

VOITH TURBO

Internal Gear Pumps

Range of single and multiple-flow pumps and pressure relief valves



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IP-Pumps Design

The main design features are the same for high pressure and medium-pressure pumps: internal gearing, plain bearings, radial and axial compensation. This guarantees smooth operation and a low-pulsation flow. All IP pumps can be combined with each other to form multiple-flow units.

- 1 Pinion shaft
- 2 Internal gear
- 3 Filler pin
- 4 Filler (IPH)
- 4a Filler, segment carrier
- 4b Filler, segment
- 5 Axial disc
- 6 Control piston (only IPH)
- 7 Radial pressure area
- 8 Axial pressure area
- 9 Housing
- 10 Cover with bleeder screw

IPH high-pressure pumps

Peak pressure up to 330 bar

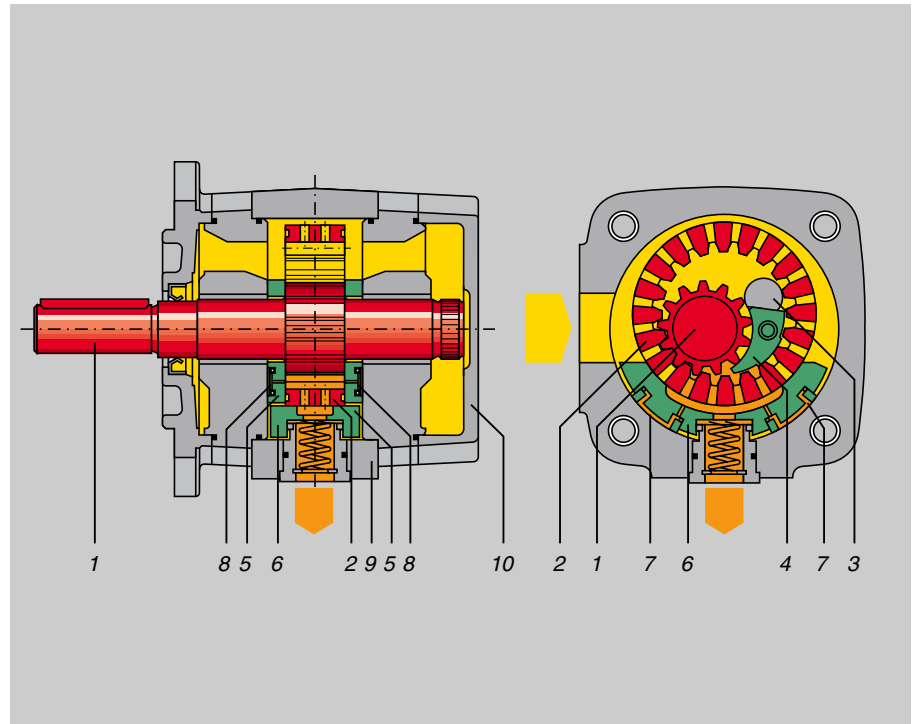
Displacement up to 125 cm³/rev

Overall efficiency above 90 %
(upward of 100 bar)

Noise behaviour for example 68 dB (A)
at 300 bar, 75 l/min and 1450 rpm*

High permissible viscosity
(up to 2000 c St)

Excellent suction capabilities



IPC medium-pressure pumps

Peak pressure up to 250 bar

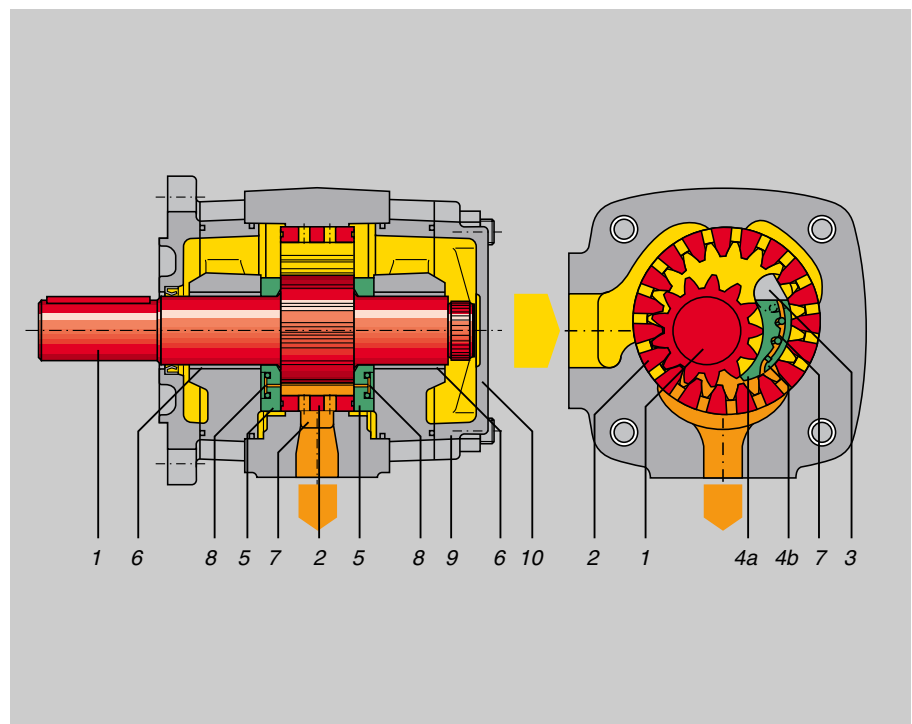
Displacement up to 250 cm³/rev

Overall efficiency above 92 %

Noise behaviour for example 64 dB (A)
at 250 bar, 48 l/min and 1450 rpm*

High permissible viscosity
(up to 2000 c St)

Excellent suction capabilities



* Measured in a low-reverberation room.
In a totally unechoic room, the values will be
5 dB (A) lower.

Technical data

The performance data refer to the delivery of mineral oils with a viscosity of 20...40 c St at 50 °C and a pump intake pressure of 0.6 bar (min) and 2.0 bar (max) absolute.

The size mentioned together with the type designation corresponds roughly to the displacement in cm³/rev, the precise value of which is given in the table.

Calculation of delivery

$$Q = V_{gth} \cdot n \cdot \eta_v \cdot 10^{-3} \text{ [l/min]}$$

Calculation of power

$$P = \frac{Q \cdot \Delta p}{600 \cdot \eta_g}$$

Q = delivery in litres/min

V_{gth} = displacement in cm³/rev

n = speed in rpm

η_v = volumetric efficiency

η_g = overall efficiency

P = power in kW

Δp = pressure in bar

Type	Size	Displacement cm ³ /rev	Speed		Delivery l/min at 1500 rpm	Pressure	
			rpm			bar Continuous pressure	Peak pressure
			min	max			

IPH

4 – 20	20.7	300	3000	31.0	300	330
4 – 25	25.7	300	3000	38.6	250	315
4 – 32	32.3	300	3000	48.5	250	300
5 – 40	40.8	300	3000	61.2	300	330
5 – 50	50.3	300	3000	75.4	250	315
5 – 64	63.9	300	3000	95.8	250	300
6 – 80	81.3	300	2500	121.9	300	330
6 – 100	101.6	300	2500	152.4	250	315
6 – 125	125.6	300	2500	188.8	250	300

IPC

4 – 20	20.7	400	3000	31.0	210	250
4 – 25	25.4	400	3000	38.1	210	250
4 – 32	32.6	400	3000	48.9	210	250
5 – 40	41.0	400	2600	61.5	210	250
5 – 50	50.3	400	2600	75.4	210	250
5 – 64	64.9	400	2600	97.3	210	250
6 – 80	80.7	400	2200	121.0	210	250
6 – 100	101.3	400	2200	151.9	210	250
6 – 125	126.2	400	2200	189.3	210	250
7 – 160	160.8	400	1800	241.2	210	250
7 – 200	202.7	400	1800	304.0	210	250
7 – 250	251.7	400	1800	377.5	210	250

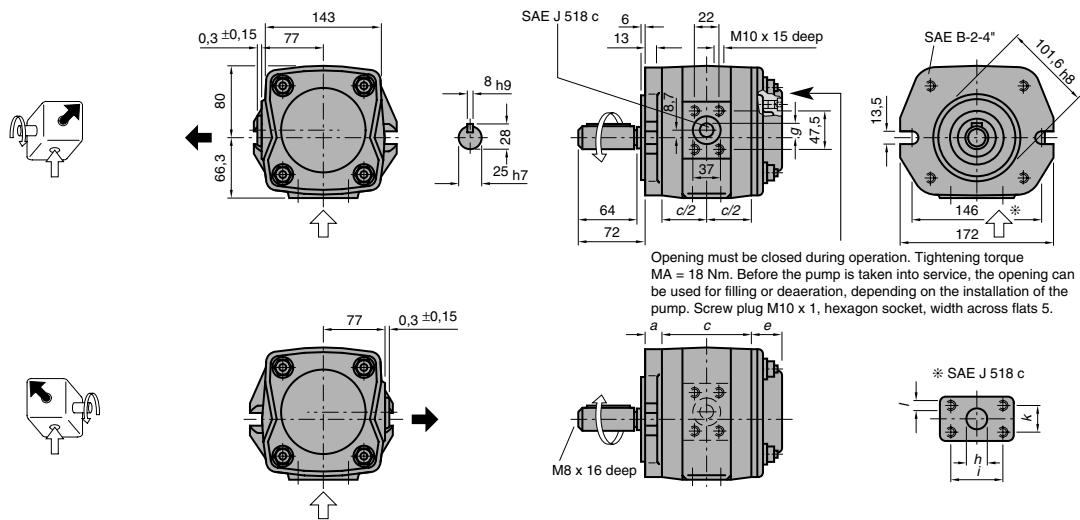
Note:

The permissible peak pressures are based on a duty cycle of 15 %, the maximum cycle time being 1 min.

