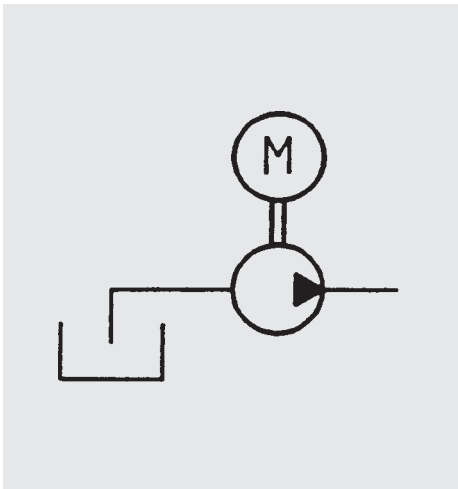


HYDAC

INTERNATIONAL

Feed Pumps

Low-Noise Series



FEED PUMP SERIES VP

1. GENERAL

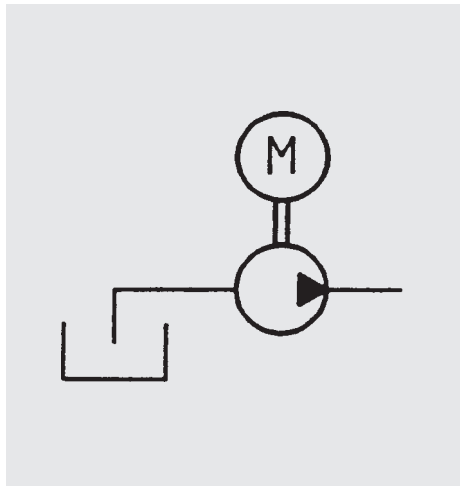
The VP series of feed pumps are low-noise, single-stroke vane pumps with constant flow rate.

By using a dampened bell housing (PT) a reduction in noise level is achieved.

1.1. AREAS OF APPLICATION

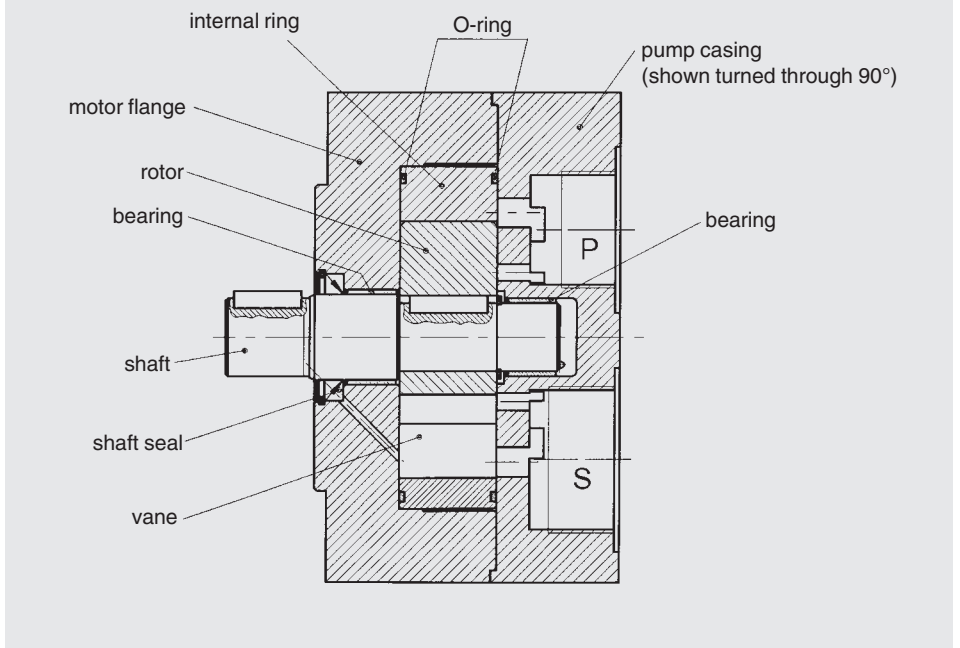
- filter circuits
- cooling circuits
- lubrication applications
- pump transfer units

