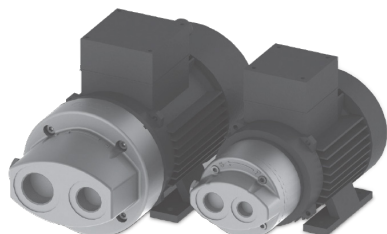
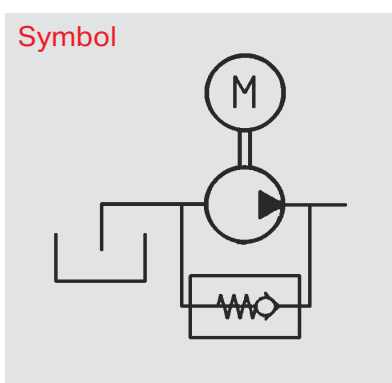


## HYDAC INTERNATIONAL

### 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

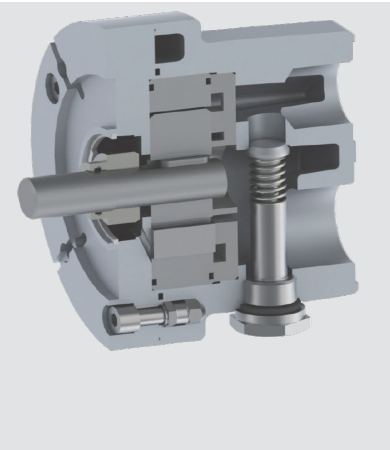
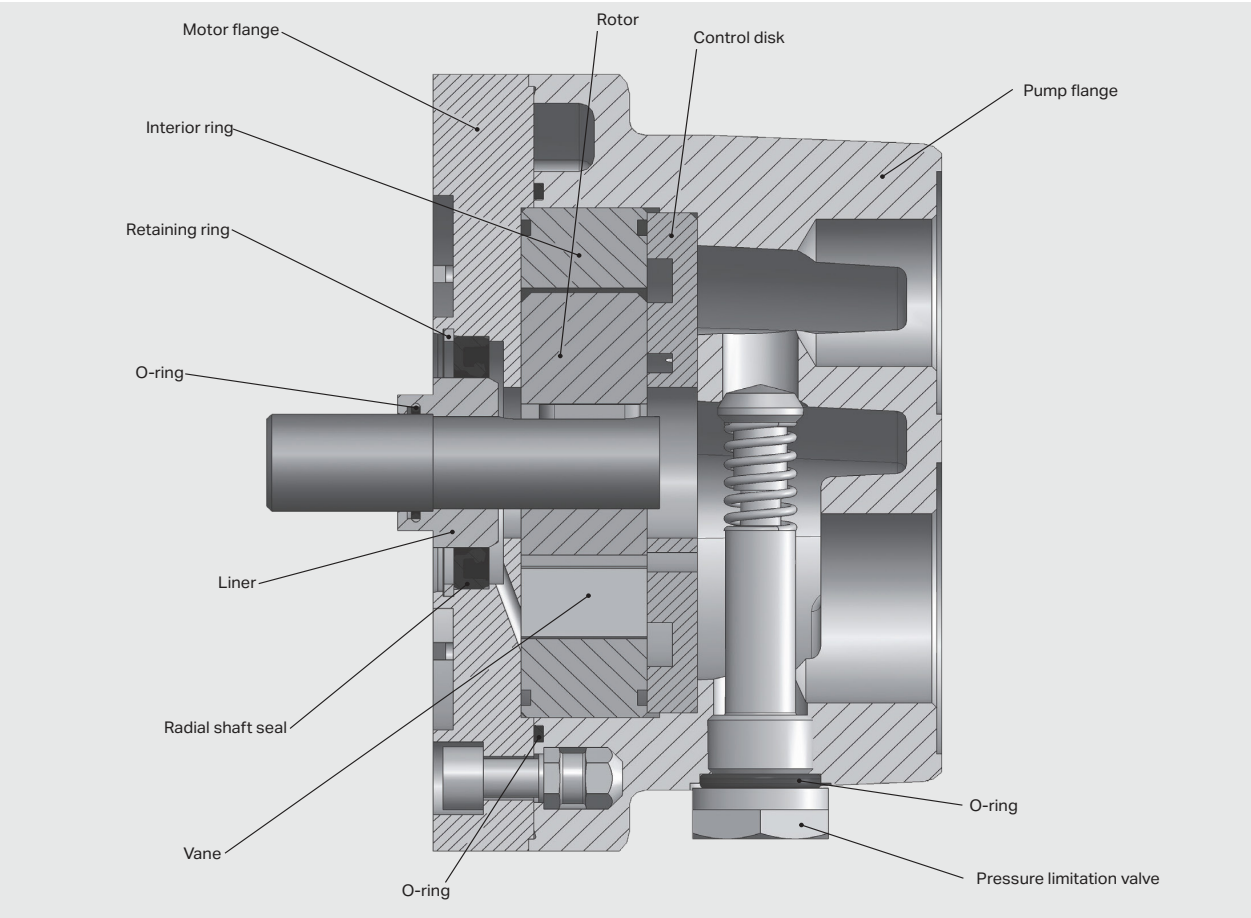
#### Application Field