If the drive shaft is under radial stress, contact the manufacturer or supplier.

IPH 4

Standard design

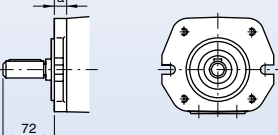
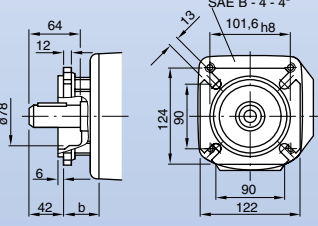
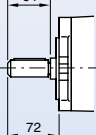
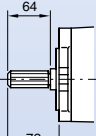
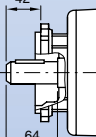
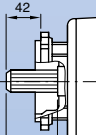


Opening must be closed during operation. Tightening torque MA = 18 Nm. Before the pump is taken into service, the opening can be used for filling or deaeration, depending on the installation of the pump. Screw plug M10 x 1, hexagon socket, width across flats 5.

Weight and dimensions										
	a	b	c	e	g	h	i	k	l	kg
IPH 4 – 20	20	50	102	36	19	32	58.7	30.2	M 10 x 15 deep	13.5
IPH 4 – 25	20	50	108	36	21	32	58.7	30.2	M 10 x 15 deep	14.2
IPH 4 – 32	20	50	116	36	24	32	58.7	30.2	M 10 x 15 deep	15.0

SAE flange no.	
↑	↓
11	13
11	13
11	13

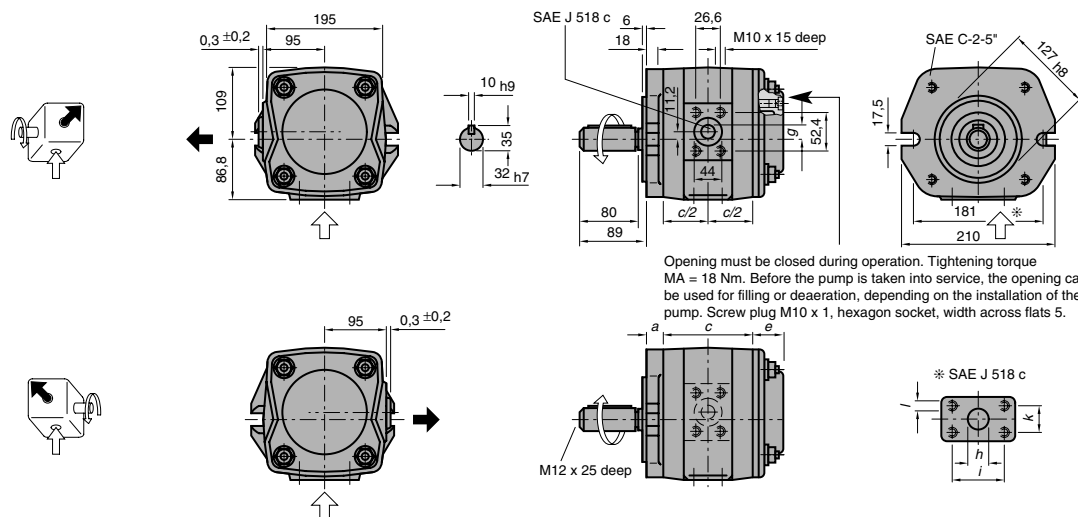
Performance data as per page 5
For SAE suction and discharge flanges see page 22

Type	Size	Suction port radial Sense of rotation	Mounting flange SAE-2-hole flange	Alternative: SAE-4-hole flange	Shaft end
IPH 4	20	 1	 Dimensions as above	 SAE B - 4 - 4" 101.6 h8	 Dimensions as above
	25				 Involute splines ANSI B92 1a 13 T 16/32 DP 30°
	32				 Involute splines ANSI B92 1a 13 T 16/32 DP 30°
		 6			 Involute splines ANSI B92 1a 13 T 16/32 DP 30°
					 Involute splines ANSI B92 1a 13 T 16/32 DP 30°

Ordering-code

IPH 5

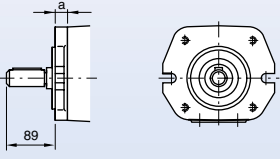
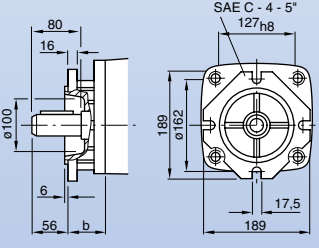
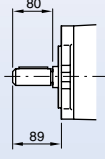
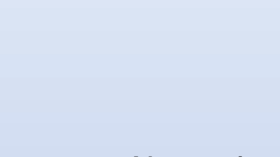
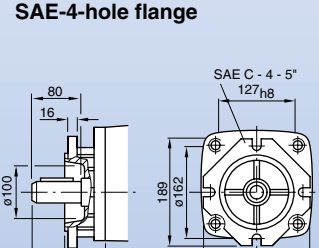
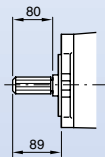
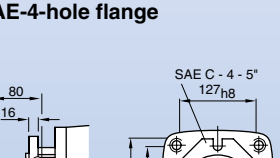
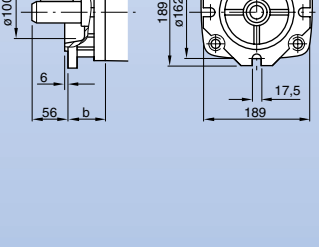
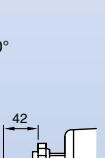
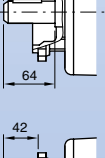
Standard design



Weight and dimensions										
	a	b	c	e	g	h	i	k	l	kg
IPH 5 – 40	22	55	138	35	24	35	70	36	M 12 x 19 deep	26.8
IPH 5 – 50	22	55	145	35	27	42	70	36	M 12 x 19 deep	28.3
IPH 5 – 64	22	55	155	35	29	42	70	36	M 12 x 19 deep	30

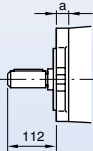
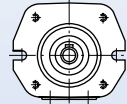
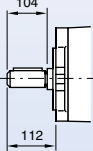
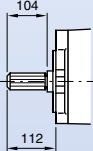
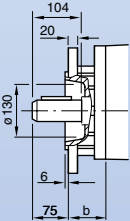
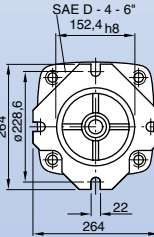
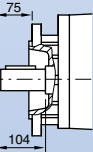
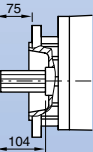
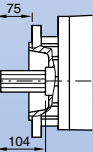
SAE flange no.	
12	14
12	14
12	14

Performance data as per page 5
For SAE suction and discharge flanges see page 22

Type	Size	Suction port radial Sense of rotation	Mounting flange SAE-2-hole flange	Alternative: SAE-4-hole flange	Shaft end
IPH 5	40	 1			 Involute splines ANSI B92 1a 14 T 12/24 DP 30°
	50	 6			 Involute splines ANSI B92 1a 14 T 12/24 DP 30°
	64	 1			 Involute splines ANSI B92 1a 14 T 12/24 DP 30°
					 Involute splines ANSI B92 1a 14 T 12/24 DP 30°
Ordering-code					

	<i>a</i>	<i>b</i>	<i>c</i>	<i>e</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>k</i>	<i>l</i>	<i>kg</i>
IPH 6 – 80	26	63	171	49	32.5	50	77.8	42.9	M 12 x 23 deep	50.5
IPH 6 – 100	26	63	181	49	36	50	77.8	42.9	M 12 x 23 deep	54
IPH 6 – 125	26	63	193	47	39	50	77.8	42.9	M 12 x 23 deep	58

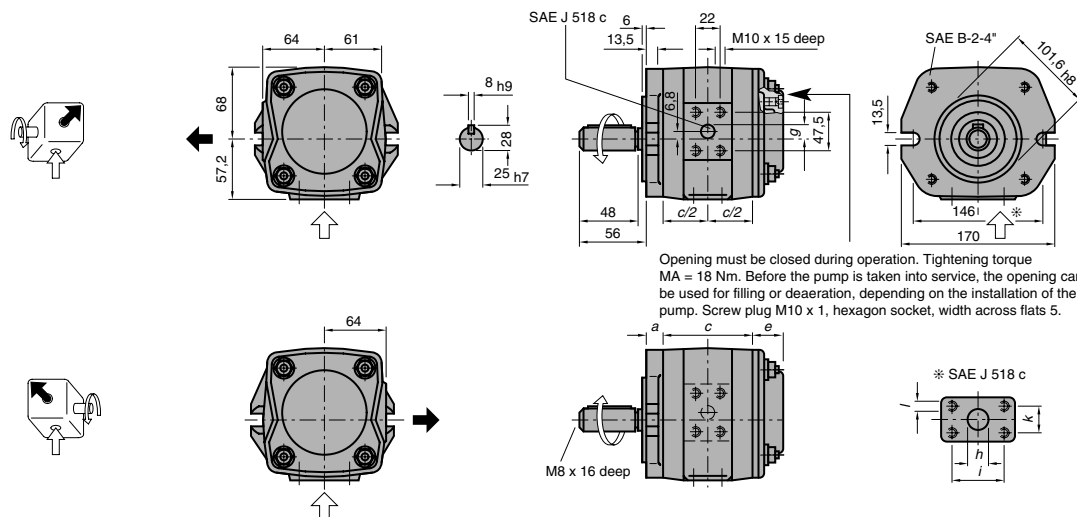
↑	↓
14	15
14	15
14	15

Type	Size	Sense of rotation	Mounting flange	Shaft end
IPH 6	80	 1	  Dimensions as above	 Dimensions as above
	100	100		
	125	125		 6
			Alternative: SAE-4-hole flange   SAE D - 4 - 6° 152,4_{h8}	1 1  Involute splines ANSI B92 1a 13 T 8/16 DP 30° 
				1 0 

8

IPC 4

Standard design



Opening must be closed during operation. Tightening torque MA = 18 Nm. Before the pump is taken into service, the opening can be used for filling or deaeration, depending on the installation of the pump. Screw plug M10 x 1, hexagon socket, width across flats 5.

