

# 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  
 $1 \text{ to } 2500 \text{ mm}^2/\text{s}$



## 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 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.

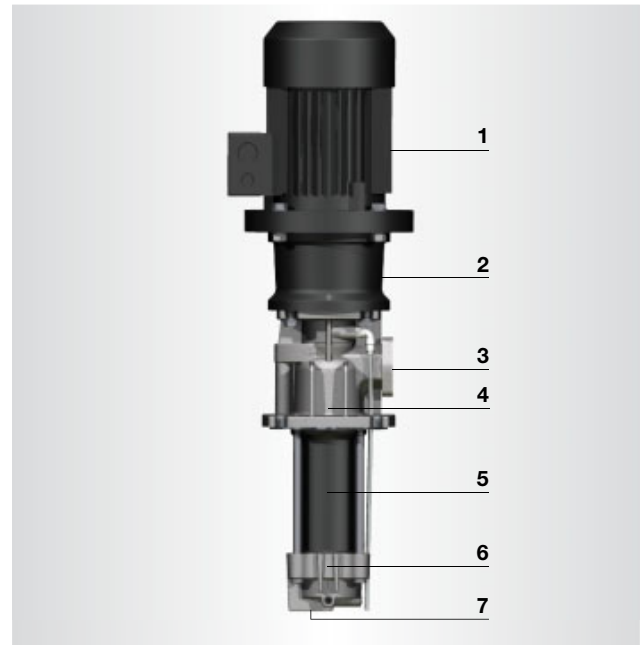
A foot flange is attached to the pump support for horizontal positioning beside the container (outside the reservoir).

### 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) (6) to the pressure port (3).

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

Operation at speed <1400 min<sup>-1</sup> on request

**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 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  
(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

> 4 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.

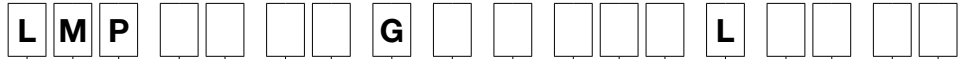
If needed, a single pump with a frequency converter can be used to accomplish the tasks of several pumps (without speed adjustment). Full separation of the motor from the pump allows integration of the speed adjustable operation for retrofitters as well.

## 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.

**Type number key**



Series

Size

**10, 11, 20, 21, 22, 12, 13, 14, 15, 16, 17, 27, 28, 29, 37, 38**

Maximum delivery pressure

**10** = 10 bar  
**20** = 20 bar  
**30** = 30 bar  
 ... (in increments of 10 up to)  
**00** = 100 bar  
**11** = 110 bar  
**12** = 120 bar

Material design

**G** = cast iron with lamellar graphite EN-GJL-250

Seal type

**W** = rotary shaft seal  
**G** = mechanical seal

Pump guide

**R** = Pipe thread  
**F** = SAE flange  
**V** = pressure regulating valve + SAE flange  
**H** = foot flange

Immersion depth in mm

**219, 262, 315, 361, 408, 465**

Motor index\*

**L** = 3 kW at 50 Hz, 3.45 kW at 60 Hz  
 ...

Electrical supply\*

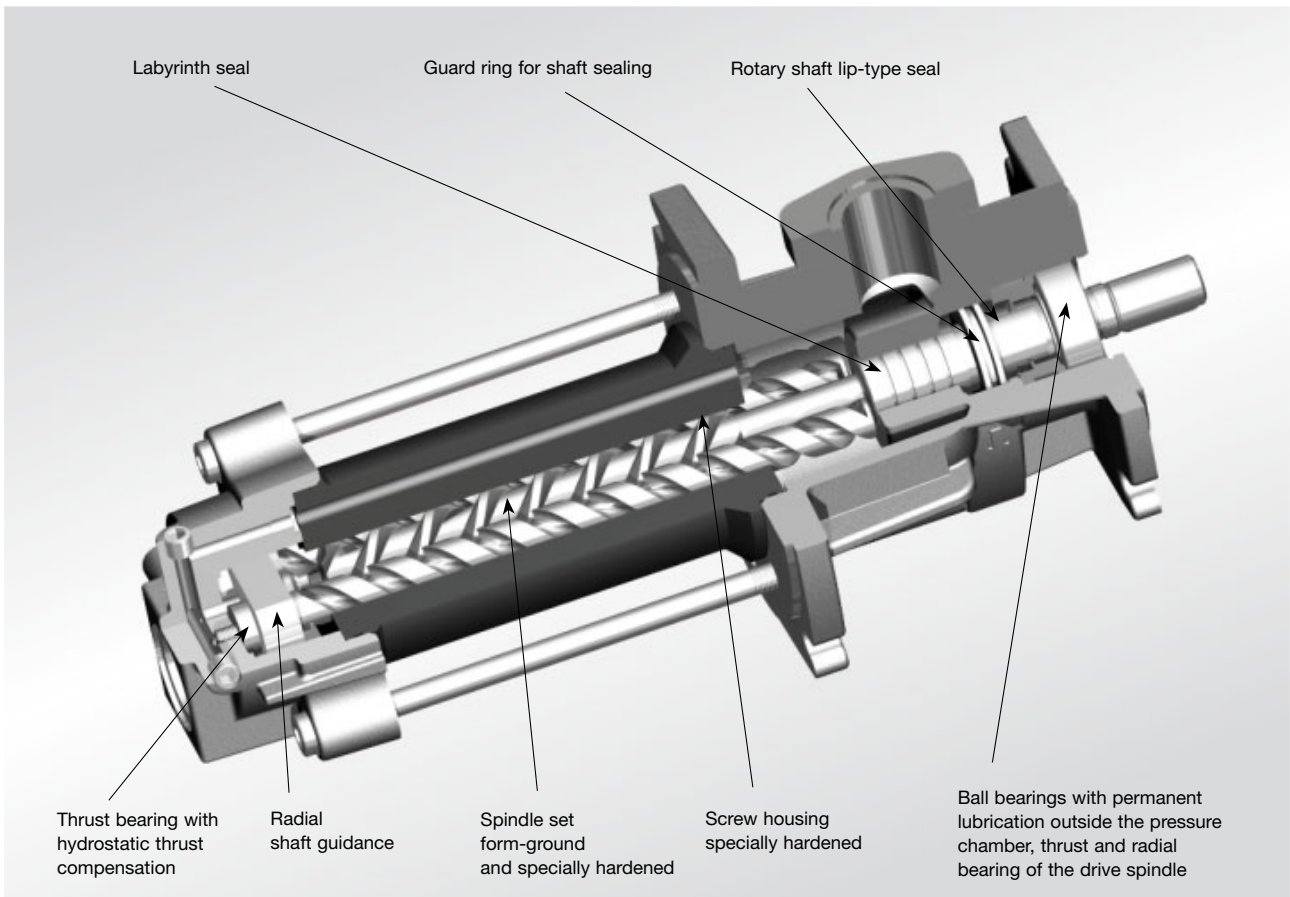
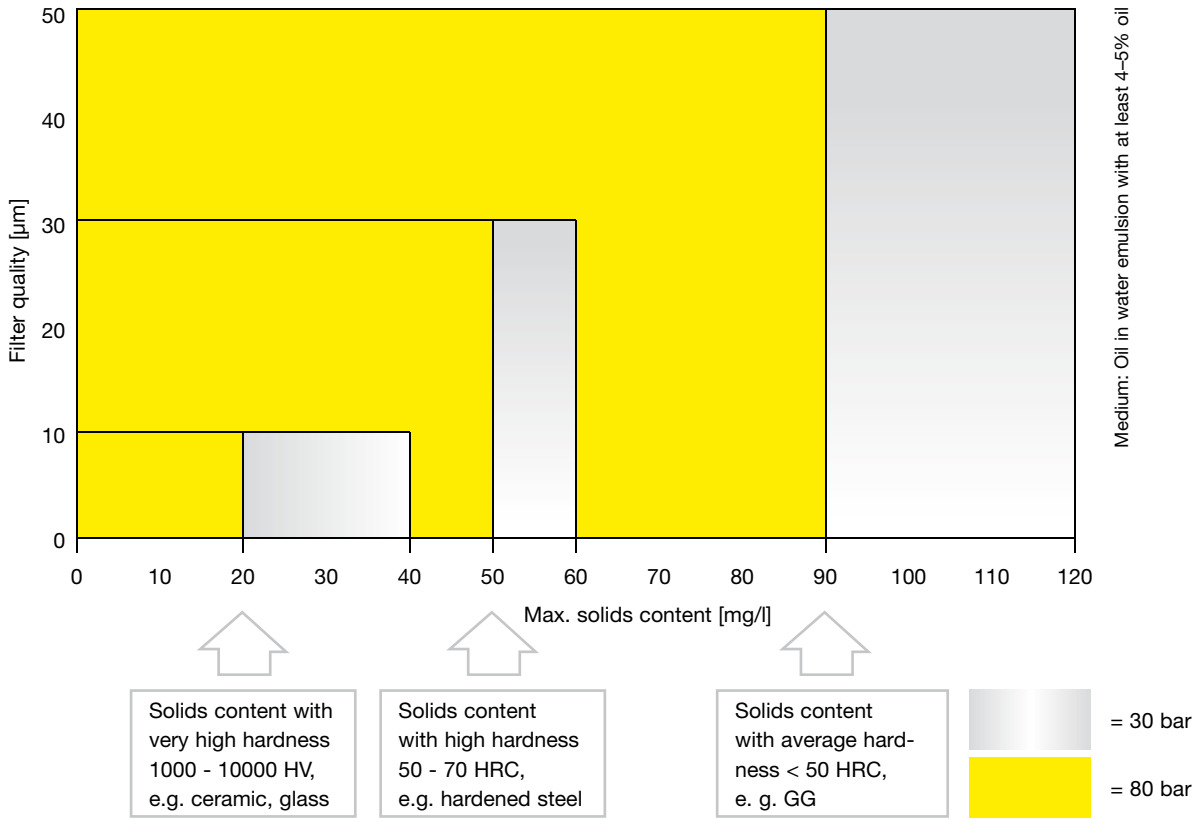
**01** = 230/400 V 50 Hz, 265/460 V 60 Hz ≤ 4 kW (European standard)  
**02** = 400/690 V 50 Hz, 460 V 60 Hz ≥ 5.5 kW (European standard)

Motor design\*

**BA** = Standard (insulation class F, IP 55)  
**BC** = UL/CSA design  
**BD** = Industrial plug connection (DESINA)  
**BI** = integrated frequency converter  
**BK** = PTC thermistor  
 ...

