

KP 1 ... 5

HIGH PRESSURE
GEAR PUMPS



KRACHT®
FLUID TECHNOLOGY AND SYSTEMS

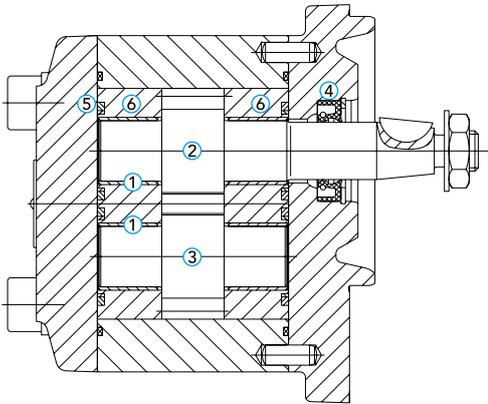
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General

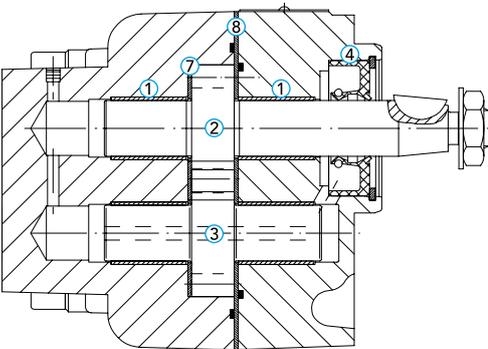
Constructions

KP 1 – Aluminum version

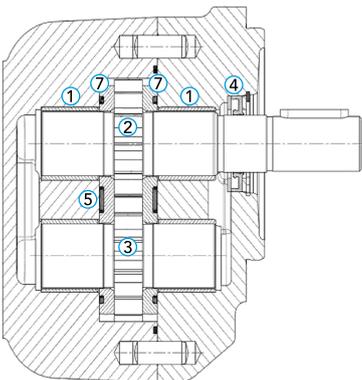


- 1 Plain bearing
- 2 Driving shaft
- 3 Driven shaft
- 4 Shaft sealing
- 5 Pressure field sealing
- 6 Bearing gland
- 7 Sliding plate
- 8 Pressure plate

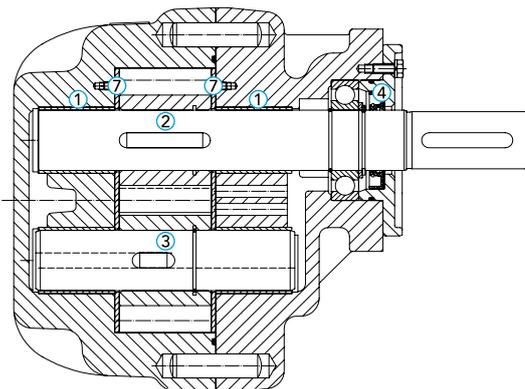
KP 1 – Cast iron version



KP 2/3 – Cast iron version



KP 5 – Cast iron version



General

Descriptions

KP 1 – Aluminium

Due to its design, the KP1 external gear pump is a type of so-called spectacle pump. The main functional elements, gear sets and bearing seats are located in an aluminium housing made of highstrength extruded alloy.

The gear set is made of case-hardened steel and consists of the driving shaft and the driven shaft, and the highest manufacturing quality is ensured by grinding the tooth flanks. Due to the high number of teeth (13) and the special tooth shape, a significant reduction in the design-related volume flow fluctuation and the associated pressure pulsation is achieved. The bearing grooves arranged on both sides of the gear sets support the shaft journals and the sealing elements in heavy-duty multi-material plain bearings to seal the pressure fields for axial clearance compensation.

On request, the pumps can be supplied with a directly flange-mounted pressure relief valve or with mounted special valves. Multiple pump combinations are possible.

KP 1 – Cast iron

Due to its design and the materials used, the grey cast iron version is suitable for use under the toughest operating conditions. The main components can withstand high dynamic loads and are therefore insensitive to pressure peaks and continuous vibrations.

Large-area PTFE-Pb-coated bronze plain bearings on steel backs support the precision-ground bearing journals of the gear set with shafts made of hardened case-hardened steel. The tooth flanks are ground to achieve the best possible running characteristics and the function of active axial play compensation, which is essential for high-pressure pumps, is performed by the kidneys under the pressure plate. These have hydraulically pressurised pressure fields, which ensure that the axial play is compensated at any operating pressure. The pressure plates are designed in such a way that the clearance is equalised regardless of viscosity. This ensures high volumetric and mechanical efficiency at every operating point.

Seals in NBR or FKM can be used to fulfil a wide range of application requirements. These pumps are suitable for hydraulic oil, engine oil, HEES bio-oils and flame-retardant liquids, and all versions can be supplied with ship approvals.

KP 2/3 – Cast iron

KRACHT external gear pumps of size KP 2/3 are suitable for use under the toughest operating conditions due to their design and the materials used. The main components are the housing and flange cover - both made of cast iron - which can withstand high dynamic loads and are therefore insensitive to pressure peaks and continuous vibrations. Large-area PTFE-Pb-coated bronze plain bearings on steel backs in the housing and flange cover support the precision-ground bearing journals of the gear sets, which consists of a driving shaft and a driven shaft. The tooth flanks of the gear set, which is made of hardened case-hardened steel, are ground to achieve the best possible running properties, and the high number of teeth (14), combined with a tooth shape designed to meet the special requirements of hydraulics and the optimised design of the expansion grooves in the pinch oil area, results in a considerable reduction in the volume flow fluctuation and thus the pressure pulsation. This leads to significantly lower noise levels of the pumps or entire systems and machines. The function of active axial clearance compensation, which is essential for high-pressure pumps, is performed by the sliding plates located on the side of the gear sets. These have hydraulically pressurised pressure fields, which ensure that the axial play is compensated at any operating pressure, and the sliding plates are designed in such a way that the play is compensated regardless of viscosity.

This ensures a high degree of volumetric and mechanical efficiency at every operating point, and seals in NBR or FKM can be used to fulfil a wide range of application requirements - depending on the temperature and/or medium. Multiple pump combinations of the same or different sizes are possible, and the noise-optimised pumps of the KP series are designed for pumping media with an increased air content, primarily for use as lubricating oil pumps on gearboxes. The noise levels are at, or only slightly higher than the measured values with non-air-containing oils. There is also no shift in the noise spectrum towards higher, unpleasant frequencies. The use of this variant is not advisable for applications without air in the medium, as the noise reduction effect does not occur there. These pumps are installed in combination with an electric motor.

All variants can be supplied with ship approvals.

KP 5 – Cast iron

High-pressure gear pumps from the KP series are preferably used in oil-hydraulic systems. They are suitable for mineral oil-based hydraulic fluids (DIN 51524/25) and engine oils (DIN 51511).

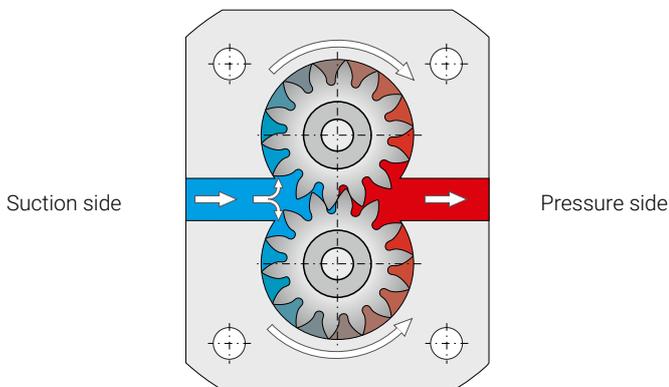
The housing parts are made of high-quality EN-GJL-300 or EN-GJS-400, the shafts and gears are made of hardened and ground case-hardened steel. The shafts are mounted in multi-layer bearings with very good emergency running properties. The drive shaft end is sealed by NBR or FKM shaft sealing rings. There is an outboard bearing at the shaft end to absorb radial and axial forces. The use of fine-mesh filters significantly increases the service life of the gear pumps.

General

Operating principle

Gear pumps in the KP high-pressure series (up to 300 bar) are external gear pumps that operate according to the positive displacement principle. The fluid is transported from the suction side to the pressure side by rotating the two gear sets / shafts (a driving shaft and a driven shaft) in the tooth gaps along the housing wall. The geometric delivery volume is displaced per gear wheel revolution. A value that is rounded to characterise the pump size as the nominal size in technical documents.

Gear pumps are basically self-priming - extremely high viscosities may require a pre-pressure. The described displacement process initially takes place without pressure build-up. The working pressure required to overcome these resistances is only established after external loads, e.g. head, flow resistances, line elements, etc., have been specified.



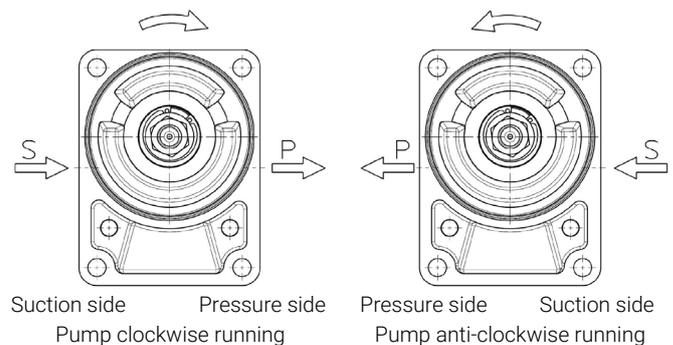
Operating instructions

- The media must guarantee a certain minimum lubricity, be chemically compatible with the materials used and should not contain any coarse solid particles.
- The pumps may only be operated in the specified direction of rotation.
- A pressure relief valve in the system or on the pump is recommended to prevent impermissible overpressure of the pump.
- Dry running must be avoided.

Directions of rotation

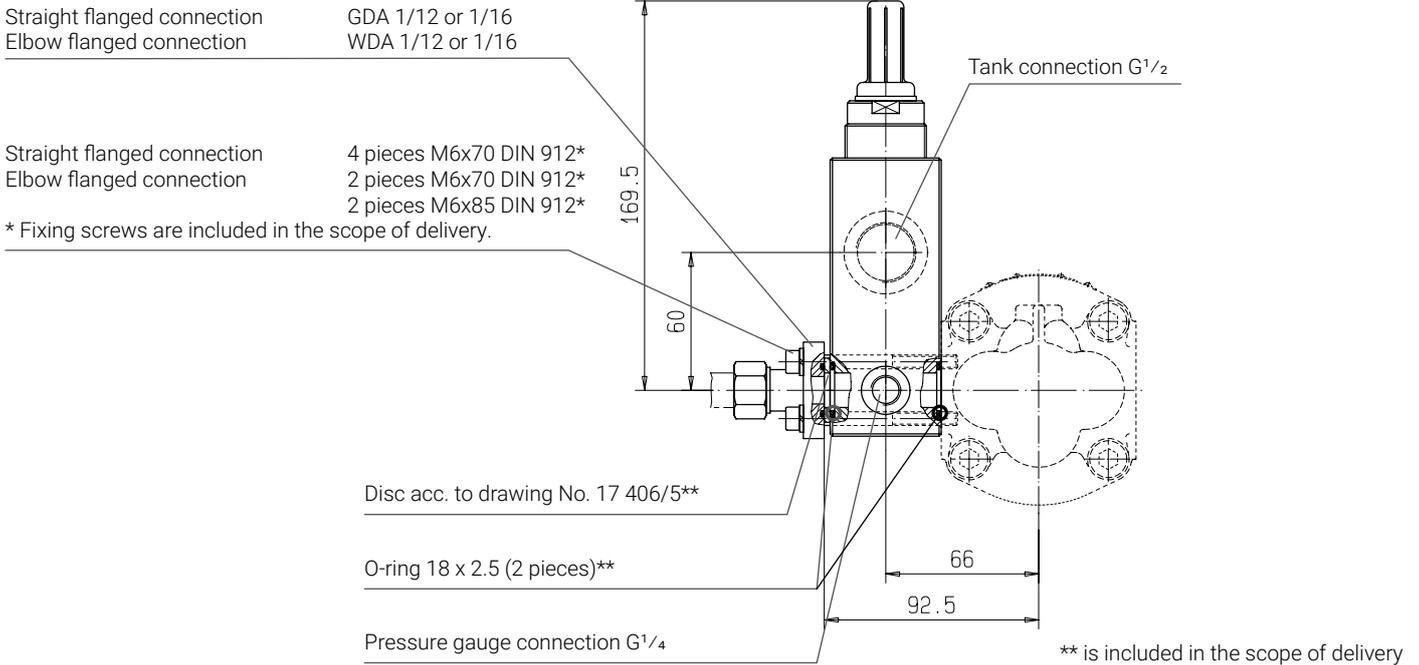
The following applies to the directions of rotation:

- When looking at the end of the pump shaft, the direction of delivery is from left to right if the shaft is rotating clockwise.
- When looking at the end of the pump shaft, the direction of delivery is from right to left if the shaft is rotating anti-clockwise.



Valves

Pressure relief valve DBD for direct attachment to KP 1



Ordering codes	Set pressures ₁ in bar	Set pressures ₂ in bar	Discharge flows ₁ in l/min	Discharge flows ₂ in l/min
DBD 10 K5 N1 D 300 S1	10	280	15	75
DBD 10 K5 N1 D 200 S1	10	200	15	70
DBD 10 K5 N1 D 150 S1	10	150	10	55
DBD 10 K5 N1 D 085 S1	10	85	10	45
DBD 10 K5 N1 D 040 S1	10	40	10	30
DBD 10 K5 N1 D 016 S1	5	16	9	20

Valves that can be integrated into pipes: Pressure relief valve DBD

The design of the valves that can be integrated into pipes depends on many factors, such as the pressure, flow rate, medium or viscosity. Our sales engineers will be happy to advise you and find the right solution for your application.

