	60.5	70.2	79.8	89.5	99.1	
		3500	14.2	25.8	37.4	49	60.6	72.2	83.8	95.4	106.9	118.5	15.2	26.9	38.5	50.2	61.9	73.5	85.2	96.9	108.6	120.2	

### LMP 27, 28, 29, 37, 38 – characteristics

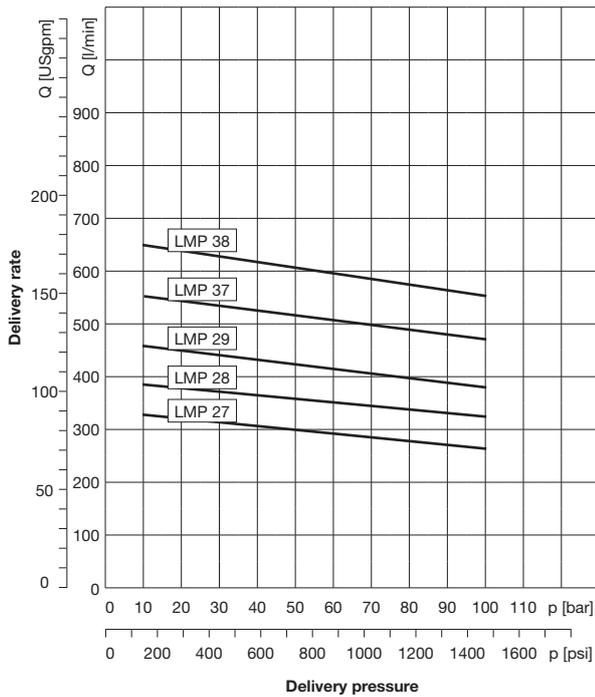
Speed 2900 min.<sup>-1</sup>, 50 Hz, 1 mm<sup>2</sup>/s



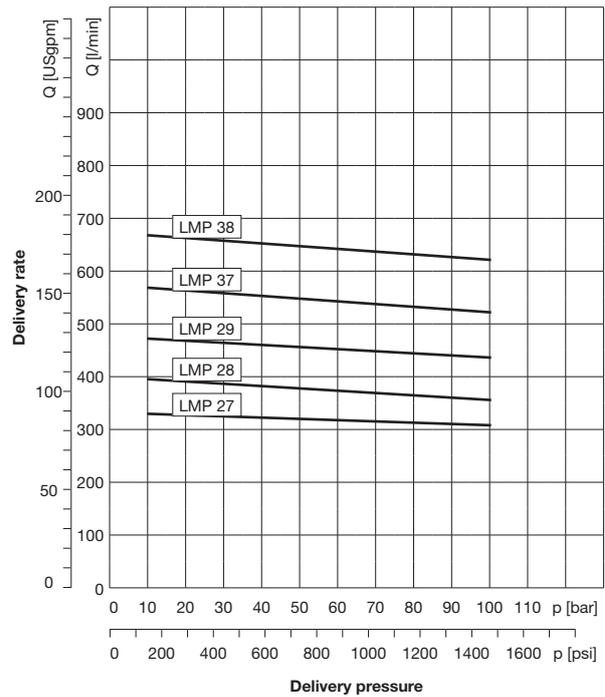
Speed 2900 min.<sup>-1</sup>, 50 Hz, 20 mm<sup>2</sup>/s



