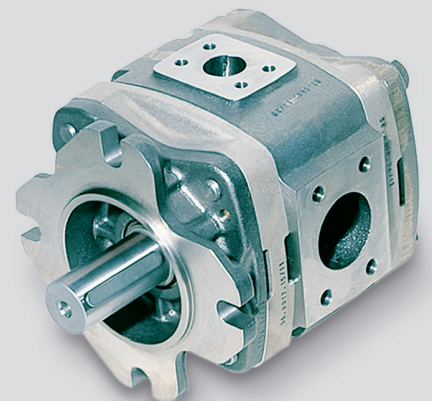


Benefits that convince. IPV High-pressure Internal Gear Pumps



High-pressure Internal Gear Pumps

Internal gear pumps from Voith Turbo H + L Hydraulic are working reliably in hundreds of thousands of machines worldwide. Sophisticated technology, robust design and cost-efficient operation have convinced thousands of customers to trust Voith. Based on that trust, we have become the world market leader for high-pressure internal gear pumps with gap compensation.

Features that count

The market requires hydraulic pumps that are quiet and compact with minimal pressure pulsations at simultaneously high efficiencies. Voith Turbo H + L Hydraulic has met these requirements with the IPV pumps, which feature radial and axial sealing gap compensation with volume-optimized involute gearing.

Machines that run

Rarely seen, but hard at work in countless machines, Voith Turbo H + L Hydraulic internal gear pumps reliably provide high pressures. Their main applications are machines in the plastics and sheetmetal processing sectors, presses as well as conveying and lifting equipment. These pumps are also in demand for shipbuilding, municipal vehicles, power plants and special machine building.

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Design and Function

Function

Rotation of the gears within the pump draws in the pressure fluid (usually hydraulic oil) into the space between the pinion and internal gear. The two smooth running gears help to ensure excellent intake behaviour.

In the radial direction, the gear chambers are closed by gear meshing and the filler piece. In the axial direction, the axial plates seal the pressure chamber with the minimal possible gap. This design minimizes volume losses and increases efficiency.

When the gears rotate, the tooth heads enter the gaps between teeth and displace the pressure fluid.

Combinations

IPV pumps can be combined to form dual or multi-flow pumps. Combinations with other Voith Turbo H + L Hydraulic pump series are also possible. Used in conjunction with pumps from the medium and low-pressure series, Voith equipment can handle a wide range of potential applications. For further information on possible combinations, refer to brochure G1714 (Voith multi-flow pumps).

Combinations with third-party products are generally possible. We'll be happy to discuss your needs.

Variable volume flow

We supply complete hydraulic units with IPVP pumps, synchronous motors and frequency converters to generate variable volume flows.