The pressure relief valve DBD is a directly controlled seat valve for installation in pipes or as a screw-in valve. The valve is used for pressure relief in hydraulic systems up to 400 bar. The housing has two connections with Whitworth pipe threads for line attachment. Without the housing, the valve cartridge can also be screwed into the specified bore contour in any body instead.

Details: See DBD data sheet

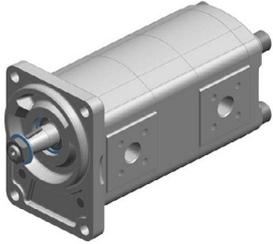


Variants

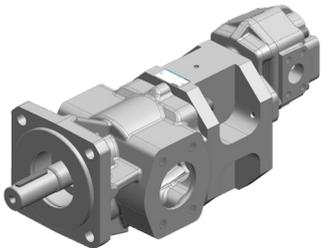
Multiple pumps

Characteristics

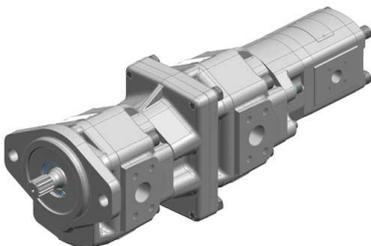
- Opposing flow direction possible
- High cold start viscosity possible at high idle speed
- High efficiency over wide speed ranges
- Hydraulically separated



High-pressure gear pump KP
+ High-pressure gear pump KP



Gear pump KF
+ High-pressure gear pump KP



High-pressure gear pump KP
+ High-pressure gear pump KP
+ High-pressure gear pump KP

Motor-pump units

Motors that can be combined with KP pumps

- Air motors
- Gear motors
- Hydraulic motors (for details, see data sheet KM)
- IEC electric motors in all common efficiency classes (up to IE4)
- Motors in Atex/IECEx design
- Motors with marine approval
- NEMA-motors

Technical data

Technical characteristics

	Nominal sizes	Geom. displacement in cm ³ /rev	Max. pressure Pressure side in bar	Suction side ⁶ in bar	Maximum speeds in 1/min		Minimum speeds in 1/min ...					
							100 bar	120 bar	150 bar	180 bar	200 bar	250 bar
KP 1 – Aluminium	2	2.00	220	-0.4 ... 2	3000 ¹	4000 ²	600	700	900	1 200	1 300	1 400
	3	3.00	250	-0.4 ... 2	3000 ¹	4000 ²	600	700	900	1 200	1 300	1 400
	4	4.00	250	-0.4 ... 2	3000 ¹	4000 ²	600	700	900	1 200	1 300	1 400
	5.5	5.45	250	-0.4 ... 2	3000 ¹	4000 ²	500	700	900	1 000	1 200	1 400
	6.3	6.28	250	-0.4 ... 2	3000 ¹	4000 ²	500	700	900	1 000	1 200	1 400
	8	7.90	250	-0.4 ... 2	3000 ¹	4000 ²	500	700	900	1 000	1 100	1 400
	11	10.90	250	-0.4 ... 2	3000 ¹	3500 ²	500	700	900	1 000	1 100	1 200
	14	13.85	250	-0.4 ... 2	3000 ¹	3000 ²	500	700	800	900	1 000	1 100
	16	15.90	250	-0.4 ... 2	3000 ¹	3000 ²	500	600	700	800	1 000	1 000
	19	18.80	200	-0.4 ... 2	2800 ¹	2800 ²	500	600	700	800	1 000	-
22	22.30	150	-0.4 ... 2	2500 ¹	2500 ²	500	600	700	800	-	-	
25	25.21	150	-0.4 ... 2	2500 ¹	2500 ²	500	600	700	800	-	-	
KP 1 – Cast iron	3	3.20	200	-0.4 ... 2	3000 ¹	4000 ²	700	800	1000	1200	1200	-
	4	4.70	200	-0.4 ... 2	3000 ¹	4000 ²	600	800	900	1000	1100	-
	5.5	5.70	200	-0.4 ... 2	3000 ¹	4000 ²	500	700	900	1000	1100	-
	8	8.30	180	-0.4 ... 2	3000 ¹	4000 ²	500	700	900	1000	1000	-
	11	11.30	160	-0.4 ... 2	3000 ¹	3500 ²	500	700	800	900	-	-
	16	16.60	160	-0.4 ... 2	2800 ¹	3000 ²	500	600	800	800	-	-
KP 2 – Cast iron	20	19.70	250 ⁵	-0.4 ... 2	3000 ³	2800 ⁴	700	700	800	900	1000	-
	25	24.60	250 ⁵	-0.4 ... 2	3000 ³	2800 ⁴	600	600	700	800	900	-
	28	27.70	230 ⁵	-0.4 ... 2	2800 ³	2500 ⁴	600	600	700	800	900	-
	32	31.50	230 ⁵	-0.4 ... 2	2600 ³	2500 ⁴	500	600	700	800	900	-
	40	39.40	210 ⁵	-0.4 ... 2	2800 ³	2200 ⁴	500	600	700	800	800	-
	50	49.20	210 ⁵	-0.4 ... 2	2600 ³	2000 ⁴	500	600	700	800	800	-
	62	61.20	180 ⁵	-0.4 ... 2	2200 ³	-	500	600	700	800	-	-
KP 3 – Cast iron	63	62.50	230 ⁵	-0.4 ... 2	2600	2600	800	800	900	1000	1000	-
	71	70.60	230 ⁵	-0.4 ... 2	2500	2500	700	700	800	900	900	-
	82	81.00	210 ⁵	-0.4 ... 2	2600	2600	500	600	700	800	800	-
	100	99.50	210 ⁵	-0.4 ... 2	2500	2500	500	600	700	800	800	-
	112	111.10	200 ⁵	-0.4 ... 2	2400	2400	500	600	700	800	800	-
	125	123.80	200 ⁵	-0.4 ... 2	2300	2300	500	600	700	800	800	-
KP 5 – Casti.	160	156.00	100	-0.4 ... 2	2000	2000	800	-	-	-	-	-
	200	196.00	100	-0.4 ... 2	1800	1800	-	-	-	-	-	-
	250	245.00	100	-0.4 ... 2	1600	1600	-	-	-	-	-	-
	300	293.00	80	-0.4 ... 2	1500	1500	-	-	-	-	-	-

¹ NBR

² FKM

³ Housing with SAE connection Ø 32 mm / Ø 40 mm

⁴ Housing with connection Ø 26 mm

⁵ Noise-optimised version: 40 bar

⁶ Short-term 5 bar

Permitted/recommended viscosities for continuous operation

	KP 1 – Aluminium	KP 1 – Cast iron	KP 2/3– Cast iron	KP 2/3– Cast iron Noise-optimised	KP 5 – Cast iron
Permitted viscosities	10 ... 600 mm ² /s	1.2 ... 600 mm ² /s	10 ... 600 mm ² /s	10 ... 1 000 mm ² /s	13 ... 600 mm ² /s
Recommended viscosities	30 ... 45 mm ² /s	On request	30 ... 45 mm ² /s	30 ... 200 mm ² /s	On request

Technical data

Materials

	KP 1 – Aluminium	KP 1 – Cast iron	KP 2/3 – Cast iron	KP 2/3 – Cast iron Noise-optimised	KP 5 – Cast iron
Housing materials					
Aluminium (Extruded alloy)	•	-	-	-	-
EN-GJL-250	-	•	•		
EN-GJL-300	-	•	•	-	•
EN-GJS-400-15	-	•	•	•	-
EN-GJS-400-18-LT	-	•	•		
EN-GJS-600	-	-	•		
Cover materials					
EN-GJL-300	-	-	•	-	•
EN-GJS-400-15	•	•	•	•	-
Gear set material					
Surface-hardened and ground case-hardening steel to DIN 17210	•	•	•	•	•
Bearing materials					
Bearing bracket with multi-layer plain bearing	•	-	-	-	-
Sliding plate and multi-layer plain bearing	-	•	•	•	•
Shaft seal materials					
NBR	•	•	•	•	•
FKM	•	•	•	•	•
O-ring materials					
NBR	•	•	•	•	•
FKM	•	•	•	•	•
Corrosion protection					
C2m - RAL 7024	•	•	•	•	•

Temperatures

Sealing materials	Pumps	Media temperatures in °C	Ambient temperatures in °C
FKM	KP 1 – Aluminium	-20 ... 100	-20 ... 60
	KP 1 – Cast iron	-20 ... 150	-20 ... 60
	KP 2/3 – Cast iron	-20 ... 150	-20 ... 60
	KP 5 – Cast iron	-20 ... 120	-20 ... 60
NBR	KP 1 – Aluminium	-20 ... 90	-20 ... 60
	KP 1 – Cast iron	-20 ... 90	-20 ... 60
	KP 2/3 – Cast iron	-20 ... 90	-20 ... 60
	KP 5 – Cast iron	-20 ... 80	-20 ... 60

Note: Other seal materials on request.

Technical data

Weights

KP 1 - Aluminium

Nominal sizes	Flange designs		
	A	G/K/F/M/L/Q	With mounting angle
3	2.5	2.1	3.7
4	2.6	2.2	3.8
5.5	2.6	2.2	3.8
6.3	2.7	2.3	3.9
8	2.7	2.3	3.9
11	2.9	2.5	4.1
14	3.0	2.6	4.2
16	3.2	2.8	4.4
19	3.3	2.9	4.5
22	3.5	3.1	4.7

Weight of the outboard bearing L: 1.0 kg

Weight of the outboard bearing S: 3.5 kg

KP 1 - Cast iron

Nominal sizes	Flange designs		
	F	G	With mounting angle
3	4.2	5.3	6.0
4	4.2	5.3	6.0
5.5	4.0	5.1	5.8
8	4.1	5.2	5.9
11	4.2	5.3	6.0
16	4.2	5.2	6.0
20	4.4	5.5	6.2

KP 2 - Cast iron

Nominal sizes	Flange designs	
	G	S
20	11.0	10.0
25	11.5	10.5
28	12.0	11.0
32	12.5	11.5
40	13.0	12.5
50	13.5	13.0
62	15.0	14.0

KP 3 - Cast iron

Nominal sizes	Flange designs		
	S	T	V
63	22.0	23.0	23.0
71	23.0	23.5	24.0
82	24.5	25.0	25.5
100	26.0	26.5	27.0
112	27.0	27.5	28.0
125	29.0	29.5	30.0

KP 5 - Cast iron

Nominal sizes	Flange designs	
	C	E
160	42.0	43.0
200	44.0	45.0
250	48.0	49.0
300	52.0	53.0

Explanations on flame-retardant pressurised fluids in accordance with VDMA 24317

1. HFA Water content > 80 % (Oil-in-water emulsion)
2. HFB Water content > 40 % (Water-in-oil emulsion)
3. HFC Water content > 35 % (Aqueous polymer solutions)
4. HFDR Water content = 0 % (Anhydrous liquids based on phosphoric acid esters)

Liquids	Availability	Maximum pressures in bar	Speeds in 1/min	Temperatures in °C	Sealing materials	Inlet to the pump required
HFA	KP 1 – Cast iron KP 2/3 – Cast iron KP 5 – Cast iron	40	1400 ... 1800	5 ... 55	NBR	Yes
HFB		80	... 1800	5 ... 60	NBR	Yes
HFC		120	... 1800	-20 ... 60	NBR	Yes
HFDR		140	... 1800	-20 ... 110	FKM	Yes

Note:

Water glycol coolants (e.g. glythermine from BASF) must not be used! With HFA, HFB and HFC (all liquids containing water), it must be noted that all components that come into contact with air (dividing line between medium and air in the tank or air bubbles in the components) corrode. Tanks therefore require a special coating and the pumps must always be installed below tank level, either outside or inside. The pumps must never run empty and when installed in the tank, the pump must always be fully immersed in the medium. Caution: Always observe and monitor the lowest liquid level for pendulum volumes!

Technical data

Discharge flows and required drive powers

KP 1 – Aluminium at 950 1/min

Pressures in bar							Nominal sizes	Pressures in bar						
20	60	100	140	180	220	250		20	60	100	140	180	220	250
1.7	1.7	1.7	1.6	-	-	-	2	0.12	0.26	0.40	0.55	-	-	-
2.6	2.6	2.5	2.4	-	-	-	3	0.18	0.39	0.60	0.82	-	-	-
4.9	4.8	4.6	4.5	4.4	-	-	5.5	0.25	0.60	0.96	1.32	1.68	-	-
7.1	7.0	6.9	6.8	6.7	-	-	8	0.33	0.85	1.37	1.89	2.40	-	-
9.8	9.7	9.6	9.5	9.4	-	-	11	0.42	1.13	1.84	2.55	3.26	-	-
12.5	12.4	12.3	12.2	12.0	-	-	14	0.52	1.41	2.31	3.20	4.09	-	-
14.3	14.2	14.1	13.9	13.8	-	-	16	0.58	1.61	2.64	3.66	4.69	-	-
17.0	16.9	16.8	16.7	16.6	-	-	19	0.68	1.89	3.11	4.33	5.55	-	-
20.1	20.0	20.0	19.9	19.8	-	-	22	0.78	2.21	3.64	5.07	6.50	-	-
22.7	22.6	22.6	22.5	22.4	-	-	25	0.88	2.50	4.11	5.73	7.35	-	-
Discharge flows in l/min								Required drive powers in kW						

KP 1 – Aluminium at 1450 1/min

Pressures in bar							Nominal sizes	Pressures in bar						
20	60	100	140	180	220	250		20	60	100	140	180	220	250
2.8	2.7	2.7	2.7	2.7	2.6	2.6	2	0.17	0.39	0.62	0.84	1.06	1.29	1.51
4.2	4.1	4.1	4.0	4.0	3.9	3.9	3	0.26	0.59	0.93	1.26	1.59	1.93	2.26
7.7	7.7	7.6	7.5	7.4	7.4	7.3	5.5	0.36	0.91	1.45	1.99	2.53	3.07	3.61
11.2	11.2	11.1	11.0	10.9	10.8	10.7	8	0.49	1.28	2.07	2.86	3.65	4.44	5.23
15.4	15.3	15.2	15.1	15.0	14.8	14.7	11	0.64	1.72	2.81	3.89	4.97	6.06	7.14
19.6	19.5	19.4	19.3	19.2	19.0	18.9	14	0.80	2.22	3.63	5.05	6.46	7.88	9.29
22.5	22.4	22.3	22.2	22.1	22.0	21.9	16	0.89	2.49	4.08	5.67	7.26	8.85	10.45
26.7	26.6	26.5	26.4	26.3	26.2	-	19	1.02	2.87	4.72	6.57	8.42	10.27	-
31.6	31.5	31.4	31.4	31.3	-	-	22	1.20	3.39	5.58	7.76	9.95	-	-
35.7	35.6	35.5	35.5	35.4	-	-	25	1.36	3.83	6.31	8.77	11.25	-	-
Discharge flows in l/min								Required drive powers in kW						

Notes:

- Scatter range of the flow rate +2.5 % ... -5 % of the table value.
- The characteristics refer to a mineral oil with a viscosity of 34 mm²/s.
- At a viscosity < 30 mm²/s, the flow rate is reduced.
- The power of the drive motor must be selected 15 % higher than the value in the table.
- For viscosity > 100 mm²/s, a surcharge to the drive power is required.
- For noise-optimised versions, 3 % must be deducted from the flow rate.