\*further designs on request

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



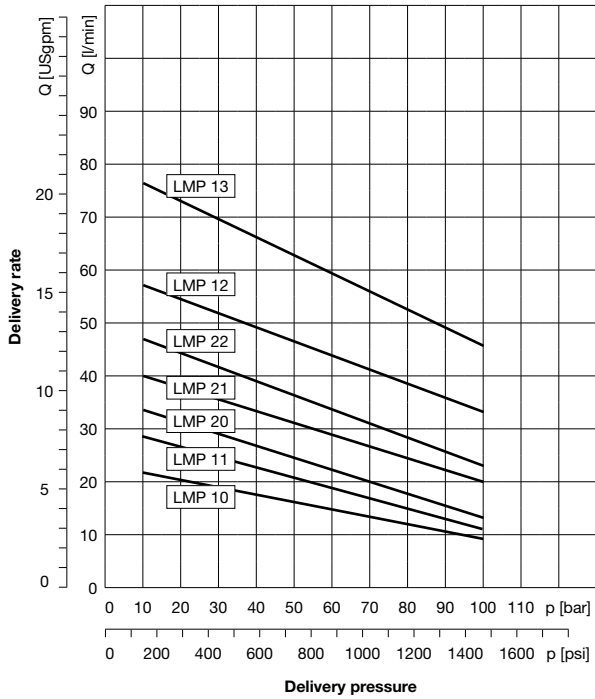
### LMP 10, 11, 20, 21, 22, 12, 13 – delivery rates and power requirement

			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	

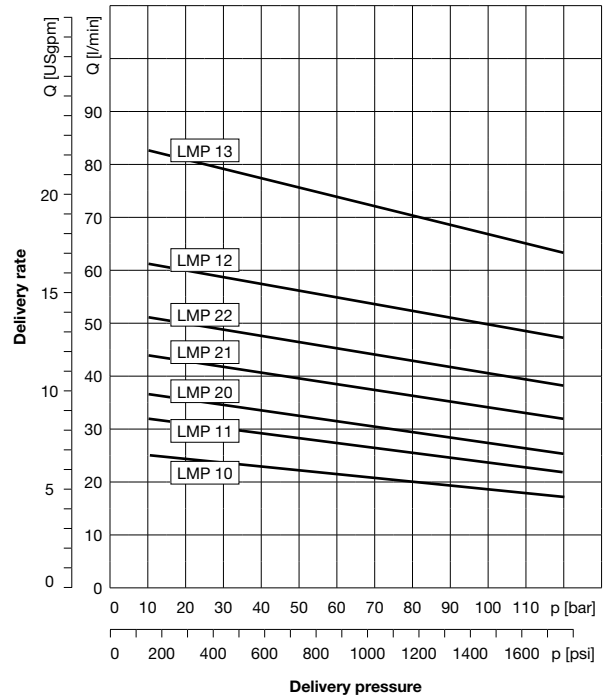
Tolerances = VDMA24284 - II

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

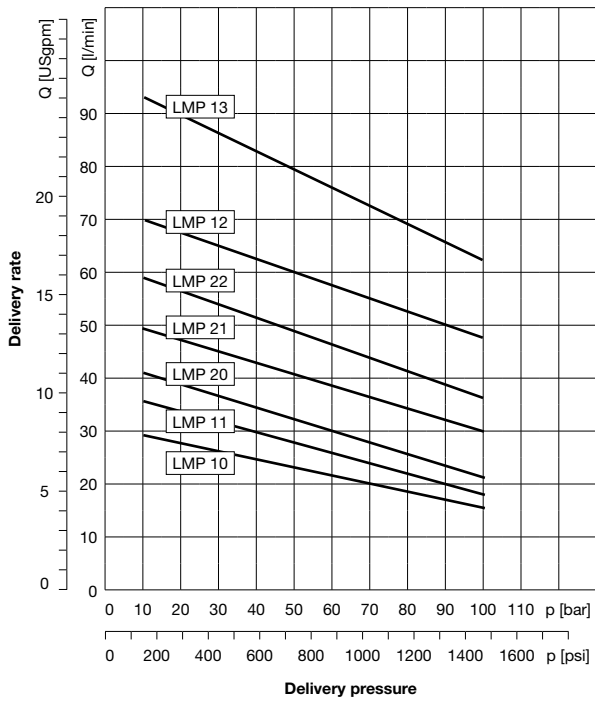
Speed 2900 min.<sup>-1</sup>, 50 Hz, 1 mm<sup>2</sup>/s



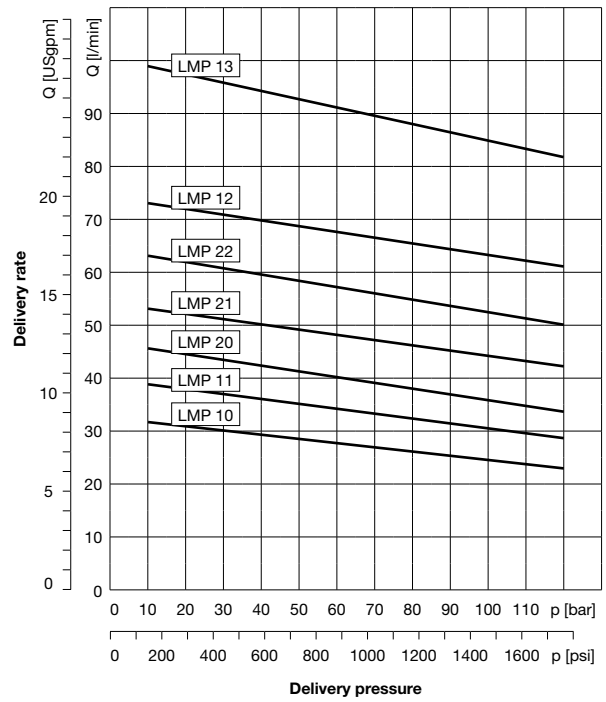
Speed 2900 min.<sup>-1</sup>, 50 Hz, 20 mm<sup>2</sup>/s



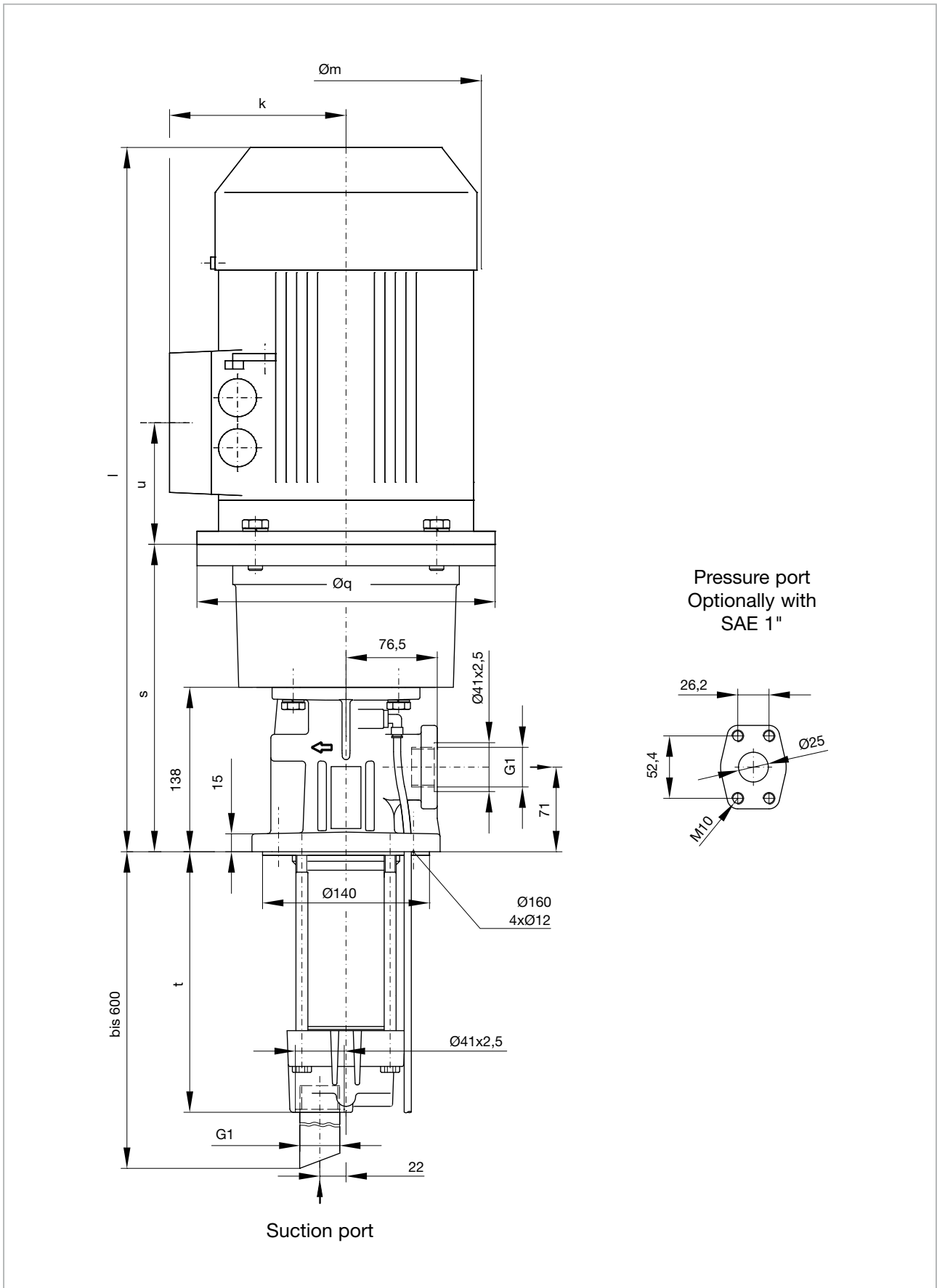
Speed 3500 min.<sup>-1</sup>, 60 Hz, 1 mm<sup>2</sup>/s