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

#### Operation Data

Operating pressure	max. 10 bar			
Pressure at the suction port	- max. -0.4 bar suction underpressure - max. 0.5 bar overpressure			
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	● min. 1,000 rpm ● max. 2,000 rpm 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 u = 40 mm <sup>2</sup> /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 mm <sup>2</sup> /s) The noise level values serve as guidelines, as room acoustics, connections, viscosity and reflection affect the level of noise.			

Design



Note regarding tubing pressure differences (flow loss)

□ Simplified for hydraulic oils:

$$D_p \text{ [bar]} = 5.84 \cdot l \text{ [m]} \cdot d_1 \text{ [mm]} \cdot Q \text{ [l/min]} \cdot g \text{ [mm}^2\text{/s]}$$

□ Influence of the interior diameter on flow losses with the following example values:  $l = 1 \text{ m}$ ,  $Q = 150 \text{ l/min}$ ,  $g = 200 \text{ mm}^2\text{/s}$   
 $D_p \text{ [bar]} \text{ di}_1 \text{ (32)} 0.084$   
 $\text{Internal diameter [mm]} \text{ di}_1 \text{ (32)} 0.167 \text{ di}_1 \text{ (25)} 0.45$

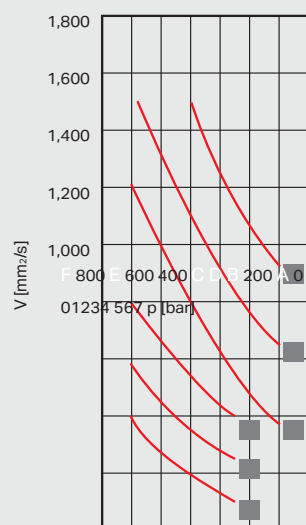

- Observations apply only for straight pipes  
□ Additional threaded joints and pipe bends increase flow loss

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

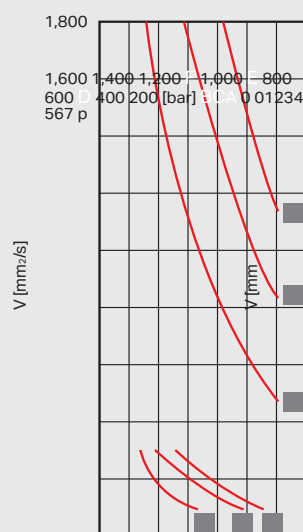
## Control Curves

FZP-1



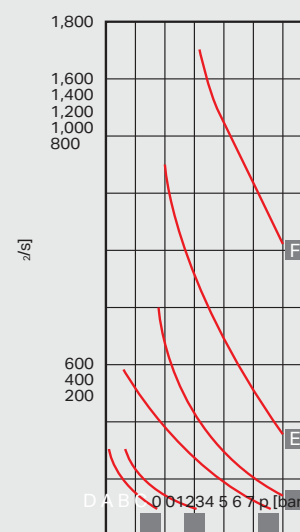
- A 10.0 cm³ / rev - 0.18 kW / 0.2 kW DC
- B 7.0 cm³ / rev - 0.18 kW / 0.2 kW DC
- C 3.5 cm³ / rev - 0.18 kW / 0.2 kW DC
- D 10.0 cm³ / rev - 0.37 kW
- E 7.0 cm³ / rev - 0.37 kW
- F 3.5 cm³ / rev - 0.37 kW