Technical data

Discharge flows and required drive powers

KP 1 – Cast iron at 950 1/min

Pressures in bar							Nominal sizes	Pressures in bar						
20	60	100	140	180	200	220		20	60	100	140	180	200	220
2.8	2.6	2.4	2.2	-	-	-	3	0.19	0.42	0.65	0.88	-	-	-
4.2	3.9	3.6	3.4	3.1	-	-	4	0.24	0.57	0.90	1.23	1.56	-	-
5.1	4.8	4.6	4.3	4.0	-	-	5.5	0.26	0.63	1.00	1.38	1.75	-	-
7.4	7.1	6.9	6.6	6.2	6.1	-	8	0.34	0.88	1.43	1.97	2.51	2.79	-
10.1	9.9	9.6	9.4	9.1	-	-	11	0.44	1.17	1.91	2.64	3.38	-	-
14.9	14.6	14.3	14.0	13.6	-	-	16	0.61	1.68	2.75	3.83	4.90	-	-
18.2	17.6	16.9	16.1	-	-	-	20	0.73	2.05	3.37	4.69	-	-	-
Discharge flows in l/min								Required drive powers in kW						

KP 1 – Cast iron at 1450 1/min

Pressures in bar							Nominal sizes	Pressures in bar						
20	60	100	140	180	200	220		20	60	100	140	180	200	220
4.5	4.3	4.0	3.8	3.5	3.4	3.3	3	0.27	0.64	1.00	1.36	1.72	1.90	2.08
6.6	6.3	6.0	5.7	5.4	5.3	5.1	4	0.35	0.87	1.39	1.91	2.43	2.69	2.95
8.0	7.8	7.5	7.2	6.9	6.8	6.6	5.5	0.38	0.94	1.51	2.08	2.64	2.93	3.21
11.7	11.4	11.1	10.7	10.4	10.2	-	8	0.51	1.34	2.17	2.99	3.82	4.24	-
15.9	15.7	15.4	15.1	14.7	-	-	11	0.66	1.78	2.91	4.03	5.16	-	-
23.4	23.1	22.7	22.3	21.9	-	-	16	0.93	2.60	4.27	5.93	7.60	-	-
28.7	28.0	27.2	26.3	25.5	-	-	20	1.10	3.11	5.12	7.12	-	-	-
Discharge flows in l/min								Required drive powers in kW						

Notes:

- Scatter range of the flow rate +2.5 % ... -5 % of the table value.
- The characteristics refer to a mineral oil with a viscosity of 34 mm²/s.
- At a viscosity < 30 mm²/s, the flow rate is reduced.
- The power of the drive motor must be selected 15 % higher than the value in the table.
- For viscosity > 100 mm²/s, a surcharge to the drive power is required.
- For noise-optimised versions, 3 % must be deducted from the flow rate.

Technical data

Discharge flows and required drive powers

KP 2 – Cast iron at 950 1/min

Pressures in bar								Nominal sizes	Pressures in bar							
20	60	100	140	180	200	230	250		20	60	100	140	180	200	230	250
18.0	17.8	17.5	17.2	16.9	-	-	-	20	0.9	2.3	3.8	5.2	6.6	-	-	-
22.5	22.2	21.9	21.5	21.1	20.9	20.7	20.5	25	1.1	2.8	4.6	6.3	8.1	8.9	10.2	11.1
25.4	25.1	24.7	24.4	24.0	23.8	23.5	-	28	1.2	3.1	5.1	7.0	9.0	9.9	11.4	-
28.9	28.5	28.1	27.7	27.3	27.1	26.8	-	32	1.3	3.5	5.7	7.9	10.1	11.2	12.8	-
36.1	35.7	35.2	34.7	34.2	33.9	-	-	40	1.6	4.3	7.0	9.7	12.4	13.8	-	-
45.1	44.6	44.0	43.3	42.7	42.4	-	-	50	1.9	5.3	8.6	12.0	15.3	17.0	-	-
56.2	55.8	55.4	55.0	54.6	-	-	-	62	2.3	6.4	10.4	14.5	18.6	-	-	-
Discharge flows in l/min									Required drive powers in kW							

KP 2 – Cast iron at 1450 1/min

Pressures in bar								Nominal sizes	Pressures in bar							
20	60	100	140	180	200	230	250		20	60	100	140	180	200	230	250
27.9	27.6	27.4	27.1	26.8	26.6	26.4	26.2	20	1.4	3.6	5.8	7.9	10.1	11.2	12.8	13.9
34.8	34.5	34.2	33.8	33.4	33.2	33.0	32.8	25	1.7	4.3	7.0	9.6	12.3	13.6	15.6	17.0
39.2	38.9	38.6	38.2	37.9	37.7	37.4	-	28	1.8	4.8	7.8	10.7	13.7	15.2	17.4	-
44.6	44.3	43.9	43.5	43.1	42.8	42.5	-	32	2.0	5.4	8.7	12.0	15.4	17.1	19.6	-
55.8	55.4	54.9	54.4	53.9	53.6	-	-	40	2.5	6.6	10.7	14.9	19.0	21.0	-	-
69.7	69.2	68.6	67.9	67.3	67.0	-	-	50	3.0	8.1	13.2	18.3	23.4	26.0	-	-
86.8	86.4	86.0	85.6	85.2	-	-	-	62	3.5	9.7	15.9	22.1	28.3	-	-	-
Discharge flows in l/min									Required drive powers in kW							

KP 2 – Cast iron / Noise-optimised at 950 1/min

Pressures in bar					Nominal sizes	Pressures in bar				
10	20	30	40	120		10	20	30	40	120
17.4	16.6	15.8	14.9	6.9	20	0.5	0.9	1.2	1.6	4.4
21.8	20.8	19.7	18.6	8.7	25	0.6	1.1	1.5	1.9	5.3
24.7	23.8	22.8	21.8	12.8	28	0.7	1.2	1.6	2.1	5.9
28.2	27.2	26.2	25.1	15.8	32	0.8	1.3	1.8	2.4	6.7
35.3	34.3	33.1	31.9	21.5	40	0.9	1.6	2.2	2.9	8.2
44.3	43.1	41.8	40.5	29.0	50	1.1	1.9	2.7	3.6	10.2
55.3	54.1	52.8	51.4	39.7	62	1.3	2.3	3.3	4.3	12.4
Discharge flows in l/min						Required drive powers in kW				

KP 2 – Cast iron / Noise-optimised at 1450 1/min

Pressures in bar					Nominal sizes	Pressures in bar				
10	20	30	40	120		10	20	30	40	120
27.3	26.5	25.6	24.7	16.8	20	0.8	1.4	1.9	2.4	6.6
34.1	33.1	32.0	30.9	21.0	25	1.0	1.6	2.3	2.9	8.1
38.6	37.6	36.7	35.6	26.7	28	1.1	1.8	2.5	3.2	9.0
43.9	43.0	41.9	40.9	31.5	32	1.2	2.0	2.8	3.6	10.2
55.0	54.0	52.8	51.6	41.2	40	1.4	2.4	3.4	4.4	12.6
68.9	67.7	66.4	65.1	53.6	50	1.7	2.9	4.2	5.4	15.5
85.9	84.7	83.4	82.0	70.3	62	2.0	3.5	5.1	6.6	18.9
Discharge flows in l/min						Required drive powers in kW				

Notes:

- Scatter range of the flow rate +2.5 % ... -5 % of the table value.
- The characteristics refer to a mineral oil with a viscosity of 34 mm²/s.
- At a viscosity < 30 mm²/s, the flow rate is reduced.
- The power of the drive motor must be selected 15 % higher than the value in the table.
- For viscosity > 100 mm²/s, a surcharge to the drive power is required.
- For noise-optimised versions, 3 % must be deducted from the flow rate.

Technical data

Discharge flows and required drive powers

KP 3 – Cast iron at 950 1/min

Pressures in bar								Nominal sizes	Pressures in bar							
20	60	100	140	180	200	210	250		20	60	100	140	180	200	210	250
57.3	56.6	55.8	55	54.1	-	-	-	63	2.4	6.8	11.1	15.5	19.8	-	-	-
64.8	64.1	63.4	62.7	61.9	61.5	61.3	60.9	71	2.7	7.6	12.5	17.5	22.4	24.9	26.1	28.6
74.3	73.7	73.1	72.4	71.6	71.3	71.1	-	82	3.1	8.7	14.4	20.0	25.7	28.5	29.9	-
91.4	90.9	90.4	89.8	89.2	88.9	88.8	-	100	3.7	10.6	17.4	24.3	31.2	34.6	36.4	-
102.2	101.9	101.6	101.2	100.9	100.7	-	-	112	4.1	11.7	19.3	26.9	34.4	38.2	-	-
113.9	113.6	113.2	112.8	112.4	112.2	-	-	125	4.5	12.8	21.2	29.6	38.0	42.2	-	-
Discharge flows in l/min									Required drive powers in kW							

KP 3 – Cast iron at 1450 1/min

Pressures in bar								Nominal sizes	Pressures in bar							
20	60	100	140	180	200	210	250		20	60	100	140	180	200	210	250
88.5	87.8	87.0	86.2	85.4	84.9	84.7	83.8	63	3.7	10.3	17.0	23.6	30.3	33.6	35.3	41.9
100.1	99.4	98.7	98.0	97.2	96.8	96.6	96.2	71	4.1	11.6	19.2	26.7	34.2	38.0	39.8	43.6
114.8	114.2	113.6	112.9	112.1	111.8	111.6	-	82	4.7	13.3	21.9	30.6	39.2	43.5	45.7	-
141.2	140.7	140.1	139.6	139.0	138.7	138.5	-	100	5.6	16.1	26.6	37.1	47.6	52.9	55.5	-
157.8	157.5	157.1	156.8	156.4	156.3	-	-	112	6.2	17.8	29.4	41.0	52.6	58.4	-	-
175.8	175.5	175.1	174.7	174.3	174.1	-	-	125	6.8	19.6	32.4	45.2	58.0	64.4	-	-
Discharge flows in l/min									Required drive powers in kW							

KP 3 – Cast iron / Noise-optimised at 950 1/min

Pressures in bar					Nominal sizes	Pressures in bar				
10	20	30	40	120		10	20	30	40	120
60.6	59.3	57.8	56.3	43.0	71	1.4	2.7	3.9	5.1	14.9
69.7	68.2	66.7	65.1	50.9	82	1.6	3.0	4.4	5.9	17.1
88.4	86.5	84.5	82.4	63.7	100	2.0	3.7	5.4	7.1	20.8
100.4	98.2	95.8	93.4	72.0	112	2.1	4.0	5.9	7.8	22.9
112.0	109.8	107.5	105.0	83.6	125	2.4	4.4	6.5	8.6	25.3
Discharge flows in l/min						Required drive powers in kW				

KP 3 – Cast iron / Noise-optimised at 1450 1/min

Pressures in bar					Nominal sizes	Pressures in bar				
10	20	30	40	120		10	20	30	40	120
95.9	94.6	93.1	91.6	78.3	71	2.2	4.1	5.9	7.8	22.8
110.2	108.7	107.2	105.6	91.4	82	2.5	4.6	6.8	8.9	26.1
138.2	136.3	134.2	132.1	113.5	100	3.0	5.6	8.2	10.8	31.7
155.9	153.7	151.4	148.9	127.5	112	3.3	6.2	9.1	11.9	35.0
173.9	171.7	169.4	166.9	145.5	125	3.6	6.8	10.0	13.2	38.6
Discharge flows in l/min						Required drive powers in kW				

Notes:

- Scatter range of the flow rate +2.5 % ... -5 % of the table value.
- The characteristics refer to a mineral oil with a viscosity of 34 mm²/s.
- At a viscosity < 30 mm²/s, the flow rate is reduced.
- The power of the drive motor must be selected 15 % higher than the value in the table.
- For viscosity > 100 mm²/s, a surcharge to the drive power is required.
- For noise-optimised versions, 3 % must be deducted from the flow rate.