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****Dimensions, weights and electrical values at a viscosity of 1 mm<sup>2</sup>/s**

Frame size	Delivery pressure [bar]	Immersion depth [mm]	Motor index	Motor frame size	Frequency [Hz]	Rated output [kW]	Rated voltage $\Delta Y$ [V]	Rated current* $\Delta Y$ [A]	Speed* [min <sup>-1</sup> ]	Dimensions [mm]						Weight [kg]*
										$\varnothing m^*$	k*	l*	$\varnothing q$	s	u*	
LMP 10	10	219	G	80	50	0.75	230/400	3.0/1.73	2855	163	120	480	200	247	64	30
					60	0.86	265/460		3455							
	20		J	90S	50	1.5	230/400	5.63/3.25	2860	180	128	528	200	247	79	35
					60	1.75	265/460		3460							
	30		K	90L	50	2.2	230/400	7.88/4.55	2880	180	128	528	200	247	79	38
					60	2.55	265/460		3480							
	40		L	100L	50	3	230/400	10.57/6.1	2890	203	135	570	250	258	102	41
					60	3.45	265/460		3490							
	50		L	100L	50	3	230/400	10.57/6.1	2890	203	135	570	250	258	102	41
					60	3.45	265/460		3490							
	60		M	112M	50	4	230/400	13.51/7.8	2905	227	148	591	250	258	102	45
					60	4.6	265/460		3505							
70	M	112M	50	4	230/400	13.51/7.8	2905	227	148	591	250	258	102	45		
			60	4.6	265/460		3505									
80	N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	62		
			60	6.3	$\Delta 460$		3525									
90	N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	62		
			60	6.3	$\Delta 460$		3525									
100	N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	62		
			60	6.3	$\Delta 460$		3525									
LMP 11	10	219	H	80	50	1.1	230/400	4.16/2.4	2845	163	120	480	200	247	64	32
					60	1.3	265/460		3445							
	20		K	90L	50	2.2	230/400	7.88/4.55	2880	180	128	528	200	247	79	38
					60	2.55	265/460		3480							
	30		K	90L	50	2.2	230/400	7.88/4.55	2880	180	128	528	200	247	79	38
					60	2.55	265/460		3480							
	40		L	100L	50	3	230/400	10.57/6.1	2890	203	135	570	250	258	102	41
					60	3.45	265/460		3490							
	50		M	112M	50	4	230/400	13.51/7.8	2905	227	148	591	250	258	102	45
					60	4.6	265/460		3505							
	60		M	112M	50	4	230/400	13.51/7.8	2905	227	148	591	250	258	102	45
					60	4.6	265/460		3505							
70	N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	62		
			60	6.3	$\Delta 460$		3525									
80	N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	62		
			60	6.3	$\Delta 460$		3525									
90	O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	71		
			60	8.6	$\Delta 460$		3530									
100	O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	71		
			60	8.6	$\Delta 460$		3530									
LMP 20	10	219	H	80	50	1.1	230/400	4.16/2.4	2845	163	120	480	200	247	64	32
					60	1.3	265/460		3445							
	20		K	90L	50	2.2	230/400	7.88/4.55	2880	180	128	528	200	247	79	38
					60	2.55	265/460		3480							
	30		L	100L	50	3	230/400	10.57/6.1	2890	203	135	570	250	258	102	41
					60	3.45	265/460		3490							
	40		M	112M	50	4	230/400	13.51/7.8	2905	227	148	591	250	258	102	45
					60	4.6	265/460		3505							
	50		M	112M	50	4	230/400	13.51/7.8	2905	227	148	591	250	258	102	45
					60	4.6	265/460		3505							
	60		N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	62
					60	6.3	$\Delta 460$		3525							
70	N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	62		
			60	6.3	$\Delta 460$		3525									
80	O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	71		
			60	8.6	$\Delta 460$		3530									
90	O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	71		
			60	8.6	$\Delta 460$		3530									
100	P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	325	161	102		
			60	12.5	$\Delta 460$		3540									
LMP 21	10	219	J	90S	50	1.5	230/400	5.63/3.25	2860	180	128	528	200	247	79	35
					60	1.75	265/460		3460							
	20		K	90L	50	2.2	230/400	7.88/4.55	2880	180	128	528	200	247	79	38
					60	2.55	265/460		3480							
	30		L	100L	50	3	230/400	10.57/6.1	2890	203	135	570	250	258	102	41
					60	3.45	265/460		3490							
	40		M	112M	50	4	230/400	13.51/7.8	2905	227	148	591	250	258	102	45
					60	4.6	265/460		3505							
	50		N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	62
					60	6.3	$\Delta 460$		3525							
	60		N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	62
					60	6.3	$\Delta 460$		3525							
70	O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	71		
			60	8.6	$\Delta 460$		3530									
80	O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	71		
			60	8.6	$\Delta 460$		3530									
90	P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	326	161	102		
			60	12.6	$\Delta 460$		3540									
100	P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	326	161	102		
			60	12.6	$\Delta 460$		3540									

\* Depending on motor make

**LMP 22, 12, 13****Dimensions, weights and electrical values at a viscosity of 1 mm<sup>2</sup>/s**

Frame size	Delivery pressure [bar]	Immersion depth [mm]	Motor index	Motor frame size	Frequency [Hz]	Rated output [kW]	Rated voltage $\Delta/Y$ [V]	Rated current* $\Delta/Y$ [A]	Speed* [min <sup>-1</sup> ]	Dimensions [mm]						Weight [kg]*
										$\varnothing m^*$	k*	l*	$\varnothing q$	s	u*	
LMP 22	10	219	J	90S	50	1.5	230/400	5.63/3.25	2860	180	128	528	200	247	79	35
					60	1.75	265/460		3460							
	20		L	100L	50	3	230/400	10.57/6.1	2890	203	135	570	250	258	102	41
					60	3.45	265/460		3490							
	30		M	112M	50	4	230/400	13.51/7.8	2905	227	148	591	250	258	102	45
					60	4.6	265/460		3505							
	40		N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	62
					60	6.3	$\Delta 460$		3525							
	50		O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	71
					60	8.6	$\Delta 460$		3530							
	60		O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	71
					60	8.6	$\Delta 460$		3530							
70	O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	71		
			60	8.6	$\Delta 460$		3530									
80	P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	326	161	102		
			60	12.6	$\Delta 460$		3540									
90	P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	326	161	102		
			60	12.6	$\Delta 460$		3540									
100	P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	326	161	102		
			60	12.6	$\Delta 460$		3540									
LMP 12	10	262	K	90L	50	2.2	230/400	7.88/4.55	2880	180	128	528	200	247	79	40
					60	2.55	265/460		3480							
	20		L	100L	50	3	230/400	10.57/6.1	2890	203	135	570	250	258	102	42
					60	3.45	265/460		3490							
	30		M	112M	50	4	230/400	13.51/7.8	2905	227	148	591	250	258	102	47
					60	4.6	265/460		3505							
	40		N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	64
					60	6.3	$\Delta 460$		3525							
	50		O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	73
					60	8.6	$\Delta 460$		3530							
	60		O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	73
					60	8.6	$\Delta 460$		3530							
70	P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	326	161	104		
			60	12.6	$\Delta 460$		3540									
80	P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	326	161	104		
			60	12.6	$\Delta 460$		3540									
90	P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	326	161	104		
			60	12.6	$\Delta 460$		3540									
100	Q	160M	50	15	$\Delta 400$	26.5	2940	320	197	804	350	326	161	113		
			60	17.3	$\Delta 460$		3540									
LMP 13	10	262	K	90L	50	2.2	230/400	7.88/4.55	2880	180	128	528	200	247	79	40
					60	2.55	265/460		3480							
	20		M	112M	50	4	230/400	13.51/7.8	2905	227	148	591	250	258	102	47
					60	4.6	265/460		3505							
	30		N	132S	50	5.5	$\Delta 400$	10.3	2925	267	167	655	300	282	128	64
					60	6.3	$\Delta 460$		3525							
	40		O	132S	50	7.5	$\Delta 400$	13.8	2930	267	167	655	300	282	128	73
					60	8.6	$\Delta 460$		3530							
	50		P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	326	161	104
					60	12.6	$\Delta 460$		3540							
	60		P	160M	50	11	$\Delta 400$	20	2940	320	197	804	350	326	161	104
					60	12.6	$\Delta 460$		3540							
70	Q	160M	50	15	$\Delta 400$	26.5	2940	320	197	804	350	326	161	113		
			60	17.3	$\Delta 460$		3540									
80	Q	160M	50	15	$\Delta 400$	26.5	2940	320	197	804	350	326	161	113		
			60	17.3	$\Delta 460$		3540									
90	Q	160M	50	15	$\Delta 400$	26.5	2940	320	197	804	350	326	161	113		
			60	17.3	$\Delta 460$		3540									
100	R	160L	50	18.5	$\Delta 400$	32.5	2940	320	197	804	350	326	161	122		
			60	21.3	$\Delta 460$		3540									