Weight and dimensions										
	<i>a</i>	<i>b</i>	<i>c</i>	<i>e</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>k</i>	<i>l</i>	<i>kg</i>
IPC 4 – 20	18	50	98	31	18	27	58.7	30.2	M 10 x 15	9.6
IPC 4 – 25	18	50	104	31	18	30	58.7	30.2	M 10 x 15	10.2
IPC 4 – 32	18	50	113	31	18	32	58.7	30.2	M 10 x 15	11.0

SAE flange no.	
11	13
11	13
11	13

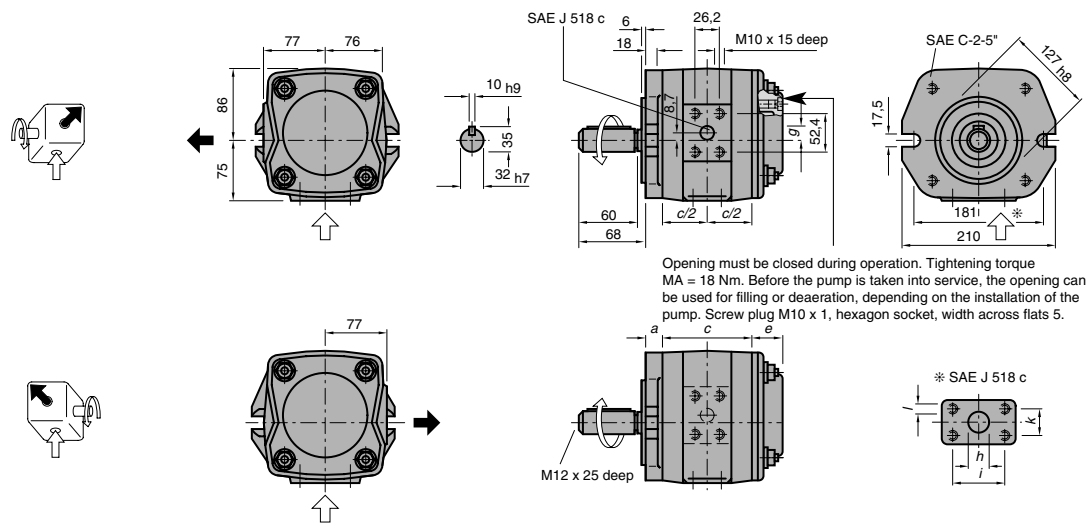
Performance data as per page 5
For SAE suction and discharge flanges see page 22

Type	Size	Sense of rotation	Mounting flange	Shaft end
IPC 4	20	1	SAE-2-hole flange Dimensions as above Alternatives: SAE-2-hole flange for splined shaft Direct mounting on equipment with SAE connection.	SAE-2-hole flange Dimensions as above Alternatives: SAE-2-hole flange for splined shaft Direct mounting on equipment with SAE connection.
	25	6	SAE-4-hole flange Dimensions as above Alternatives: SAE-4-hole flange for splined shaft Direct mounting on equipment with SAE connection.	SAE-4-hole flange Dimensions as above Alternatives: SAE-4-hole flange for splined shaft Direct mounting on equipment with SAE connection.
	32		VDMA 24560 DIN ISO 3019/2 4-hole flange Dimensions as above Alternatives: VDMA 24560 DIN ISO 3019/2 4-hole flange Dimensions as above	VDMA 24560 DIN ISO 3019/2 4-hole flange Dimensions as above Alternatives: VDMA 24560 DIN ISO 3019/2 4-hole flange Dimensions as above

Ordering-code

IPC 5

Standard design



Weight and dimensions										
	a	b	c	e	g	h	i	k	l	kg
IPC 5 – 40	20	53	125	36	19	35	70	36	M 12 x 20	16.3
IPC 5 – 50	20	53	132	36	21	40	70	36	M 12 x 20	17.4
IPC 5 – 64	20	53	143	36	23	40	70	36	M 12 x 20	18.7

SAE flange no.	
12	30
12	30
12	30

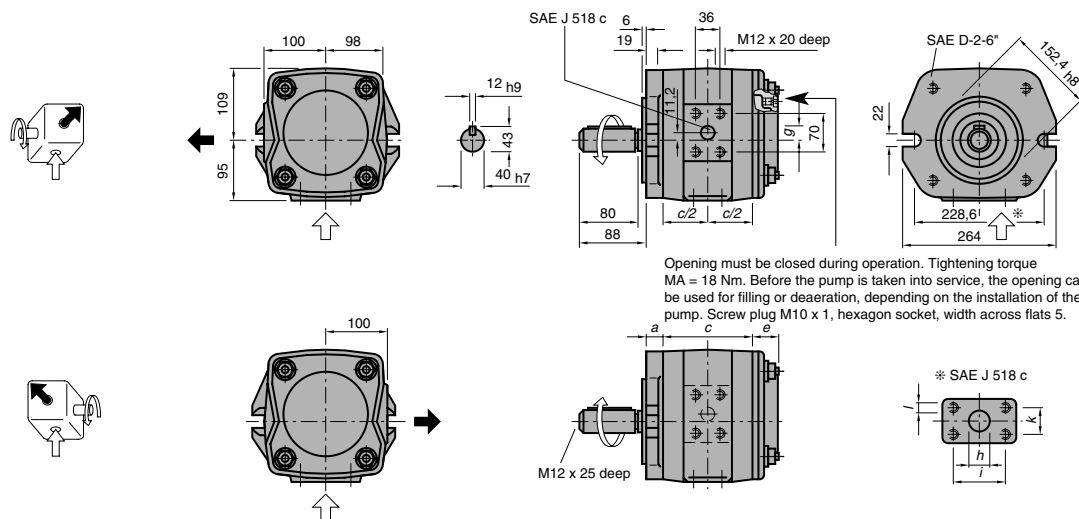
Performance data as per page 5
For SAE suction and discharge flanges see page 22

Type	Size	Sense of rotation	Mounting flange	Shaft end
IPC 5	40	 1	SAE-2-hole flange Dimensions as above 0 1	SAE-2-hole flange Dimensions as above 0 1
	50		Alternatives: SAE-2-hole flange for splined shaft Direct mounting on equipment with SAE connection. 7 0	SAE-2-hole flange for splined shaft Direct mounting on equipment with SAE connection. 7 0
	64		SAE-4-hole flange 1 1	SAE-4-hole flange 1 1
		 6	VDMA 24560 DIN ISO 3019/2 4-hole flange 5 1	VDMA 24560 DIN ISO 3019/2 4-hole flange 5 1

Ordering-code

IPC 6

Standard design



Weight and dimensions									
	a	b	c	e	g	h	i	k	kg
IPC 6 – 80	22	59	148	35	23	45	77.8	42.9	30.7
IPC 6 – 100	22	59	158	35	27	50	77.8	42.9	32.6
IPC 6 – 125	22	59	170	40	30	50	77.8	42.9	35.0

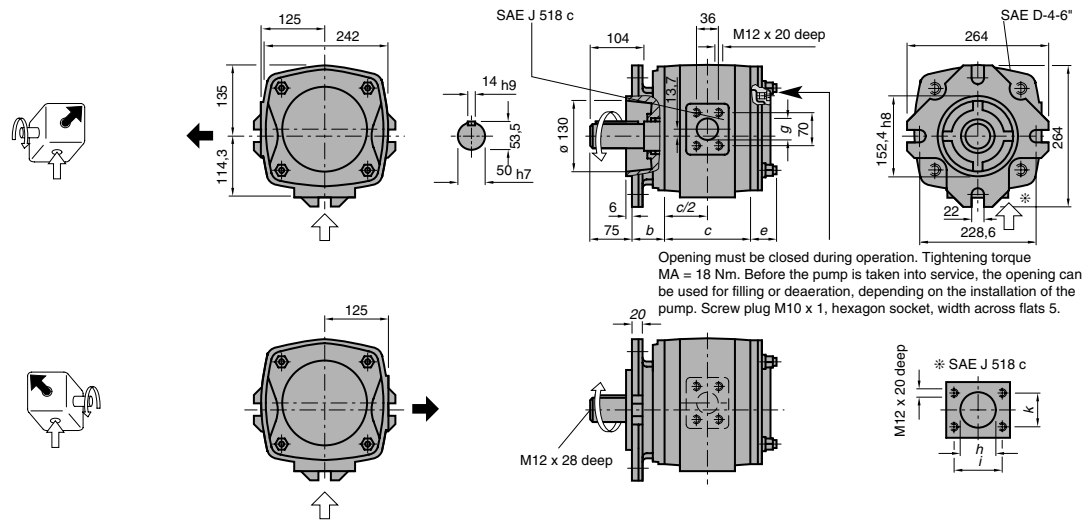
SAE flange no.	
14	15
14	15
14	15

Performance data as per page 5
For SAE suction and discharge flanges see page 22.
With pressures exceeding 210 bar, only use Voith flange no. 14 or other permissible pressure flange.