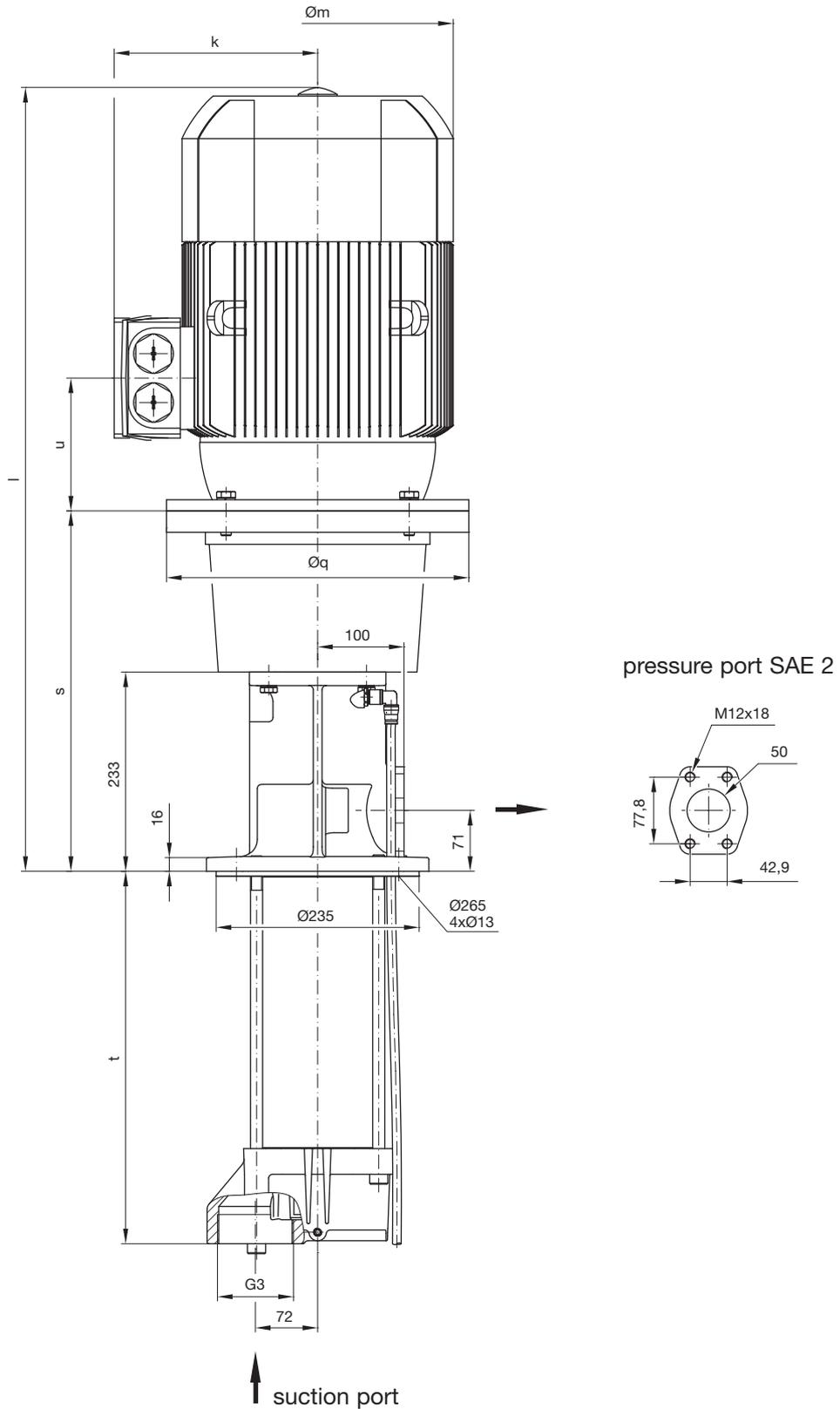
Speed 3500 min.<sup>-1</sup>, 60 Hz, 1 mm<sup>2</sup>/s