1.2. SYMBOL



2. DESCRIPTION

2.1. DIAGRAMMATIC ILLUSTRATION



2.2. NOTES ON INSTALLATION

Pressure differentials (flow rate losses)

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

- effect of the internal diameter on the flow rate losses using the following example values:
l = 1m; Q = 150 l/min; $\gamma = 200 \text{ mm}^2/\text{s}$

	Internal diameter (mm)		
	di ₁ (38)	di ₁ (32)	di ₁ (25)
Δp (bar/m)	0.084	0.167	0.45

- Only applicable for straight pipes
- Additional threaded connections and pipe bends increase the flow rate losses

- Notes:**
- as few threaded connections as possible
 - few pipe bends; if required use large radius
 - difference in height between pump and oil level as small as possible
 - hoses must be suitable for a vacuum of min. 5000 mmW (e.g. hoses to be steel reinforced)
 - do not reduce piping cross-section predetermined by the threaded connection.

3. MODEL CODE

VPBM - 2 / 1.0 / P / 90/40 / 1.5/400-50

Pump + PT + coupling + motor
 Pump + PT + coupling
 Pump
 (PT = bell housing)

VPBM
 VPB
 VP

Size 2 _____
 3 _____

Modification number _____

Seals = P (Perbunan) _____
 (other materials on request)

Motor size and flow rate _____

Size	Motor size	Motor output	Flow rates in ccm/revolutions (others on request)					
			20	30	40	70	100	130
2	80	0.75 kW	●	●	●			
	90	1.5 kW	●	●	●			
3	100	2.2 kW				●	●	●
	112	4 kW				●	●	●
	132	5.5 kW					●	●
	132	7.5 kW						●

(Please note: max. pressure 16 bar)

Motor output and voltage (n = 1500 rpm) _____
 (only for VPBM)

Motor version: B5

Size 2: **Motor output** **Nominal current (for 400V - 50 Hz)**
 0.75 kW 2.1 A
 1.5 kW 3.8 A

Size 3: **Motor output** **Nominal current (for 400 V - 50 Hz)**
 2.2 kW 5.0 A
 4 kW 9.0 A
 5.5 kW 12.3 A
 7.5 kW 16.3 A

Standard voltages and frequencies for 3-phase motors

Motor output 0.75 KW - 4 KW

380 - 420 V star/220 - 240 V delta - 50 Hz
 440 - 480 V star/254 - 277 V delta - 60 Hz (motor output x 1.15)

Motor output 5.5 KW - 7.5 KW

660 - 720 V star/380 - 420 V delta - 50 Hz
 760 - 830 V star/440 - 480 V delta - 60 Hz (motor output x 1.15)

4. TECHNICAL SPECIFICATIONS

- 4.1. OPERATING PRESSURE
16 bar max.
- 4.2. SUCTION PRESSURE
-0.4 bar max. for mineral oil
- 4.3. FLUID
Mineral oil
to DIN 51524, parts 1 and 2
Permissible contamination
≤ NAS 12
- 4.4. FLUID TEMPERATURE
-20° C to +80° C
for mineral oil
- 4.5. VISCOSITY
See graphs
- 4.6. AMBIENT TEMPERATURE
-20°C to +40°C
- 4.7. MOUNTING POSITION
Preferably horizontal
- 4.8. REVOLUTIONS
min. 1000 rpm
max. 2000 rpm
Direction of rotation: clockwise
(when looking at motor fan wheel)
- 4.9. WEIGHTS
 VP - 2: 5.0 kg
 VP - 3: 13.0 kg
 VPB - 2: 8.5 kg
 VPB - 3 2.2 - 4 kW: 18.0 kg
 VPB - 3 5.5 - 7.5 kW: 19.5 kg
 VPBM - 2 0.75 kW: 18.0 kg
 VPBM - 2 1.5 kW: 24.0 kg
 VPBM - 3 2.2 kW: 39 kg
 VPBM - 3 4 kW: 49 kg
 VPBM - 3 5.5 kW: 60 kg
 VPBM - 3 7.5 kW: 79 kg

