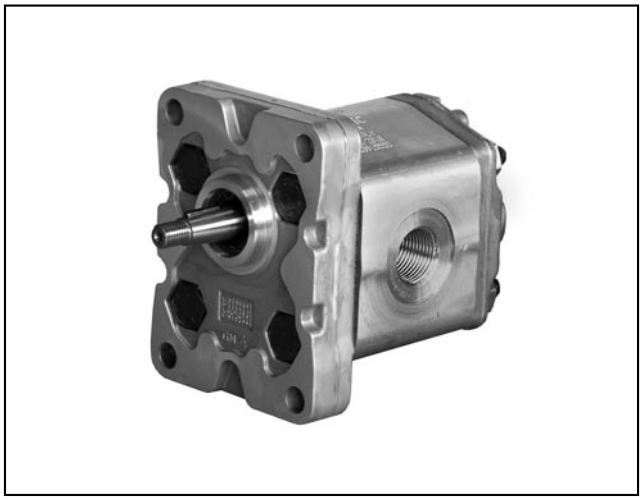
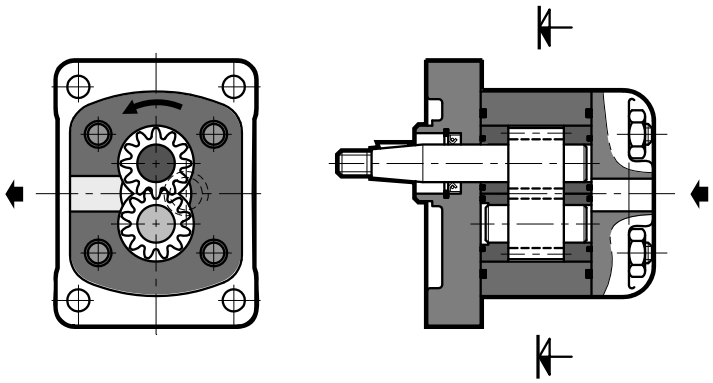


1P
EXTERNAL GEAR PUMPS
SERIES 11

OPERATING PRINCIPLE



— The 1P pumps are fixed displacement external gear pumps, equipped with axial clearance compensation, clockwise direction of rotation, tapered shaft end, and BSP threaded ports for hydraulic connection.

— They provide high volumetric efficiency even at high operating pressures, ensuring low noise levels and long service life, thanks to an effective load balancing system on the bearing bushings.

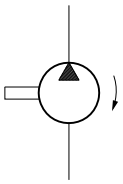
— These pumps are available with displacements from 1.1 to 8.0 cm³/rev, for operating pressures up to 230 bar.

TECHNICAL SPECIFICATIONS

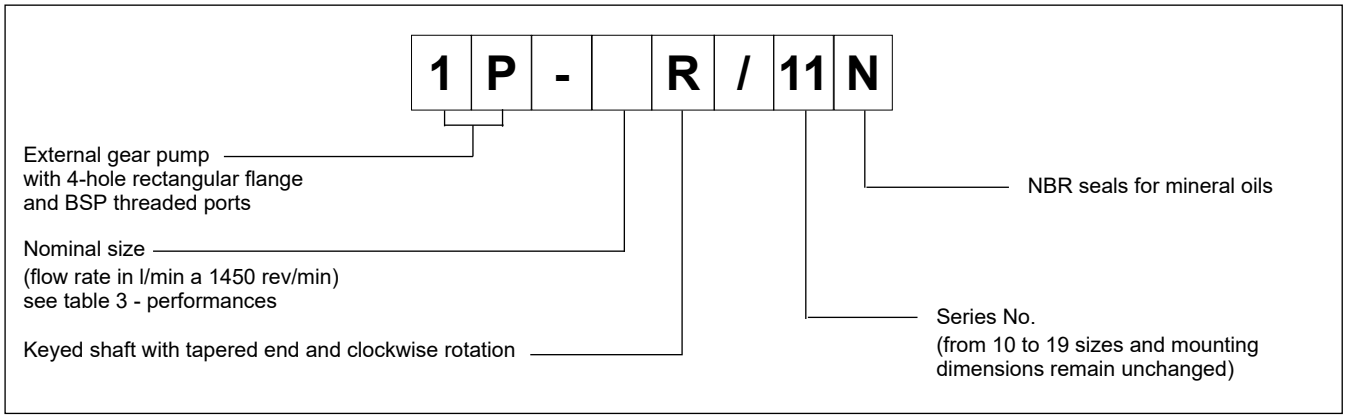
PUMP SIZE		1P
Displacement range	cm³/rev	1,1 ÷ 8,0
Flow rate and operating pressure		see table 3 - Performances
Rotation speed		see table 3 - Performances
Rotation direction		clockwise (seen from the shaft side)
Loads on the shaft		radial and axial load are not allowed
Hydraulic connection		threaded ports BSP
Type of mounting		4 hole flange - rectangular type
Mass	kg	approx. 1,6