Technical data

Discharge flows and required drive powers

KP 5 – Cast iron at 950 1/min

Pressures in bar						Nominal sizes	Pressures in bar					
10	20	40	60	80	100		10	20	40	60	80	100
150	149	147	146	144	143	160	3.5	6.5	12.0	17.5	23.0	29.0
190	189	187	185	183	181	200	4.0	8.0	14.5	22.0	29.0	36.0
239	238	236	234	232	230	250	5.0	9.5	18.0	26.5	35.0	43.5
286	285	284	283	281	-	300	6.0	11.5	21.5	32.0	42.5	-
Discharge flows in l/min							Required drive powers in kW					

KP 5 – Cast iron at 1450 1/min

Pressures in bar						Nominal sizes	Pressures in bar					
10	20	40	60	80	100		10	20	40	60	80	100
227	225	223	221	219	216	160	5.5	10.0	18.5	27.0	36.0	44.5
285	284	282	280	278	276	200	6.5	12.0	23.0	33.5	43.5	54.0
358	356	354	352	349	346	250	8.0	14.0	27.5	41.0	54.0	67.0
429	428	426	424	422	-	300	9.5	17.5	33.0	49.0	64.5	-
Discharge flows in l/min							Required drive powers in kW					

Notes:

- Scatter range of the flow rate +2.5 % ... -5 % of the table value.
- The characteristics refer to a mineral oil with a viscosity of 34 mm²/s.
- At a viscosity < 30 mm²/s, the flow rate is reduced.
- The power of the drive motor must be selected 15 % higher than the value in the table.
- For viscosity > 100 mm²/s, a surcharge to the drive power is required.
- For noise-optimised versions, 3 % must be deducted from the flow rate.

Type key KP 1 – Aluminium / Cast iron

KP 1	/	8	3	N	1	0	G	2	K	D	2	0	1	A	A	E	0	B	D	W
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1 Product	
KP 1	High-pressure gear pumps, size 1

2 Nominal sizes	Housing materials
2 · 3 · 4 · 5.5 · 6.3 · 8 · 11 · 14 · 16 · 19 · 22 · 25	Aluminium
3 · 4 · 5.5 · 8 · 11 · 16 · 20	Cast iron

3 Housing materials	
1	EN-GJL-300
2	EN-GJS-400-15
3	Aluminium
4	EN-GJS-400-18-LT
5	EN-GJS-600
6	EN-GJL-250

4 Sealing materials	
F	FKM
N	NBR

5 Directions of rotation	
1	Clockwise
2	Anti-clockwise

6 Outboard bearings	
0	Without
L	Light version
S	Heavy-duty version only KP 1 – Aluminium

7 Flange types	
A	SAE A-2 hole
S	SAE B-2 hole
G	Rectangle 4-hole Centring diameter 80 mm
K	Rectangle 4-hole Centring diameter 36.47 mm
F	Square 2-hole
M	Square 2-hole Holes mirror-inverted
L	Square 2-hole + centring with o-ring without lip-type seal
Q	Square 2-hole + centring with o-ring with lip-type seal

8 Flange cover materials	
1	EN-GJL-300
2	EN-GJS-400

9 Shaft ends	
A	Taper 1:5 / Ø 20 mm / Shaft end F with outboard bearing
B	Taper 1:5 / Ø 20 mm / Shaft end X with outboard bearing
C	Taper 1:5 / Ø 17 mm / Shaft end F with outboard bearing
D	Taper 1:5 / Ø 17 mm / Shaft end X with outboard bearing
F	Parallel flat shaft end without shaft seal
K	Taper 1:5 / Ø 17 mm only KP 1 – Aluminium Taper 1:5 / Ø 16.5 mm only KP 1 – Cast iron
L	Shaft end K in long version with outboard bearing only KP 1 – Cast iron
M	Taper 1:8 / Ø 17 mm
S	Splined shaft profile SAE-A
V	Splined shaft profile SAE-A reinforced without backstitch
X	Splined shaft profile B17x14 DIN 5482

10 Types of ending	
0	Without only KP 1 – Cast iron
D	Cover
V	Valve
Z	Intermediate piece
S	Speed sensor

11 Cover materials	
0	Without
2	EN-GJS-400-15
5	EN-GJS-600

12 Second shaft end	
0	Without
1	With

13 Axial clearance compensation	
0	Without
1	With

14 Hydraulic connections, suction side		Nominal sizes
0	Without	2 ... 25
A	Ø 15 / Bolt circle diameter 35 mm Ø 15 / Bolt circle diameter 40 mm Ø 20 / Bolt circle diameter 40 mm	2 3 ... 5.5 6.3 ... 25
B	G ³ / ₄	2 ... 25
C	G ¹ / ₂	2 ... 25
D	M22x1.5	2 ... 25
J	⁷ / ₈ " - 14 UNF 1 1/16" - 12 UN	2 ... 8 11 ... 25
Q	Ø 13.5 mm / BCD 30.2 mm / 45° offset 4 x M6 Ø 20 mm / BCD 39.7 mm / 45° offset 4 x M6	2 ... 8 11 ... 25

15 Hydraulic connections, pressure side	
0	Without
A	Ø 15 / Bolt circle diameter 35 mm
B	G ³ / ₄
C	G ¹ / ₂
D	M14x1.5
E	SAE ¹ / ₂ "
J	⁷ / ₈ " - 14 UNF
Q	Ø 13.5 mm / Bolt circle diameter 30.2 mm / 45° offset 4 x M6

16 Gear set materials	
G	Hardened steel
E	Case-hardening steel (16MnCrS5)

17 Gear set coating	
0	Without

18 Bearing types	
G	Plain bearing
B	Sliding bearing

19 Bearing materials	
D	DU
P	P10
Q	P23

20 Seal types	
0	Without
W	One radial lip-type seal
D	Two radial lip-type seals without uni-oiler
E	Two radial lip-type seals with uni-oiler

Type key KP 2/3 – Cast iron

KP 2	/	32	1	N	1	0	S	1	Z	0	0	0	1	A	A	E	0	G	P	W
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1 Product	
KP 2	High-pressure gear pumps, size 2
KP 3	High-pressure gear pumps, size 3

2 Nominal sizes	Sizes
20 · 25 · 28 · 32 · 40 · 50 · 62	2
63 · 71 · 82 · 100 · 112 · 125	3

3 Housing materials	
1	EN-GJL-300
2	EN-GJS-400-15
4	EN-GJS-400-18-LT
5	EN-GJS-600
6	EN-GJL-250

4 Sealing materials	
F	FKM
N	NBR

5 Directions of rotation	
1	Clockwise
2	Anti-clockwise

6 Outboard bearing	
0	Without

7 Flange types	Sizes
A	SAE A-2-hole 2/3
S	SAE B-2-hole 2/3
T	SAE C-2-hole 3
V	SAE C-4-hole 3
G	Rectangle-4-hole BCD 105 mm 2

8 Flange cover materials	
1	EN-GJL-300
2	EN-GJS-400-15
4	EN-GJS-400-18-LT
5	EN-GJS-600
6	EN-GJL-250

9 Shaft ends		
KP 2	B	Splined shaft profile W35x2 DIN 5480
	K	Taper 1:5 / Ø 25 mm
	U	Splined shaft profile SAE-B
	W	Splined shaft profile B28x25 DIN 5482
KP 3	Z	Cylindrical Ø 24 mm
	B	Splined shaft profile W35x2 DIN 5480
	Q	Splined shaft profile SAE-C
	W	Splined shaft profile B28x25 DIN 5482
	Z	Cylindrical Ø 32 mm

10 Types of ending	
0	Without
Z	Intermediate piece

11 Cover materials	
0	Without
2	EN-GJS-400-15
5	EN-GJS-600

12 Second shaft end	
0	Without
1	With

13 Axial clearance compensation	
0	Without
1	With

14 Hydraulic connections, suction side		Nominal sizes	
KP 2	A	Ø = 26 mm/ Bolt circle diameter 55 mm	20 ... 50
	D	G1	20 ... 62
	F	SAE 1 1/4" / Ø 32 mm	20 ... 32
	I	SAE 1 1/4" / Ø 32 mm / 6000 PSI	20 ... 32
	G	SAE 1 1/2" / Ø 40 mm	40 ... 62
	H	SAE 1 1/2" / Ø 40 mm / 6000 PSI	40 ... 62
KP 3	L	G1 at the back	20 ... 62
	G	SAE 1 1/2"	63 ... 71
	H	SAE 1 1/2" / 6000 PSI	63 ... 71
	J	SAE 2"	82 ... 125
	M	SAE 2" / 6000 PSI	82 ... 125
L	G1 1/2 at the back	63 ... 125	

15 Hydraulic connections, pressure side		Nominal sizes	
KP 2	A	Ø = 26 mm/ Bolt circle diameter 55 mm	20 ... 50
	D	SAE 1" / Ø 25 mm	20 ... 32
	E	SAE 1" / 6000 PSI	20 ... 32
	F	SAE 1 1/4" / Ø 32 mm	40 ... 62
	I	SAE 1 1/4" / Ø 32 mm / 6000 PSI	40 ... 62
	L	G1 at the back	20 ... 62
KP 3	F	SAE 1 1/4"	63 ... 125
	I	SAE 1 1/4" / 6000 PSI	63 ... 71
	L	G1 1/2 at the back	63 ... 125

16 Gear set materials	
G	Hardened steel
E	Case-hardening steel (16MnCrS5)

17 Gear set coating	
0	Without

18 Bearing types	
G	Plain bearing
B	Sliding bearing

19 Bearing materials	
D	DU
P	P10
Q	P23

20 Seal types	
0	Without
W	One radial lip-type seal
D	Two radial lip-type seals without uni-oiler
E	Two radial lip-type seals with uni-oiler

Type key KP 5 – Cast iron

KP 5	/	200	1	N	1	0	C	1	Z	0	0	0	0	K	K	E	0	G	D	W
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1 Product	
KP 5	High-pressure gear pumps, size 5
2 Nominal sizes	
160 · 200 · 250 · 300	
3 Housing material	
1	EN-GJL-300
4 Sealing materials	
F	FKM
N	NBR
5 Directions of rotation	
1	Clockwise
2	Anti-clockwise
6 Outboard bearing	
L	Light version
7 Flange types	
C	SAE C-2-hole with outboard bearing
E	SAE C-4-hole with outboard bearing
8 Flange cover material	
1	EN-GJL-300
9 Shaft ends	
Q	Splined shaft profile SAE-C
V	Splined shaft profile W40x2 DIN 5480
Z	Cylindrical Ø 38 mm
10 Type of ending	
0	Without
11 Cover material	
0	Without
12 Second shaft end	
0	Without
13 Axial clearance compensation	
0	Without
14 Hydraulic connection, suction side	
K	SAE 2½"
15 Hydraulic connection, pressure side	
K	SAE 2"
16 Gear set materials	
E	Case-hardening steel (16MnCrS5)
17 Gear set coating	
0	Without
18 Bearing type	
G	Plain bearing
19 Bearing material	
D	DU
20 Seal type	
W	One radial lip-type seal

Atex version

Permitted areas of application

Depending on the labeling, our explosion-proof pump versions in accordance with directive 2014/34/EU may be used as follows:

1. In the zone 2 (Gas-Ex, category 3G) in the explosion groups IIA, IIB and IIC
2. In the zone 22 (Dust-Ex, category 3D) in the explosion groups IIIA and IIIB
3. In the zone 1 (Gas-Ex, category 2G) in the explosion groups IIA, IIB and IIC
4. In the zone 21 (Dust-Ex, category 2D) in the explosion groups IIIA and IIIB

Characteristics

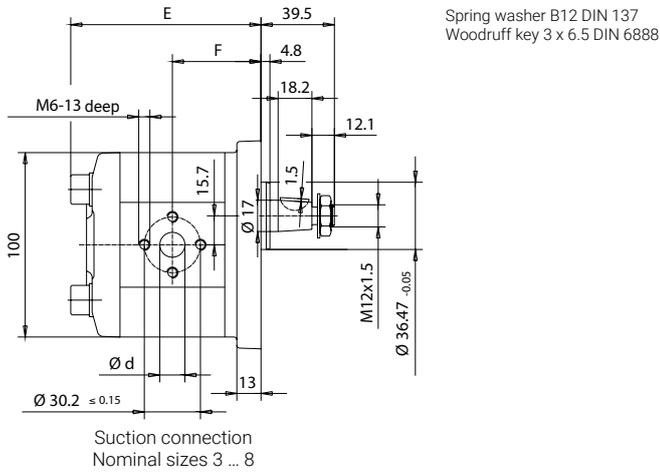
Nominal sizes	KP 1	2 · 3 · 4 · 5.5 · 6.3 · 8 · 11 · 14 · 16 · 19 · 20 · 22 · 25
	KP 2	20 · 25 · 28 · 32 · 40 · 50 · 62
	KP 3	71 · 82 · 100 · 112 · 125
Maximum pressure, suction side	-0.4 ... 0.5 bar	
Maximum pressure, pressure side	KP 1	250 bar
	KP 2/3	105 bar
Mounting position	Horizontal or shaft end downwards, versions with connection for horizontal liquid feed (only KP 2/3).	
Ambient temperatures	NBR	-20 ... 60 °C
	FKM	-15 ... 60 °C
Media temperatures	NBR	-20 ... 80 °C (T4)
	FKM	-15 ... 80 °C (T4)
	FKM	-15 ... 110 °C (T3)
Device temperatures	NBR	-20 ... 80 °C (T4)
	FKM	-15 ... 130 °C (T3/T4)

The maximum temperatures must not be exceeded. An applicationdependent self-heating of the devices must be taken into account.