- 4.10. DRIVE (ONLY VPBM)
 Type of drive: electric motor
 Type of current: three-phase
 Output and voltage:
 see model code
 Safety type: IP54
 Insulation class: F

- 4.11. VOLUMETRIC EFFICIENCY:
>90% (at v=40 mm²/s)

4.12. NOISE LEVELS IN dB(A)

	ccm/rev	1bar	6bar	10bar
Size 2	20	57	60	63
	30	60	61	64
	40	61	62	64
Size 3	70	62	64	67
	100	66	67	69
	130	68	69	70

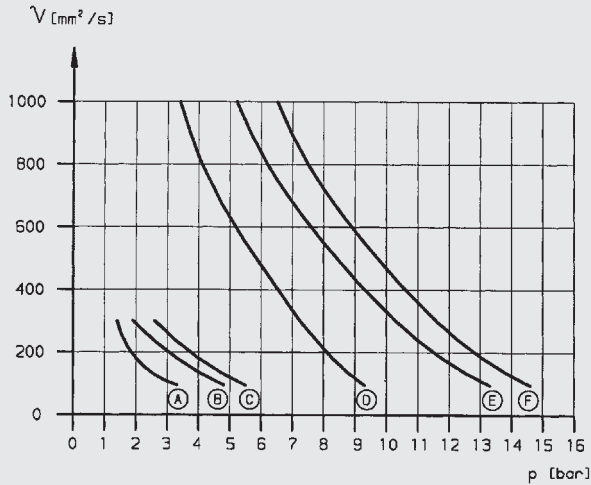
Test fluid: ISOVG46 at 40° C

Measured with dampened bell housing.

The noise levels are only a guide as acoustic properties of a room, connections, viscosity and reflections have an effect on the noise level.

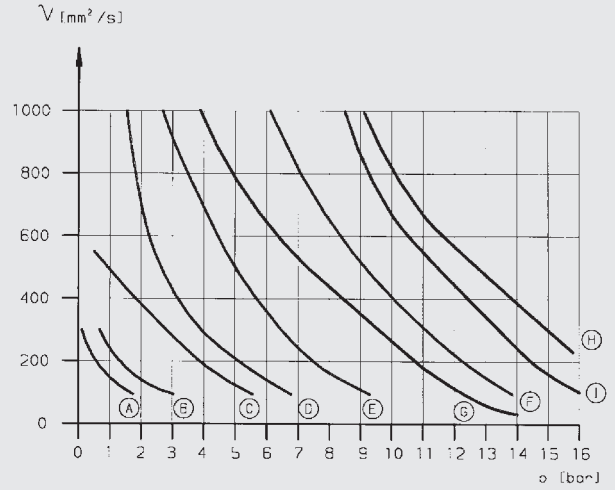
4.13. GRAPHS (n = 1500 rpm)