Ambient temperature range	°C	–20 / +50
Fluid temperature range	°C	–15 / +80
Fluid viscosity range	see par. 2.2	
Recommended viscosity	cSt	25 ÷ 100
Degree of fluid contamination	see par. 2.3	

HYDRAULIC SYMBOL



1 - IDENTIFICATION CODE



2 - HYDRAULIC FLUID

2.1 - Type of fluid

Use mineral oil based hydraulic fluids with anti-foam and antioxidant additives, in conformity with the requisites of the following standards:
- FZG test - 11th stage - DIN 51525 - VDMA 24317

For use with other types of fluid (water glycol, phosphate esters and others), consult our technical department.

Operating with fluid at temperatures above 80 °C may cause premature degradation of both the fluid and the sealing elements. The physical and chemical properties of the fluid must be maintained.

2.2 - Fluid viscosity

The operating fluid viscosity must be within the following range:

minimum viscosity	12 cSt	referred to the maximum fluid temperature of 80 °C
optimum viscosity	25 ÷ 100 cSt	referred to the operating temperature of the fluid in the tank
maximum viscosity	1600 cSt	limited to only the start-up phase of the pump

2.3 - Degree of fluid contamination

The maximum permissible degree of fluid contamination must comply with ISO 4406:1999 class 20/18/15; therefore, use of a filter with $\beta_{20} \geq 75$ is recommended.

For optimum pump durability, a fluid contamination level according to ISO 4406:1999, class 18/16/13, is recommended. Accordingly, a filter with $\beta_{10} \geq 100$ should be used.

If there is a filter installed on the suction line, be sure that the pressure at the pump inlet is not lower than the values specified in section 6.

The suction filter must be equipped with a bypass valve and, if possible, with a clogging indicator.

3 - PERFORMANCES

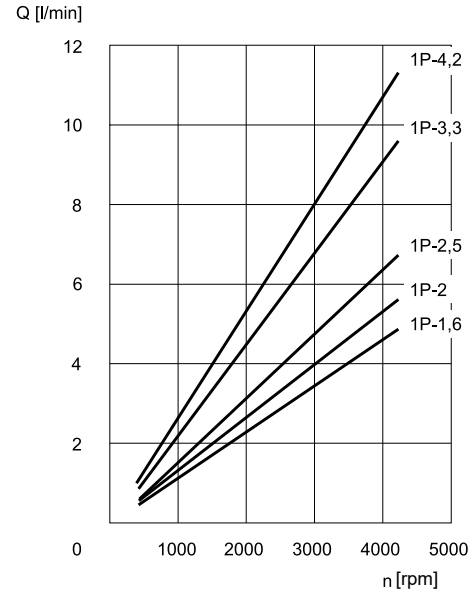
(values obtained with mineral oil with viscosity of 36 cSt at 50 °C)