Speed 3500 min.<sup>-1</sup>, 60 Hz, 20 mm<sup>2</sup>/s



**LMP 27, 28, 29, 37, 38 – dimensions**



LMP 27, 28, 29 – technical data at a viscosity of 1 mm<sup>2</sup>/s

Type of pump			Immer- sion depth t [mm]	Rated motor values						Dimensions [mm]						Weight [kg]*	Sonic pressure dBA 50/60 Hz	Pressure port acc. to ISO 228
Series	Frame size	Delivery pressure [bar]		Frequency f [Hz]	Voltage $\Delta/Y$ U [V]	In- dex	Output P <sub>N</sub> [kW]	Current $\Delta/Y$ I <sub>N</sub> [A]	Speed n <sub>N</sub> [min <sup>-1</sup> ]	øm*	k*	l*	øq	s	u*			
LMP	27	10	381	50	Δ 400	O	7,5	Δ 13,1	2950	262	202	822	300	377	116	129	68/72	
				60	Δ 460		8,6	Δ 13,0	3550									
		20		50	Δ 400	Q	15	Δ 27	2960	314	237	915	350	421	155	157	70/77	
				60	Δ 460		17,3	Δ 27	3555									
		30		50	Δ 400	R	18,5	Δ 32	2955	314	237	975	350	421	155	167	70/77	
				60	Δ 460		21,3	Δ 32	3555									
		40		50	Δ 400	T	30	Δ 53	2955	396	315	1028	400	417	164	299	73/78	
				60	Δ 460		33,5	Δ 52	3555									
		50		50	Δ 400	T	30	Δ 53	2955	396	315	1028	400	417	164	299	73/78	
				60	Δ 460		33,5	Δ 52	3555									
		60		50	Δ 400	U	37	Δ 65	2955	396	315	1053	400	417	164	324	74/79	
				60	Δ 460		41,5	Δ 63	3555									
		70		50	Δ 400	V	45	Δ 78	2960	449	338	1119	450	409	164	391	73/75	
				60	Δ 460		51	Δ 77	3560									
		80		50	Δ 400	V	45	Δ 78	2960	449	338	1119	450	409	164	391	73/75	
				60	Δ 460		51	Δ 77	3560									
		90		50	Δ 400	W	55	Δ 95	2975	497	410	1197	550	450	192	466	73/76	
				60	Δ 460		62	Δ 92	3575									
		100		50	Δ 400	Y	75	Δ 128	2975	551	433	1270	550	450	210	591	74/78	
				60	Δ 460		84	Δ 125	3575									
LMP	28	10	381	50	Δ 400	P	11	Δ 19,6	2955	314	237	915	350	421	155	148	70/77	
				60	Δ 460		12,6	Δ 19,5	3555									
		20		50	Δ 400	Q	15	Δ 27	2960	314	237	915	350	421	155	157	70/77	
				60	Δ 460		17,3	Δ 27	3555									
		30		50	Δ 400	S	22	Δ 38,5	2950	356	286	1009	350	421	155	233	73/78	
				60	Δ 460		24,5	Δ 37,5	3550									
		40		50	Δ 400	T	30	Δ 53	2955	396	315	1028	400	417	164	299	73/78	
				60	Δ 460		33,5	Δ 52	3555									
		50		50	Δ 400	U	37	Δ 65	2955	396	315	1053	400	417	164	324	74/79	
				60	Δ 460		41,5	Δ 63	3555									
		60		50	Δ 400	V	45	Δ 78	2960	449	338	1119	450	409	164	391	73/75	
				60	Δ 460		51	Δ 77	3560									
		70		50	Δ 400	W	55	Δ 95	2975	497	410	1197	550	450	192	466	73/76	
				60	Δ 460		62	Δ 92	3575									
		80		50	Δ 400	W	55	Δ 95	2975	497	410	1197	550	450	192	466	73/76	
				60	Δ 460		62	Δ 92	3575									
		90		50	Δ 400	Y	75	Δ 128	2975	551	433	1270	550	450	210	591	74/78	
				60	Δ 460		84	Δ 125	3575									
		100		50	Δ 400	Y	75	Δ 128	2975	551	433	1270	550	450	210	591	74/78	
				60	Δ 460		84	Δ 125	3575									
LMP	29	10	381	50	Δ 400	P	11	Δ 19,6	2955	314	237	915	350	421	155	148	70/77	
				60	Δ 460		12,6	Δ 19,5	3555									
		20		50	Δ 400	R	18,5	Δ 32	2955	314	237	975	350	421	155	167	70/77	
				60	Δ 460		21,3	Δ 32	3555									
		30		50	Δ 400	T	30	Δ 53	2955	396	315	1028	400	417	164	299	73/78	
				60	Δ 460		33,5	Δ 52	3555									
		40		50	Δ 400	U	37	Δ 65	2955	396	315	1053	400	417	164	324	74/79	
				60	Δ 460		41,5	Δ 63	3555									
		50		50	Δ 400	V	45	Δ 78	2960	449	338	1119	450	409	164	391	73/75	
				60	Δ 460		51	Δ 77	3560									
		60		50	Δ 400	W	55	Δ 95	2975	497	410	1197	550	450	192	466	73/76	
				60	Δ 460		62	Δ 92	3575									
		70		50	Δ 400	Y	75	Δ 128	2975	551	433	1197	550	450	210	591	74/78	
				60	Δ 460		84	Δ 125	3575									
		80		50	Δ 400	Y	75	Δ 128	2975	551	433	1270	550	450	210	591	74/78	
				60	Δ 460		84	Δ 125	3575									
		90		50	Δ 400	Y	75	Δ 128	2975	551	433	1270	550	450	210	591	74/78	
				60	Δ 460		84	Δ 125	3575									
		100		50	Δ 400	Z	90	Δ 152	2975	551	433	1381	550	450	210	671	74/78	
				60	Δ 460		101	Δ 149	3575									

