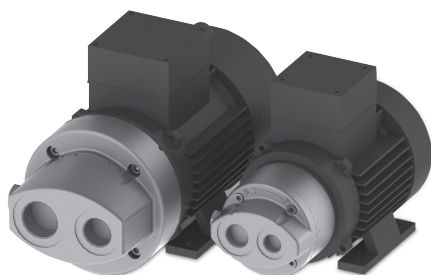
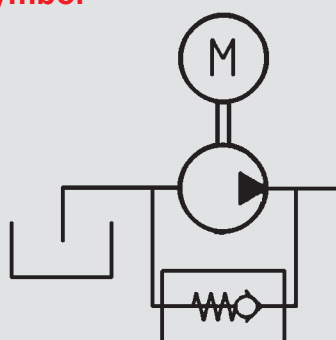


## Feed Pumps FZP / MFZP



### Symbol



### General

The feed pump from the FZP series is a vane pump for the low-pressure range with constant flow rate.

### Product Features

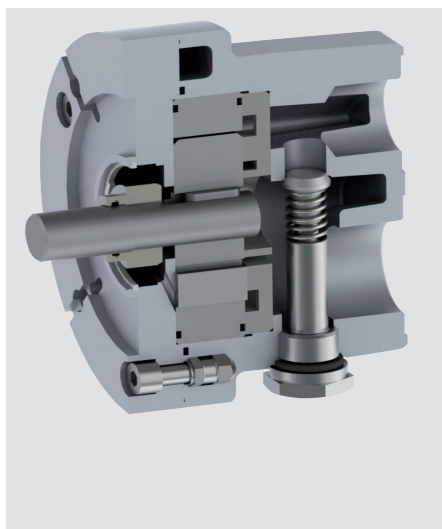
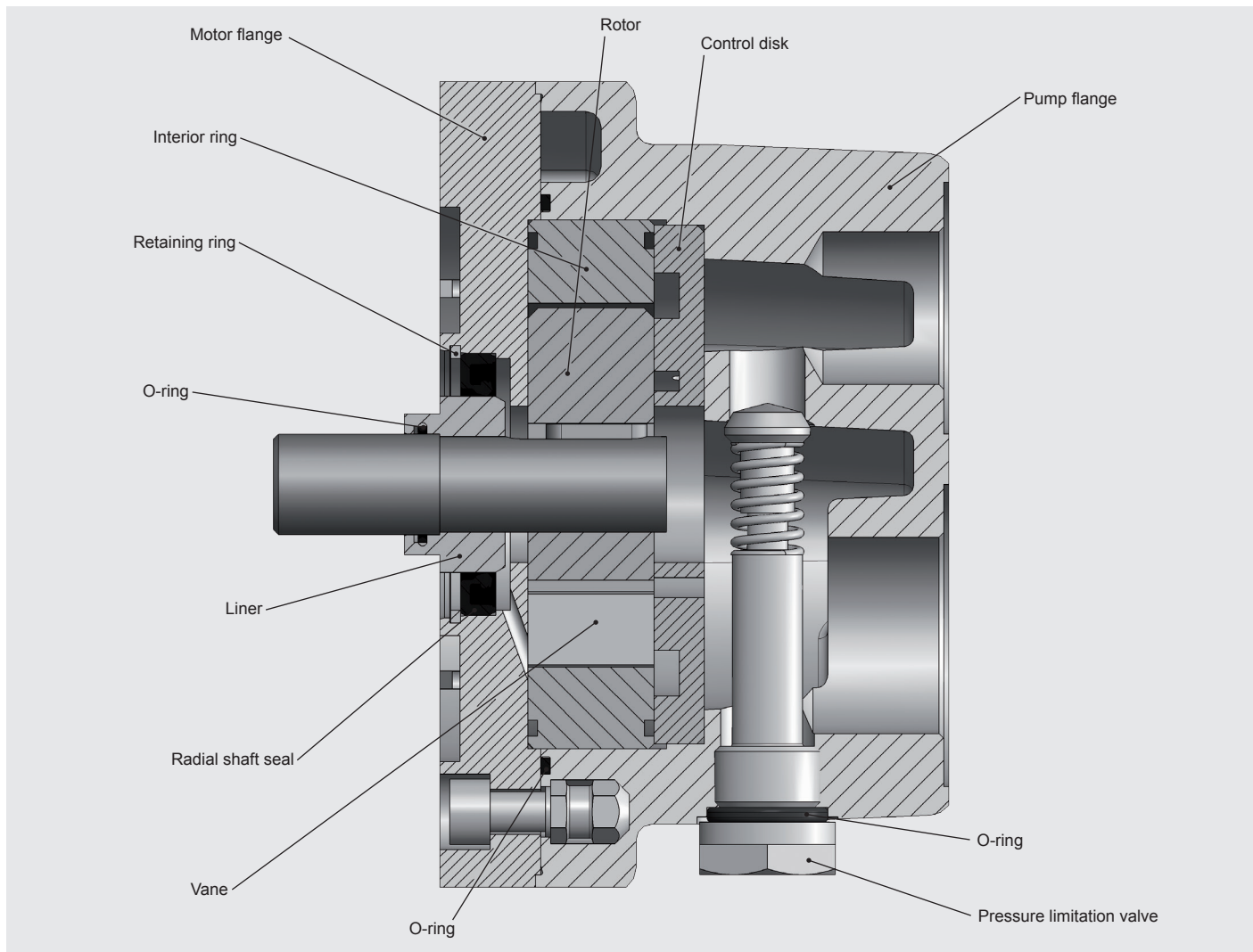
- Direct drive pump – no bell housing or coupling required
- Standard with internal pressure limitation valve
- Optional with flange-mounted motor
- Small construction lengths