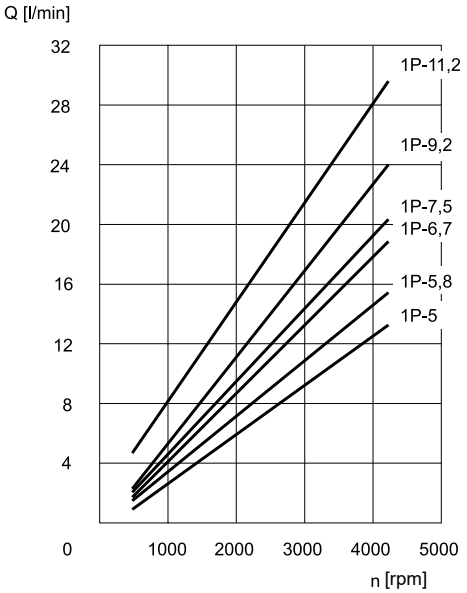
PUMP	NOMINAL SIZE	DISPLACEMENT [cm^3/rev]	FLOW RATE at 1500 rpm [l/min]	MAX PRESSURE at 1500 rpm [bar]		SPEED [rpm]	
				operating	peak	max	min
1P	**1,6**	1,1	1,6	230	270	6000	1000
	2	1,3	2,0				
	2,5	1,6	2,4				
	3,3	2,1	3,2				
	4,2	2,7	4,0				800
	5	3,2	4,8	210	250	5000	
	5,8	3,7	5,6			4500	
	6,7	4,2	6,4			4000	
	7,5	4,8	7,2	190	230	3500	600
	9,2	5,8	8,7			3000	
	11,5	8,0	11,9	160	200	2100	

4 - CURVES AND CHARACTERISTIC DATA OF 1P PUMPS

(values obtained with mineral oil with viscosity of 36 cSt at 50 °C)

4.1 - Flow rate curves Q = f (n) obtained with operating pressure 0 bar





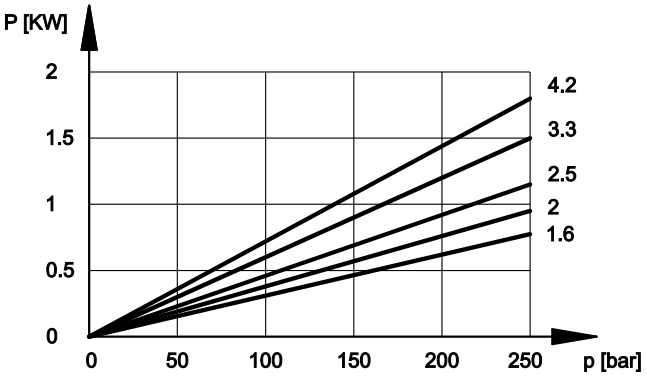
4.2 - Efficiency

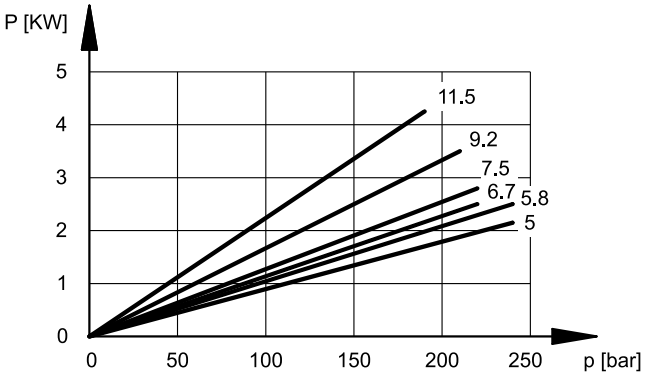
PUMP NOMINAL SIZE	VOLUMETRIC EFFICIENCY [%]	TOTAL EFFICIENCY [%]
1,6	0,96	0,85
2	0,94	0,87
2,5	0,94	0,87
3,3	0,96	0,90
4,2	0,96	0,90
5	0,96	0,90
5,8	0,96	0,89
6,7	0,97	0,92
7,5	0,97	0,93
9,2	0,95	0,89
11,5	0,94	0,89

4.3 - Noise level (at 1500 rpm)