\* Depending on motor make

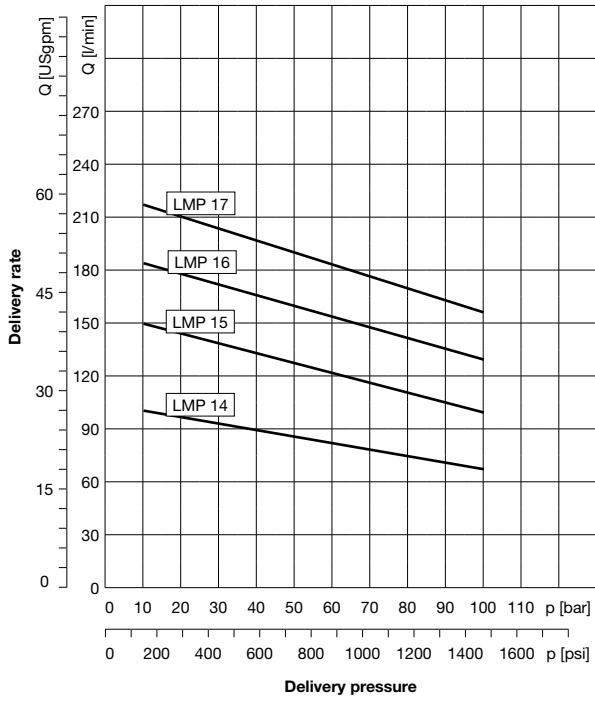
### LMP 14, 15, 16, 17 – delivery rates and power requirement

			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	

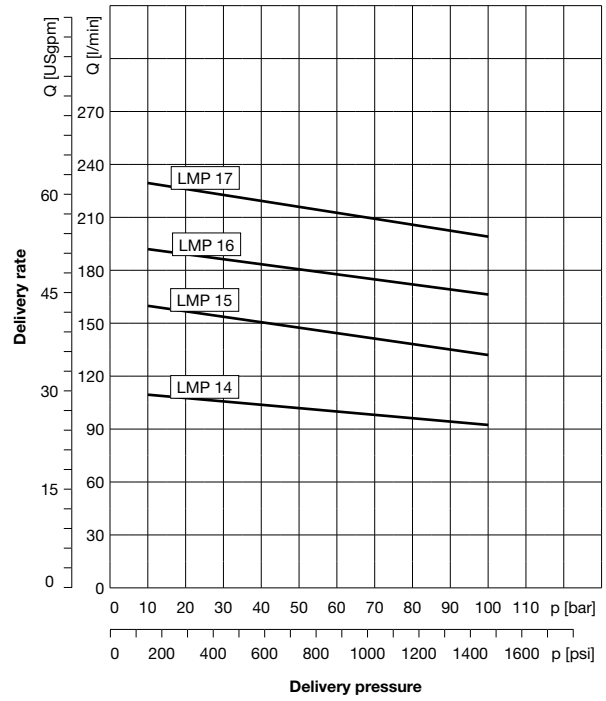
Tolerances = VDMA24284 - II

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

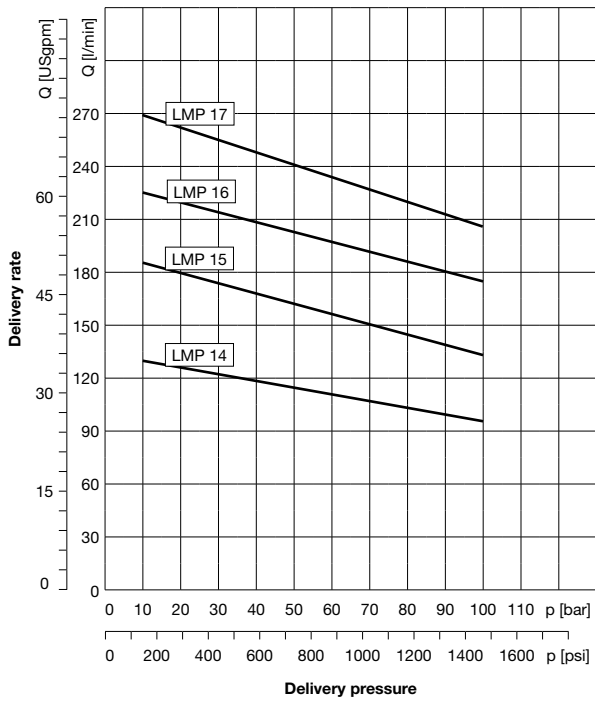
Speed 2900 min.<sup>-1</sup>, 50 Hz, 1 mm<sup>2</sup>/s



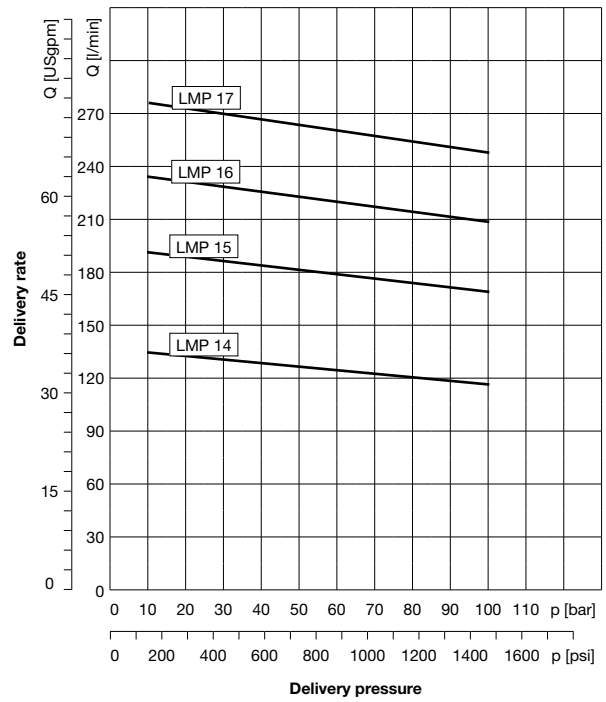
Speed 2900 min.<sup>-1</sup>, 50 Hz, 20 mm<sup>2</sup>/s



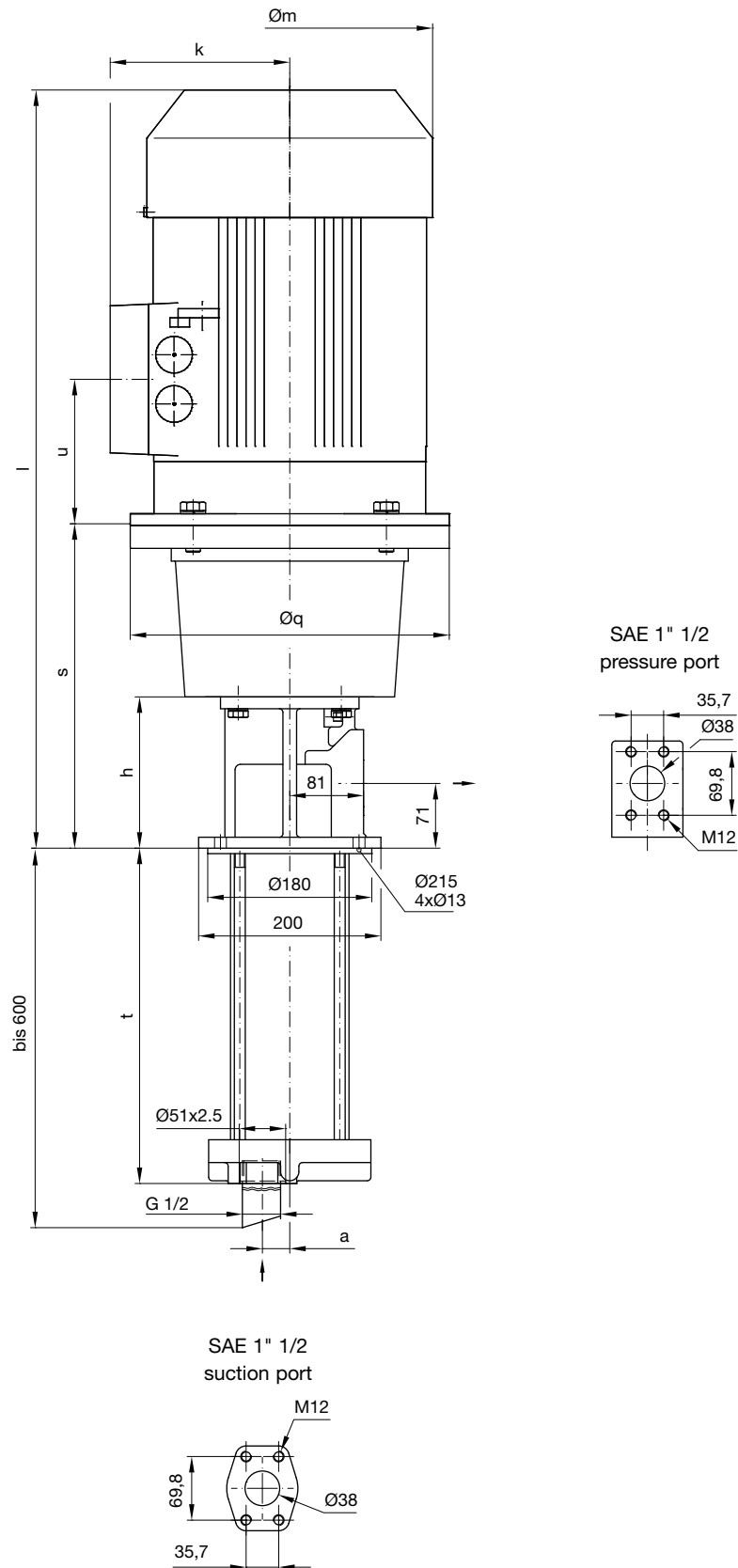
Speed 3500 min.<sup>-1</sup>, 60 Hz, 1 mm<sup>2</sup>/s