### Application Field

- Filter circuits
- Cooling circuits
- Lubrication technology
- Pump transfer units

### Operation Data

Operating pressure	max. 10 bar			
Pressure at the suction port	<div><div></div> max. -0.4 bar suction underpressure</div> <div><div></div> max. 0.5 bar overpressure</div>			
Medium	Mineral oil to DIN 51524 Part 1 and Part 2			
Permissible contamination	≤ NAS 12			
Temperature of medium	-20 °C to +80 °C for mineral oil			
Viscosity	See characteristic curves			
Ambient temperature	-20 °C to +40 °C			
Mounting position	No restrictions			
RPM	<div><div></div> min. 1,000 rpm</div> <div><div></div> max. 2,000 rpm</div> Direction of rotation – right-turning (view of motor fan wheel)			
Drive (only MFZP)	Drive type: electric motor Current type: three-phase current For power and voltage see model code Protection class: IP 55 Insulation class: F			
Volumetric efficiency	>90% (at $v = 40 \text{ mm}^2/\text{s}$ )			
Weights	FZP-1:		1.4 kg	
	FZP-2:		3.9 kg	
	FZP-3:		9.6 kg	
	MFZP-1/2.0	0.18 kW	6.0 kg	
	MFZP-1/2.0	0.37 kW	7.4 kg	
	MFZP-2/2.1	0.75 kW	13.5 kg	
	MFZP-2/2.1	1.50 kW	19.5 kg	
	MFZP-3/3.0	2.20 kW	32.5 kg	
	MFZP-3/3.0	4.00 kW	39.5 kg	
Noise levels		ccm/rev	1 bar	6 bar
	Size 1	3.5	58	62
		7.0	58	63
		10.0	60	64
	Size 2	20.0	66	68
		30.0	67	68
		40.0	69	70
	Size 3	70.0	69	71
		100.0	76	78
		130.0	77	78
	Test fluid: ISO VG46 at 40 °C (40 mm²/s) The noise level values serve as guidelines, as room acoustics, connections, viscosity and reflection affect the level of noise.			



## Note regarding tubing pressure differences (flow loss)

- Simplified for hydraulic oils:

$$\Delta p [\text{bar}] = 5.84 \cdot \frac{l [\text{m}]}{d^4 [\text{mm}]} \cdot Q [\text{l/min}] \cdot \gamma [\text{mm}^2/\text{s}]$$

- Influence of the interior diameter on flow losses  
with the following example values:  
 $l = 1 \text{ m}$ ,  $Q = 150 \text{ l/min}$ ,  $\gamma = 200 \text{ mm}^2/\text{s}$

	Internal diameter [mm]		
	$d_{i1} (38)$	$d_{i1} (32)$	$d_{i1} (25)$
$\Delta p [\text{bar}]$	0.084	0.167	0.45