PUMP NOMINAL SIZE	NOISE LEVEL [dB (A)]
1,6	55
2	58
2,5	58
3,3	60
4,2	65
5	66
5,8	66
6,7	68
7,5	72
9,2	72
11,5	74

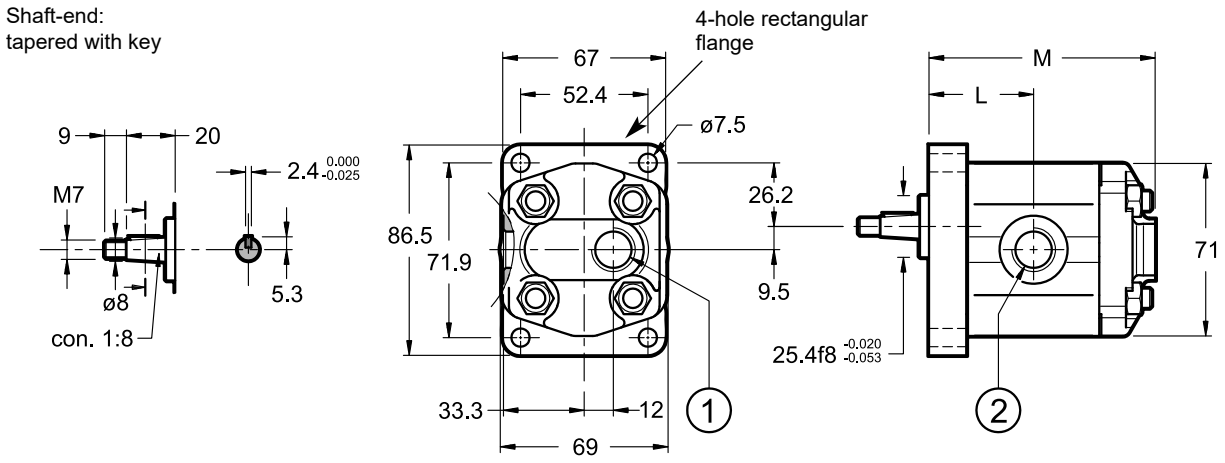
4.4 - Absorbed power / pressure (at 1500 rpm)





5 - OVERALL AND MOUNTING DIMENSIONS

dimensions in mm



Pump code	**Product Name**	L	M	suction	pressure
0710842	**1P-1,6**	34	75	3/8" BSP	3/8" BSP
0710843	**1P-2**	34.5	76		
0710844	**1P-2,5**	35	77		
0710845	**1P-3,3**	36	79		
0710846	**1P-4,2**	37	81		
0710847	**1P-5**	38	83		
0710848	**1P-5,8**	39	85		
0710849	**1P-6,7**	40	87		
0710850	**1P-7,5**	41	89		
0710851	**1P-9,2**	43	93		
0710852	**1P-11,5**	47	101		

6 - INSTALLATION

— The 1P external gear pumps can be installed in any position, without restrictions on positioning.

— The suction line must be properly sized to ensure a steady oil flow; sharp bends, restrictions, or excessive length can impair correct pump operation. It is recommended that the oil velocity in the suction line does not exceed 1 to 2 m/s.

— The minimum allowable suction pressure is -0.3 bar relative. The pump cannot operate with suction pressure.

— Before installation, the pump must be filled with the same hydraulic fluid used in the system. Filling can be performed through the connection lines. If necessary, manually rotate the pump to facilitate filling.

— The coupling must be direct, using a flexible coupling capable of compensating for any misalignments. Couplings that generate axial or radial loads on the pump shaft are not permitted.

— Verify that the motor rotation direction matches the direction indicated by the arrow on the pump housing before starting the pump.

— Before the first start-up, it is necessary to vent air from the delivery port.

— Pump start-up, especially at low temperatures, should be performed with minimum system pressure (unloaded condition).

— Gear pumps must not operate below the minimum rotational speed specified (refer to Table 3 – Performance Data).

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