VP-2



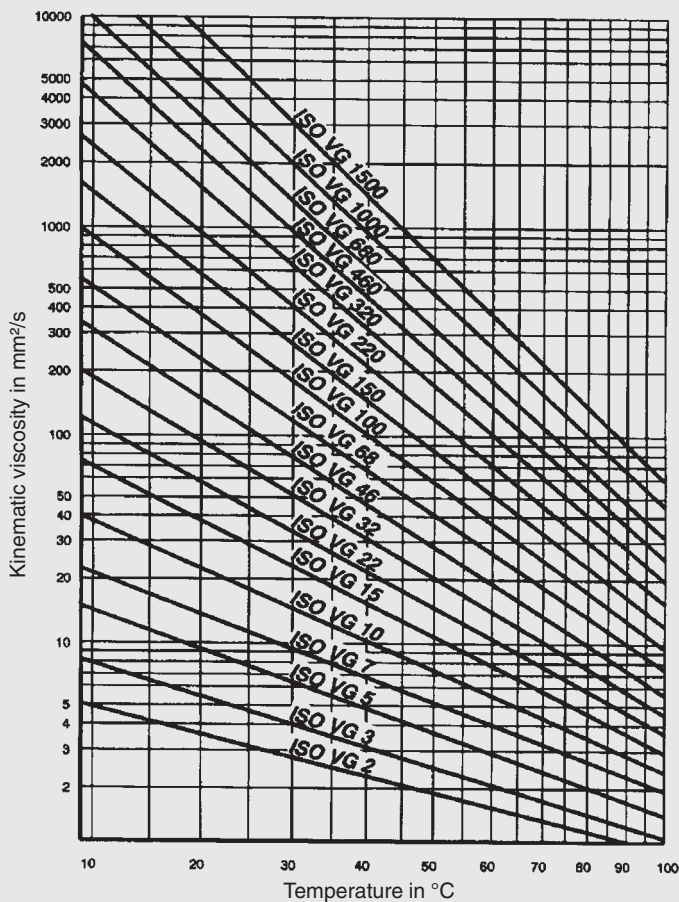
- (A) 40 cm³/rev-0.75 kW (D) 40 cm³/rev-1.5 kW
- (B) 30 cm³/rev-0.75 kW (E) 30 cm³/rev-1.5 kW
- (C) 20 cm³/rev-0.75 kW (F) 20 cm³/rev-1.5 kW

VP-3

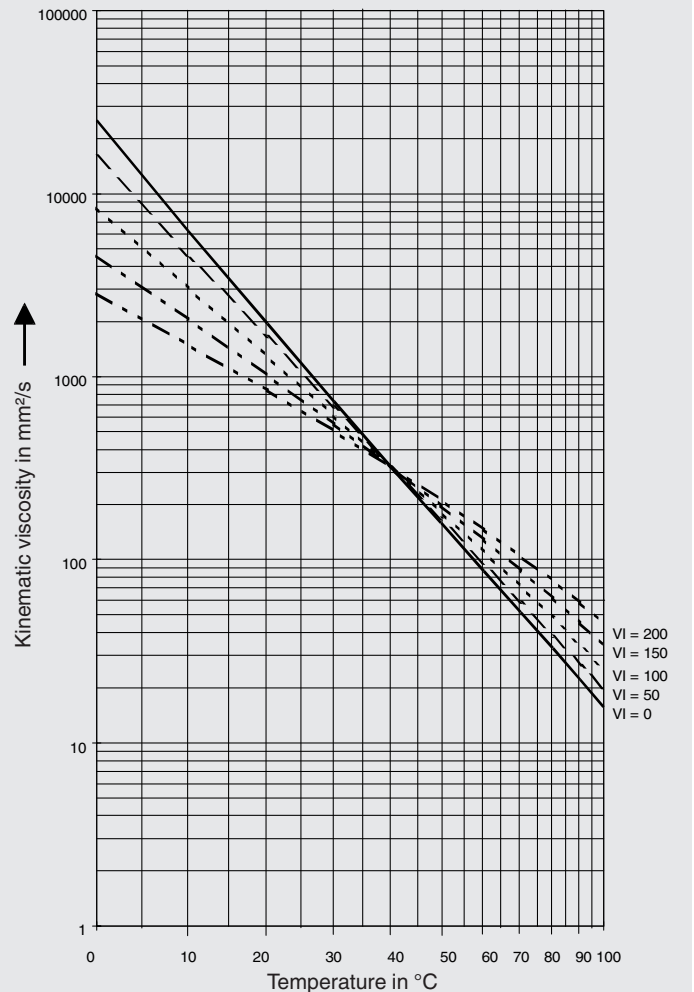


- (A) 130 cm³/rev-2.2 kW (D) 130 cm³/rev-4.0 kW (G) 130 cm³/rev-5.5 kW
- (B) 100 cm³/rev-2.2 kW (E) 100 cm³/rev-4.0 kW (H) 130 cm³/rev-7.5 kW
- (C) 70 cm³/rev-2.2 kW (F) 70 cm³/rev-4.0 kW (I) 100 cm³/rev-5.5 kW