\* Depending on motor make

**LMP 37, 38 – technical data at a viscosity of 1 mm<sup>2</sup>/s**

Type of pump			Immer- sion depth t [mm]	Rated motor values					Dimensions [mm]						Weight [kg]*	Sonic pressure dBA 50/60 Hz	Pressure port acc. to ISO 228																																																																								
Series	Frame size	Delivery pressure [bar]		Frequency f [Hz]	Voltage Δ/Y U [V]	In- dex	Output P <sub>N</sub> [kW]	Current Δ/Y I <sub>N</sub> [A]	Speed n <sub>N</sub> [min <sup>-1</sup> ]	øm*	k*	l*	øq	s				u*																																																																							
LMP	37	10	435	50	Δ 400	P	11	Δ 19,6	2955	314	237	915	350	421	155	158	70/77																																																																								
				60	Δ 460		12,6	Δ 19,5	3555																																																																																
		20		50	Δ 400	S	22	Δ 38,5	2950									356	286	1009	350	421	155	243	73/78																																																																
				60	Δ 460		24,5	Δ 37,5	3550																																																																																
		30		50	Δ 400	T	30	Δ 53	2955																	396	315	1028	400	417	164	309	73/78																																																								
				60	Δ 460		33,5	Δ 52	3555																																																																																
		40		50	Δ 400	V	45	Δ 78	2960																									449	338	1119	450	409	164	401	73/75																																																
				60	Δ 460		51	Δ 77	3560																																																																																
		50		50	Δ 400	W	55	Δ 95	2975																																	497	410	1197	550	450	192	476	73/76																																								
				60	Δ 460		62	Δ 92	3575																																																																																
		60		50	Δ 400	Y	75	Δ 128	2975																																									551	433	1197	550	450	210	601	74/78																																
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		70		50	Δ 400	Y	75	Δ 128	2975																																																	551	433	1270	550	450	210	601	74/78																								
				60	Δ 460		84	Δ 125	3575																																																																																
		80		50	Δ 400	Z	90	Δ 152	2975																																																									551	433	1381	550	450	210	681	74/78																
				60	Δ 460		101	Δ 149	3575																																																																																
		90		50	Δ 400	Z	90	Δ 152	2975																																																																	551	433	1381	550	450	210	681	74/78								
				60	Δ 460		101	Δ 149	3575																																																																																
		100		50	Δ 400	-	110	Δ 183	2980																																																																									616	515	1392	660	480	238	853	75/79
				60	Δ 460		123	Δ 179	3580																																																																																
LMP	38	10	435	50	Δ 400	Q	15	Δ 27	2960	314	237	915	350	421	155	167	70/77																																																																								
				60	Δ 460		17,3	Δ 27	3555																																																																																
		20		50	Δ 400	T	30	Δ 53	2955									396	315	1028	400	417	164	309	73/78																																																																
				60	Δ 460		33,5	Δ 52	3555																																																																																
		30		50	Δ 400	U	37	Δ 65	2955																	396	315	1053	400	417	164	334	74/79																																																								
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		40		50	Δ 400	W	55	Δ 95	2975																									497	410	1197	550	450	192	476	73/76																																																
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				60	Δ 460		123	Δ 179	3580																																																																																
		90		50	Δ 400	-	110	Δ 183	2980																																																																	616	515	1392	660	480	238	853	75/79								
				60	Δ 460		123	Δ 179	3580																																																																																
		100		50	Δ 400	-	132	Δ 220	2980																																																																									616	515	1557	660	480	238	983	75/79
				60	Δ 460		148	Δ 215	3580																																																																																