Type	Size	Sense of rotation	Mounting flange SAE-2-hole flange	Alternatives: SAE-2-hole flange for splined shaft	Shaft end
IPC 6	80	1			
	100				
	125	6			
Ordering-code					

IPC 7

Standard design



Weight and dimensions

	a	b	c	e	g	h	i	k	l	kg
IPC 7 – 160	–	63	162	48	30	56	89	50.8	M 12 x 20	50
IPC 7 – 200	–	63	174	46	34	62	89	50.8	M 12 x 20	54
IPC 7 – 250	–	63	188	42	38	72	106.3	62	M 16 x 25	59

SAE flange no.

	14	16
14	14	16
14	14	17

Performance data as per page 5
For SAE suction and discharge flanges see page 22.
Observe permissible operating pressures for pressure flanges.

Type	Size	Sense of rotation	Mounting flange	Shaft end
IPC 7	160		SAE-4-hole flange 	
	200		Alternatives: VDMA 24560 DIN ISO 3019/2 4-hole flange 	
	250		SAE-4-hole flange 	

Ordering-code

Combination of IP pumps

IP pumps of the same size or of different sizes can be combined to form multiple-flow units.

In principle, all the sizes listed as single-flow pumps are available with their corresponding displacement.

The following list contains all the available combinations of double and triple-flow pumps arranged according to size.

Quadruple pump units usually require consultation with the manufacturer.

Combination with Voith IPC pumps or axial piston pumps such as Rexroth A10V0 is possible even with different operating media.

(See also page 20 and 21).

Dimensions

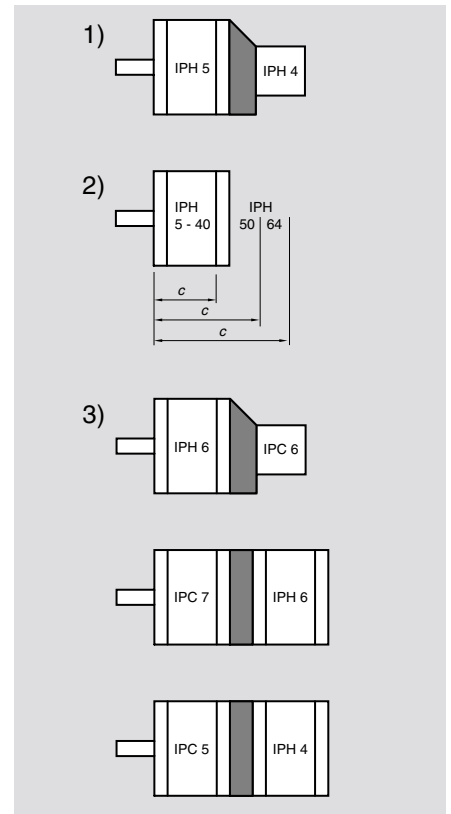
The installation dimensions of multiple-flow pumps can be determined from the dimension sheets of the individual units (pp. 6-16) and those of the intermediate housings (pp. 18/19).

Note:

The available multiple-flow pumps are usually combined in such a way that pumps of greater size are arranged closer to the drive shaft. In the case of identical pressure ranges the order is according to displacement (Fig. 1).

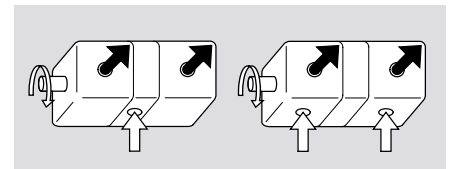
Dimension c of the individual pump depends on the displacement (Fig. 2).

The size of IPC pumps corresponds to that of the next smaller IPH (Fig. 3).



Options: Intermediate housing

With some pumps of identical size, there is a choice between a narrow intermediate housing without intake port and a wide one with intake port.

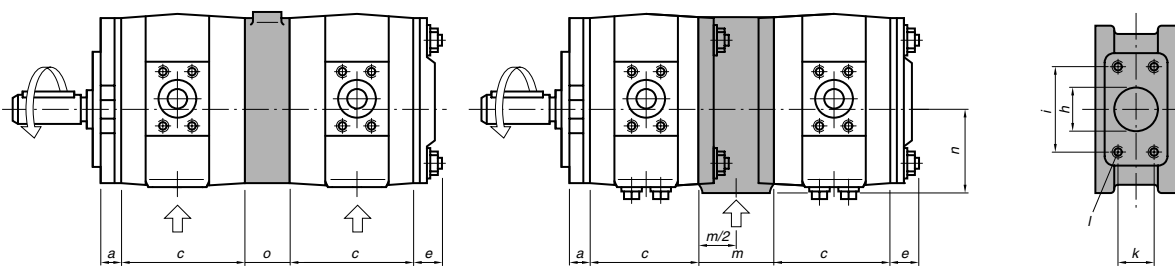


Options: Mounting flange / shaft extension

The following list ("Combinations") shows which types of SAE two and four-hole flange and which types of shaft end are available for the various pump variants.

For options **not** included in this list, such as the VDMA four-hole flanges with associated shafts, and for dimensions please refer to the separate sheets.

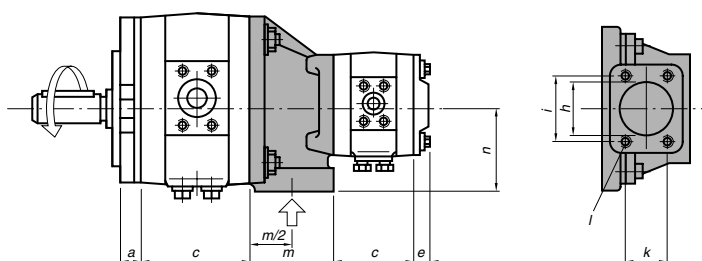
Intermediate housings for multiple-flow pumps



Each intermediate housing bears a number. The housings are classified in the table on pp. 16 – 19.

No.	<i>o</i>
231	55
232	56
233	55
234	56
235	48
236	55
237	56

No.	<i>m</i>	<i>n</i>	<i>h</i>	<i>i</i>	<i>k</i>	<i>l</i>	SAE suction flange no.
103	66	70	40	70	36	M 12 x 20 deep	30
106	90	82	60	89	50.8	M 12 x 20 deep	16
110	110	100	76	106.3	62	M 16 x 25 deep	17
115	140	120	100	130.2	77.8	M 16 x 25 deep	18
116	90	82	60	89	50.8	M 12 x 20 deep	16
118	110	100	76	106.3	62	M 16 x 25 deep	17
121	140	120	100	130.2	77.8	M 16 x 25 deep	18
131	70	74.3	40	70	36	M 12 x 20 deep	14
133	90	90	60	89	50.8	M 12 x 20 deep	16
136	110	110	76	106.3	62	M 16 x 25 deep	17

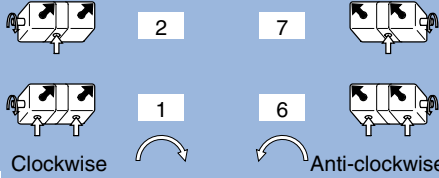
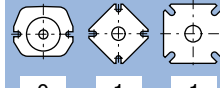
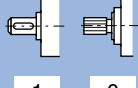


No.	<i>m</i>	<i>n</i>	<i>h</i>	<i>i</i>	<i>k</i>	<i>l</i>	SAE suction flange no.
105	90	82	60	89	50.8	M 12 x 20 deep	16
108	110	100	76	106.3	62	M 16 x 25 deep	17
109	110	100	76	106.3	62	M 16 x 25 deep	17
112	110	110	76	106.3	62	M 16 x 25 deep	17
113	110	110	76	106.3	62	M 16 x 25 deep	17
114	140	120	100	130.2	77.8	M 16 x 25 deep	18
117	110	100	76	106.3	62	M 16 x 25 deep	17
119	110	110	76	106.3	62	M 16 x 25 deep	17
120	110	110	76	106.3	62	M 16 x 25 deep	17
123	70	74.3	40	70	36	M 12 x 20 deep	30
125	90	90	60	89	50.8	M 12 x 20 deep	16
127	110	110	76	106.3	62	M 16 x 25 deep	17
128	90	90	60	89	50.8	M 12 x 20 deep	16
129	110	110	76	106.3	62	M 16 x 25 deep	17
130	110	110	76	106.3	62	M 16 x 25 deep	17
132	90	90	60	89	50.8	M 12 x 20 deep	16
134	110	110	76	106.3	62	M 16 x 25 deep	17
135	110	110	76	106.3	62	M 16 x 25 deep	17

For SAE-suction and discharge flanges
see page 22.

Combinations

* For further options see page 13 or separate sheets.

Model	Type	Size	Variants									
			Direction of rotation and suction				Mounting flange*			Shaft end*		Intermediate housing
												
IPH	4 / 4	See data sheets for individual pumps	2	7	0	1	1	0	131			
			1	6					235			
IPHC	4 / 4		2	7	0	1	1	0	123			
IPC	4 / 4		2	7	0	1	1		103			
IPH	5 / 4		2	7	0	1	1	0	132			
IPHC	5 / 4		2	7	0	1	1	0	125			
IPCH	5 / 4		2	7	0	1	1		116			
IPC	5 / 4		2	7	0	1	1		105			
IPH	5 / 5		2	7	0	1	1	0	133			
			1	6					236			
IPHC	5 / 5		2	7	0	1	1	0	128			
IPC	5 / 5		2	7	0	1	1		106			
IPH	6 / 4		2	7	0	1	1	0	134			
IPHC	6 / 4		2	7	0	1	1	0	127			
IPCH	6 / 4		2	7	0	1	1		117			
IPC	6 / 4		2	7	0	1	1		108			
IPH	6 / 5		2	7	0	1	1	0	135			
IPHC	6 / 5		2	7	0	1	1	0	129			
IPCH	6 / 5		2	7	0	1	1		118			
			1	6					233			
IPC	6 / 5		2	7	0	1	1		109			
IPH	6 / 6		2	7	0	1	1	0	136			
			1	6					237			
IPHC	6 / 6		2	7	0	1	1	0	130			
IPC	6 / 6		2	7	0	1	1		110			
			1	6					231			
IPCH	7 / 4	2	7		1	1		119				
IPC	7 / 4	2	7		1	1		112				
IPCH	7 / 5	2	7		1	1		120				
IPC	7 / 5	2	7		1	1		113				
IPCH	7 / 6	2	7		1	1		121				
		1	6					234				
IPC	7 / 6	2	7		1	1		114				
IPC	7 / 7	2	7		1	1		115				
		1	6					232				
- /												

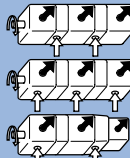
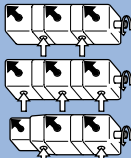
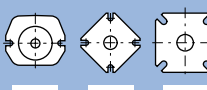
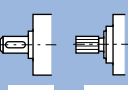
Ordering-
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* For further options see page 13 and the various separate sheets.