4.14. VISCOSITY-TEMPERATURE GRAPH to DIN 51519 viscosity index 50

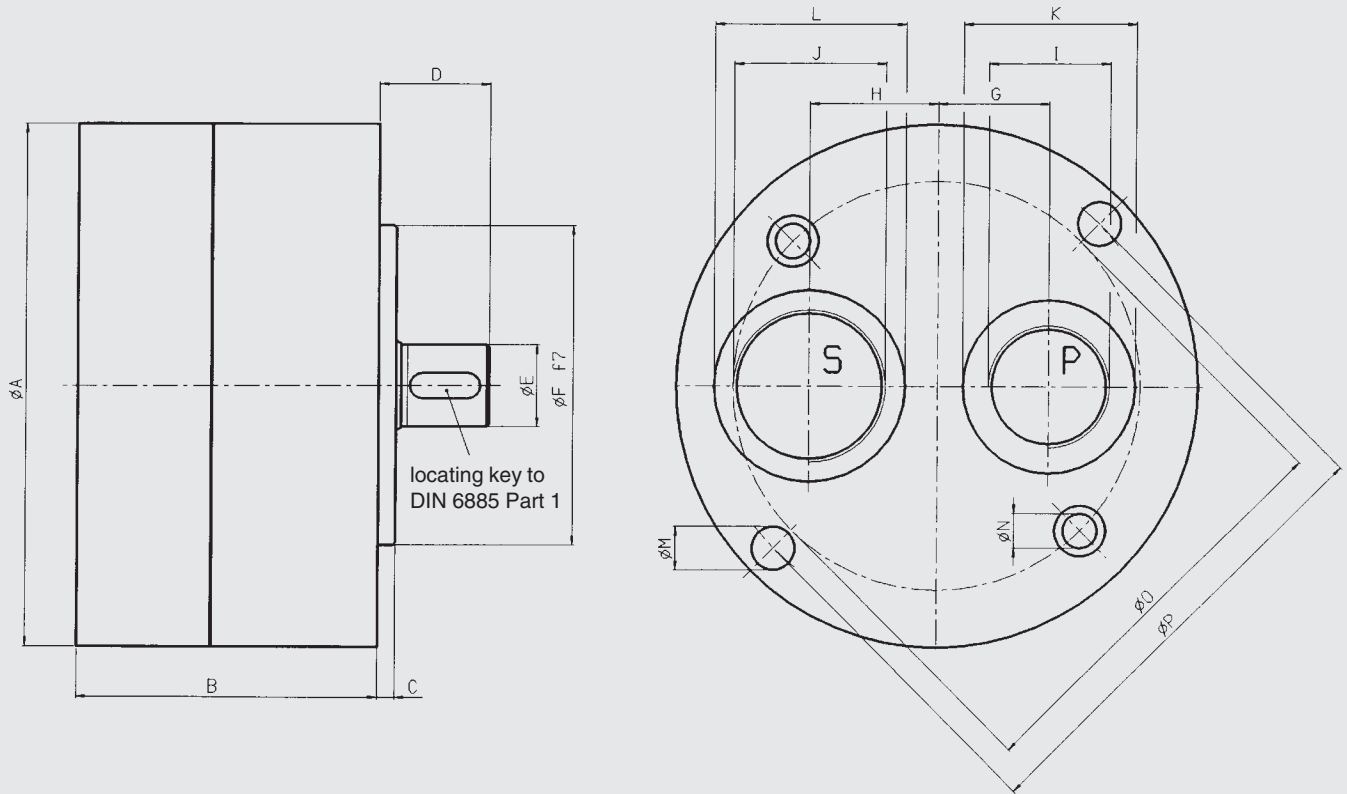


4.15. VISCOSITY-TEMPERATURE GRAPH Viscosity Index 0 to 200 Oil ISO VG 320



The viscosity index (VI) indicates how much the viscosity of the oil changes with temperature. The higher the viscosity index, the smaller the change in viscosity in relation to the temperature.
 ⇒ Oils with a high viscosity index have a lower viscosity at low temperatures than oils with a low viscosity index.

