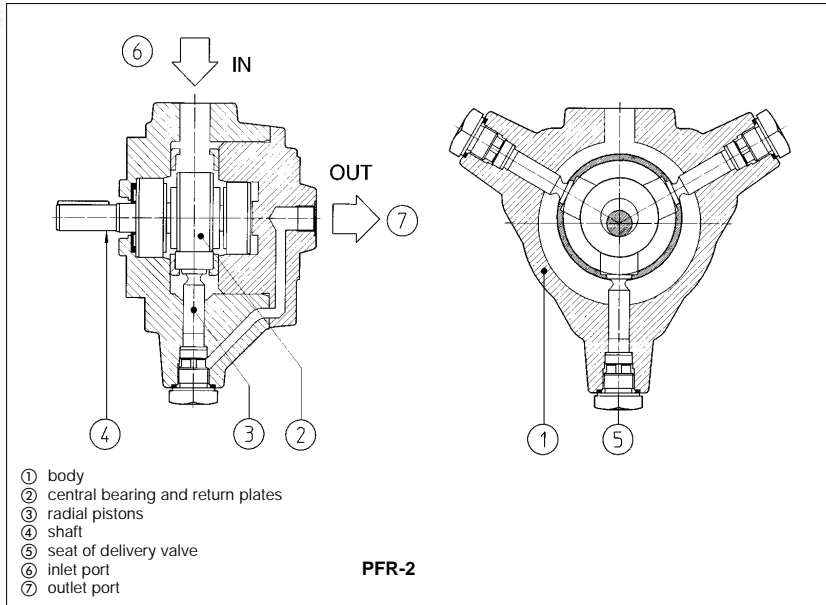


Radial piston pumps type PFR

fixed displacement



PFR are fixed displacement radial piston pumps ②③ with positive drive construction of the pistons (without return spring) for high performance and low noise level.

Suitable for hydraulic oils according to DIN 51524... 535 or synthetic fluids having similar lubricating characteristics.

These pumps are available as single or with through-shaft configuration in order to be coupled to PFE vane pumps and to PFG gear pumps, see table A190.

Wide variety of displacements from 1,7 up to 34,3 cm³/rev.
 Max pressure up to 500 bar.

1 MODEL CODE

PFR	XA	- 3	08	**	/*
Fixed displacement radial piston pump					Synthetic fluids: /WG = water-glycol /PE = phosphate ester
Additional suffix for pumps provided to be coupled with vane pump type PFE (tab. A005) or gear pumps type PFG (tab. A055), see section 2					Design number
Only for PFR-2 XF = provided (special shaft) to be coupled with PFGXP					Displacement [cm ³ /rev], see section 2 for PFR-2: 02, 03 for PFR-3: 08, 11, 15 for PFR-5: 18, 22, 25, 30, 34
Only for PFR-3 XP = provided (throughgoing shaft, flange and joint) to be coupled with PFGXF					
Only for PFR-3 and PFR-5: XA = provided (throughgoing shaft, flange and joint) to be coupled with PFE-31 XB = provided (throughgoing shaft, flange and joint) to be coupled with PFE-41 XC = provided (throughgoing shaft, flange and joint) to be coupled with PFE-51					
See table A190 for codes of complete multiple pumps: PFR + PFE = PFRX*E PFR + PFG = POX					
			Conventional size, see section 2: 2, 3, 5		

2 OPERATING CHARACTERISTICS at 1500 rpm with hydraulic oil having a viscosity of 24 mm²/s and 40°C

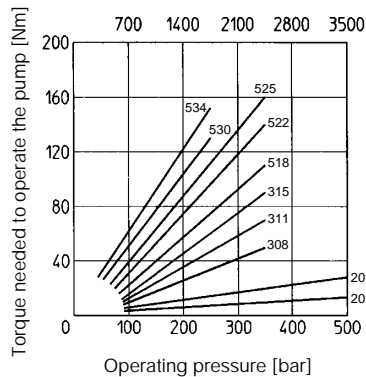
Model	Displacement cm ³ /rev	Max pressure bar	Speed range rpm	150 bar (3) l/min	kW	250 bar (3) l/min	kW	350 bar (3) l/min	kW	500 bar (3) l/min	kW
PFR-202	1,7	500 (1)	600-1800 (2)	2,5	0,7	2,5	1,1	2,4	1,6	2,4	2,1
PFR-203	3,7			5,0	1,4	5,0	2,2	4,9	3,3	4,9	4,2
PFR-308	8,2			12,5	3,2	12,5	5,6	12,4	7,5		
PFR-311	11,4	350 (1)		16,5	4,5	16,4	7,8	16,2	10		
PFR-315	14,7			21,5	6,3	21,5	10,0	20,9	12,5		
PFR-518	18,1			26	7,7	25,8	12,3	25,6	15,2		
PFR-522	21,8			31,5	9,5	31,2	14,9	31	18,4		
PFR-525	25,4	250 (1)		37	11	36,6	17,3	36,2	21,6		
PFR-530	29,6			43	12,5	42,5	20,5				
PFR-534	34,3			50	14,5	49,4	24				