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

#### Dimensions, weights and electrical values at a viscosity of 1 mm<sup>2</sup>/s

Frame size	Delivery pressure [bar]	Immersion depth [mm]	Motor index	Motor frame size	Frequency [Hz]	Rated output [kW]	Rated voltage Δ/Y [V]	Rated current* Δ/Y [A]	Speed* [min <sup>-1</sup> ]	Dimensions [mm]								Weight [kg]*
										øm*	k*	l*	øq	s	h	a	u*	
LMP 14	10	315	L	100L	50	3	230/400	10.57/6.1	2890	203	135	613	250	301	166	25	102	50
					60	3.45	265/460		3490									
	20		N	132S	50	5.5	Δ400	10.3	2925									
					60	6.3	Δ460		3525									
	30		O	132S	50	7.5	Δ400	13.8	2930									
					60	8.6	Δ460		3530									
	40		P	160M	50	11	Δ400	20	2940									
					60	12.6	Δ460		3540									
	50		Q	160M	50	15	Δ400	26.5	2940									
					60	17.3	Δ460		3540									
	60		Q	160M	50	15	Δ400	26.5	2940									
					60	17.3	Δ460		3540									
70	R	160L	50	18.5	Δ400	32.5	2940											
			60	21.3	Δ460		3540											
80	S	180M	50	22	Δ400	39.5	2940											
			60	24.5	Δ460		3540											
90	S	180M	50	22	Δ400	39.5	2940											
			60	24.5	Δ460		3540											
100	T	200L	50	30	Δ400	53	2944											
			60	33.5	Δ460		3544											
LMP 15	10	315	M	112M	50	4	230/400	13.51/7.8	2905	227	148	634	250	301	166	25	102	57
					60	4.6	265/460		3505									
	20		O	132S	50	7.5	Δ400	13.8	2930									
					60	8.6	Δ460		3530									
	30		P	160M	50	11	Δ400	20	2940									
					60	12.6	Δ460		3540									
	40		Q	160M	50	15	Δ400	26.5	2940									
					60	17.3	Δ460		3540									
	50		R	160L	50	18.5	Δ400	32.5	2940									
					60	21.3	Δ460		3540									
	60		S	180M	50	22	Δ400	39.5	2940									
					60	24.5	Δ460		3540									
70	T	200L	50	30	Δ400	53	2944											
			60	33.5	Δ460		3544											
80	T	200L	50	30	Δ400	53	2944											
			60	33.5	Δ460		3544											
90	T	200L	50	30	Δ400	53	2944											
			60	33.5	Δ460		3544											
100	U	200L	50	37	Δ400	65	2944											
			60	41.5	Δ460		3544											
LMP 16	10	361	N	132S	50	5.5	Δ400	10.3	2925	267	167	689	300	317	173	30	128	96
					60	6.3	Δ460		3525									
	20		P	160M	50	11	Δ400	20	2940									
					60	12.6	Δ460		3540									
	30		Q	160M	50	15	Δ400	26.5	2940									
					60	17.3	Δ460		3540									
	40		R	160L	50	18.5	Δ400	32.5	2940									
					60	21.3	Δ460		3540									
	50		S	180M	50	22	Δ400	39.5	2940									
					60	24.5	Δ460		3540									
	60		T	200L	50	30	Δ400	53	2944									
					60	33.5	Δ460		3544									
70	T	200L	50	30	Δ400	53	2944											
			60	33.5	Δ460		3544											
80	U	200L	50	37	Δ400	65	2944											
			60	41.5	Δ460		3544											
90	U	200L	50	37	Δ400	65	2944											
			60	41.5	Δ460		3544											
100	V	225M	50	45	Δ400	78	2959											
			60	51	Δ460		3559											
LMP 17	10	361	O	132S	50	7.5	Δ400	13.8	2930	267	167	689	300	317	173	30	128	105
					60	8.6	Δ460		3530									
	20		P	160M	50	11	Δ400	20	2940									
					60	12.6	Δ460		3540									
	30		Q	160M	50	15	Δ400	26.5	2940									
					60	17.3	Δ460		3540									
	40		S	180M	50	22	Δ400	39.5	2940									
					60	24.5	Δ460		3540									
	50		T	200L	50	30	Δ400	53	2944									
					60	33.5	Δ460		3544									
	60		T	200L	50	30	Δ400	53	2944									
					60	33.5	Δ460		3544									
70	U	200L	50	37	Δ400	65	2944											
			60	41.5	Δ460		3544											
80	V	225M	50	45	Δ400	78	2959											
			60	51	Δ460		3559											
90	V	225M	50	45	Δ400	78	2959											
			60	51	Δ460		3559											
100	V	225M	50	45	Δ400	78	2959											
			60	51	Δ460		3559											

\* Depending on motor make

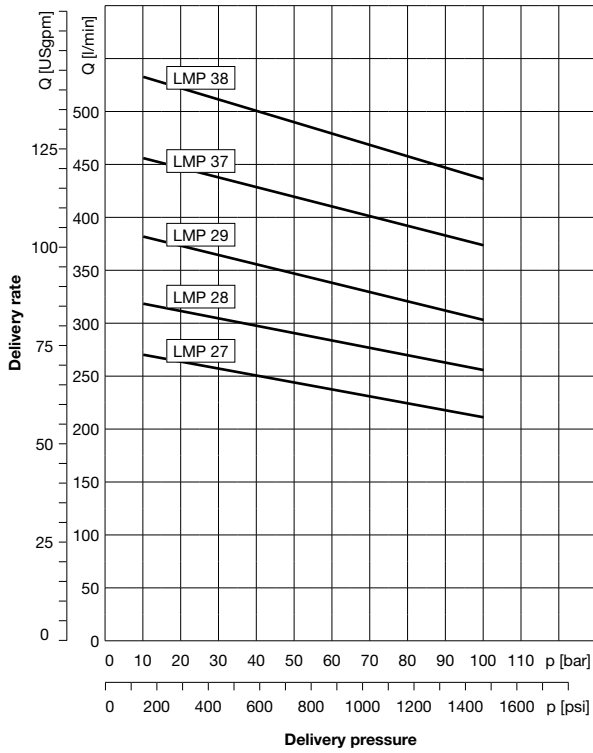
**LMP 27, 28, 29, 37, 38 – delivery rates and power requirement**

			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	

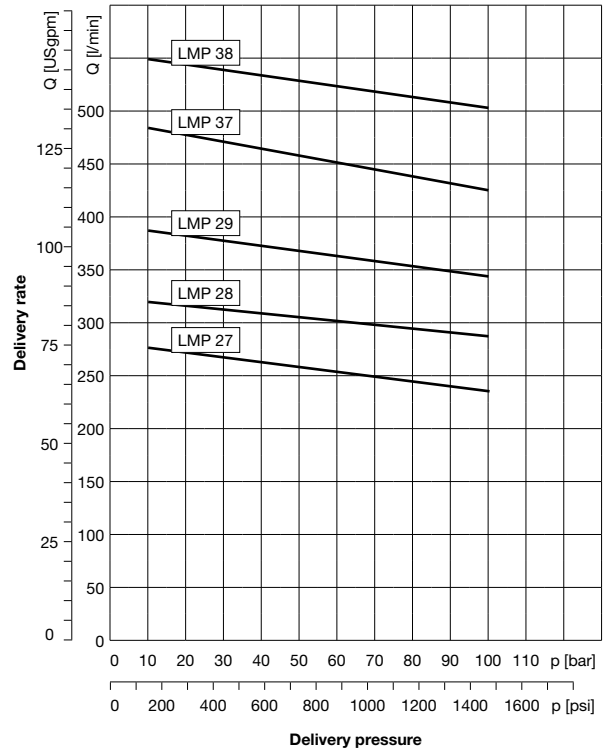
Tolerances = VDMA24284 - II

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

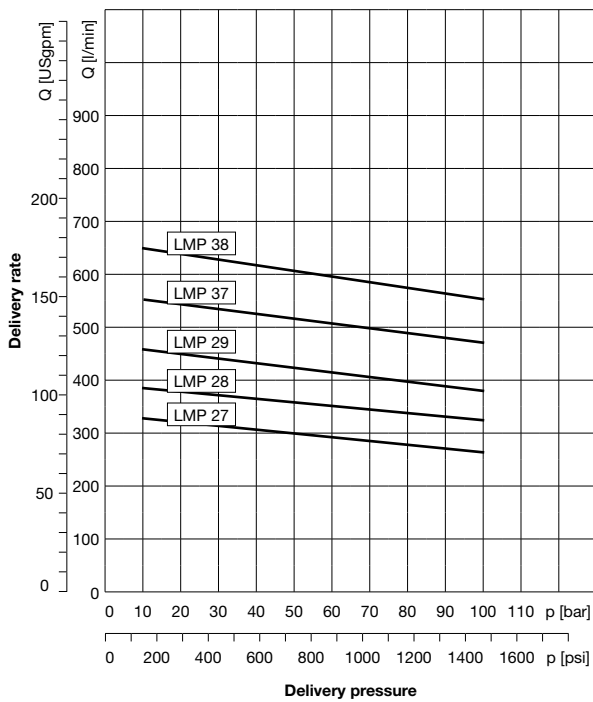
Speed 2900 min.<sup>-1</sup>, 50 Hz, 1 mm<sup>2</sup>/s