Model	Type	Size	Variants										
			Direction of rotation and suction				Mounting flange*		Shaft end*		Intermediate housing		
			Clockwise				Anti-clockwise						
IPH	4 / 4 / 4	See data sheets for individual pumps	1	6			1	1	0	235	235		
IPHHC	4 / 4 / 4		3	8	0		1	1	0	235	123		
IPHCC	4 / 4 / 4		2	7	0		1	1	0	123	103		
IPC	4 / 4 / 4		2	7			1	1		103	103		
IPH	5 / 4 / 4		2	7	0	1		1	0	132	131		
IPHHC	5 / 4 / 4		2	7	0	1		1	0	132	123		
IPHCC	5 / 4 / 4		2	7	0	1		1	0	125	103		
IPCHH	5 / 4 / 4		2	7	0	1		1		116	131		
IPCHC	5 / 4 / 4		2	7	0	1		1		116	123		
IPC	5 / 4 / 4		2	7	0	1		1		105	103		
IPH	5 / 5 / 4		3	8		1		1	0	236	132		
IPHHC	5 / 5 / 4		3	8	0	1		1	0	236	125		
IPHCH	5 / 5 / 4		2	7	0	1		1	0	128	116		
IPHCC	5 / 5 / 4		2	7	0	1		1	0	128	105		
IPCCH	5 / 5 / 4		2	7	0	1		1		106	116		
IPC	5 / 5 / 4		2	7	0	1		1		106	105		
IPH	5 / 5 / 5		1	6		1		1	0	236	236		
IPHHC	5 / 5 / 5		3	8	0	1		1	0	236	128		
IPHCC	5 / 5 / 5		2	7	0	1		1	0	128	106		
IPC	5 / 5 / 5		2	7		1		1		106	106		
IPH	6 / 4 / 4		2	7	0	1		1	0	134	131		
IPHHC	6 / 4 / 4		2	7	0	1		1	0	134	123		
IPHCC	6 / 4 / 4		2	7	0	1		1	0	127	103		
IPCHH	6 / 4 / 4		2	7	0	1		1		117	131		
IPCHC	6 / 4 / 4		2	7	0	1		1		117	123		
IPC	6 / 4 / 4		2	7	0	1		1		108	103		
IPH	6 / 5 / 4		2	7	0	1		1	0	135	132		
IPHHC	6 / 5 / 4		2	7	0	1		1	0	135	125		
IPHCH	6 / 5 / 4		2	7	0	1		1	0	129	116		
IPHCC	6 / 5 / 4		2	7	0	1		1	0	129	105		
IPCHH	6 / 5 / 4	2	7	0	1		1		118	132			
		3	8						233	132			
IPCHC	6 / 5 / 4	2	7	0	1		1		118	125			
		3	8						233	125			
- /													
/ /													

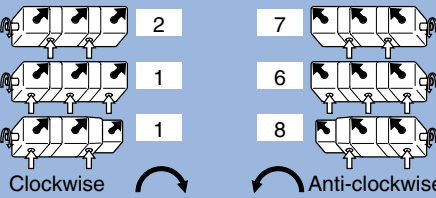
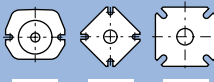
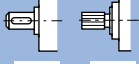
Combinations

* For further options see page 13 and the various separate sheets.

Model	Type	Size	Variants							
			Direction of rotation and suction		Mounting flange*		Shaft end*		Intermediate housing	
			 Clockwise	 Anti-clockwise	 0 1 1	 1 0				
IPCCH	6 / 5 / 4	See data sheets for individual pumps	2	7	0	1	1		109	116
IPC	6 / 5 / 4		2	7	0	1	1		109	105
IPH	6 / 5 / 5		2	7	0	1	1	0	135	133
IPHHC	6 / 5 / 5		2	7	0	1	1	0	135	128
IPHCC	6 / 5 / 5		2	7	0	1	1	0	129	106
IPCHH	6 / 5 / 5		2	7	0	1	1		118	133
			1	6					233	236
IPCHC	6 / 5 / 5		2	7	0	1	1		118	128
			3	8					233	128
IPC	6 / 5 / 5		2	7	0	1	1		109	106
IPH	6 / 6 / 4		3	8	0	1	1	0	237	134
IPHHC	6 / 6 / 4		3	8	0	1	1	0	237	127
IPHCH	6 / 6 / 4		2	7	0	1	1	0	130	117
IPHCC	6 / 6 / 4		2	7	0	1	1	0	130	108
IPCCH	6 / 6 / 4		2	7	0	1	1		110	117
			3	8					231	117
IPC	6 / 6 / 4		2	7	0	1	1		110	108
			3	8					231	108
IPH	6 / 6 / 5		3	8	0	1	1	0	237	135
IPHHC	6 / 6 / 5		3	8	0	1	1	0	237	129
IPHCH	6 / 6 / 5		2	7	0	1	1	0	130	118
IPHCC	6 / 6 / 5		2	7	0	1	1	0	130	109
IPCCH	6 / 6 / 5		2	7	0	1	1		110	118
			1	6					231	233
IPC	6 / 6 / 5		2	7	0	1	1		110	109
			3	8					231	109
IPH	6 / 6 / 6		1	6		1	1	0	237	237
IPHHC	6 / 6 / 6		3	8	0	1	1	0	237	130
IPHCC	6 / 6 / 6		2	7	0	1	1	0	130	110
IPC	6 / 6 / 6		2	7		1	1		110	110
			1	6					231	231
IPCHH	7 / 4 / 4		2	7		1	1		119	131
IPCHC	7 / 4 / 4		2	7		1	1		119	123
IPC	7 / 4 / 4		2	7		1	1		112	103
IPCHH	7 / 5 / 4		2	7		1	1		120	132
IPCHC	7 / 5 / 4		2	7		1	1		120	125
	- /	/ /								

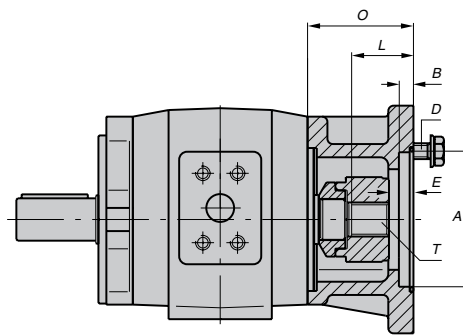
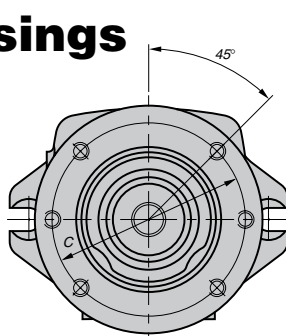
Ordering-code

* For further options see page 13 and the various separate sheets.

Model	Type	Size	Variants							
			Direction of rotation and suction		Mounting flange*		Shaft end*		Intermediate housing	
										
IPCCH	7 / 5 / 4	See data sheets for individual pumps	2	7	1	1	113	116		
IPC	7 / 5 / 4		2	7	1	1	113	105		
IPCHH	7 / 5 / 5		2	7	1	1	120	133		
IPCHC	7 / 5 / 5		2	7	1	1	120	128		
IPC	7 / 5 / 5		2	7	1	1	113	106		
IPCHH	7 / 6 / 4		2	7	1	1	121	134		
			3	8			234	134		
IPCHC	7 / 6 / 4		2	7	1	1	121	127		
			3	8			234	127		
IPCCH	7 / 6 / 4		2	7	1	1	114	117		
IPC	7 / 6 / 4		2	7	1	1	114	108		
IPCHH	7 / 6 / 5		2	7	1	1	121	135		
			3	8			234	135		
IPCHC	7 / 6 / 5		2	7	1	1	121	129		
			3	8			234	129		
IPCCH	7 / 6 / 5		2	7	1	1	114	118		
IPC	7 / 6 / 5		2	7	1	1	114	109		
IPCHH	7 / 6 / 6		2	7	1	1	121	136		
			1	6			234	237		
IPCHC	7 / 6 / 6		2	7	1	1	121	130		
			3	8			234	130		
IPC	7 / 6 / 6		2	7	1	1	114	110		
IPCCH	7 / 7 / 4	2	7	1	1	115	119			
			3	8			232	119		
IPC	7 / 7 / 4	2	7	1	1	115	112			
			3	8			232	112		
IPCCH	7 / 7 / 5	2	7	1	1	115	120			
			3	8			232	120		
IPC	7 / 7 / 5	2	7	1	1	115	113			
			3	8			232	113		
IPCCH	7 / 7 / 6	2	7	1	1	115	121			
			1	6			232	234		
IPC	7 / 7 / 6	2	7	1	1	115	114			
			3	8			232	114		
IPC	7 / 7 / 7	2	7	1	1	115	115			
			1	6			232	232		

Intermediate housings with coupling

Voith internal gear pumps type IPV, IPC, or IPH can be combined with pumps of a different design. They can also be used for different operating media.