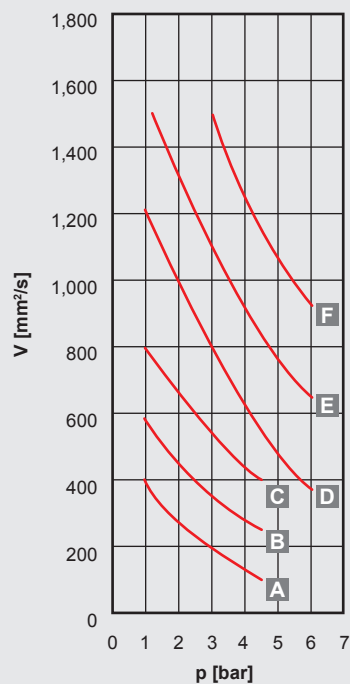
- Observations apply only for straight pipes
- Additional threaded joints and pipe bends increase flow loss

## Note:

- As few threaded connections as possible
- Few pipe bends – where bends are used, with large bending radius
- Difference in height between pump and oil level as small as possible
- Hoses must be suitable for a vacuum of min. 5,000 mmW (e.g. by means of steel wire insert)
- Do not reduce the pipe cross-section determined by the threaded connection

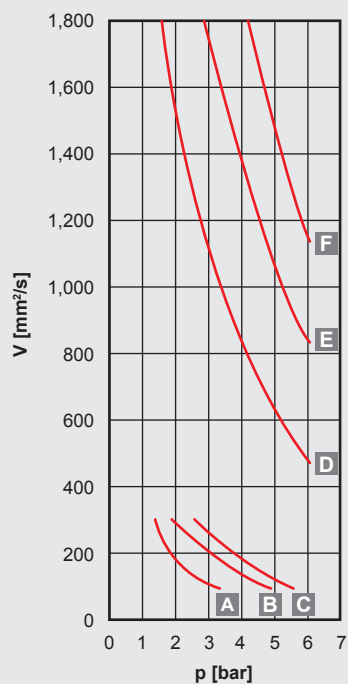
## Control Curves

FZP-1



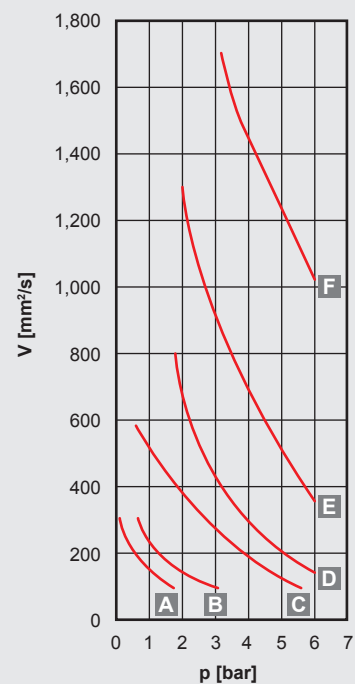
- A** 10.0 cm³ / rev - 0.18 kW / 0.2 kW DC
- B** 7.0 cm³ / rev - 0.18 kW / 0.2 kW DC
- C** 3.5 cm³ / rev - 0.18 kW / 0.2 kW DC
- D** 10.0 cm³ / rev - 0.37 kW
- E** 7.0 cm³ / rev - 0.37 kW
- F** 3.5 cm³ / rev - 0.37 kW