FZP-2



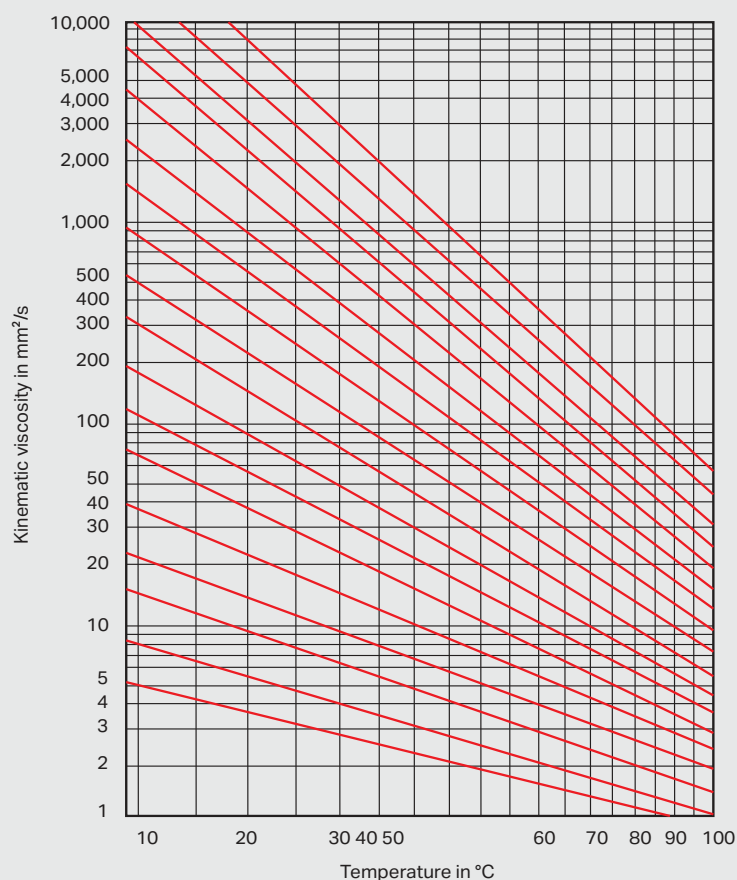
- A 40 cm³ / rev - 0.75 kW
- B 30 cm³ / rev - 0.75 kW
- C 20 cm³ / rev - 0.75 kW
- D 40 cm³ / rev - 1.5 kW
- E 30 cm³ / rev - 1.5 kW
- F 20 cm³ / rev - 1.5 kW

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

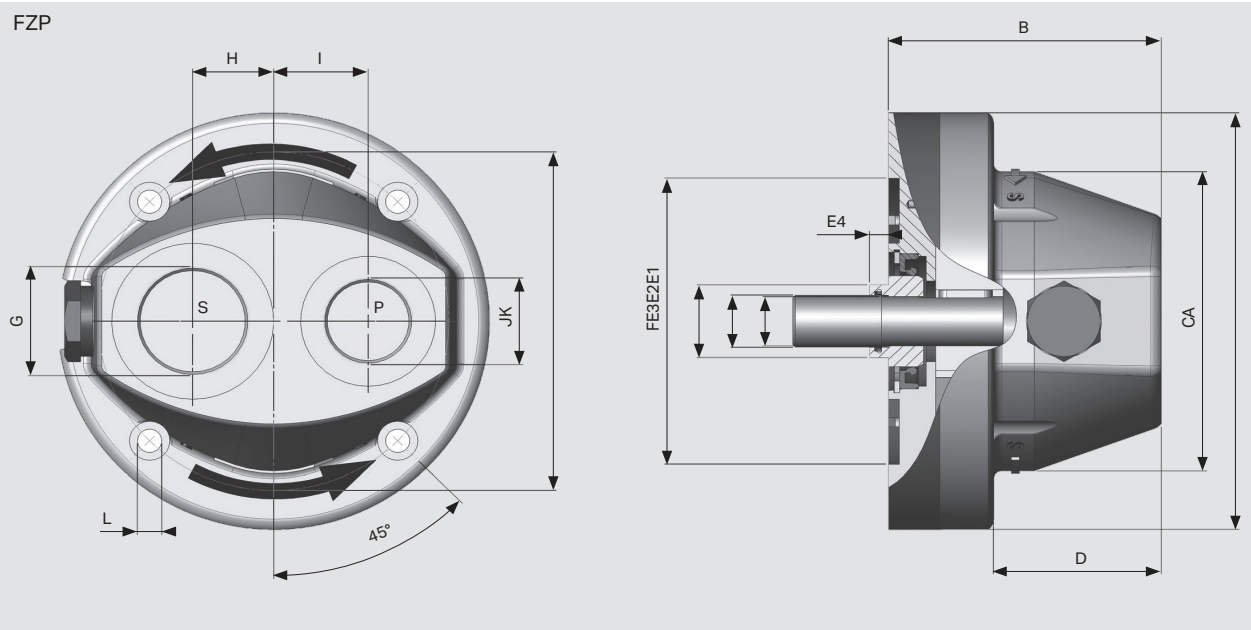
#### Selection:

190 l/min  $\rightarrow$  FZP-3 / MFZP-3 (approx. 130 ccm/rev at 1,500 rpm)  
 5 bar and 200 cSt  $\rightarrow$  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

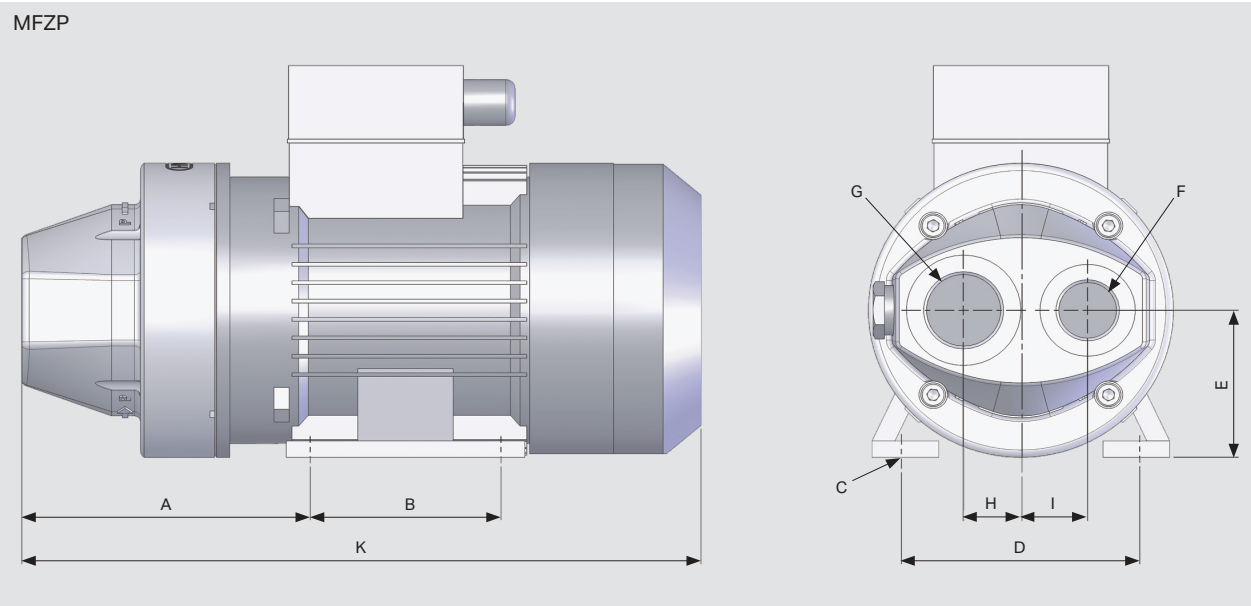
Dimensions



[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 1¼	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 1½	165	11

Dimensions



[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 1¼	30.00	35.00
MFZP-2/2.1/X/90	156	125	9	140	90	G 1	G 1¼	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)

## ■ Design Data Sheet, Feed Pumps

Project: \_\_\_\_\_

Contact: \_\_\_\_\_

Telephone: \_\_\_\_\_

E-mail: \_\_\_\_\_

Medium: \_\_\_\_\_ (Enclose data sheet for the medium)

Fluid temperature: \_\_\_\_\_ °C

Fluid purity: \_\_\_\_\_

Spec. materials prescribed? \_\_\_\_\_

Seal material: ☐ Perbunan ☐ Viton  
 (NBR) ☐ Other: \_\_\_\_\_ (FPM)

Flow rate: \_\_\_\_\_ l/min

Suction height: \_\_\_\_\_ m

Operating pressure: \_\_\_\_\_ bar

Max. pressure: \_\_\_\_\_ bar (pressure limitation valve)

### Electrical data

Motor rating: \_\_\_\_\_ kW

Voltage: \_\_\_\_\_ V \_\_\_\_\_ Hz

Speed: \_\_\_\_\_ rpm

Direction of rotation: \_\_\_\_\_

Installation position of the pump: \_\_\_\_\_  
 Installation space limited? \_\_\_\_\_

Permitted noise level: \_\_\_\_\_ dB(A)

Ambient temperature: \_\_\_\_\_ °C

Unit qty. per year: \_\_\_\_\_

Remarks/miscellaneous:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_





## Note

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications and corrections.

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