\* Depending on motor make

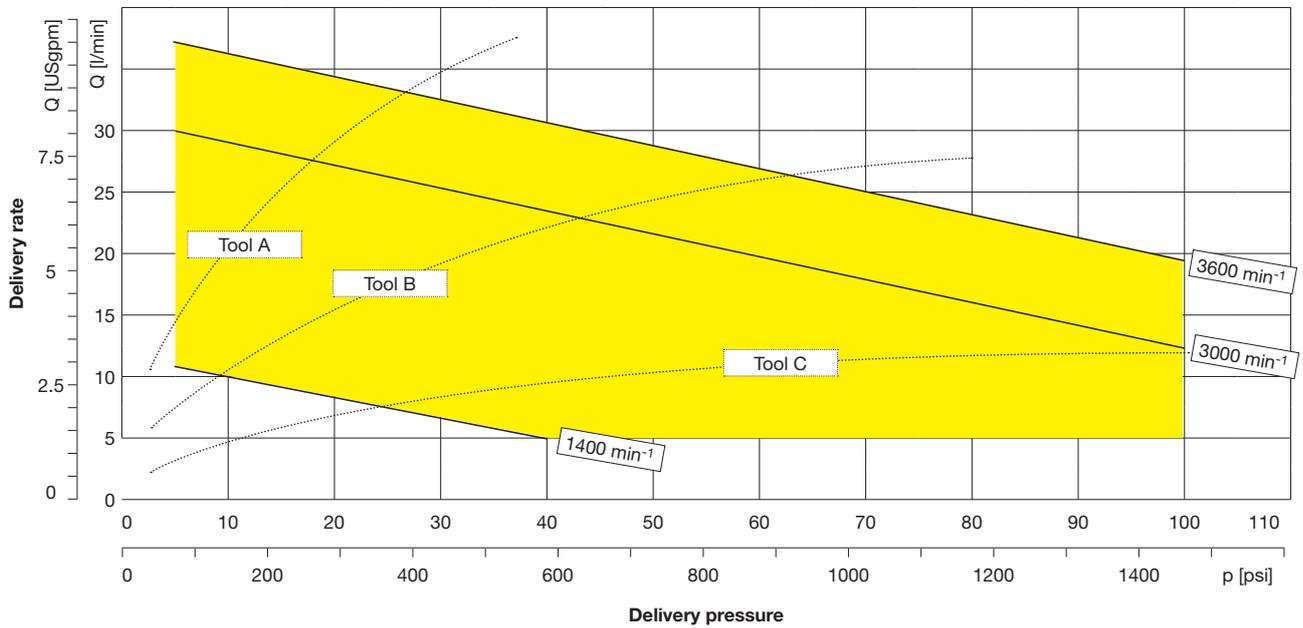
## Frequency converter



### Sustainability

- Up to 70% energy savings can be achieved in practice
- Speed adjustment ensures effective delivery rate and usage
- Lower heat input in the overall system and thus reduced effort required for cooling capacity

