

RE 11 260/07.02

Replaces: 06.98

**Radial piston pump type R4
Fixed displacement**Nominal sizes (NS) 0.40 to 2.00 cm³

Series 1X

Operating pressure up to 700 bar



K 3701/5

Type 1PF1R4-1X/1,00-450WA01M01

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Features

- Self-priming, valve controlled
- Very low noise
- High bearing life due to hydro-dynamically lubricated plain bearings
- Very compact design, therefore installation friendly dimensions
- Can be combined with fixed and variable displacement vane pumps
- 5 nominal sizes

Ordering details

1PF1R4		1X	W	01	01	*	
Series	Series 10 to 19 (10 to 19: unchanged installation and connection dimensions)	= 1X					Further details in clear text
Nominal size (NS)	V_{geom}	NS – p_{max}					Number of pressure ports 01 = 1 pressure port
	0.40 cm ³	= 0.40 – 700			M =		NBR seals, suitable for mineral oil HLP to DIN 51 524, part 2
	0.63 cm ³	= 0.63 – 700			V =		FKM seals
	1.00 cm ³	= 1.00 – 450					Suction and pressure ports 01 = Pipe threads to ISO 228/1
	1.60 cm ³	= 1.60 – 250			G =		Splined shaft end (for use as combination pump with vane pumps)
	2.00 cm ³	= 2.00 – 175			A =		Cylindrical shaft end
Direction of rotation	Anti- and clockwise	= W					

Note: All five sizes of pump have 3 pistons.© 2002
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Function, section, symbol

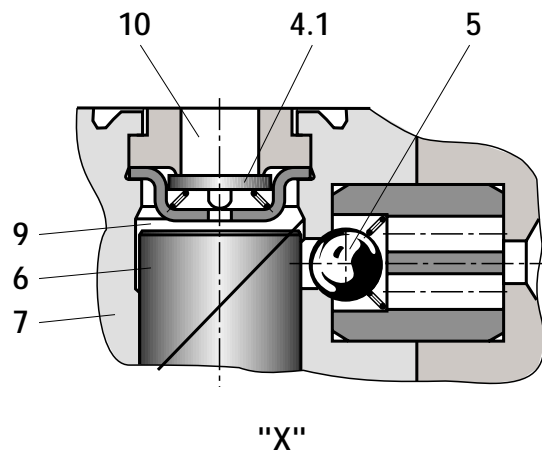
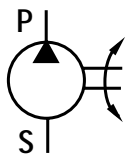
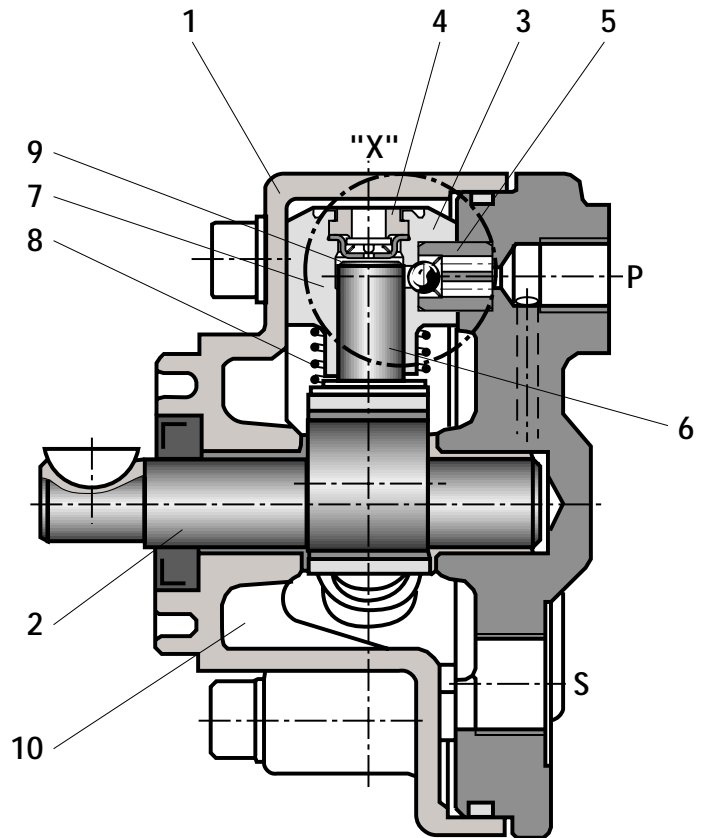
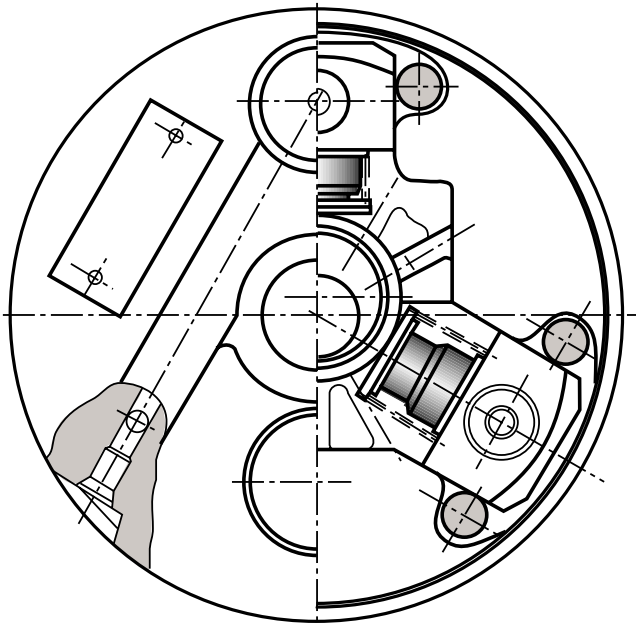
These pumps are valve controlled, self-priming, radial piston pumps with a fixed displacement.