5. DIMENSIONS VP



Size	Flow rates l/min at 1500 rpm	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
VP-2	30 - 60	160	79.5	7	44	22	100	30	35	G1	G1¼	50	60	13.5	11	125	140
VP-3	100 - 200	205	119	7	44	32	125	44	50	G1½	G2	68	76	17	13.5	160	180

The VP pump can be combined with various hydraulic pumps.

The following combinations are possible:

Brueninghaus axial piston pump

Main pump	Through drive	HYDAC low noise pump	Shaft
A10VSO	K25	VP-2/1.0	Cyl. diam. = 22 mm
A10VSO	K27	VP-3/1.0	Cyl. diam. = 32 mm
A10VSO	KB3	VP-2/1.3	Splined shaft 7/8" 13T 16/32 DP
A10VSO	KB5	VP-3/1.3	Splined shaft 1 1/4" 14T 12/24 DP
A10VO	K07	VP-3/2.3 (S=G2, P=G 1 1/4) VP-3/1.4 (S=SAE 2", P=SAE 1 1/2")	Splined shaft 1 1/4" 14T 12/24 DP

Rexroth vane pump

Main pump	With intermediate flange and coupling adaptor for:	HYDAC low noise pump	Shaft
V7 / 40	V7 / 40	VP-3/1.0	Cyl. diam. = 32 mm
V7 / 63	V7 / 40	VP-3/1.0	Cyl. diam. = 32 mm
V7 / 63	V7 / 63	VP-3/1.0	Cyl. diam. = 32 mm
V7 / 100	V7 / 40	VP-3/1.0	Cyl. diam. = 32 mm
V7 / 100	V7 / 63	VP-3/1.0	Cyl. diam. = 32 mm