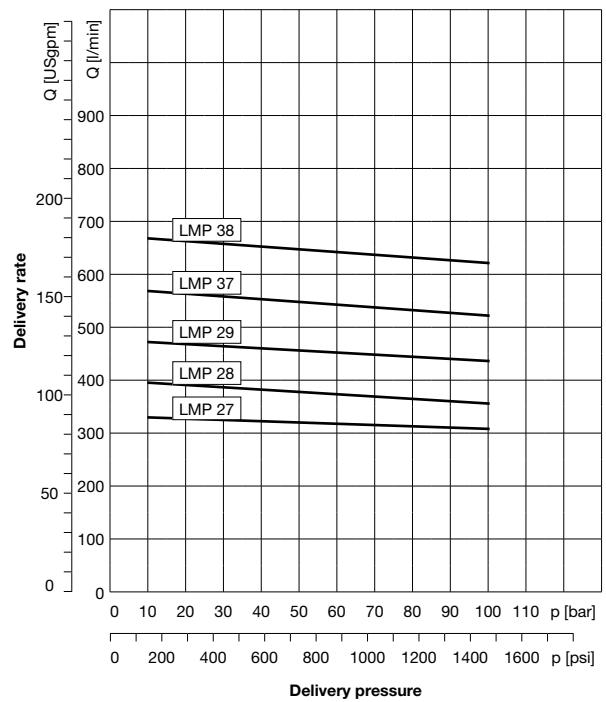
Speed 2900 min.<sup>-1</sup>, 50 Hz, 20 mm<sup>2</sup>/s



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

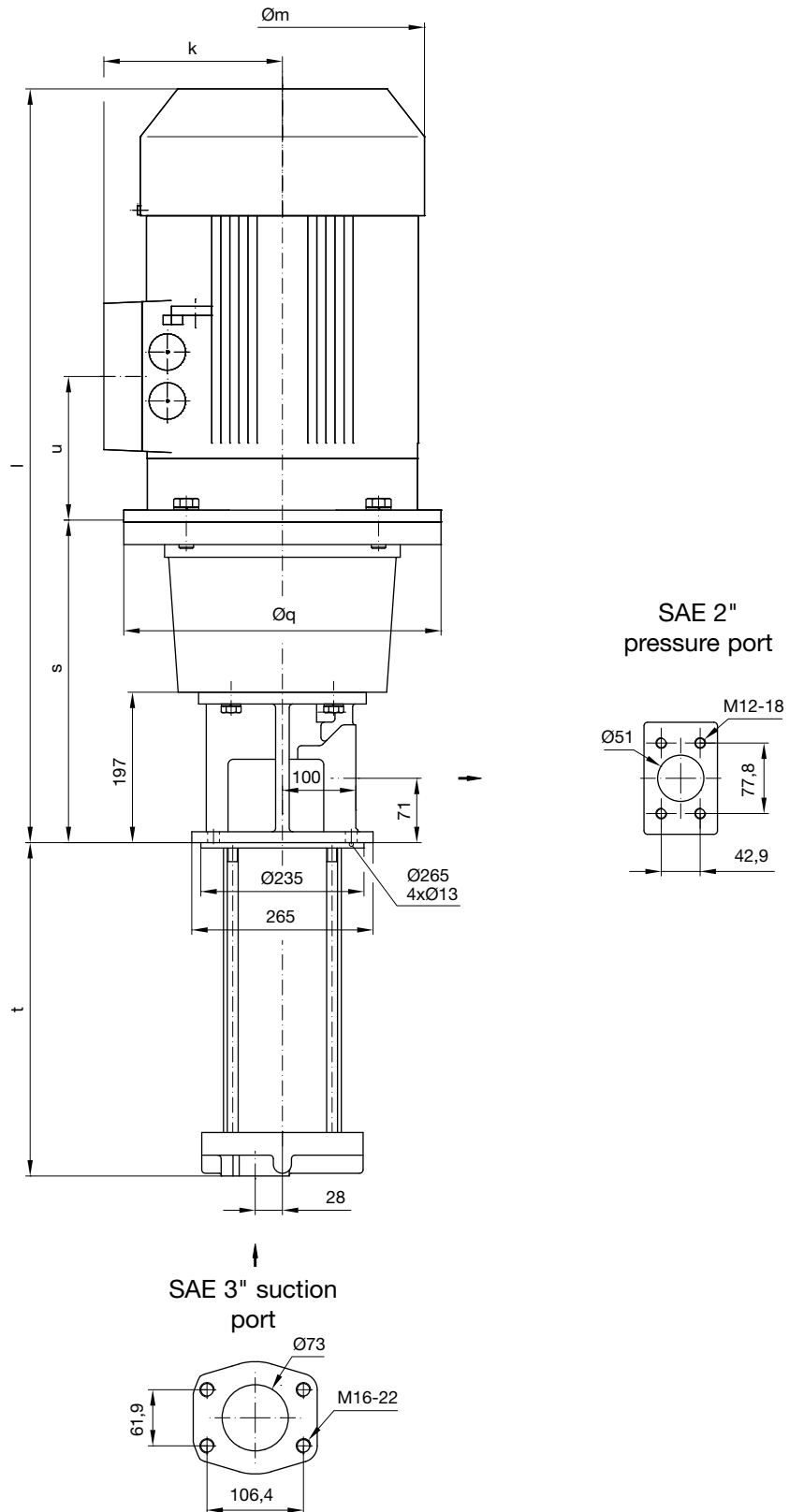


Speed 3500 min.<sup>-1</sup>, 60 Hz, 20 mm<sup>2</sup>/s





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



**LMP 27, 28, 29****Dimensions, weights and electrical values at a viscosity of 1 mm<sup>2</sup>/s**

Frame size	Delivery pressure [bar]	Immersion depth [mm]	Motor index	Motor frame size	Frequency [Hz]	Rated output [kW]	Rated voltage Δ/Y [V]	Rated current* Δ/Y [A]	Speed* [min <sup>-1</sup> ]	Dimensions [mm]						Weight [kg]*
										øm*	k*	l*	øq	s	u*	
LMP 27	10	408	O	132S	50	7.5	Δ400	13.8	2930	267	167	714	300	341	128	131
					60	8.6	Δ460		3530							
	20		Q	160M	50	15	Δ400	26.5	2940	320	197	863	350	385	161	165
					60	17.3	Δ460		3540							
	30		R	160L	50	18.5	Δ400	32.5	2940	320	197	863	350	385	161	174
					60	21.3	Δ460		3540							
	40		T	200L	50	30	Δ400	53	2944	402	305	1040	400	381	178	252
					60	33.5	Δ460		3544							
	50		T	200L	50	30	Δ400	53	2944	402	305	1040	400	381	178	252
					60	33.5	Δ460		3544							
	60		U	200L	50	37	Δ400	65	2944	402	305	1040	400	381	178	273
					60	41.5	Δ460		3544							
	70		V	225M	50	45	Δ400	78	2959	402	305	1039	450	373	184.5	307
					60	51	Δ460		3559							
	80		V	225M	50	45	Δ400	78	2959	402	305	1038	450	373	184.5	307
					60	51	Δ460		3559							
	90		W	250M	50	55	Δ400	93	2975	495	392	1161	550	414	237	490
					60	75	Δ460		3578							
100	Y	280S	50	75	Δ400	128	2975	555	432	1234	550	414	252	600		
			60	100	Δ460		3580									
LMP 28	10	408	P	160M	50	11	Δ400	20	2940	320	197	863	350	385	161	156
					60	12.6	Δ460		3540							
	20		Q	160M	50	15	Δ400	26.5	2940	320	197	863	350	385	161	165
					60	17.3	Δ460		3540							
	30		S	180M	50	22	Δ400	39.5	2940	363	258	987	350	385	159	198
					60	24.5	Δ460		3540							
	40		T	200L	50	30	Δ400	53	2944	402	305	1040	400	381	178	252
					60	33.5	Δ460		3544							
	50		U	200L	50	37	Δ400	65	2944	402	305	1040	400	381	178	273
					60	41.5	Δ460		3544							
	60		V	225M	50	45	Δ400	78	2959	402	305	1039	450	373	184.5	307
					60	51	Δ460		3559							
	70		W	250M	50	55	Δ400	93	2975	495	392	1161	550	414	237	490
					60	75	Δ460		3578							
	80		W	250M	50	55	Δ400	93	2975	495	392	1161	550	414	237	490
					60	75	Δ460		3578							
	90		Y	280S	50	75	Δ400	128	2975	555	432	1234	550	414	252	600
					60	100	Δ460		3580							
100	Y	280S	50	75	Δ400	128	2975	555	432	1234	550	414	252	600		
			60	100	Δ460		3580									
LMP 29	10	408	P	160M	50	11	Δ400	20	2940	320	197	863	350	385	161	156
					60	12.6	Δ460		3540							
	20		R	160L	50	18.5	Δ400	32.5	2940	320	197	863	350	385	161	174
					60	21.3	Δ460		3540							
	30		T	200L	50	30	Δ400	53	2944	402	305	1040	400	381	178	252
					60	33.5	Δ460		3544							
	40		U	200L	50	37	Δ400	65	2944	402	305	1040	400	381	178	273
					60	41.5	Δ460		3544							
	50		V	225M	50	45	Δ400	78	2959	402	305	1039	450	373	184.5	307
					60	51	Δ460		3559							
	60		W	250M	50	55	Δ400	93	2975	495	392	1161	550	414	237	490
					60	75	Δ460		3578							
	70		Y	280S	50	75	Δ400	128	2975	555	432	1234	550	414	252	600
					60	100	Δ460		3580							
	80		Y	280S	50	75	Δ400	128	2975	555	432	1234	550	414	252	600
					60	100	Δ460		3580							
	90		Y	280S	50	75	Δ400	128	2975	555	432	1234	550	414	252	600
					60	100	Δ460		3580							
100	Z	280M	50	90	Δ400	150	2978	555	432	1344	550	414	252	685		
			60	125	Δ460		3580									