FZP-2



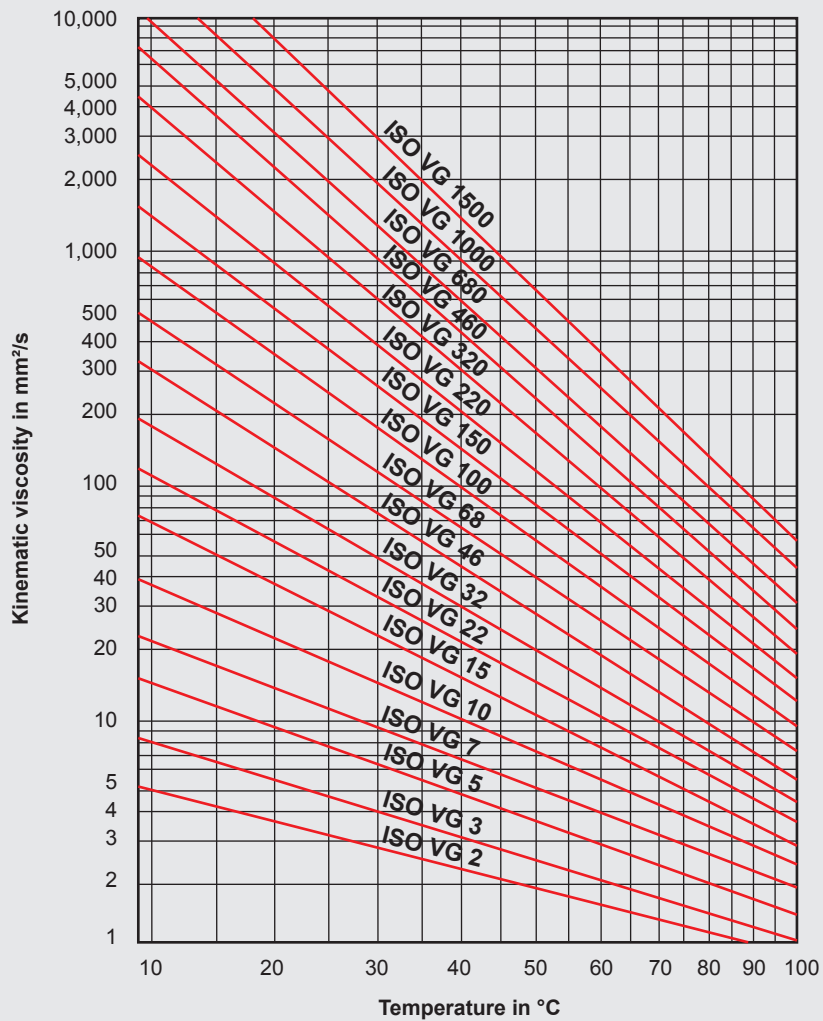
- A** 40 cm³ / rev - 0.75 kW
- B** 30 cm³ / rev - 0.75 kW
- C** 20 cm³ / rev - 0.75 kW
- D** 40 cm³ / rev - 1.5 kW
- E** 30 cm³ / rev - 1.5 kW
- F** 20 cm³ / rev - 1.5 kW

FZP-3



- A** 130 cm³ / rev - 2.2 kW
- B** 100 cm³ / rev - 2.2 kW
- C** 70 cm³ / rev - 2.2 kW
- D** 130 cm³ / rev - 4.0 kW
- E** 100 cm³ / rev - 4.0 kW
- F** 70 cm³ / rev - 4.0 kW

**Viscosity-temperature graph  
to DIN 51519 viscosity index 50**



**Design**

Pump (FZP or MFZP) selected in accordance with customer specifications.

Example:

Flow rate: 190 l/min  
Counter-pressure: 5 bar  
Viscosity: 200 cSt  
Motor voltage: 400 V – 50 Hz