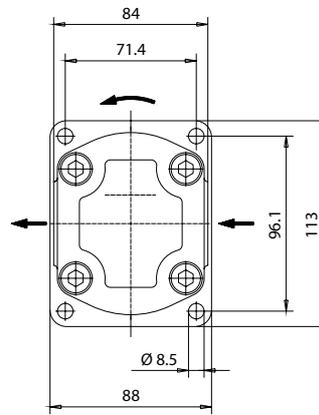
Technical drawings / Dimensions

KP 1 – Aluminium, rectangle 4-hole flange (K)

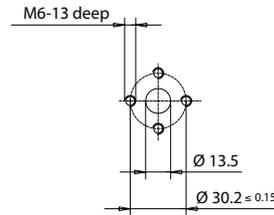
Tapered shaft 1:8



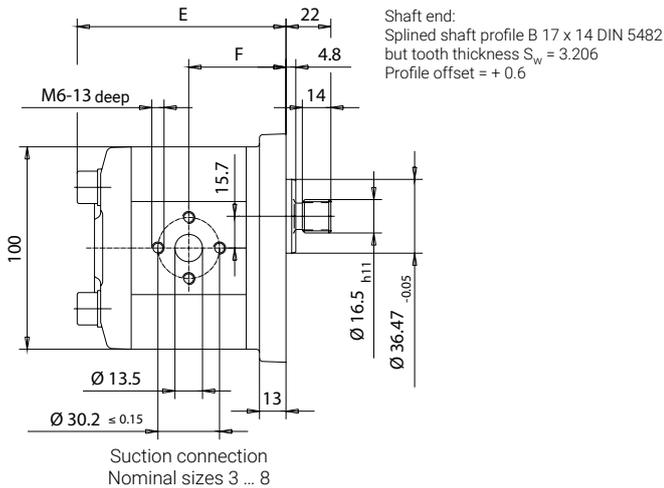
Flange



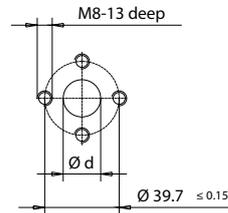
Pressure side connection



Splined shaft



Suction side connection for nominal sizes 11 ... 22



Note:

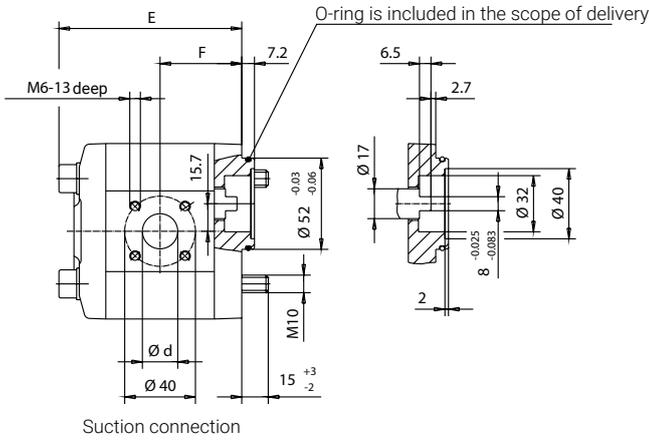
Direction of rotation shown: clockwise. With anti-clockwise rotation, the suction and pressure connections are opposite.

Nominal sizes	Dimensions		
	d	E	F
3	$\varnothing 13.5$	89.0	41.0
4	$\varnothing 13.5$	90.7	41.8
5.5	$\varnothing 13.5$	93.2	43.1
6.3	$\varnothing 13.5$	94.6	43.8
8	$\varnothing 13.5$	97.4	45.2
11	$\varnothing 20$	102.4	47.7
14	$\varnothing 20$	107.4	50.2
16	$\varnothing 20$	110.8	51.9
19	$\varnothing 20$	115.8	54.4
22	$\varnothing 20$	121.6	57.3

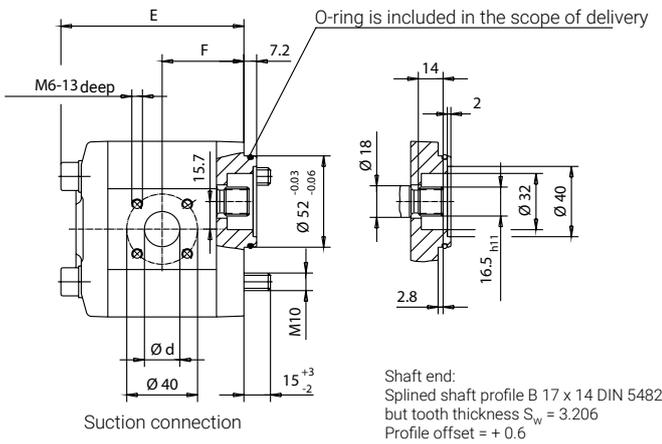
Technical drawings / Dimensions

KP 1 – Aluminium, square 2-hole flange (L)

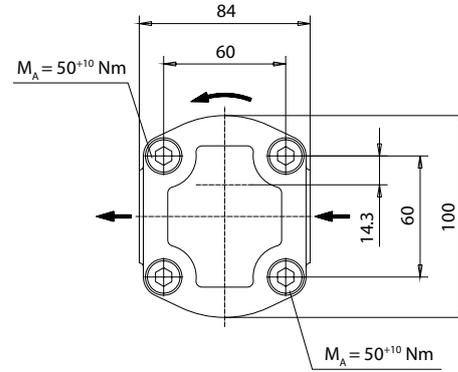
Parallel flat shaft



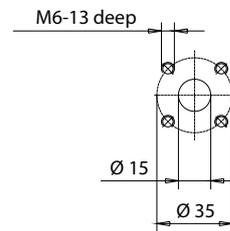
Splined shaft



Flange



Pressure side connection



Dimensions in mm

Note:

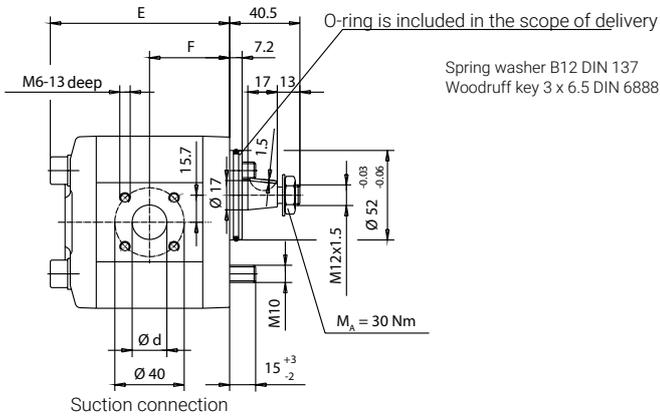
Direction of rotation shown: clockwise. With anti-clockwise rotation, the suction and pressure connections are opposite.

Nominal sizes	Dimensions		
	d	E	F
3	Ø 15	85.0	37.0
4	Ø 15	86.7	37.9
5.5	Ø 15	89.2	39.1
6.3	Ø 20	90.6	39.8
8	Ø 20	93.4	41.2
11	Ø 20	98.4	43.7
14	Ø 20	103.4	46.2
16	Ø 20	106.8	47.9
19	Ø 20	111.8	50.4
22	Ø 20	117.6	53.3

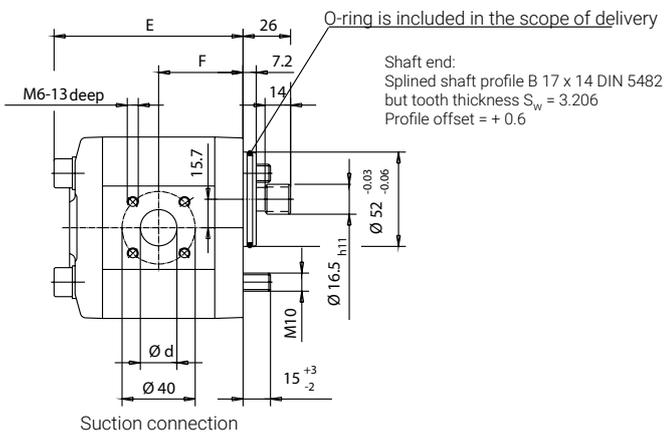
Technical drawings / Dimensions

KP 1 – Aluminium, square 2-hole flange (Q)

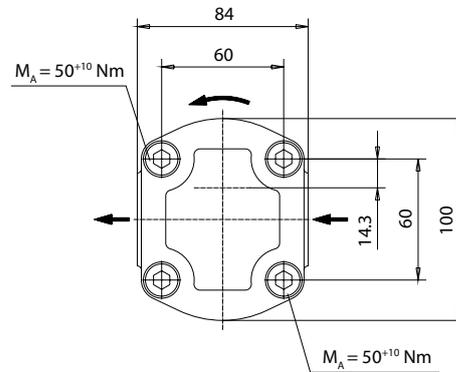
Tapered shaft 1:5



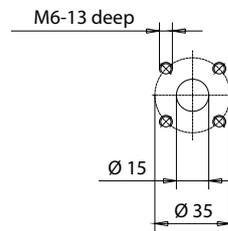
Splined shaft



Flange



Pressure side connection



Dimensions in mm

Note:

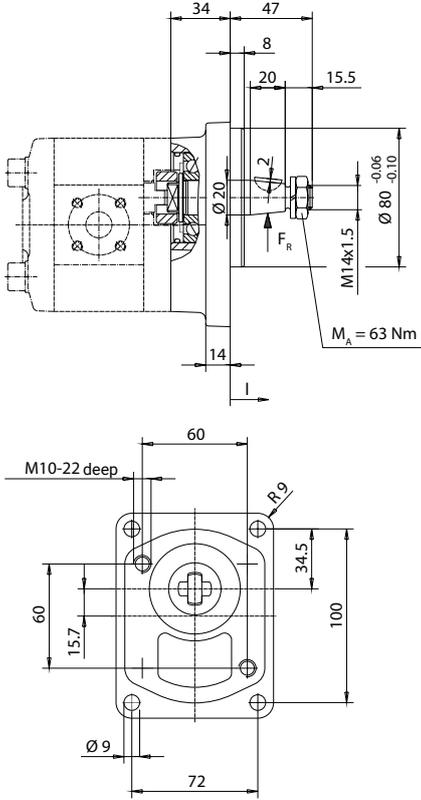
Direction of rotation shown: clockwise. With anti-clockwise rotation, the suction and pressure connections are opposite.

Nominal sizes	Dimensions		
	d	E	F
3	Ø 15	85.0	37.0
4	Ø 15	86.7	37.9
5.5	Ø 15	89.2	39.1
6.3	Ø 20	90.6	39.8
8	Ø 20	93.4	41.2
11	Ø 20	98.4	43.7
14	Ø 20	103.4	46.2
16	Ø 20	106.8	47.9
19	Ø 20	111.8	50.4
22	Ø 20	117.6	53.3

Technical drawings / Dimensions / Technical data

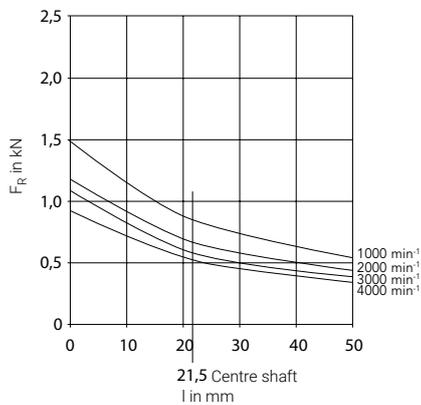
KP 1 – Aluminium, outboard bearing versions

Outboard bearing L, tapered shaft 1:5



Weight of the outboard bearing = 1.0 kg
 Parallel flat connection 40 Nm_{max}
 alternatively splined shaft connection 70 Nm_{max}
 Hexagon nut M 14 x 1.5 DIN EN 28675
 Spring washer B 14 DIN 127
 Woodruff key 4 x 6.5 DIN 6888

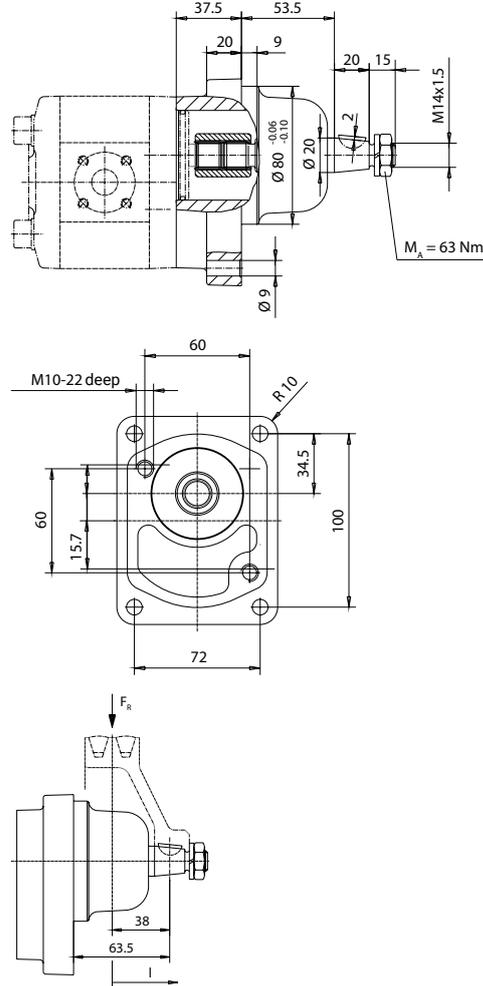
Permissible radial forces F_R



Permissible radial forces F_R as a function of the support distance l : $F_R = f(l)$
 (for $L_h = 10.000$ h)