\* Depending on motor make

**LMP 37, 38****Dimensions, weights and electrical values at a viscosity of 1 mm<sup>2</sup>/s**

Frame size	Delivery pressure [bar]	Immersion depth [mm]	Motor index	Motor frame size	Frequency [Hz]	Rated output [kW]	Rated voltage $\Delta/Y$ [V]	Rated current* $\Delta/Y$ [A]	Speed* [min <sup>-1</sup> ]	Dimensions [mm]						Weight [kg]*
										$\varnothing m^*$	k*	l*	$\varnothing q$	s	u*	
LMP 37	10	465	P	160M	50	11	$\Delta 400$	20	2940	320	197	863	350	385	161	160
					60	12.6	$\Delta 460$		3540							
	20		S	180M	50	22	$\Delta 400$	39.5	2940	363	258	987	350	385	159	202
					60	24.5	$\Delta 460$		3540							
	30		T	200L	50	30	$\Delta 400$	53	2944	402	305	1040	400	381	178	256
					60	33.5	$\Delta 460$		3544							
	40		V	225M	50	45	$\Delta 400$	78	2959	402	305	1039	450	373	184.5	311
					60	51	$\Delta 460$		3559							
	50		W	250M	50	55	$\Delta 400$	93	2975	495	392	1161	550	414	237	494
					60	75	$\Delta 460$		3578							
	60		Y	280S	50	75	$\Delta 400$	128	2975	555	432	1234	550	414	252	604
					60	100	$\Delta 460$		3580							
	70		Y	280S	50	75	$\Delta 400$	128	2975	555	432	1234	550	414	252	604
					60	100	$\Delta 460$		3580							
	80		Z	280M	50	90	$\Delta 400$	150	2978	555	432	1344	550	414	252	689
					60	125	$\Delta 460$		3580							
	90		Z	280M	50	90	$\Delta 400$	150	2978	555	432	1344	550	414	252	689
					60	125	$\Delta 460$		3580							
100	-	315S	50	110	$\Delta 400$	182	2982	610	500	1376	660	444	285	864		
			60	150	$\Delta 460$		3585									
LMP 38	10	465	Q	160M	50	15	$\Delta 400$	26.5	2940	320	197	863	350	385	161	169
					60	17.3	$\Delta 460$		3540							
	20		T	200L	50	30	$\Delta 400$	53	2944	402	305	1040	400	381	178	256
					60	33.5	$\Delta 460$		3544							
	30		U	200L	50	37	$\Delta 400$	65	2944	402	305	1040	400	381	178	277
					60	41.5	$\Delta 460$		3544							
	40		W	250M	50	55	$\Delta 400$	93	2975	495	392	1161	550	414	237	494
					60	75	$\Delta 460$		3578							
	50		Y	280S	50	75	$\Delta 400$	128	2975	555	432	1234	550	414	252	604
					60	100	$\Delta 460$		3580							
	60		Y	280S	50	75	$\Delta 400$	128	2975	555	432	1234	550	414	252	604
					60	100	$\Delta 460$		3580							
	70		Z	280M	50	90	$\Delta 400$	150	2978	555	432	1344	550	414	252	689
					60	125	$\Delta 460$		3580							
	80		-	315S	50	110	$\Delta 400$	182	2982	610	500	1376	660	444	285	864
					60	150	$\Delta 460$		3585							
	90		-	315S	50	110	$\Delta 400$	182	2982	610	500	1376	660	444	285	864
					60	150	$\Delta 460$		3585							
100	-	315M	50	132	$\Delta 400$	220	2982	610	500	1536	660	444	285	990		
			60	175	$\Delta 460$		3586									