Design and Function

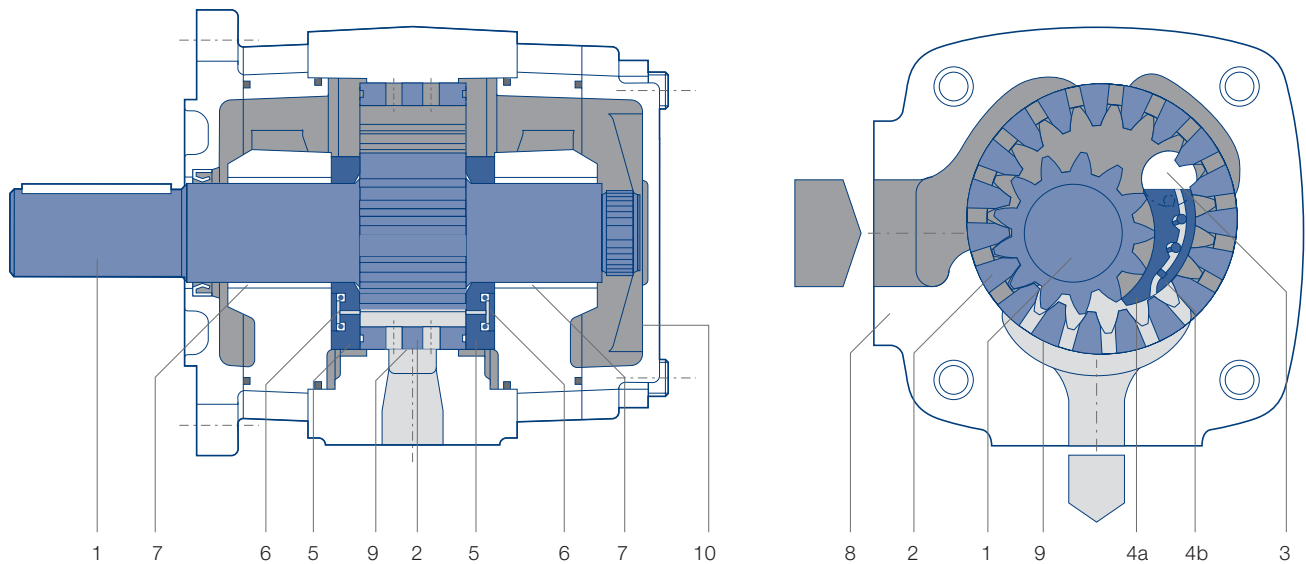
Design features

- Internal gear principle
- Sleeve bearing
- Radial and axial sealing gap compensation
- Volume-optimized involute gearing

Product characteristics

- Long life
- High volumetric efficiency
- High overall efficiency
- Very low pump flow and pressure pulsation
- Low noise level
- Compact dimensions
- Low weight
- Large speed range
- Very good suction properties
- Wide range of acceptable viscosities
- Simple maintenance
- Multiple pumps and pump combinations are possible
- Suitable for variable-speed drives (variable volume flow!)
- Motor operation possible (energy recovery!)

Functional diagram



- | | |
|---------------------------|---------------------------------|
| 1 Pinion shaft | 6 Axial pressure area |
| 2 Internal gear | 7 Plain bearings |
| 3 Filler pin | 8 Housing |
| 4a Filler segment carrier | 9 Hydrostatic bearing |
| 4b Filler sealing segment | 10 End cover with bleeder screw |
| 5 Axial disc | |

- Suction chamber
- Pressure chamber

Performance data

Technical data

Design	internal gear pump with radial and axial sealing gap compensation
Type	IPV
Mounting types	SAE hole flange; ISO 3019/1 or VDMA hole flange; ISO 3019/2
Line mounting	SAE suction and pressure flange J 518 C Code 61
Sense of rotation	right or left-hand rotation
Mounting position	any
Shaft load	for details of radial and axial drive shaft loads please contact your Voith Turbo H + L Hydraulic representative
Input pressure	0.8 ... 3 bar absolute pressure (at start short time 0.6 bar)
Pressure fluid	HLP mineral oils DIN 51524, part 2 or 3
Viscosity range	10 ... 300 mm ² s ⁻¹ (cSt)
Permissible start viscosity	max. 2 000 mm ² s ⁻¹ (cSt)
Permissible temperature of the pressure fluid	-20 ... + 80 °C
Required purity of the pressure fluid	class 19 / 17 / 14 (ISO 4406), class 8 (NAS 1638)
Filtration	Filtration quotient min. $\beta_{20} \geq 75$, recommended $\beta_{10} \geq 100$ (longer life)
Permissible ambient temperature	-20 ... + 60 °C

Calculations

Pump flow	$Q = V_{g\ th} \cdot n \cdot \eta_v \cdot 10^{-3} \text{ [l/min]}$
Power	$P = \frac{Q \cdot \Delta p}{600 \cdot \eta_g} \text{ [kW]}$
$V_{g\ th}$	Pump volume per revolution [cm ³]
n	Speed [min ⁻¹]
η_v	Volumetric efficiency
η_g	Overall efficiency
Δp	Differential pressure [bar]