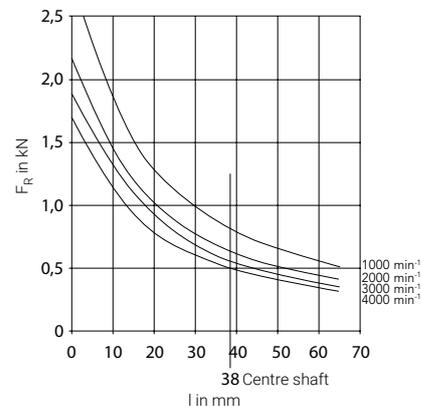
Dimensions in mm

Outboard bearing S, tapered shaft 1:5



Weight of the outboard bearing = 3.5 kg
 Parallel flat connection 40 Nm_{max}
 alternatively splined shaft connection 70 Nm_{max}
 Hexagon nut M 14 x 1.5 DIN EN 28675
 Spring washer B 14 DIN 127
 Woodruff key 4 x 6.5 DIN 6888

Permissible radial forces F_R

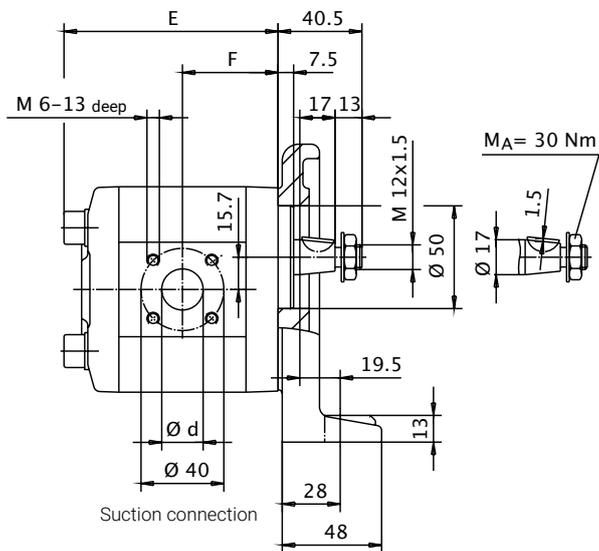


Permissible radial forces F_R as a function of the support distance l : $F_R = f(l)$
 (for $L_h = 10.000$ h)

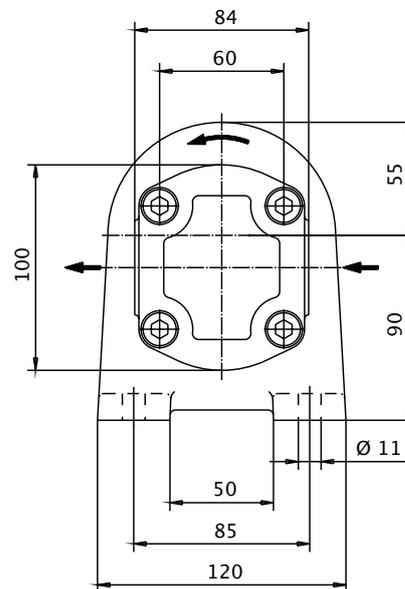
Technical drawings / Dimensions

KP 1 – Aluminium, with mounting angle

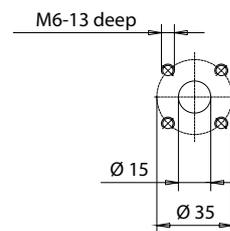
Tapered shaft 1:5



Flange



Pressure side connection



Note:

Direction of rotation shown: clockwise. With anti-clockwise rotation, the suction and pressure connections are opposite.

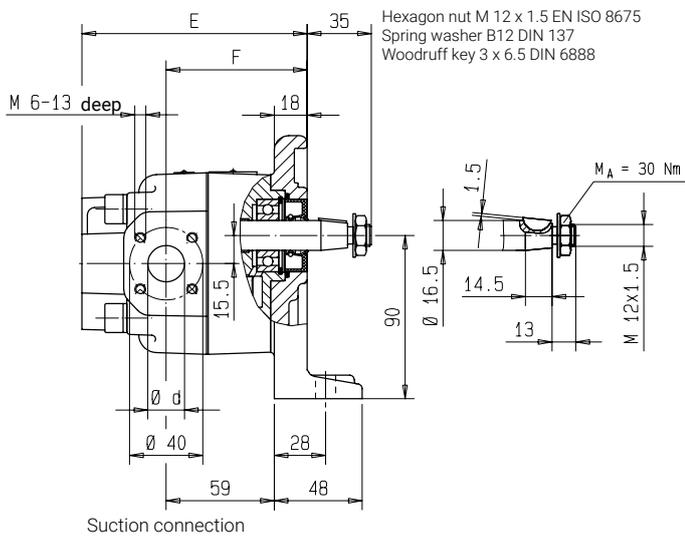
Nominal sizes	Dimensions		
	d	E	F
3	Ø 15	85.0	37.0
4	Ø 15	86.7	37.9
5.5	Ø 15	89.2	39.1
6.3	Ø 20	90.6	39.8
8	Ø 20	93.4	41.2
11	Ø 20	98.4	43.7
14	Ø 20	103.4	46.2
16	Ø 20	106.8	47.9
19	Ø 20	111.8	50.4
22	Ø 20	117.6	53.3

Dimensions in mm

Technical drawings / Dimensions

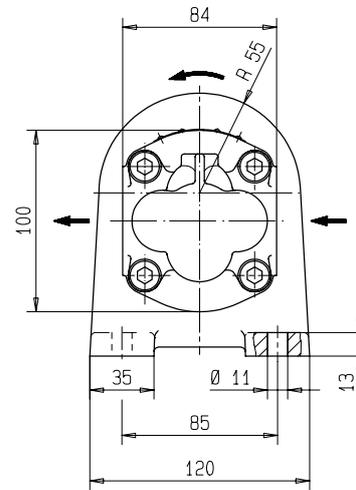
KP 1 – Cast iron, with mounting angle

Outboard bearing and tapered shaft 1:5

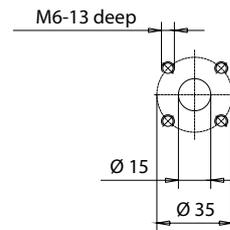


Permissible radial force on centre shaft end: 340 N at 1 450 min⁻¹

Flange



Pressure side connection



Note:

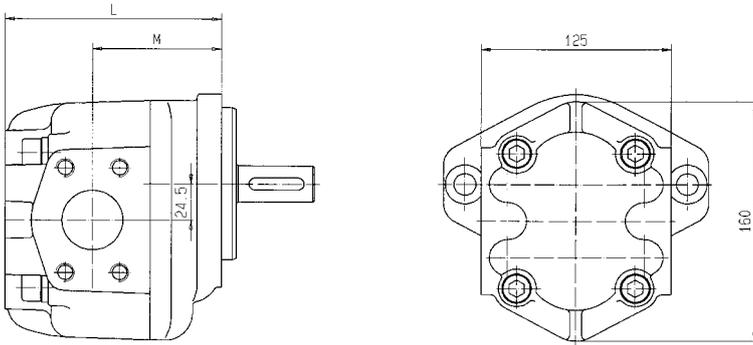
Direction of rotation shown: clockwise. With anti-clockwise rotation, the suction and pressure connections are opposite.

Nominal sizes	Dimensions		
	d	E	F
3	Ø 15	123	74
4	Ø 15	123	77
5.5	Ø 15	123	77
8	Ø 20	123	77
11	Ø 20	123	77
16	Ø 20	123	77
20	Ø 20	125	83

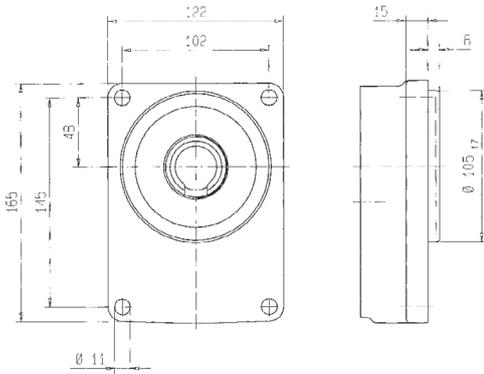
Dimensions in mm

Technical drawings / Dimensions

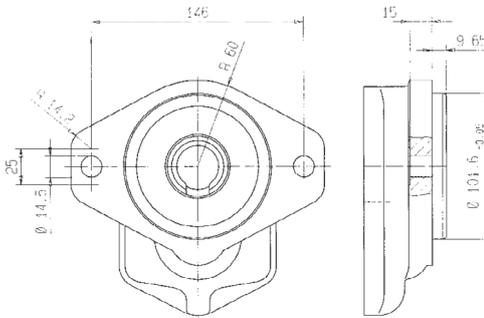
KP 2 – Cast iron



Flange type G



Flange type S



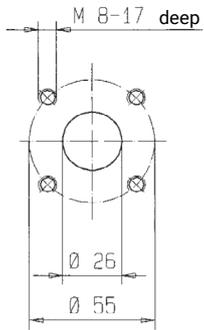
Dimensions in mm

Nominal sizes	Dimensions	
	L	M
20	129	75
25		
28		
32		
40	142	85
50		
62		

Technical drawings / Dimensions

KP 2 – Cast iron

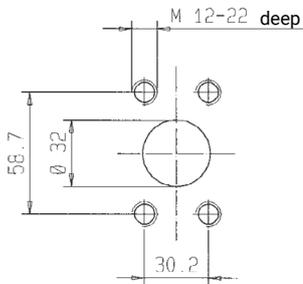
Connection A – Nominal sizes 20 ... 50



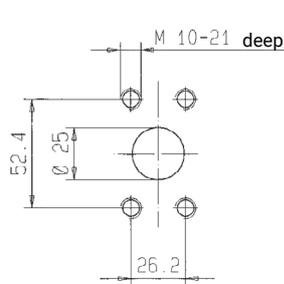
Suction and pressure connections have the same dimensions

Connection F/D – Nominal sizes 20 ... 32

Suction side SAE 1 1/4"

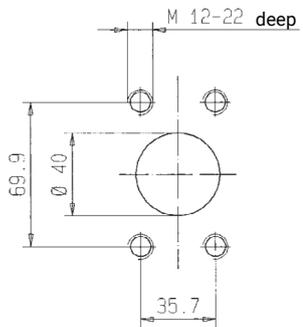


Pressure side SAE 1"

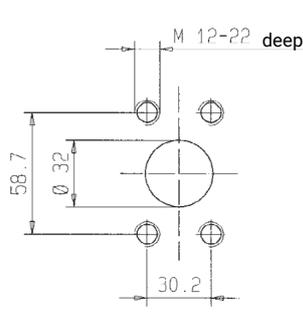


Connection G/F – Nominal sizes 40 ... 62

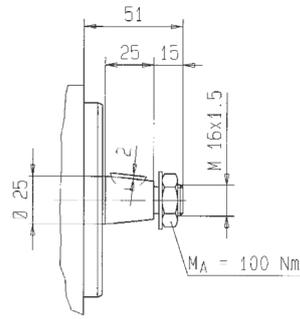
Suction side SAE 1 1/2"



Pressure side SAE 1 1/4"

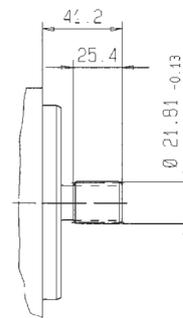


Shaft end K



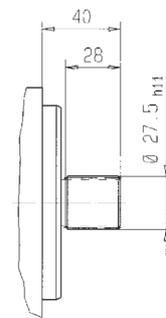
Taper 1:5, Nm_{max} 500

Shaft end U



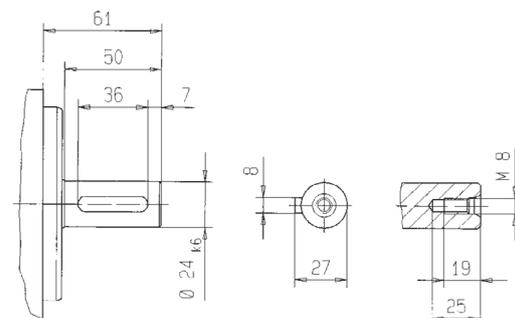
Splined shaft profile SAE-B, Nm_{max} 180