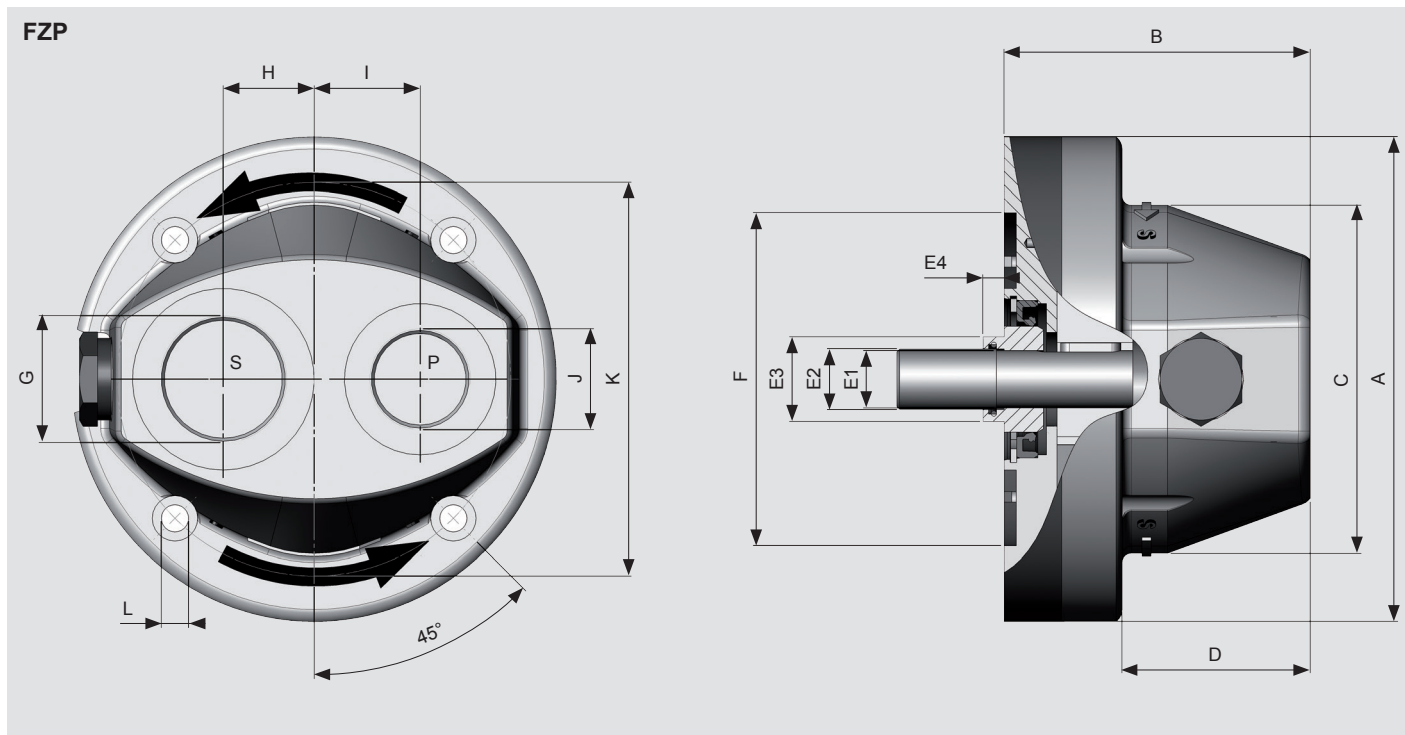
Selection:

190 l/min → FZP-3 / MFZP-3 (approx. 130 ccm/rev at 1,500 rpm)  
5 bar and 200 cSt → drive power 4 kW (= motor size 112)

Result:

FZP-3/3.0/P/100/130/RV6  
MFZP-3/3.0/P/112/130/RV6/4/400-50

## Dimensions

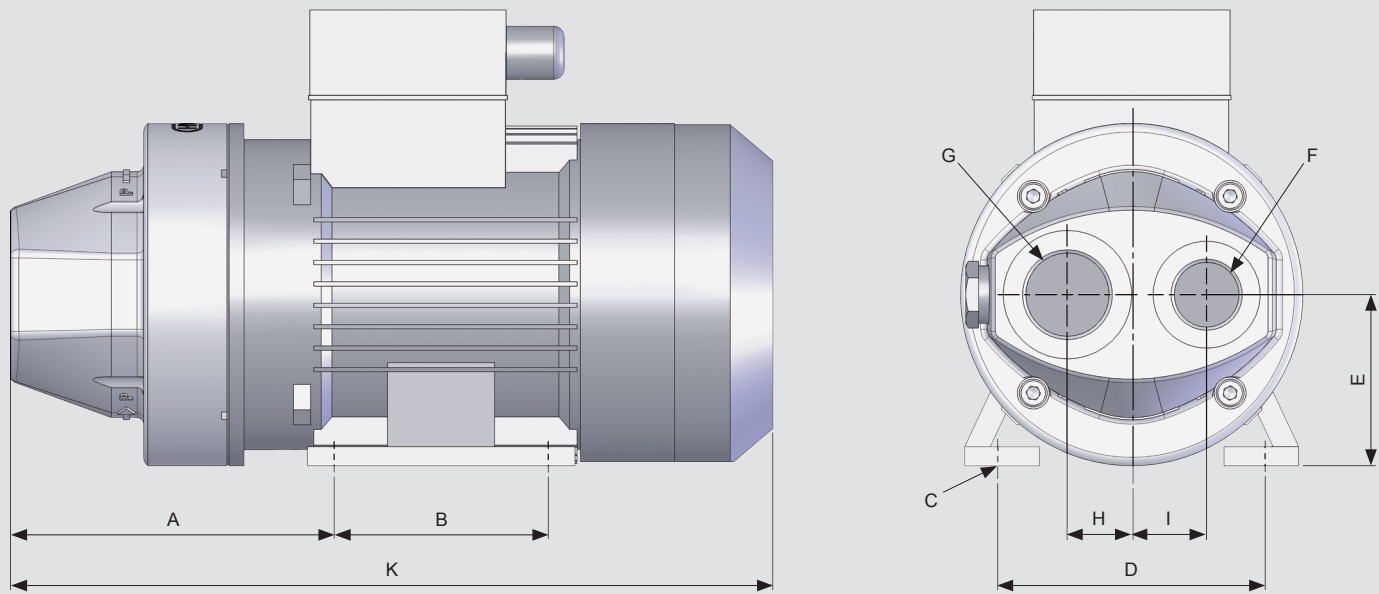


[mm]

Assembly	Flow capacity l/min at n = 1,500 rpm	Pump dimensions														
		A	B	C	D	E1	E2	E3	E4	F	G	H	I	J	K	L
1	5 – 15	105	75	70	26	14	17	24	5	70	G ¾	20.00	20.00	G ½	85	7
2	30 – 60	160	100	100	33	19	20	35	7	110	G 1 ¼	30.00	35.00	G 1	130	9
						24	25	35	7							
3	100 – 200	200	130	140	35	28	30	40	7	130	G 2	43.75	43.75	G 1 ½	165	11

# Dimensions

## MFZP



[mm]

	A	B	C	D	E	F	G	H	I
MFZP-1/2.0/X/63	89	80	7	100	63	G ½	G ¾	20.00	20.00
MFZP-1/1.1/X/AMG	117	80	7	100	63	G ½	G ¾	20.00	20.00
MFZP-1/1.1/X/71	120	90	7	112	71	G ½	G ¾	20.00	20.00
MFZP-2/2.1/X/80	150	100	9	125	80	G 1	G 1 ¼	30.00	35.00
MFZP-2/2.1/X/90	156	125	9	140	90	G 1	G 1 ¼	30.00	35.00
MFZP-3/3.0/X/100	193	140	12	160	100	G 1 ½	G 2	43.75	43.75

## Construction length “K” of motor pump groups:

	El. motor size	Flange	Length “K” [mm]
MFZP-1	63/0.18 kW	Spec. flange	approx. 260
MFZP-1	AMG/0.2 kW/B34	Small flange	approx. 245
MFZP-1	71/0.37 kW/B34	Small flange	approx. 320
MFZP-2	80/0.75 kW/B34	Large flange	approx. 340
MFZP-2	90/1.2 kW/B34	Large flange	approx. 380
MFZP-3	100/2.2 kW/B34	Large flange	approx. 450
MFZP-3	100/4 kW/B34	Large flange	approx. 480

## Model Type

**MFZP-2 - 2.1 - P - 90/40 - RV6 - 1.5/400-50**

**Motor pump group MFZP** \_\_\_\_\_

(with motor)

**Direct drive pump FZP** \_\_\_\_\_

**Assembly** \_\_\_\_\_

1

2

3

**Modification number** \_\_\_\_\_

(see flow rate table)

**Seals** \_\_\_\_\_

P = Perbunan

V = Viton

(other seals on request)

**Motor size and flow rate** \_\_\_\_\_

Assembly	Motor size	Modification number	Flow rate in ccm/revolutions (other rates on request)								
			3.5	7	10	20	30	40	70	100	130
1	63 (0.18 kW, only MFZP)	2.0	•	•	•						
	AMG (0.2 kW, DC)	1.1	•	•	•						
	71 (0.37 kW)	1.1	•	•	•						
2	80 (0.75 kW)	2.1				•	•	•			
	90 (1.5 kW)	2.1				•	•	•			
3	100 (2.2 kW)	3.0							•	•	•
	112 (4.0 kW)	3.0							•	•	•

**Pressure relief valve** \_\_\_\_\_

RV3 (3.0 bar)

RV4.5 (4.5 bar)

RV6 (6.0 bar) (preferred size)

RV10 (10.0 bar)

**Motor power and voltage** \_\_\_\_\_

n = 1,500 rpm

(other voltages and frequencies on request)

**Size 1:**

0.18 kW

0.37 kW

**Size 2:**

0.75 kW

1.50 kW

**Size 3:**

2.20 kW

4.00 kW

**Standard voltages and frequencies in three-phase motors**

400 V star / 230 V delta – 50 Hz

(other voltages and frequencies on request)