Performance Data

Characteristics

Type, size-delivery	Displacment	Speed		Delivery		Pressures		
	per revolution	min.	max.	at 1500 min ⁻¹	Continuous	Peak at 1 500 min ⁻¹	Peak at n _{max}	Inertia
	[cm ³]	[min ⁻¹]	[min ⁻¹]	[l/min]	[bar]	[bar]	[bar]	[kg cm ²]
IPV 3 – 3.5	3.6	400	3 600	5.4	330	345	345	0.34
IPV 3 – 5	5.2	400	3 600	7.8	330	345	345	0.42
IPV 3 – 6.3	6.4	400	3 600	9.6	330	345	345	0.49
IPV 3 – 8	8.2	400	3 600	12.3	330	345	345	0.58
IPV 3 – 10	10.2	400	3 600	15.3	330	345	345	0.70
IPV 4 – 13	13.3	400	3 600	19.9	330	345	345	2.25
IPV 4 – 16	15.8	400	3 400	23.7	330	345	345	2.64
IPV 4 – 20	20.7	400	3 200	31.0	330	345	345	3.29
IPV 4 – 25	25.4	400	3 000	38.1	300	330	330	3.70
IPV 4 – 32	32.6	400	2 800	48.9	250	280	280	4.44
IPV 5 – 32	33.1	400	3 000	49.6	315	345	315	8.62
IPV 5 – 40	41.0	400	2 800	61.5	315	345	315	10.20
IPV 5 – 50	50.3	400	2 500	75.4	280	315	280	11.60
IPV 5 – 64	64.9	400	2 200	97.3	230	250	250	14.40
IPV 6 – 64	64.1	400	2 600	96.1	300	330	300	25.73
IPV 6 – 80	80.7	400	2 400	121.0	280	315	280	30.90
IPV 6 – 100	101.3	400	2 100	151.9	250	300	270	36.10
IPV 6 – 125	126.2	400	1 800	189.3	210	250	250	43.70
IPV 7 – 125	125.8	400	2 200	188.7	300	330	300	84.05
IPV 7 – 160	160.8	400	2 000	241.2	280	315	280	102.60
IPV 7 – 200	202.7	400	1 800	304.0	250	300	270	119.00
IPV 7 – 250	251.7	400	1 800	377.5	210	250	250	144.50

The values given apply for:

- Pumping of mineral oils with a viscosity of 20 ... 40 mm² s⁻¹
- An input pressure of 0.8...3.0 bar absolute

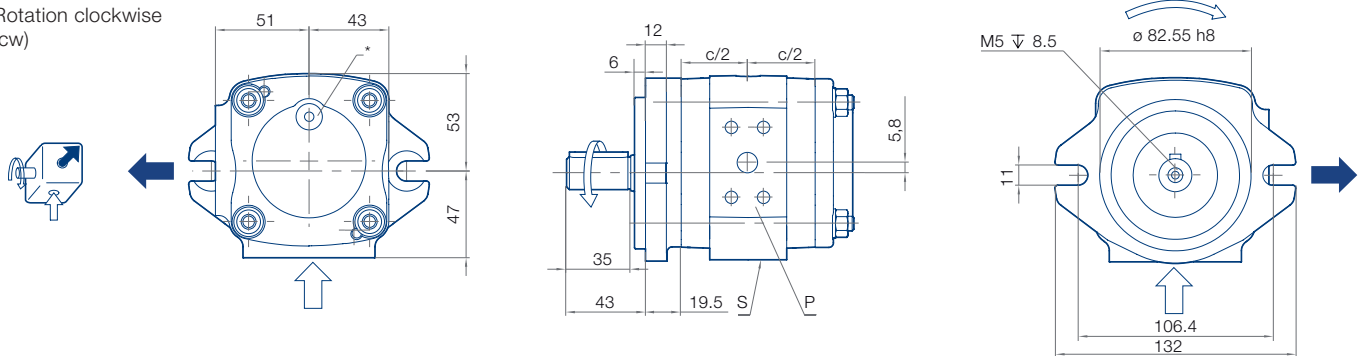
Notes:

- Peak pressures apply for 15% of operating time with a maximum cycle time of 1 minute
- Please inquire about peak pressures at non-standard speeds
- Due to production tolerances, the pump volume may be reduced by up to 1.5%.

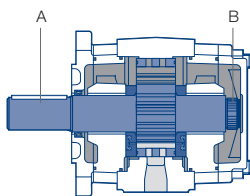
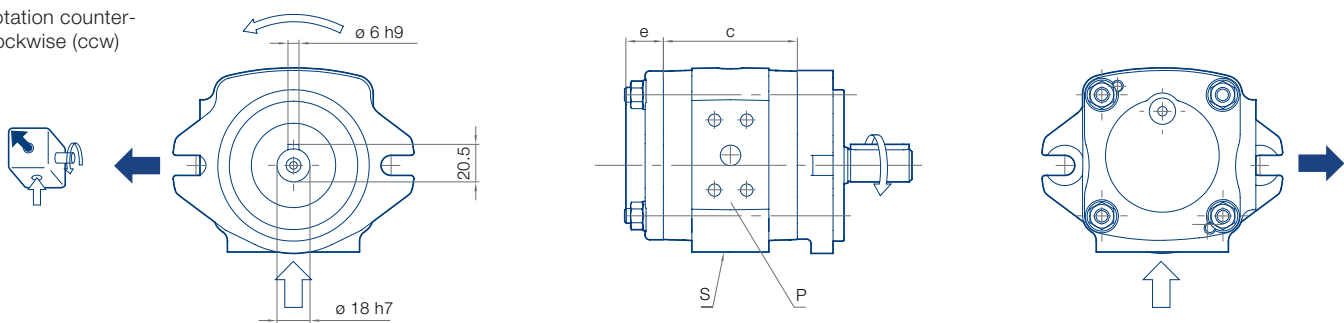
IPV 3