L = Max. possible shaft length
 T = Number of teeth of the splined hub with involute flanks (ANSI B 92.1a)
 Pressure angle 30°
 B = available length to centre

Dimensions

The dimensions of Voith internal gear pumps type IPV 4 to 7, IPC 4 to 7, and IPH 4 to 6 can be seen from the data sheets for the corresponding individual pump. The dimensions of pumps of a different design are listed in the catalogues of the manufacturer concerned.

The options available in respect of mounting flange and shaft end correspond to the information in the data sheet for the individual pump.

Intermediate housing		O	A	B	C	D	O-Ring	E	L	T	Pitch
IPC 4/	100	64	82.55 ^{G7}	8	106.5±0.3	M 10	83x3	18	38	11	16/32
IPH 4/											
IPV 5/	101	80	82.55 ^{G7}	8	106.5±0.3	M 10	83x3	18	38	11	16/32
IPC 5/											
IPH 5/											
IPV 6/	102	92	82.55 ^{G7}	8	106.5±0.3	M 10	83x3	18	38	11	16/32
IPC 6/											
IPH 6/											
IPV 7/	103	92	82.55 ^{G7}	8	106.5±0.3	M 10	83x3	18	38	11	16/32
IPC 7/											
IPH 4/											
IPV 5/	104	80	101.6 ^{G7}	10	146±0.3	M 12	102x3	17	41	13	16/32
IPC 5/											
IPH 5/											
IPV 6/	105	92	101.6 ^{G7}	10	146±0.3	M 12	102x3	17	41	13	16/32
IPC 6/											
IPH 6/											
IPV 7/	106	92	101.6 ^{G7}	10	146±0.3	M 12	102x3	17	41	13	16/32
IPC 7/											
IPV 5/											
IPC 5/	107	80	101.6 ^{G7}	10	146±0.3	M 12	102x3	17.5	46	15	16/32
IPH 5/											
IPV 6/	108	92	101.6 ^{G7}	10	146±0.3	M 12	102x3	17.5	46	15	16/32
IPC 6/											
IPH 6/											
IPV 7/	109	92	101.6 ^{G7}	10	146±0.3	M 12	102x3	17.5	46	15	16/32
IPC 7/											
IPH 5/											
IPV 6/	110	92	127 ^{G7}	13	181±0.3	M 16	126x3	8	59	14	12/24
IPC 6/											
IPH 6/											
IPV 7/	111	92	127 ^{G7}	13	181±0.3	M 16	126x3	8	59	14	12/24
IPC 7/											
IPV 6/											
IPC 6/	112	92	127 ^{G7}	13	181±0.3	M 16	126x3	8	63	17	12/24
IPH 6/											
IPV 7/	113	92	127 ^{G7}	13	181±0.3	M 16	126x3	8	63	17	12/24
IPC 7/											
IPV 7/											
IPC 7/	114	150	152.4 ^{G7}	13	228.6±0.3	M 18	150x3	8	118	13	8/16

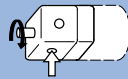
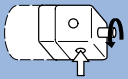
Fastening bolts and O-ring are included in the scope of supply of the Voith pump.

Intermediate housings with coupling

Combinations

consisting of Voith internal gear pumps type IPV, IPC, or IPH and intermediate housings with coupling suitable for mounting pumps with a mounting flange as per DIN ISO 3019-1 and a drive shaft with involute splines as per ANSI B 91.1a.

* For further options see page 6 till 12 of the IPH and IPC single pumps.

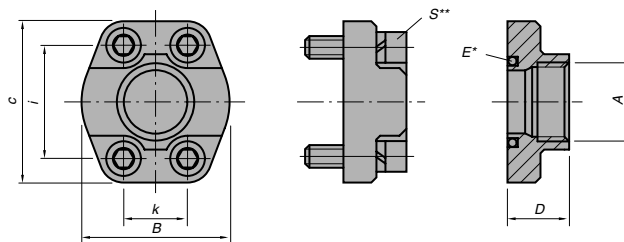
Type	Intermediate housing	Direction of rotation and intake port		Mounting flange		Shaft end*
		 Clock-wise 1	 6 Anti-clockwise	 0	 1	
IPC 4/	100	1	6	0	1	1
IPH 4/ IPV 5/ IPC 5/	101	1	6	0	1	1
IPH 5/ IPV 6/ IPC 6/	102	1	6	0	1	1
IPH 6/ IPV 7/ IPC 7/	103	1	6	0	1	1
IPH 4/ IPV 5/ IPC 5/	104	1	6	0	1	1
IPH 5/ IPV 6/ IPC 6/	105	1	6	0	1	1
IPH 6/ IPV 7/ IPC 7/	106	1	6	0	1	1
IPV 5/ IPC 5/	107	1	6	0	1	1
IPH 5/ IPV 6/ IPC 6/	108	1	6	0	1	1
IPH 6/ IPV 7/ IPC 7/	109	1	6	0	1	1
IPH 5/ IPV 6/ IPC 6/	110	1	6	0	1	1
IPH 6/ IPV 7/ IPC 7/	111	1	6	0	1	1
IPV 6/ IPC 6/	112	1	6	0	1	1
IPH 6/ IPV 7/ IPC 7/	113	1	6	0	1	1
IPV 7/ IPC 7/	114	1	6	0	1	1

Ordering example: IPV 5-50 with intermediate housing 104 for clockwise rotation with SAE 2-bolt flange and cylindrical drive shaft with key.

IPV 5 / 104-50 / ... 101

SAE suction and discharge flanges

as per SAE J 518 C
Code 61



Single-piece SAE flange – Standard pressure range

	A	B	C	D	E*	i	k	S**	Perm. pressure [bar]
10	G 1/2"	46	54	36	18.66 – 3.53	38.1	17.5	M 8	345
11	G 3/4"	50	65	36	24.99 – 3.53	47.6	22.2	M 10	345
12	G 1"	55	70	38	32.92 – 3.53	52.4	26.2	M 10	345
13	G 1 1/4"	68	79	41	37.69 – 3.53	58.7	30.2	M 10	276
14 ¹⁾	G 1 1/2"	82	98	50	47.22 – 3.53	70	36	M 12	345 ¹⁾
30	G 1 1/2"	78	93	45	47.22 – 3.53	70	36	M 12	207
15	G 2"	90	102	45	56.74 – 3.53	77.8	42.9	M 12	207
16	G 2 1/2"	105	114	50	69.44 – 3.53	89	50.8	M 12	172
17	G 3"	124	134	50	85.32 – 3.53	106.3	62	M 16	138
18	G 4"	146	162	48	110.72 – 3.53	130	77.8	M 16	34

* O-ring
ISO-R 1629 NBR (Buna N)

** Bolt DIN 912

¹⁾ Special Voith design deviating from
SAE J 518 C Code 61

DBV Pressure Relief Valves

Technical data

Internal diameter		NW 10	NW 16	NW 25	NW 32
Pilot control range $p_{\min} \dots p_{\max}$	[bar]	8...320			
Flow (max)	[l/min]	60	100	250	500
Control volume V	[cm ³]	0,5	1.15	3.1	7.85
Viscosity range	[cSt]	15...200			
Temperature range $\delta_{\min} \dots \delta_{\max}$	[°C]	-15...70			
Ambient temperature range $\delta_{\min} \dots \delta_{\max}$	[°C]	-10...45			
Opening pressure	[bar]	0.5			
Filtration	[μ]	25			
Electrical data		Solenoid			
Power consumption P	[W]	30			
Rated current J (at 24 V)	[mA]	1250			
Resistance R (at 25 °C and 24 V)	[ohms]	19			
Response time at 150 bar	[ms]	20			
Rated voltage U	[V =]	24			
Special voltages U	[V]	12 =, 48 =, 98 =, 196 =, 110/50 Hz, 200/50 Hz			
Duty cycle	[%]	100			
Degree of protection of solenoid		P 54			
Electrical connection of solenoid		Plug with PG 9			
Manual emergency operation		Standard			
Control solenoid voltages	[V]	24 =, 220/50 Hz			
Hysteresis		With dither ± 1 % of $P_{\max}$ Frequency about 100 Hz	Without dither ± 4 % of $P_{\max}$		

DBV Pressure Relief Valves

Design and mode of operation

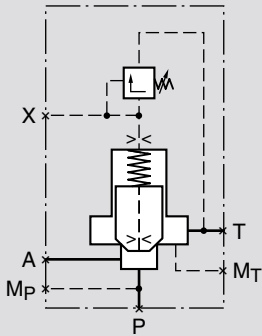
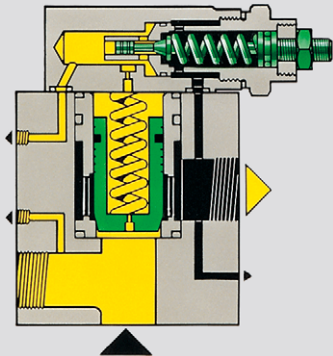
Voith pressure relief valves are designed according to the proven cartridge principle. They guarantee trouble-free operation with short response times, low pressure drop and minimum pressure peaks.