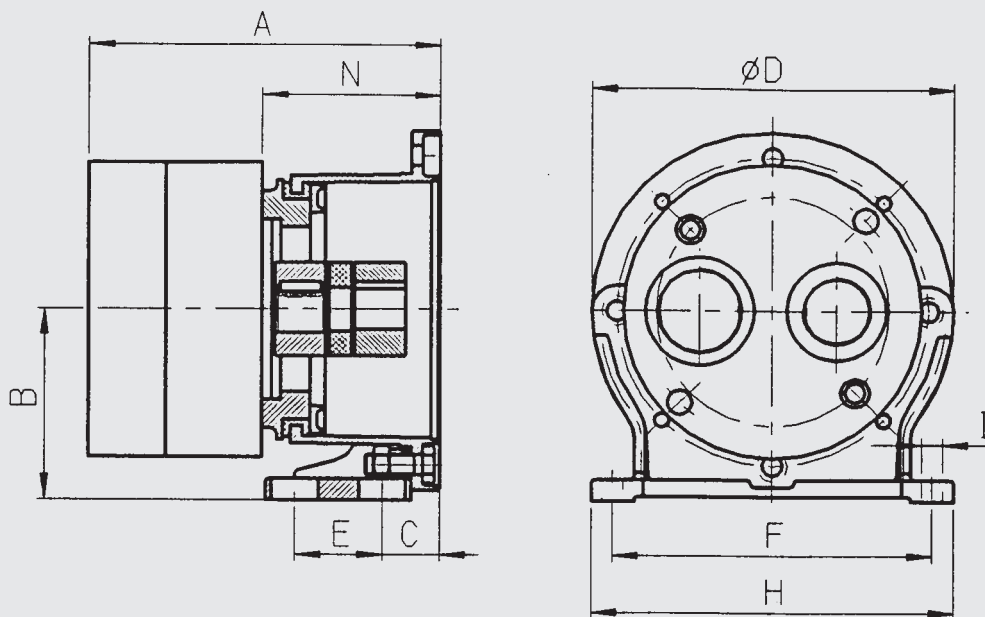
Voith internal gear pump

Main pump	Voith intermediate housing	HYDAC low noise pump	Shaft
IPC6 / A10VO71	110	VP-3/2.3 (S=G2, P=G 1 1/4) VP-3/1.4 (S=SAE 2", P=SAE 1 1/2")	Splined shaft 1 1/4" 14T 12/24 DP
IPH6 / A10VO71	111	VP-3/2.3 (S=G2, P=G 1 1/4) VP-3/1.4 (S=SAE 2", P=SAE 1 1/2")	Splined shaft 1 1/4" 14T 12/24 DP
IPC7 / A10VO71	111	VP-3/2.3 (S=G2, P=G 1 1/4) VP-3/1.4 (S=SAE 2", P=SAE 1 1/2")	Splined shaft 1 1/4" 14T 12/24 DP
IPH5	110	VP-3/2.3 (S=G2, P=G 1 1/4) VP-3/1.4 (S=SAE 2", P=SAE 1 1/2")	Splined shaft 1 1/4" 14T 12/24 DP
IPV6	110	VP-3/2.3 (S=G2, P=G 1 1/4) VP-3/1.4 (S=SAE 2", P=SAE 1 1/2")	Splined shaft 1 1/4" 14T 12/24 DP
IPC6	110	VP-3/2.3 (S=G2, P=G 1 1/4) VP-3/1.4 (S=SAE 2", P=SAE 1 1/2")	Splined shaft 1 1/4" 14T 12/24 DP
IPH6	111	VP-3/2.3 (S=G2, P=G 1 1/4) VP-3/1.4 (S=SAE 2", P=SAE 1 1/2")	Splined shaft 1 1/4" 14T 12/24 DP
IPV7	111	VP-3/2.3 (S=G2, P=G 1 1/4) VP-3/1.4 (S=SAE 2", P=SAE 1 1/2")	Splined shaft 1 1/4" 14T 12/24 DP
IPC7	111	VP-3/2.3 (S=G2, P=G 1 1/4) VP-3/1.4 (S=SAE 2", P=SAE 1 1/2")	Splined shaft 1 1/4" 14T 12/24 DP

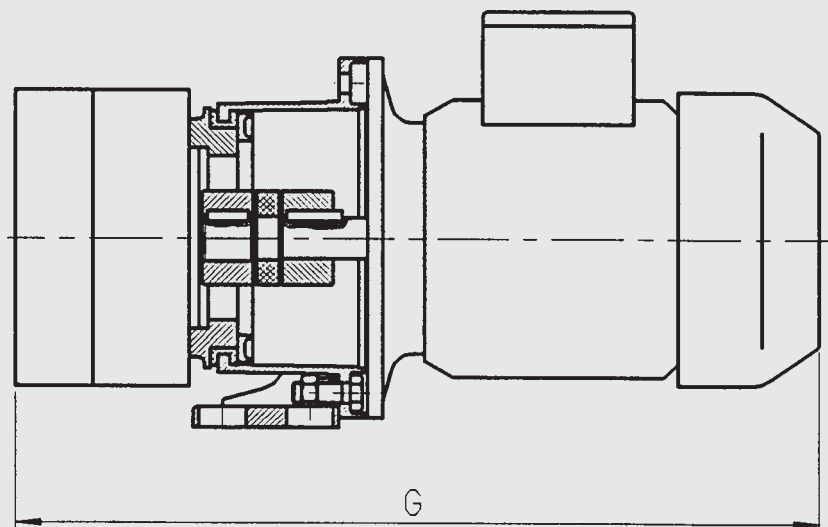
Other combinations on request!

Technical specifications and drawings for the low noise pumps are available on request.

VPB (Pump + bell housing + coupling)



VPBM (Pump + bell housing + coupling + motor)



6. NOTE

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.

Size	Motor size	A	B	C	D	E	F	G	H	I	N
2	80 0.75 kW	192.5	112	19	200	60	180	430	210	11	113
	90 1.5 kW	192.5	112	19	200	60	180	485	210	11	113
3	100 2.2 kW	243	132	40	250	60	220	560	250	14	124
	112 4 kW	243	132	40	250	60	220	580	250	14	124
	132 5.5 kW	263	160	39	300	80	260	680	290	14	144
	132 7.5 kW	263	160	39	300	80	260	680	290	14	144