## LMP 11 with frequency converter



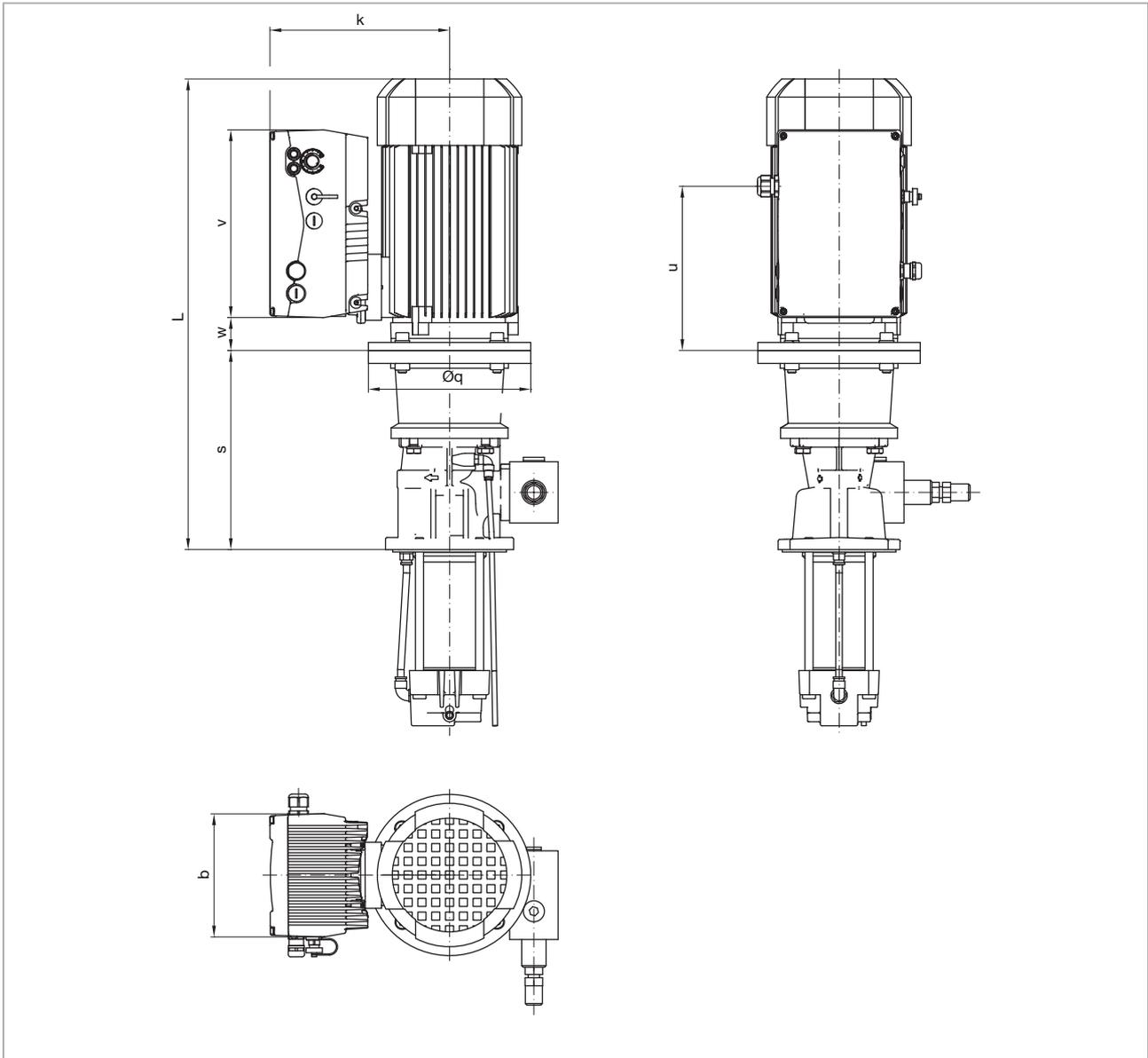
### Performance

- Medium = emulsion with at least 4–5% oil
- Viscosity = 1 mm<sup>2</sup>/s.
- Delivery pressures up to  $p_{max.}$  = 10 to 100 bar
- Delivery rates up to  $Q_{max.}$  = 5 to 37 l/min
- Power requirement = 0.4 to 7.5 kW

### Application

Within the section highlighted in yellow, any operating points are possible with reference to pressure and output (displacement) with a frequency-controlled motor.

### Frequency converter – dimensions



	Øm	k	L <sup>*1</sup>	L <sup>*2</sup>	Øq	s <sup>*1</sup>	s <sup>*2</sup>	v	w	b	u <sup>*3</sup>	Weight [kg]
1,1 kW	159	216	534	-	200	247	-	233	35	153	198	36
1,5 kW	178	221	544	-	200	247	-	233	41	153	204	39
2,2 kW	178	237	584	-	200	247	-	270	33	189	63	44
3 kW	198	231	629	679	250	258	308	270	56	189	86	51
4 kW	222	243	612	662	250	258	308	270	54	189	84	59
5,5 kW	262	305	677	713	300	282	317	307	71	223	101	72
7,5 kW	262	304	727	762	300	282	317	307	51	223	81	78
11 kW	314	397	820	855	350	326	361	414	73	294	127	108
15 kW	314	400	855	855	350	361	361	414	68	294	122	155
18,5 kW	314	400	915	915	350	361	361	414	68	294	122	165
22 kW	356	454	949	949	350	361	361	414	65	294	120	231

<sup>\*1</sup> LMP 10,11,20,21,22,12,13

<sup>\*2</sup> LMP 14,15,16,17

<sup>\*3</sup> Cable fitting for voltage input

## Suction protection



### Features

- Protection of the pump against impurities and suspended matter and solid particles
- Homogeneous distribution of remaining contamination in suction area

### Function

Due to the globular geometry and the suction openings on the side, no large quantities of solid particles can be sucked from the ground. Larger particles are deposited on the ground more quickly. The two excentric suction openings ensure homogeneous distribution of solid particles in the medium. No sedimentation occurs inside the suction protection.