Rotation and Dimensions

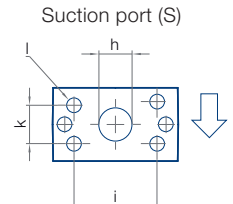
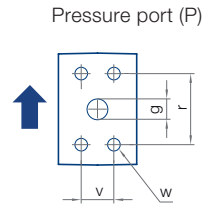
Rotation clockwise
(cw)



Rotation counter-
clockwise (ccw)



Allowed input torques:
Input shaft A: 160 Nm
Secondary shaft B: 80 Nm

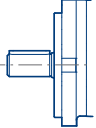
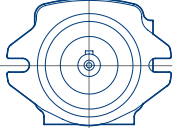
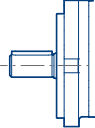
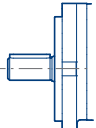
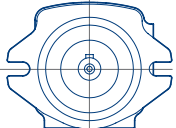
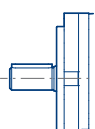
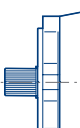
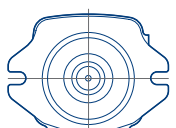
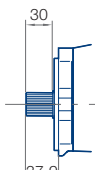
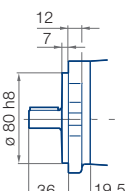
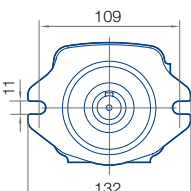
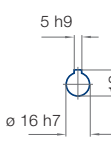
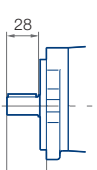


Type/ Delivery	Dimensions and Weight										SAE Flange No.		
	c	e	g	h	i	k	l	r	v	w	Weight		
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Thread	[mm]	[mm]	Thread	[kg]		
IPV 3 – 3.5	66	20.5	9	14	38.1	17.5	M8x13	38.1	17.5	M8x13	4.0	10	10
IPV 3 – 5	70	20.5	11	14	38.1	17.5	M8x13	38.1	17.5	M8x13	4.2	10	10
IPV 3 – 6.3	73	20.5	11	19	47.5	22	M10x15	38.1	17.5	M8x13	4.4	10	11
IPV 3 – 8	77.5	20.5	13	19	47.5	22	M10x15	38.1	17.5	M8x13	4.6	10	11
IPV 3 – 10	82.5	20.5	13	21	52.4	26.2	M10x15	38.1	17.5	M8x13	4.8	10	12

* Ensure the M10x1 plug screw, hexagon socket SW5, is tightened to a torque of 10 Nm during pumping operation. Dependent on the pump position, filling or ventilation is possible here prior to commissioning.

IPV 3

Design and Dimensions

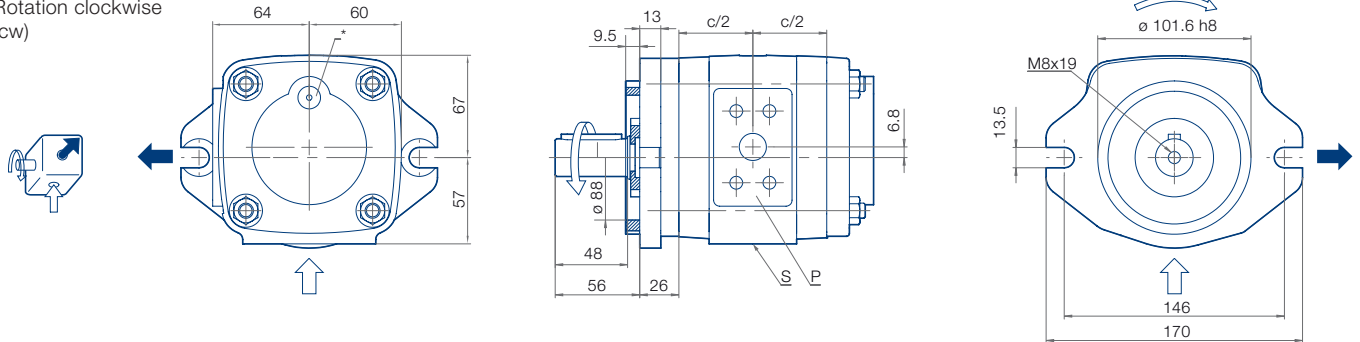
Rotation, Suction port	Mounting flange	Shaft end
Standard		
Rotation clockwise, Suction port pump  1	SAE 2-hole flange, dimensions on left   0	Keyway connection, dimensions on left  1
Variant		
Rotation counterclockwise, Suction port pump  6	SAE 2-hole flange, dimensions on left   0	Keyway connection, dimensions on left  1
Rotation clockwise*, Suction port pump  1	SAE 2-hole flange, dimensions on left   0	Involute gearing  0 ANSI B92.1a 11T 16/32 DP 30°
Rotation counterclockwise*, Suction port pump  6	VDMA-2-hole flange   4	Keyway connection   1