(1) Max pressure is 250 bar for /PE versions; max pressure is 175 bar for /WG versions
 (2) Max speed is 1000 rpm for /WG and /PE versions;
 (3) Flow rate and power consumption are proportional to revolution speed

3 MAIN CHARACTERISTICS OF FIXED DISPLACEMENT RADIAL PISTON PUMP TYPE PFR

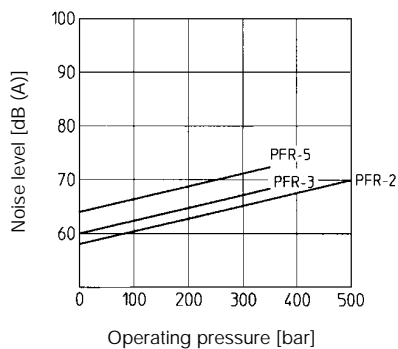
Installation position	Any position. They are not self-priming therefore their installation under oil level is recommended. Installation above oil level requires foot valve on inlet line and pump central point located no more than 150 mm above minimum oil level. The shaft of the pump has an eccentric cam which rotates with the shaft generating the stroke of the pistons and thus generating the flow rate. For the best functioning a balanced joint should be provided between the shaft of the motor and the shaft of the pump. Consult our technical office for further information.
Commissioning	PFR pumps can be reversed without changing the flow direction. Therefore both directions of rotation are permitted. It is recommend to start the pump by short impulses, with pump case filled and air bleed plugs unlocked. Pumps type PFR-3 and PFR-5 have 2 air bleed, normally plugged, ports located near to the P ports. To help filling and air bleeding, it could be advisable to install a vertical pipe connected on the intake line, just before the inlet port flange.
Loads on the shaft	Axial and radial loads are not allowed on the shaft. The coupling should be sized to absorb the peak horsepower developed.
Ambient temperature	from -20°C to +70°C
Fluid	Hydraulic oil as per DIN 51524...535; for other fluids see section 1
Recommended viscosity	max at cold start 800 mm ² /s max at full power 100 mm ² /s during operation 24 mm ² /s min at full power 10 mm ² /s
Fluid contamination class	ISO 19/16 (filters at 25 µm value with B25 ≥ 75 recommended)
Fluid temperature	T < 70°C, if T > 60 select /PE seals; T < 50° C for /WG versions
Recommended pressure on inlet port	from -0,1 to 1,5 bar for speed up to 1800 rpm

4 TORQUE VERSUS PRESSURE DIAGRAM



5 NOISE LEVEL

Tests are performed with ambient conditions according to ISO 4412-1 standards. Shaf speed: 1450 rpm. Mineral oil having a viscosity of 24 mm²/s and 40°C.



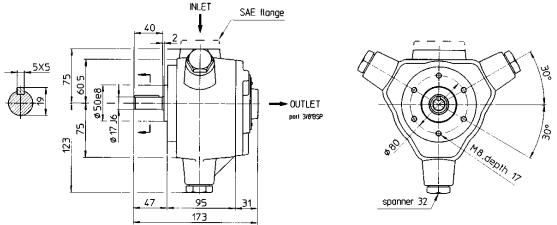
6 LIMIT OF SHAFT TORQUE

Pump model	Maximum driving torque [Nm]	Maximum torque available on the end of the through shaft [Nm]
PFR-2	200	=
PFR-3	600	320
PFR-5	800	320

The values of torque needed to operate the pumps are shown for each type on the "torque versus pressure diagram" at section 4. In multiple pumps the total torque applied to the shaft of the first element (drive shaft) is the sum of the single torque needed for operating each single pump and it is necessary to verify that this total torque applied to the drive shaft is not higher than the values indicated in the table.

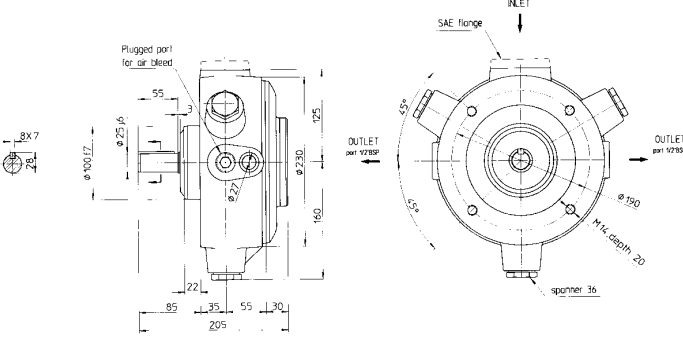
7 DIMENSIONS OF SINGLE PUMPS [mm]