They consist basically of the housing (1), eccentric shaft (2) and pump elements (3), with the suction valve (4), pressure valve (5) and piston (6).

Suction and delivery process

The pistons (6) are arranged radially around the eccentric shaft (2). Piston (6) is guided in the cylinder (7) and is pressed onto the eccentric shaft (2) by spring (8). On downward movement of the piston (6), the

working chamber (9) in the cylinder (7) increases in size. The resulting negative pressure lifts the suction valve plate (4.1) from the sealing edge, thus connecting the suction chamber (10) to the working chamber (9). The working chamber now fills with fluid. On upward movement of the piston (6), the suction valve closes and pressure valve (5) opens. Fluid now flows via pressure port (P) into the system.



Technical data (for applications outside these parameters, please consult us!)

Speed range in min⁻¹:

NS 0.40	1000 to 3400	NS 1.60	1000 to 2000
NS 0.63	1000 to 3000	NS 2.00	1000 to 2000
NS 1.00	1000 to 2000		

Operating pressure range:

Inlet pressure (absolute):

NS 0.40	0.90 to 1.5 bar	NS 1.60	0.80 to 1.5 bar
NS 0.63	0.85 to 1.5 bar	NS 2.00	0.80 to 1.5 bar
NS 1.00	0.80 to 1.5 bar		

Outlet pressure

(max. permissible operating pressure)

NS 0.40	700 bar	NS 1.60	250 bar
NS 0.63	700 bar	NS 2.00	175 bar
NS 1.00	450 bar		

Installation:

NS 0.40 - 700

Horizontal: The suction port should lie vertically above the pressure port. This improves the bleeding of the pump.

Vertical: No limitation

All other sizes have no installation limitations.

Max. permissible torque (drive shaft): 10 Nm

Shaft loading:

Radial and axial forces **cannot** be taken up.

Mounting style: Face mounting

Pipe connections: Threaded connections

Direction of rotation: Clockwise or anti-clockwise, does not affect the direction of flow

Pressure fluid: HLP mineral oil to DIN 51 524 part 2, other pressure fluids on request

Please take note of the specifications stated within catalogue sheet RE 07 075!