\* Depending on motor make

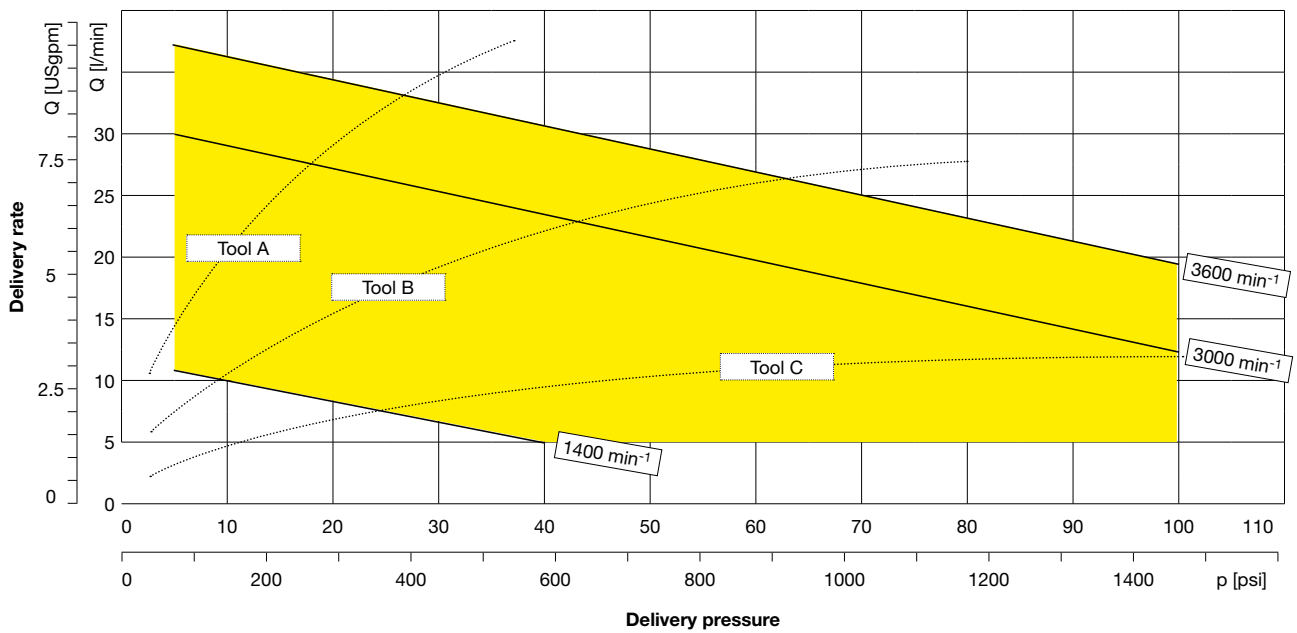
## Frequency converter



### 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



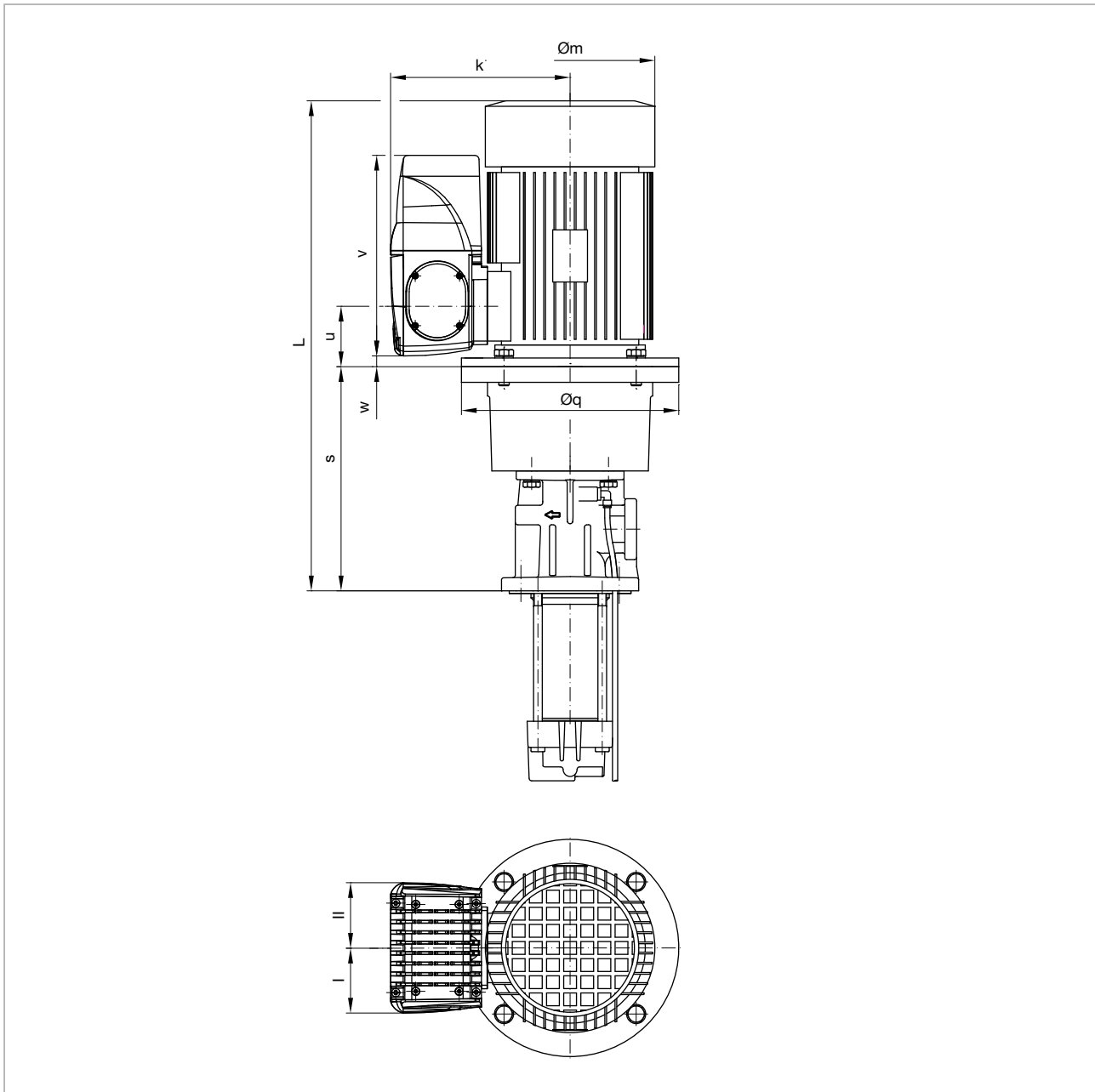
### Performance

Medium	= emulsion with at least 4–5% oil
Viscosity	= 1 $\text{mm}^2/\text{s}$ .
Delivery pressures up to $p_{\text{max}}$ .	= 10 to 100 bar
Delivery rates up to $Q_{\text{max}}$ .	= 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 based on example of LMP 10, 11, 20, 21, 22, 12, 13



	Øm	k	L	Øp	s	u	v	w	I	II	Weight [kg]
<b>1.1 kW</b>	170	192	463	200	247	89	217	11.5	75	75	31
<b>1.5 kW</b>	190	202	484	200	247	89	232	31	75	75	33
<b>2.2 kW</b>	190	202	511	200	247	89	232	31	75	75	37
<b>3 kW</b>	200	207	548	250	258	70	232	12	75	75	41
<b>4 kW</b>	200	207	548	250	258	70	232	12	75	75	45
<b>5.5 kW</b>	235	279	638	300	282	85	336	21	115	115	55
<b>7.5 kW</b>	235	279	638	300	282	85	336	21	115	115	62
<b>11 kW</b>	280	297	667	300	282	115	336	5	115	115	71

\*Further ratings with external frequency converter for control cabinet installation and PTC thermistor fitting on request

## 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

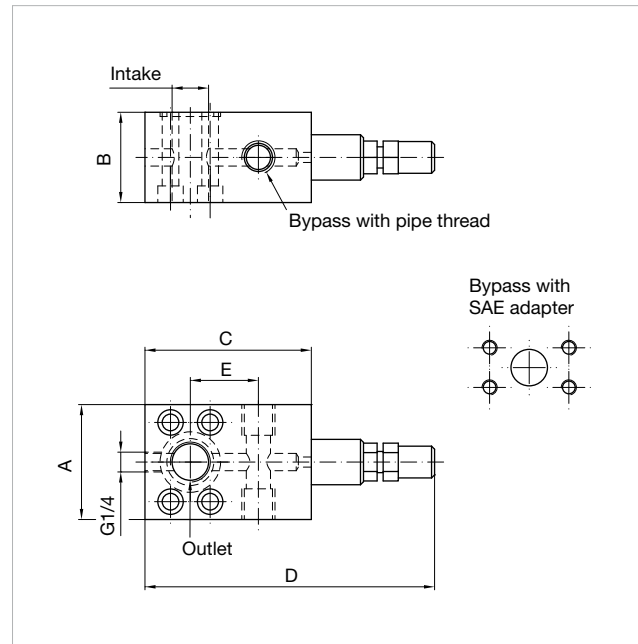


### Features

- 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

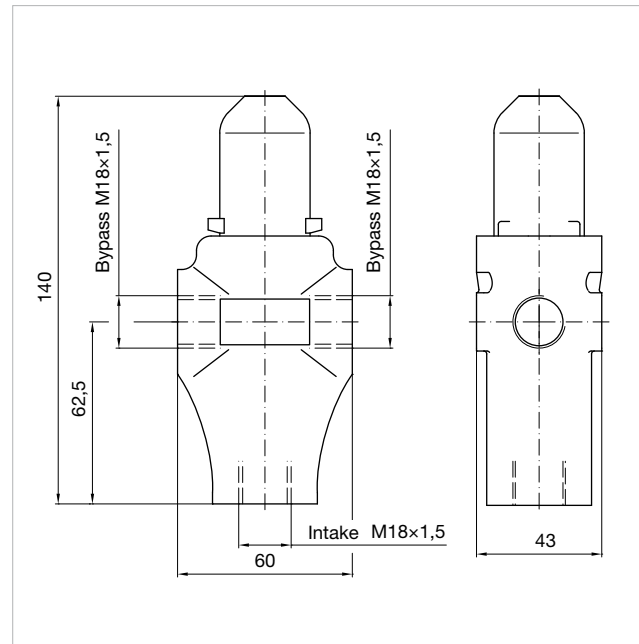
### Advantages

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

Order number	DVK 3/4	DVK 1	DVK 1 1/4
A	76	79.5	98
B	59.7	79.5	79.5
C	110	150	170
D	191.5	215	235
Inlet	SAE 1"	SAE 1 1/4"	SAE 1 1/2"
Outlet	G 3/4"	G 1"	G 1 1/4"
Bypass	G 1/2"	SAE 1"	SAE 1 1/2"



## Pressure regulating valve 308



### Features

- Variable adjustable limiting value
- Dual bypass function
- Design for tubing installation and block installation
- Pipe thread connection

### Medium

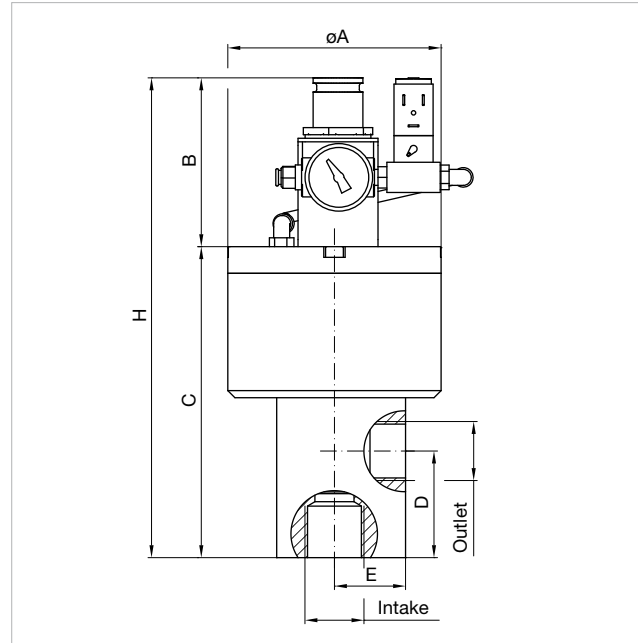
Cooling lubricants and oil/water emulsions of 1 bis 800 mm<sup>2</sup>/s.

### Performance

Order number	24-2103-3083	24-2103-3084	24-2103-3085	24-2103-3086
Operating pressure in bar	10–15	15–50	40–100	70–180
Delivery rate $Q_{\max}$	120 l/min. depending on set pressure and conductor diameter			
Medium temperature	0 to 80 °C			
Weight	1 kg			



## 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"

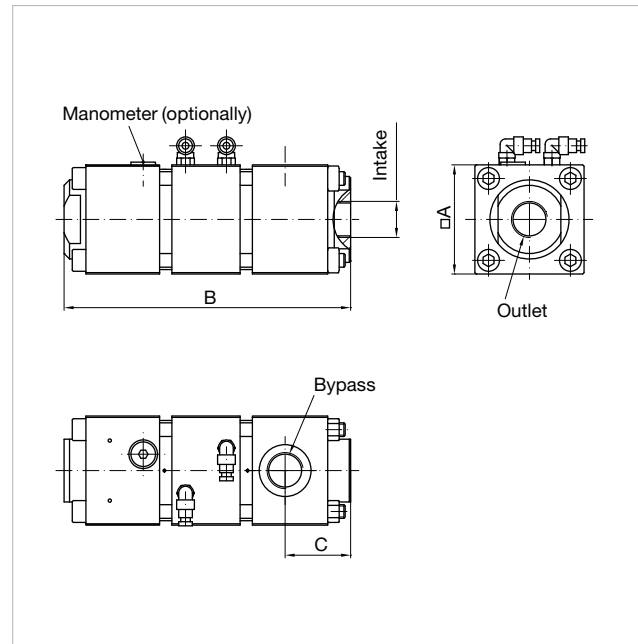
### Medium

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

### Medium

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

	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

### 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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