Shaft end W



Splined shaft profile B28x25 DIN 5482, Nm_{max} 450

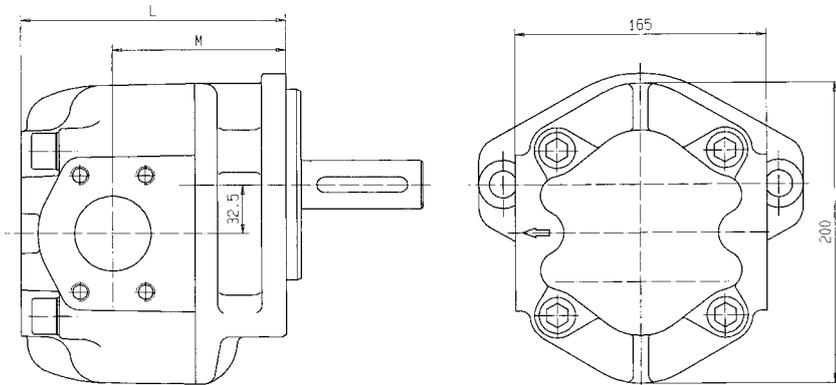
Shaft end Z



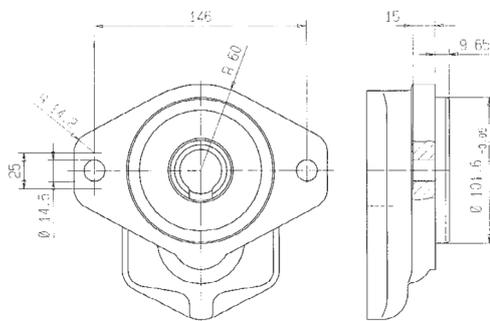
Cylindrical shaft, Nm_{max} 230

Technical drawings / Dimensions

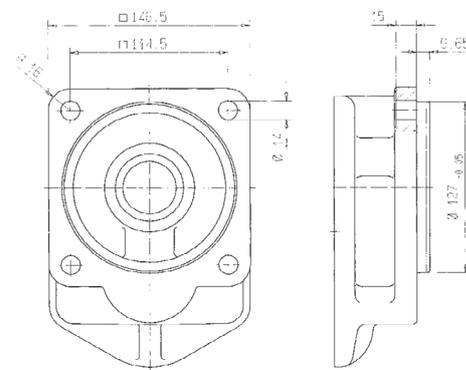
KP 3 – Cast iron



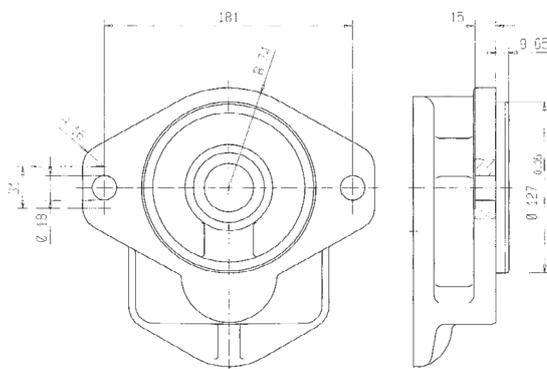
Flange type S



Flange type V



Flange type T



Nominal sizes	Dimensions	
	L	M
63	162	102
71	174	114
82	185	125
100		
112		
125		

Dimensions in mm

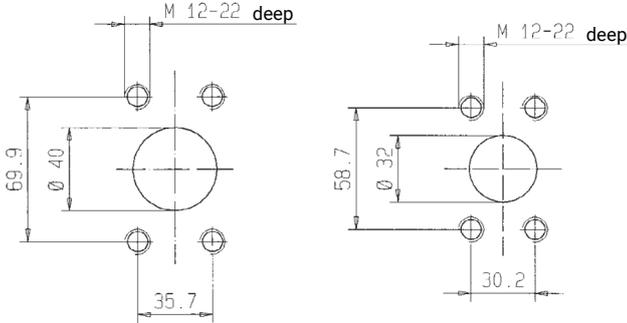
Technical drawings / Dimensions

KP 3 – Cast iron

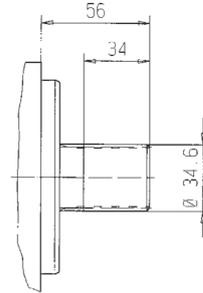
Connection G/F – Nominal sizes 63 ... 71

Suction side SAE 1 1/2"

Pressure side SAE 1 1/4"



Shaft end B

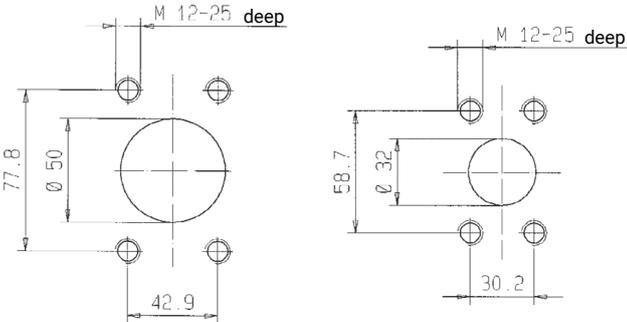


Splined shaft profile W35x2 DIN 5480, Nm_{max} 800

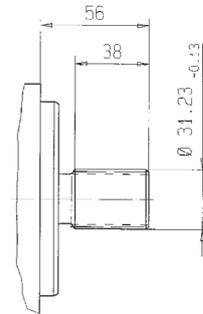
Connection J/F – Nominal sizes 82 ... 125

Suction side SAE 2"

Pressure side SAE 1 1/4"

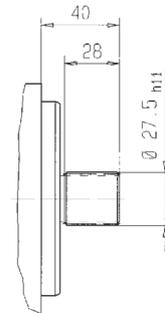


Shaft end Q



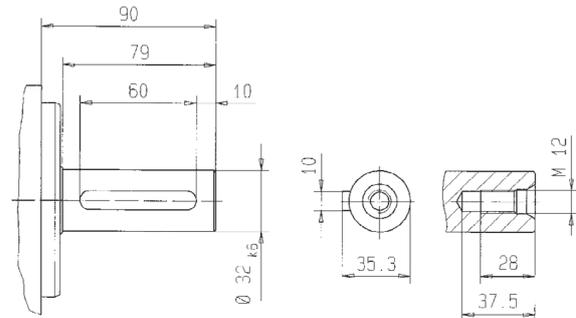
Splined shaft profile SAE-C, Nm_{max} 500

Shaft end W



Splined shaft profile B28x25 DIN 5482, Nm_{max} 450

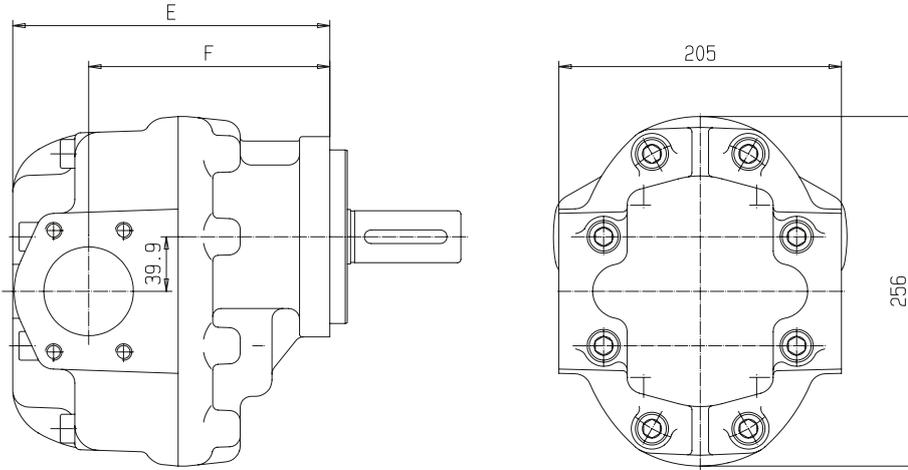
Shaft end Z



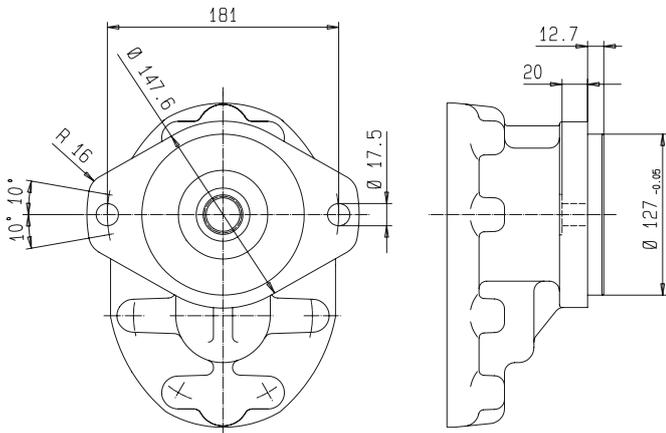
Cylindrical shaft, Nm_{max} 550

Technical drawings / Dimensions

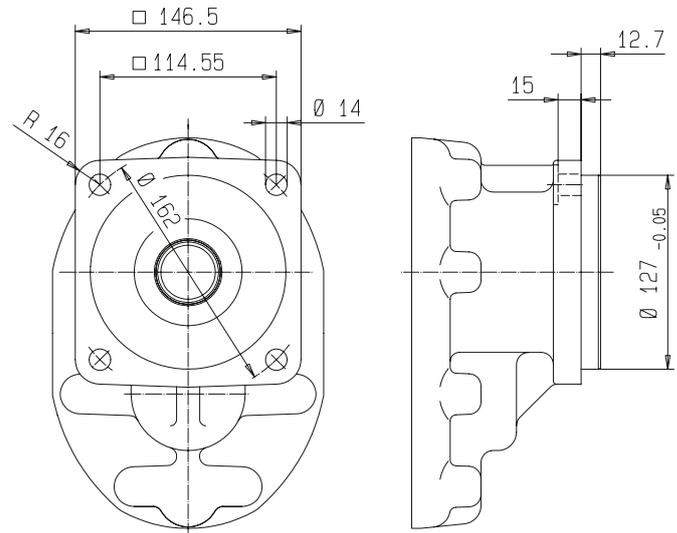
KP 5 – Cast iron



Flange type C



Flange type E



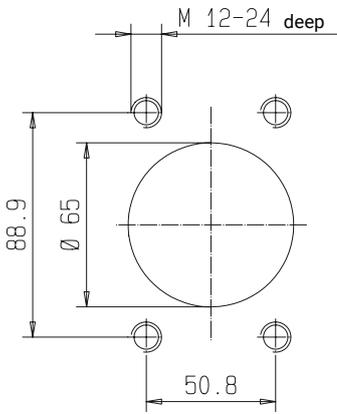
Dimensions in mm

Nominal sizes	Dimensions	
	E	F
160	225	170
200	230	175
250	243	188
300	255	200

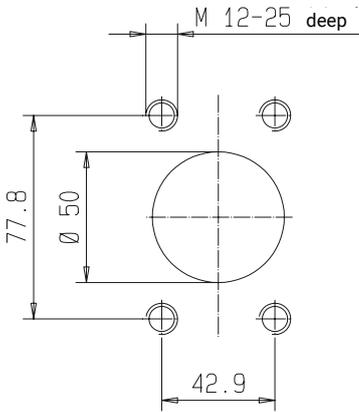
Technical drawings / Dimensions

KP 5 – Cast iron

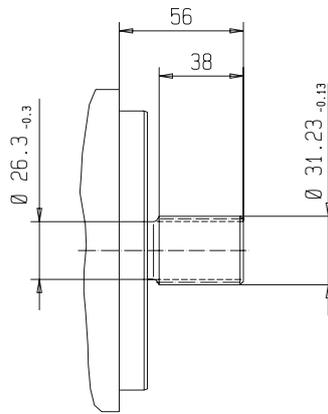
Connection suction side 2 1/2" SAE



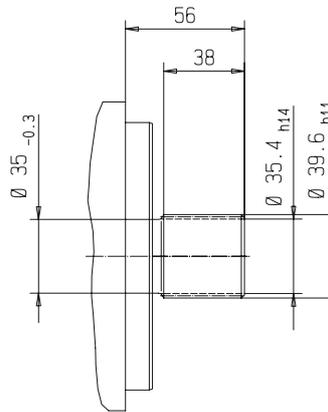
Connection pressure side 2" SAE



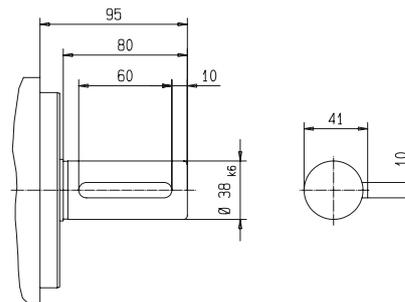
Shaft end Q



Shaft end V

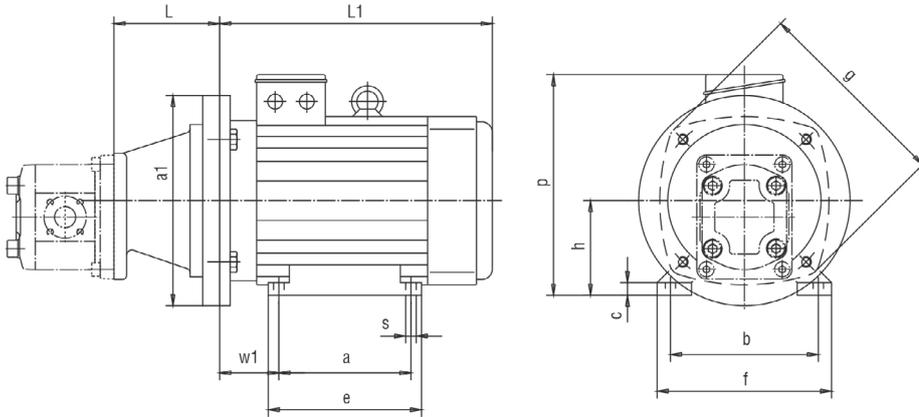


Shaft end Z



Technical drawings / Dimensions / Technical data

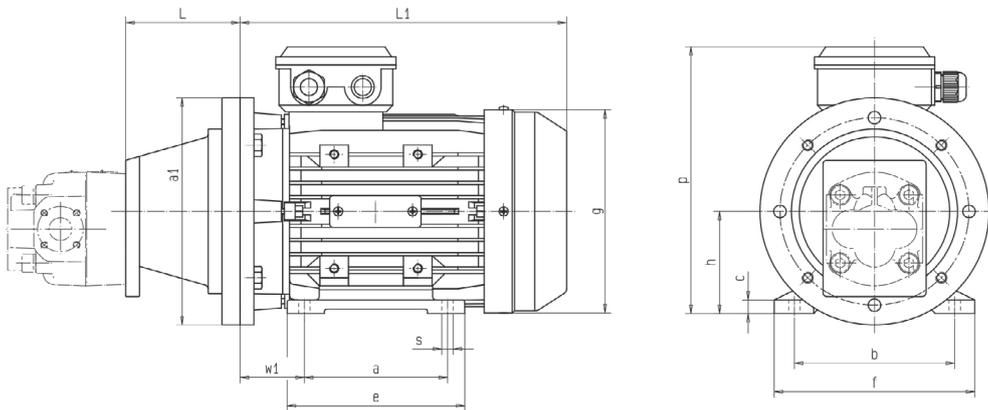
KP 1 – Aluminium



IEC motor sizes	Bellhousing	Couplings	Dimensions											
			L	a ₁	a	b	c	e	g	h	L ₁	p	s	w ₁
80 S	Z1/200/100-K	RA 24-K30/17-Z30/19	100	200	100	125	5	120	156	80	244	199	10	50
80	Z1/200/100-K	RA 24-K30/17-Z30/19	100	200	100	125	5	120	156	80	244	199	10	50
90 S	Z1/200/100-K	RA 24-K18/17-Z30/24	100	200	100	140	12	158	190	90	258	210	9	56
90 L	Z1/200/100-K	RA 24-K18/17-Z30/24	100	200	125	140	12	158	190	90	258	210	10	56
100 LS	Z1/250/110-K	RA 24/28-K18/17-Z30/28	110	250	140	160	12	172	213	100	298	232	12	63
100 L	Z1/250/110-K	RA 24/28-K18/17-Z30/28	110	250	140	160	12	172	213	100	298	232	12	63
112 M	Z1/250/110-K	RA 24/28-K18/17-Z30/28	110	250	140	190	12	172	234	112	325	252	12	70
132 S	Z1/300/132-K	RA 28/38-K18/17-Z35/38	132	300	140	216	12	187	265	132	358	283	12	89
132 M	Z1/300/132-K	RA 28/38-K18/17-Z35/38	132	300	178	216	12	218	298	132	399	303	12	89
160 M	Z1/350/171-K	RG 38/45-K18/17-Z70/42	171	350	210	254	16	323	323	160	476	341	15	108
160 L	Z1/350/171-K	RG 38/45-K18/17-Z70/42	171	350	254	254	16	323	323	160	476	341	15	108

All motor dimensions refer to the Schäfer motor brand, other motor brands on request. Motor type IM B 35.