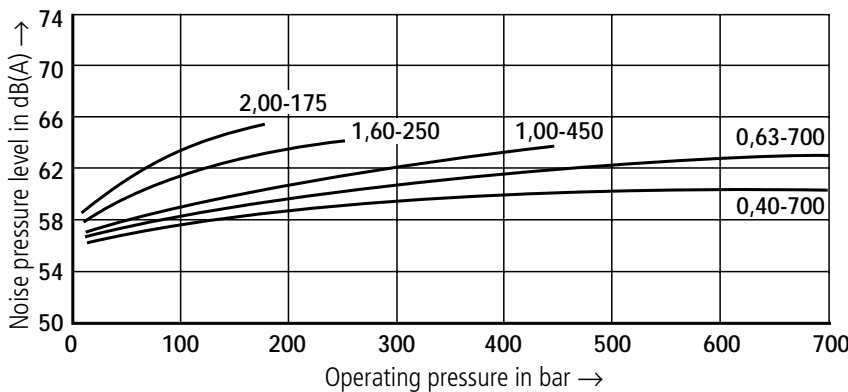
Pressure fluid temperature range: - 10 to + 70 °C

Viscosity range: 10 to 200 mm²/s

Required filtration: Maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 10. We, therefore recommend a filter with a minimum retention rate of $\beta_{20} \geq 100$. In order to achieve a longer service life, we recommend class 9. This can be achieved with a filter with a minimum retention rate of $\beta_{10} \geq 100$.

Weight: 2.6 kg

Noise pressure level (average values), measured at $n = 1450 \text{ min}^{-1}$, $\vartheta_{\text{oil}} = 40 \text{ °C} \pm 5 \text{ °C}$



Measured in an anechoic chamber to DIN 45 635, sheet 1

Distance:

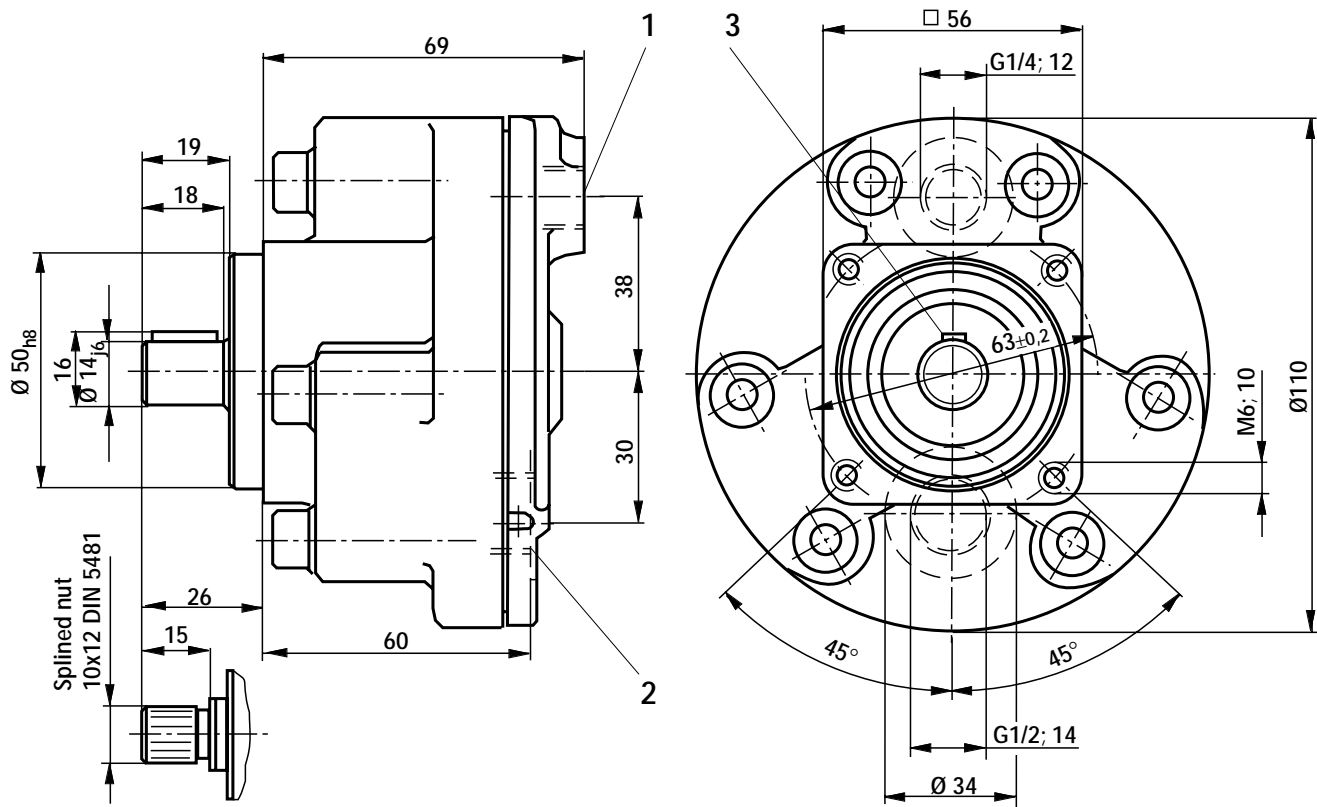
Microphone – pump = 1 m

With system pressures below 4 bar, and viscosities > 150mm²/s valve noise may be heard.

Noise pressure level at system pressure < 4 bar: ≤ 58 dB(A)

Flow and performance values (average values), measured at $n = 1450 \text{ min}^{-1}$, $\vartheta_{\text{oil}} = 40 \text{ °C} \pm 5 \text{ °C}$

NS - p_{max}	V_{geom} in cm ³	Pressure in bar	50	100	150	200	250	300	350
0.40 - 700	0.40	$q_{V,\text{eff}}$ in L/min	0.55	0.54	0.54	0.53	0.53	0.52	0.51
		P_a in kW	0.07	0.12	0.16	0.20	0.25	0.30	0.34
0.63 - 700	0.63	$q_{V,\text{eff}}$ in L/min	0.95	0.94	0.93	0.92	0.91	0.90	0.89
		P_a in kW	0.10	0.18	0.26	0.34	0.42	0.51	0.58
1.00 - 450	1.00	$q_{V,\text{eff}}$ in L/min	1.47	1.45	1.43	1.41	1.40	1.39	1.38
		P_a in kW	0.16	0.28	0.41	0.53	0.66	0.77	0.89
1.60 - 250	1.60	$q_{V,\text{eff}}$ in L/min	2.35	2.35	2.34	2.33	2.33		
		P_a in kW	0.22	0.43	0.64	0.85	1.06		
2.00 - 175	2.00	$q_{V,\text{eff}}$ in L/min	2.98	2.97	2.96				
		P_a in kW	0.31	0.58	0.86				
NS - p_{max}	V_{geom} in cm ³	Pressure in bar	400	450	500	550	600	650	700
0.40 - 700	0,40	$q_{V,\text{eff}}$ in L/min	0.50	0.50	0.49	0.49	0.48	0.48	0.47
		P_a in kW	0.39	0.43	0.48	0.52	0.57	0.61	0.66
0.63 - 700	0,63	$q_{V,\text{eff}}$ in L/min	0.88	0.88	0.87	0.86	0.85	0.84	0.83
		P_a in kW	0.67	0.74	0.82	0.90	0.98	1.07	1.15
1.00 - 450	1,00	$q_{V,\text{eff}}$ in L/min	1.37	1.36					
		P_a in kW	1.02	1.14					



- 1 Pressure port
- 2 Suction port
- 3 Woodruff key 5 x 6.5 DIN 6888

Seal kit (NBR):
Material No. **00312138**
(valid for all nominal sizes)

Seal kit (FKM)
Material No. **00313049**
(valid for all nominal sizes)

Commissioning guidelines

Bleeding

- All of the type R4 radial piston pumps are self-priming.
- Before commissioning, the pump must be bled to protect it from damage.
- Should the pump not deliver without foam after approx. 20 seconds the system must be rechecked. After reaching the operating values, check the pipework for leaks. Check the operating pressures.

Commissioning

- Check to see whether the system has been correctly and cleanly assembled.
- Start the pump without load and allow it to run for a few seconds without pressure so that sufficient lubrication is provided.
- **Under no circumstances allow the pump to run without pressure fluid!**

⚠ Important notes

- Service and maintenance of the pump may only be carried out by authorised, trained and instructed personnel!
- Only use original Bosch Rexroth spare parts!
- The pump may only be used with the permissible data.
- The pump must only be operated when in good condition!
- When work is carried out at the pump (e.g. installation and disassembly) the system must be switched off and depressurised!
- Unauthorised alterations and changes which influence the safety and function are not permitted!
- Mount protective equipment (e.g. coupling guard)!
- Existing protective equipment must not be removed!
- The general valid safety and accident prevention regulations must be observed under all circumstances!

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