Simplified sectional view

- A Working line
- P Inlet
- M_P Pump pressure
- M_T Measuring connection for return pressure
- T Outlet
- y, x, z Control lines

Types

DBV 10

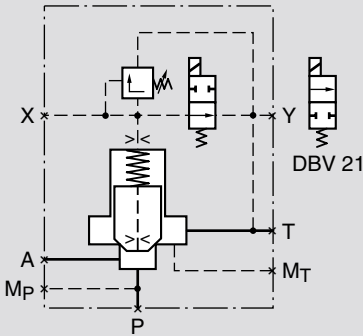
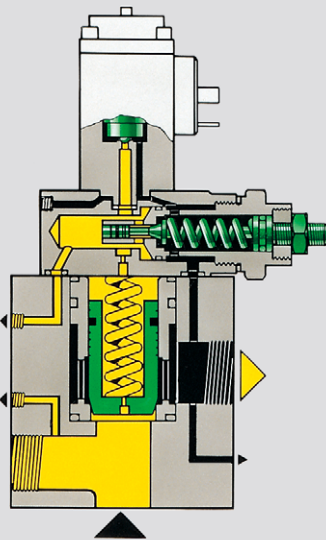


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DBV 20

DBV 21



①

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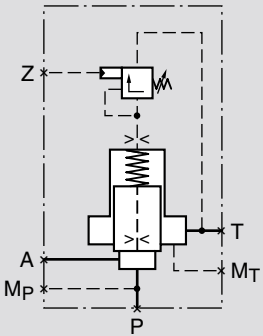
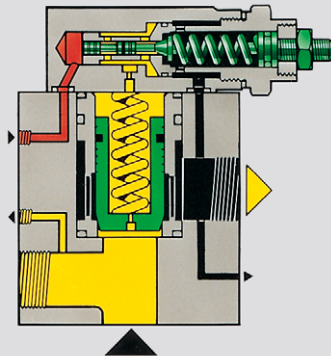
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DBV 30



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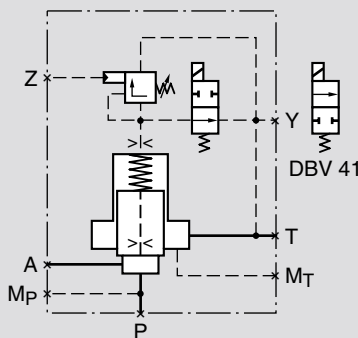
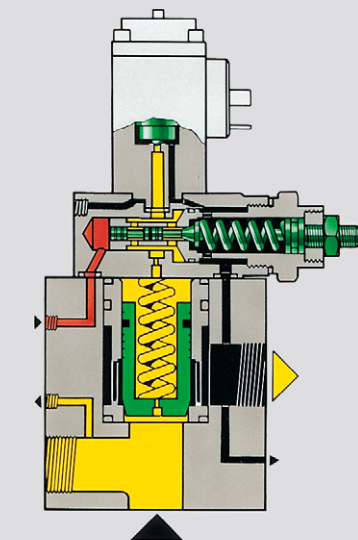
③

Features

- ① Stepless mechanical adjustment of pressure limitation
- ② Control by external pilot relief via existing port "x".
- ③ Control by external pilot pressure via existing port "z".
- ④ Control by pressure relief via an electro-magnetic 2/2-way valve (de-energized = off pressure).
- ⑤ Control by pressure relief via an electro-magnetic 2/2-way valve (de-energized = pressure).
- ⑥ Pressure limitation and control by stepless electromagnetic 2/2-way valve (de-energized = off pressure).
- ⑦ Pressure limitation and control by stepless electromagnetic 2/2-way valve (de-energized = pressure).
- ⑧ New!
Pressure relief valves for accumulator charging applications.
(See brochure G 818.)

DBV 40

DBV 41



① ①

③ ③

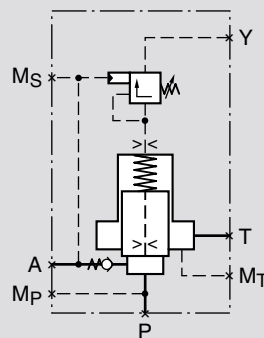
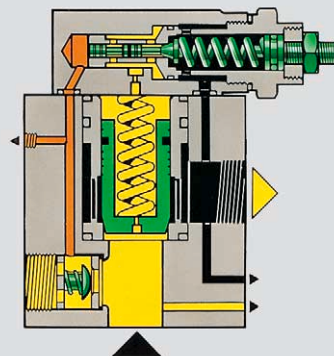
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DBV 50

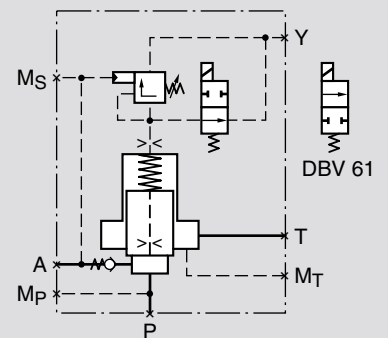
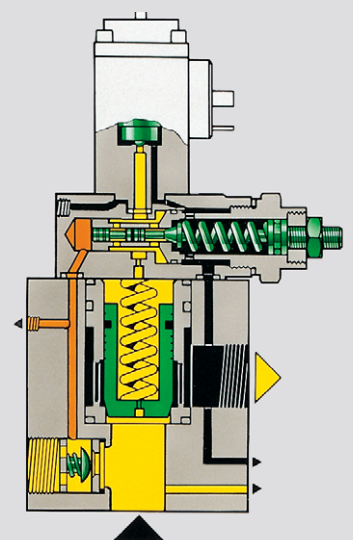


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DBV 60

DBV 61



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⑧ ⑧

DBV Pressure Relief Valves

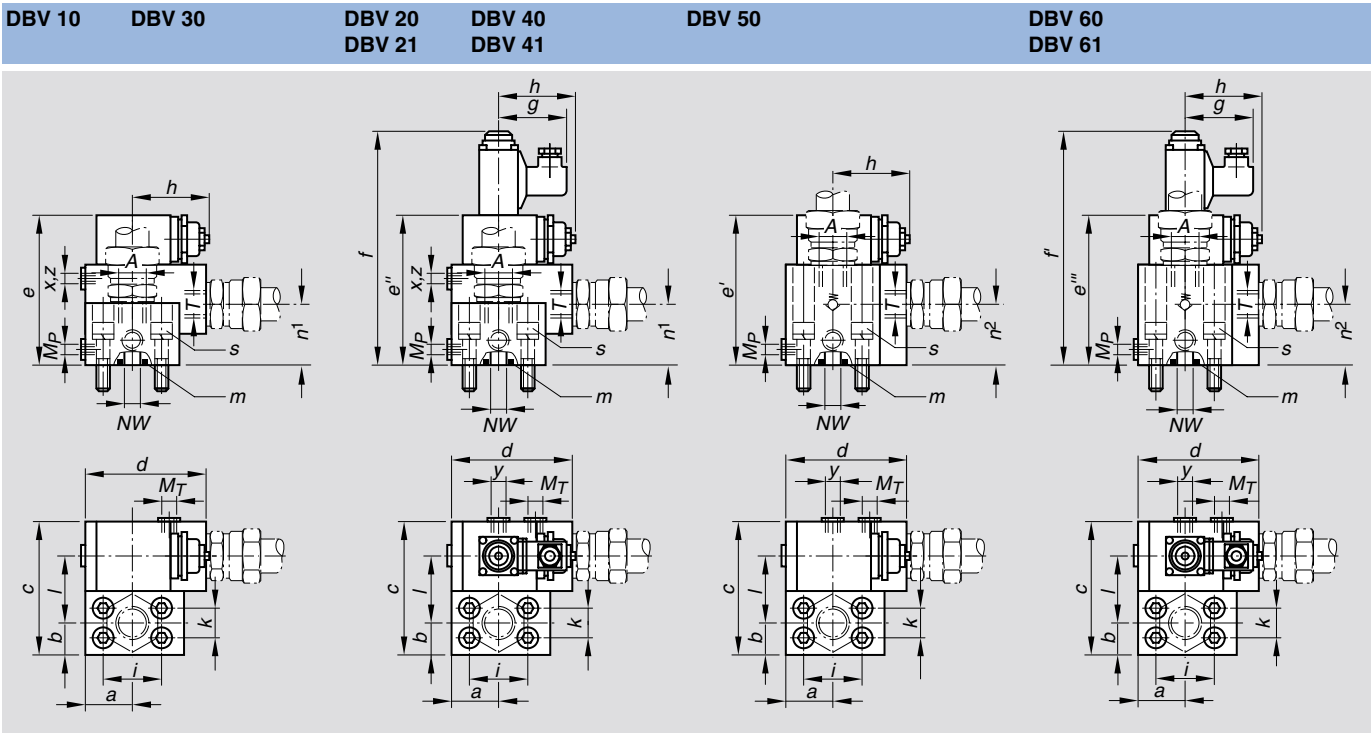
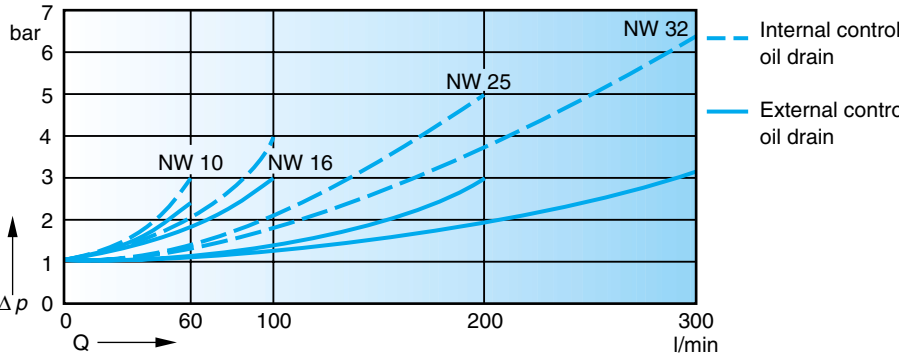
Technical data