KP 1 – Cast iron



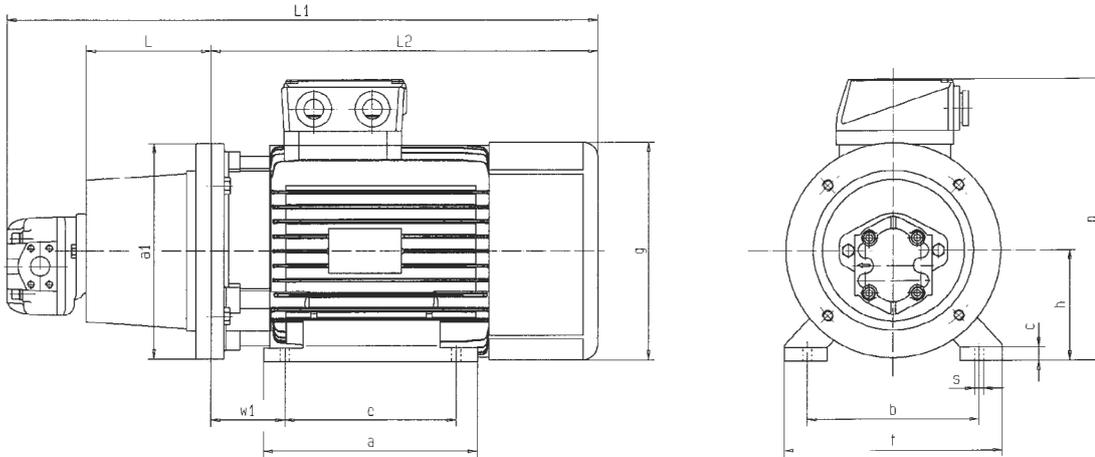
IEC motor sizes	Bellhousing	Couplings	Dimensions												
			L	a ₁	a	b	c	e	f	g	h	L ₁	p	s	w ₁
80	Z1/200/100	RA 24-K30/17-Z30/19	100	200	100	125	10	122	155	164	80	250	217	10	50
90 S	Z1/200/100	RA 24-K18/17-Z30/24	100	200	100	140	12	125	175	180	90	260	235	10	56
90 L	Z1/200/100	RA 24-K18/17-Z30/24	100	200	125	140	12	150	175	180	90	285	235	10	56
100	Z1/250/110	RA 24/28-K18/17-Z30/28	110	250	140	160	14	173	198	205	100	326	252	12	63
112	Z1/250/110	RA 24/28-K18/17-Z30/28	110	250	140	190	14	172	228	222	112	335	292	12	70
132 S	Z1/300/144	RG 38-K18/17-Z70/38	144	300	140	216	16	225	258	264	132	356	325	12	89
132 M	Z1/300/144	RG 38-K18/17-Z70/38	144	300	178	216	16	225	258	264	132	395	325	12	89

All motor dimensions refer to the ADDA motor brand, other motor brands on request. Motor type IM B 35.

Dimensions in mm

Technical drawings / Dimensions / Technical data

KP 2 – Cast iron

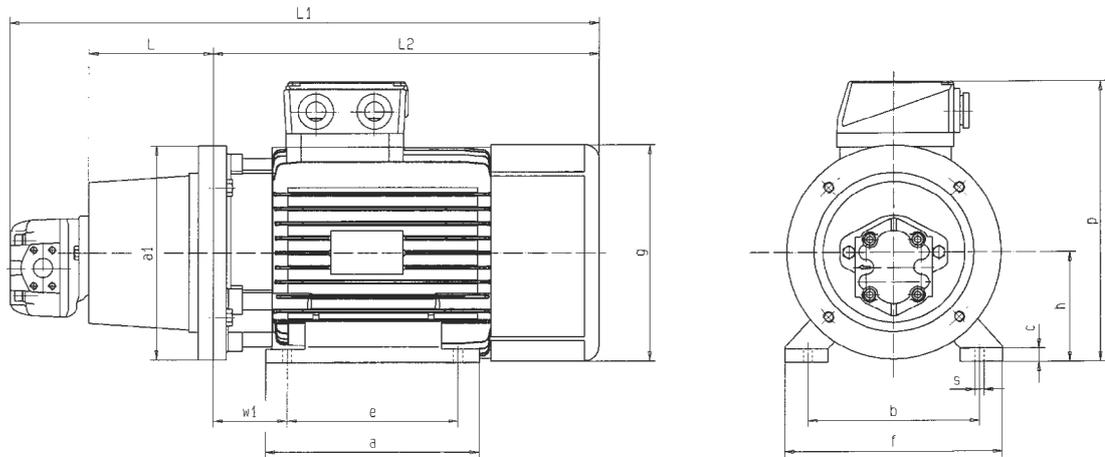


IEC motor sizes	Bellhousing	Couplings	Dimensions																
			20 ... 32	40 ... 50	62	20 ... 62													
			L ₁			L	a ₁	a	b	c	e	f	g	h	L ₂	p	s	w ₁	
100 L	Z2/250/135	RA 24/28 – Z30/24 – Z30/28	589	602	612	135	250	150	160	11	140	205	187	100	325	260	12	63	
112 M	Z2/250/135	RA 24/28 – Z30/24 – Z30/28	604	617	627	135	250	180	190	12	140	230	210	112	340	290	12	70	
132 S	Z2/300/168	RA 28/38 – Z35/24 – Z35/38	700	713	723	168	300	190	216	15	140	270	248	132	403	338	12	89	
132 M	Z2/300/168	RA 28/38 – Z35/24 – Z35/38	727	740	750	168	300	190	216	15	178	270	248	132	430	338	12	89	
160 M	Z2/350/188	RA 38/45 – Z45/24 – Z45/42	822	835	845	188	350	260	254	20	210	320	312	160	505	422	15	108	
160 L	Z2/350/188	RA 38/45 – Z45/24 – Z45/42	877	890	900	188	350	304	254	20	254	320	312	160	560	422	15	108	
180 M	Z2/350/204	RA 42/55 – Z50/24 – Z50/48	923	936	946	204	350	311	279	22	241	355	354	180	590	458	15	121	
180 L	Z2/350/204	RA 42/55 – Z50/24 – Z50/48	963	976	986	204	350	349	279	22	279	355	354	180	630	458	15	121	
200 L	Z2/400/204	RA 42/55 – Z50/24 – Z50/55	993	1006	1016	204	400	370	318	25	305	395	396	200	660	525	19	133	

All motor dimensions refer to the AC motor brand, other motor brands on request. Motor type IM B 35.

Technical drawings / Dimensions / Technical data

KP 3 – Cast iron

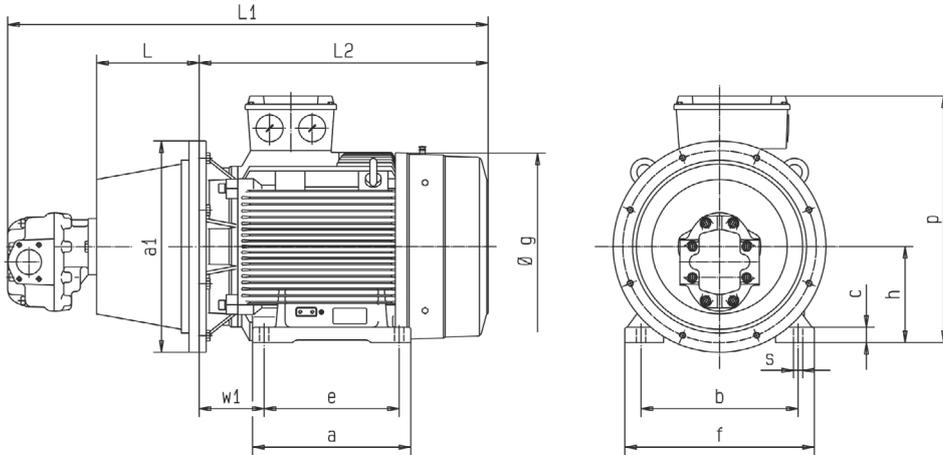


IEC motor sizes	Bellhousing	Couplings	Dimensions																
			63 ... 71	82 ... 100	112 ... 125	63 ... 125													
			L ₁			L	a ₁	a	b	c	e	f	g	h	L ₂	p	s	w ₁	
100 L	Z3/250/175	RA 28/38 – Z35/32 – Z35/28	662	674	685	175	250	150	160	11	140	205	187	100	325	260	12	63	
112 M	Z3/250/175	RA 28/38 – Z35/32 – Z35/28	677	689	700	175	250	180	190	12	140	230	210	112	340	290	12	70	
132 S	Z3/300/196	RA 28/38 – Z35/32 – Z35/38	761	773	784	196	300	190	216	15	140	270	248	132	403	338	12	89	
132 M	Z3/300/196	RA 28/38 – Z35/32 – Z35/38	788	800	811	196	300	190	216	15	178	270	248	132	430	338	12	89	
160 M	Z3/350/228	RA 38/45 – Z45/32 – Z45/42	895	907	918	228	350	260	254	20	210	320	312	160	505	422	15	108	
160 L	Z3/350/228	RA 38/45 – Z45/32 – Z45/42	950	962	973	228	350	304	254	20	254	320	312	160	560	422	15	108	
180 M	Z3/350/228	RA 42/55 – Z50/32 – Z50/48	980	992	1003	228	350	311	279	22	241	355	354	180	590	458	15	121	
180 L	Z3/350/228	RA 42/55 – Z50/32 – Z50/48	1020	1032	1043	228	350	349	279	22	279	355	354	180	630	458	15	121	
200 L	Z3/400/228	RA 42/55 – Z50/24 – Z50/55	1050	1062	1073	228	400	370	318	25	305	395	396	200	660	525	19	133	
225 S	Z3/450/262	RA 48/60 – Z56/32 – Z56/60	1099	1111	1122	262	450	368	356	28	286	435	450	225	675	574	19	149	
225 M	Z3/450/262	RA 48/60 – Z56/32 – Z56/60	1129	1141	1152	262	450	395	356	28	311	435	450	225	705	574	19	149	
250 M	Z3/550/265	RG 55/70 – Z65/32 – Z65/65	1197	1209	1220	265	550	445	406	30	349	490	490	250	770	635	24	168	
280 S	Z3/550/265	RGS 65 – Z75/32 – Z75/75	1272	1284	1295	265	550	485	457	35	368	550	550	280	845	693	24	190	

All motor dimensions refer to the AC motor brand, other motor brands on request. Motor type IM B 35.

Technical drawings / Dimensions / Technical data

KP 5 – Cast iron



IEC motor sizes	Bellhousing	Couplings	Dimensions																	
			160	200	250	300	160 ... 300													
			L ₁				L	a ₁	a	b	c	e	f	g	h	L ₂	p	s	w ₁	
160 M	PK 350/10/19	RA 38/45 - Z45/38 - Z45/42	913	918	931	943	228	350	250	254	18	210	292	290	160	460	375	14	108	
160 L	PK 350/10/19	RA 38/45 - Z45/38 - Z45/42	993	998	1011	1023	228	350	332	254	20	254	315	325	160	540	405	14	108	
180 M	PK 350/10/19	RA 42/55 - Z50/38 - Z50/48	1033	1038	1051	1063	228	350	320	279	22	241	350	340	180	580	425	14	121	
180 L	PK 350/10/19	RA 42/55 - Z50/38 - Z50/48	1033	1038	1051	1063	228	350	320	279	22	279	350	340	180	580	425	14	121	
200 L	PK 400/5/7	RA 42/55 - Z50/38 - Z50/55	1093	1098	1111	1123	228	400	365	318	24	305	395	380	200	640	475	18	133	
225 S	PK 450/3/23	RA 48/60 - Z56/38 - Z56/60	1177	1182	1195	1221	262	450	370	356	30	286	436	420	225	690	515	18	149	
225 M	PK 450/3/23	RA 48/60 - Z56/38 - Z56/60	1177	1182	1195	1221	262	450	370	356	30	311	436	420	225	690	515	18	149	
250 M	PL 550/1/9	RG 55/70 - Z65/38 - Z65/65	1255	1260	1273	1285	265	550	410	406	32	349	476	480	250	765	580	22	168	
280 S	PK 550/3/9	RG 65/75 - Z75/38 - Z75/75	1390	1395	1408	1420	275	550	480	457	35	368	534	535	280	890	680	22	190	

All motor dimensions refer to the ADDA motor brand, other motor brands on request. Motor type IM B 35.

Notes

Notes

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