### Material

- Plastic

### Advantages

- The service life of the pump is increased
- Simple and cost-effective protective device
- Can be used in all characteristic ranges
- Very suitable for original equipment manufacturers and retrofitters due to the uncomplicated and quick assembly

## Intake tube extension

In order to extend the immersion depth, intake tubes of up to 600 mm can also be delivered in combination with the suction protection.

## Foot flange for installation outside the reservoir

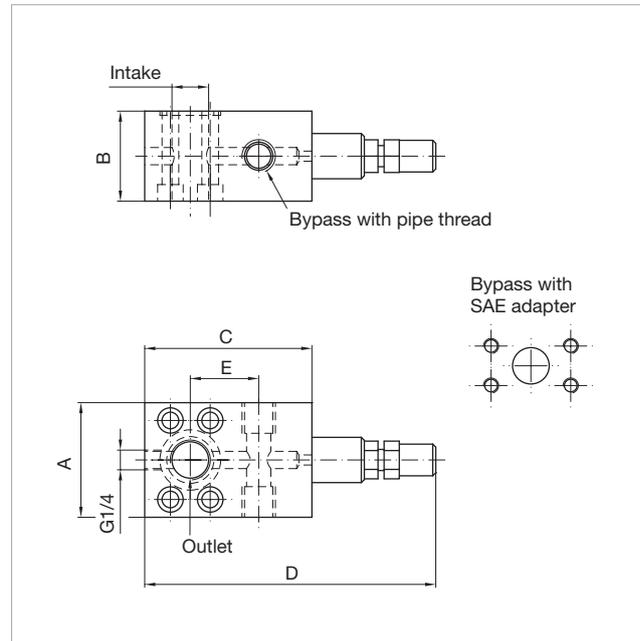


### Features

- Compact space-saving design
- Allows for storage in horizontal and vertical positions
- High load carrying capacity due to solid construction, which is lightweight nonetheless
- Material aluminum

Order number	Motor frame size	Motor rating
HPS2.02	100L; 112M	3; 4 kW
HPS2.03	132S	5.5; 7.5 kW
HPS2.04	160M; 160L; 180M	11; 15; 18.5; 22 kW
HPS2.05	200L	30; 37 kW
HPS2.06	225M	45 kW

## DVK pressure regulating valve



### Features

- Very compact design
- Variable adjustable limiting value
- Adjustable using tool
- Bypass function
- Optionally with manometer monitoring
- Connection using SAE flange on pump side
- Conductor with pipe thread connection

### Medium

Cooling lubricants according to DIN 51524 and oil/water emulsions 1 to 500 mm<sup>2</sup>/s.

### Performance

Delivery pressures up to  $p_{max.} = 10$  to 120 bar

Delivery rates up to  $Q_{max.} = 250$  l/min

Temperature T (medium) = 30 to 80 °C

### Advantages

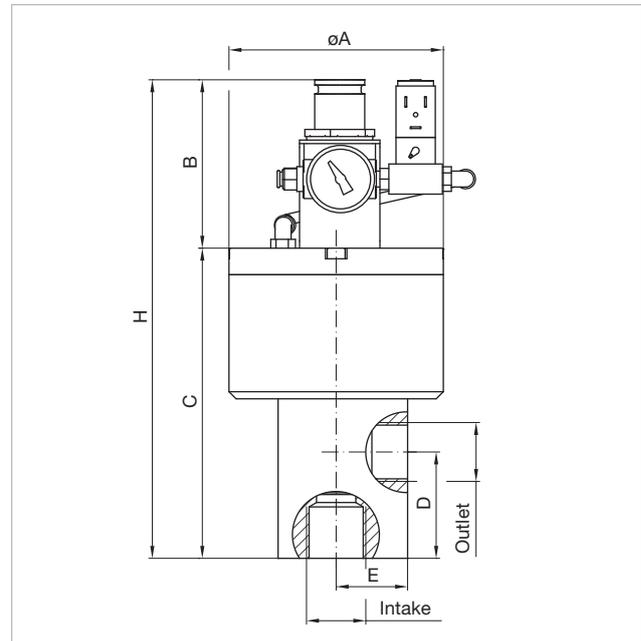
- Direct screw union with the LMP pump
- Very suitable for original equipment manufacturers and retrofitters due to the uncomplicated and quick assembly