Ventil	NW	a	b	c	d	e	e'	e''	e'''	f	f'	g	h	i	k	l	m ¹⁾	s ²⁾	A, T	M _T M _P ³⁾	P
E 10	10	40	20	88	80	80	90	95	105	177	187	58	64	38.1	17.5	44	18.64-3.53	M 8 x 50	G 1/2	G 1/4	SAE
E 16	16	37	24	100	82	90	100	105	115	187	197	58	64	47.6	22.2	52	24.99-3.53	M 10 x 35	G 3/4	G 1/4	SAE
E 25	25	37	24	119	90	128	130	128	130	210	212	58	64	52.4	26.2	64	32.92-3.53	M 10 x 40	G 1	G 1/4	SAE
E 32	32	48	31	137	120	145	150	145	150	227	232	58	72	70	36	75	37.22-3.53	M 12 x 45	G 1 1/2	G 1/4	SAE

Assignment nominal width	
Valve	Pump size
E 10	IP.3
E 16	IP.4
E 25	IP.5
E 32	IP.6, IP.7

- 1) O-ring
- 2) Bolt DIN 912 material 10.9
- 3) Allocation as per "Functions", page 37

Δp -Q-characteristic [t = 50 °C, v = 35 cSt]



DBV Pressure Relief Valves

Variants

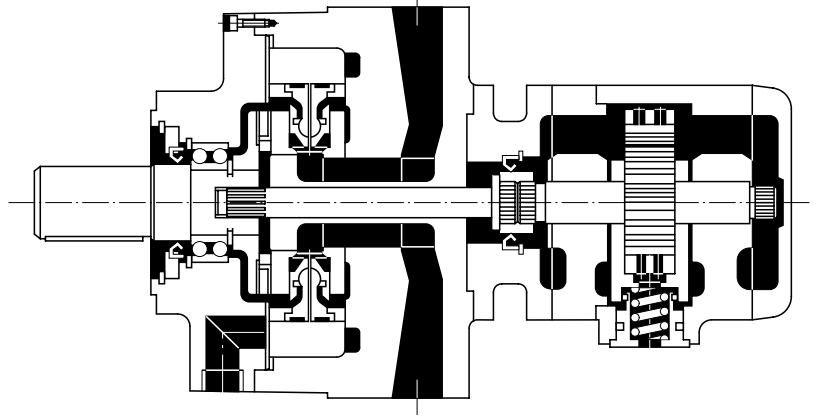
Standard variants

Type	Size		Pressure adjustment		Control oil drain		Electrical relief		Pressure range		Hysteresis		Voltage	
DBV 10	NW 10	E 10	fixed	F	iinternal	O	Solenoid	M	bar	140	of	10 %	24 V =	24 ⁴⁾
DBV 20*	NW 16	E 16			not for DBV 50 DBV 60 DBV 61		only for DBV 20, 21, DBV 40, 41, DBV 60, 61		8 – 140		system pressure			
DBV 21**	NW 25	E 25							bar	320				
DBV 30	NW 32	E 32							8 – 320					
DBV 40*														
DBV 41**														
DBV 50														
DBV 60*														
DBV 61**														

Special variants

			Hand-wheel	H	External	Y	Control Solenoid	R ⁴⁾			of system pressure	15 %	12 V =	12
													185 V =	185
													110 V 50 Hz	110
													220 V 50 Hz	220 ⁴⁾
Ordering-code														

Combination of variable displacement radial piston pumps with IP internal gear pumps



Possibilities and advantages:

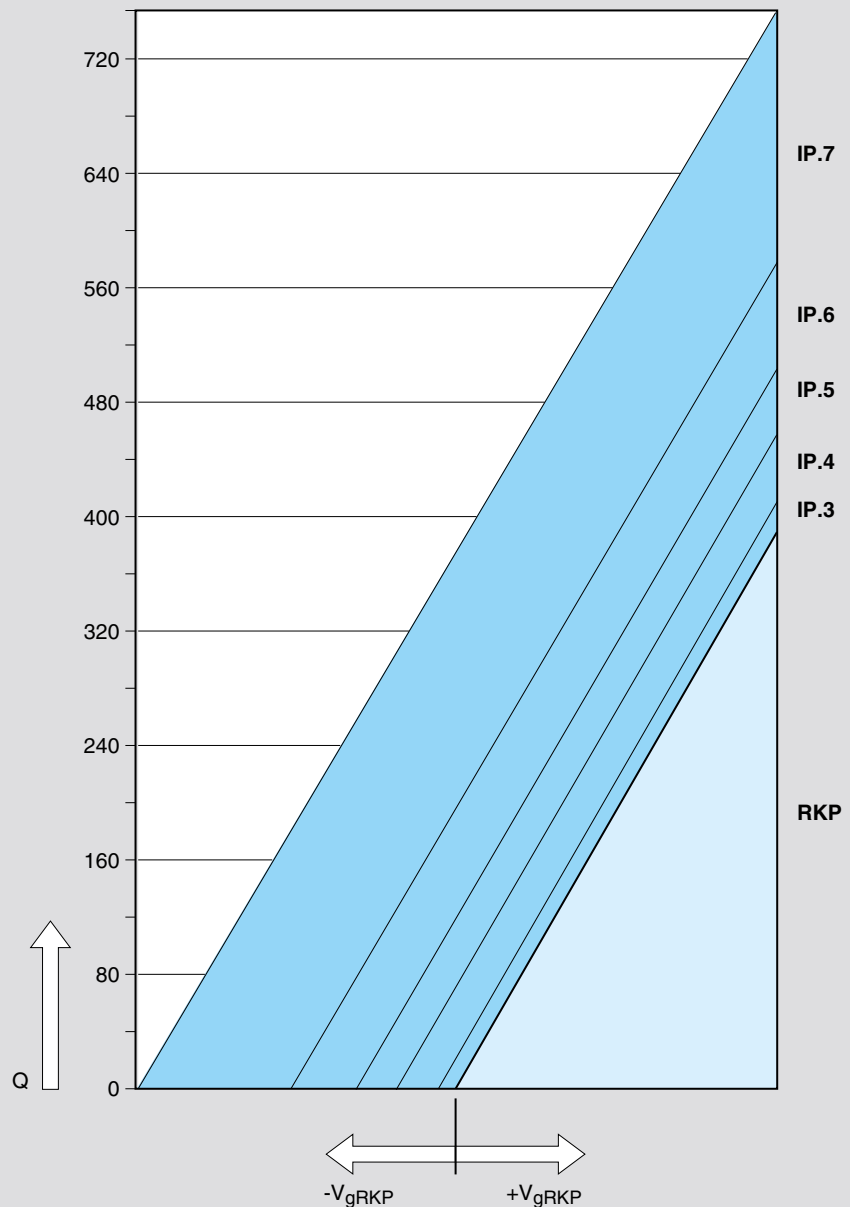
■ By combining a variable-displacement pump with a fixed-displacement one, a common circuit with steplessly adjustable accumulated flow can be obtained.

■ Two independent flows.

Addition of flows

Example RKP 250 plus IP

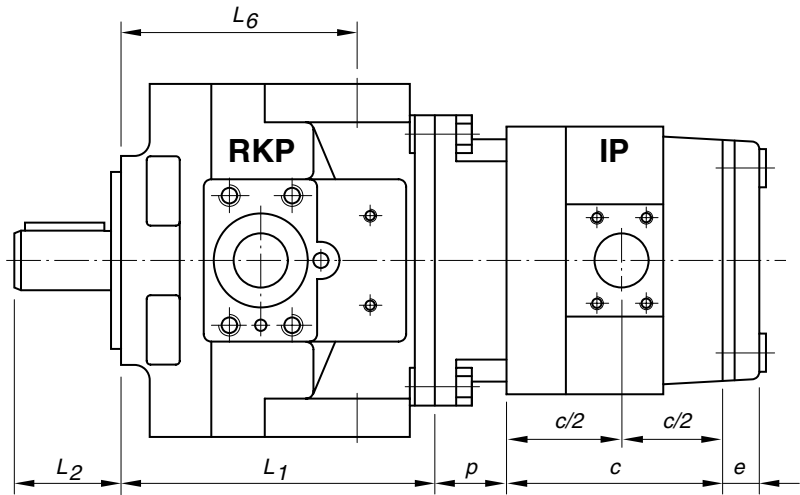
Q Delivery at 1500 rpm
 $V_{g\text{ RKP}}$ Displacement



Other combinations on request.

Dimensions

IP pumps with intermediate flange and transaxle are also available individually.



Dimension chart 1 (RKP)

Typ	L_1	L_2	L_6	Manufacturer
RKP 110 RKP 125	262.3	94.5	211.3	Wepuko
RKP 160 RKP 180	298.5	115	236.5	Wepuko
RKP 250	340	132	278	Wepuko
RKP 32 RKP 45	For dimensions please consult the Moog data sheets			Moog Moog
RKP 63 RKP 80 RKP 90 RKP 100				Moog Moog Moog Moog
RKP 140				Moog

Dimension chart 2
(length of intermediate flange)

IPH

Typ	RKP 110/125 RKP 160/180 p	RKP 250 p	RKP 32/45 p	RKP 63/80/ 90/100 p	RKP 140
IPH 4	40	—	55	55	55
IPH 5	66.5	72.5	—	55	55
IPH 6	66.5	72.5	—	55	55

IPC

IPC 4	17	17	55	55	55
IPC 5	40	17	55	55	55
IPC 6	66.5	72.5	—	55	55
IPC 7	66.5	72.5	—	—	56

IPC and IPH dimensions see pages 6 to 12.

Certified Voith quality

The Voith high-pressure, medium-pressure and low-pressure pumps with internal gears are certified to DIN/ISO 9001.



Responsible agent

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