PFR-2



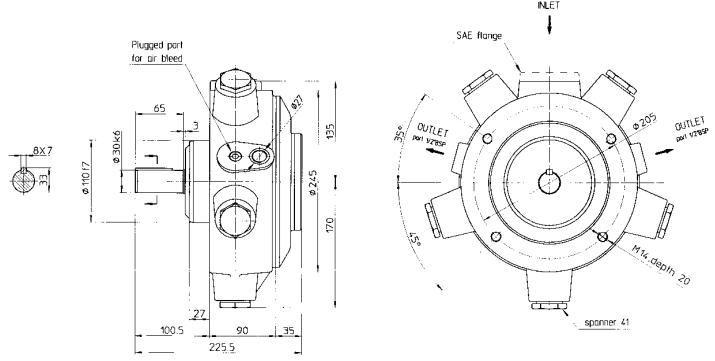
Mass: 12 Kg

PFR-3



Mass: 31 Kg

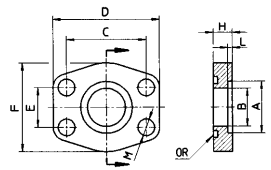
PFR-5



Model	Mass kg
PFR-518	38
PFR-522	
PFR-525	
PFR-530	39
PFR-534	

(*) SAE flanges are supplied with pumps

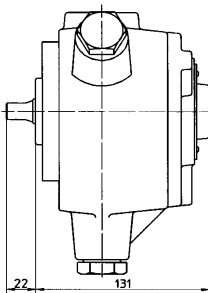
8 FLANGES SAE-3000 supplied with the pump [mm]



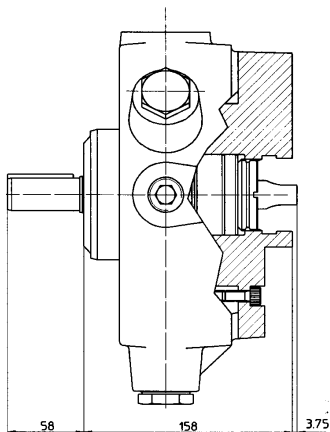
Flanges are supplied with seal and bolts

Pump model	Flange code	A	B	C	D	E	F	H	L	M	OR	Fastening bolts
PFR - 2	WFA-25	35,5	29	52,37	70	26,19	55	12	4	ø 11	4131	M10x30
PFR - 3	WFA-32	42,5	34	58,72	79	30,18	68	12	4	ø 11,5	4150	M10x35
PFR - 5												

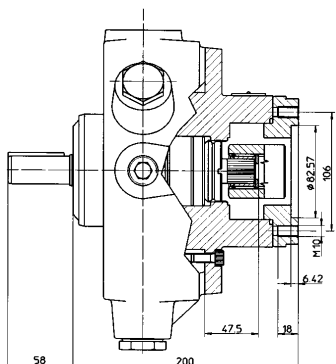
PFRXF-2



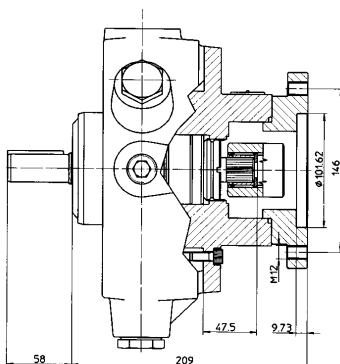
PFRXP-3



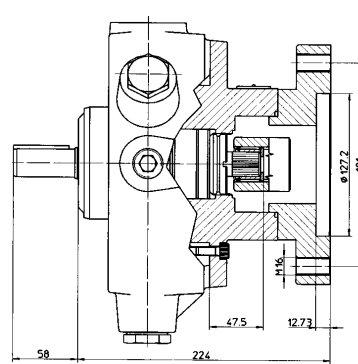
PFRXA-3



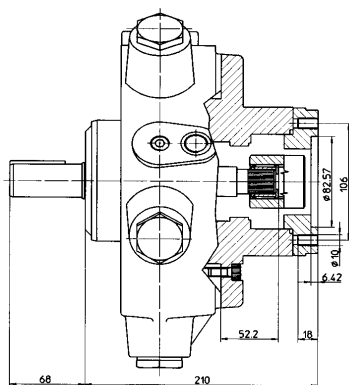
PFRXB-3



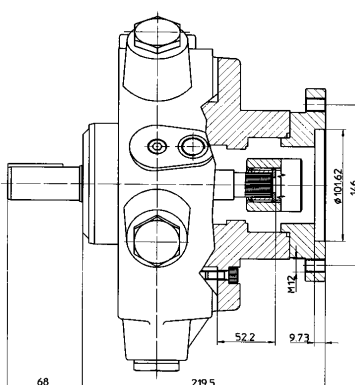
PFRXC-3



PFRXA-5



PFRXB-5



PFRXC-5