### Dimensions

Order number	DVK 3/4	DVK 1 1/4
A	76	98
B	59,7	79,5
C	110	170
D	191,5	235
E	45	74,5
Inlet	SAE 1"	SAE 1 1/2"
Outlet	G 3/4"	G 1 1/4"
Bypass	G 1/2"	SAE 1 1/2" or G 1 1/4"



## Pneumatically controlled DVP pressure regulating valve



### Features

- ON/OFF function
- Max. fluid pressure can be regulated using pneumatic pressure (proportional regulation)
- Pipe thread connection

	$\phi A$	B	C	D	E	H	Inlet	Bypass
<b>DVP 1</b>	120	95	175	60	40	270	1"	1"
<b>DVP 1 1/4</b>	12	95	180	63	40	275	1 1/4"	1 1/4"

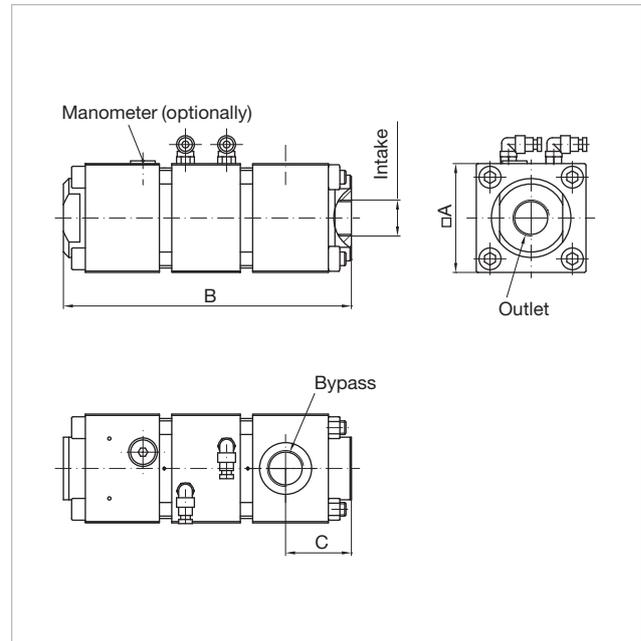
### Medium

Cooling lubricants and oil/water emulsions.

### Performance

Order number	DVP 1	DVP 1 1/4
Delivery rate $Q_{max}$	120 l/min	250 l/min
Pressure range p	5 to 100 bar	5 to 80 bar
Standard ratio	20:1 5 bar standard pressure = 100 bar medium pressure	10:1 8 bar standard pressure = 80 bar medium pressure
Electrical pneumatic valve	24 AC (48 DC) Input power 2 W Standard output G1/8	
Medium temperature	0° C 60 °C	
Ambient temperature	0 °C to 60 °C	
Weight	4.5 kg	5.0 kg

## Pneumatically controlled DVS pressure regulating valve



### Features

- ON/OFF function
- Max. Fluid pressure can be regulated using pneumatic pressure
- Bypass function
- Pipe thread connection

	A	B	Inlet	Outlet	Bypass	C
<b>DVS 3/4</b>	80	210	3/4"	3/4"	3/4"	48
<b>DVS 1 1/4</b>	100	310	1 1/4"	1 1/4"	1 1/4"	75
<b>DVS 2</b>	130	390	2"	2"	2"	100

### Medium

Cooling lubricants and oil/water emulsion, oils with 3–20 mm<sup>2</sup>/s, emulsion with 5% oil

### Performance

Order number	DVS 3/4	DVS 1 1/4	DVS 2
<b>Delivery rate Q<sub>max.</sub> Emulsion</b>	170 l/min	350 l/min	1000 l/min
<b>Delivery rate Q<sub>max.</sub> Oil</b>	120 l/min	250 l/min	700 l/min
<b>Pressure range p *</b>	15 to 100 bar	15 to 100 bar	5 to 40 bar
<b>Standard ratio</b>	15:1 6.6 bar Standard pressure = 100 bar Medium pres- sure	15:1 6.6 bar Standard pressure = 100 bar Medium pres- sure	7:1 5 bar Standard pressure = 35 bar Medium pres- sure
<b>Electrical pneumatic valve</b>	24 AC (48 DC) input power 2 W Standard output G1/8"		
<b>Medium temperature T</b>	0 °C to 60 °C		
<b>Ambient temperature T</b>	0 °C to 50 °C		
<b>Weight</b>	4 kg	9 kg	20 kg

\* ΔP input and output 1–1.5 bar





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