* Direction of rotation free selectable in the illustrated mounting flange / shaft end combination.

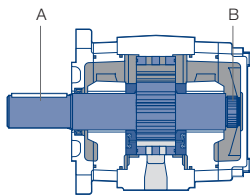
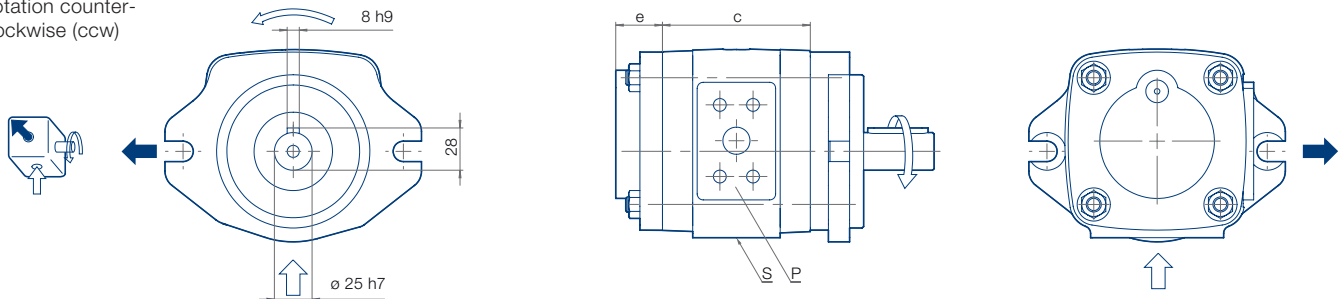
IPV 4

Rotation and Dimensions

Rotation clockwise
(cw)

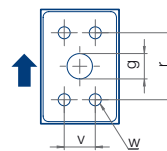


Rotation counter-
clockwise (ccw)

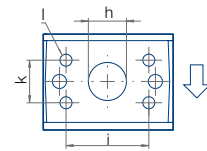


Allowed input torques:
Input shaft A: 335 Nm
Secondary shaft B: 190 Nm

Pressure port (P)



Suction port (S)

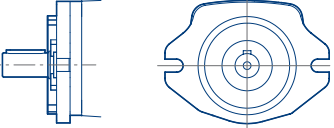
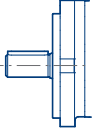
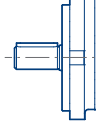
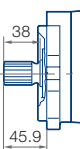
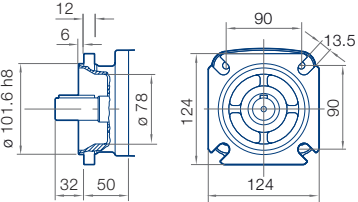
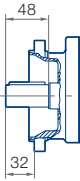
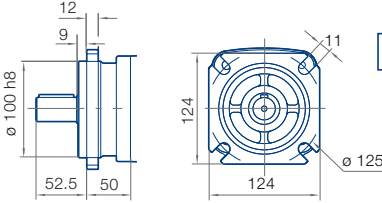
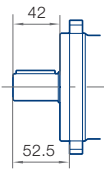


Type/ Delivery	Dimensions and Weight											SAE Flange No.	
	c	e	g	h	i	k	l	r	v	w	Weight		
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Thread	[mm]	[mm]	Thread	[kg]		
IPV 4 – 13	88.5	31	13	23	52.4	26.2	M10x15	38.1	17.5	M8x13	8.6	10	12
IPV 4 – 16	92.5	31	14	25	52.4	26.3	M10x15	38.1	17.5	M8x13	9.0	10	12
IPV 4 – 20	98	31	18	27	58.7	30.2	M10x15	47.5	22	M10x15	9.6	11	13
IPV 4 – 25	104	31	18	30	58.7	30.2	M10x15	47.5	22	M10x15	10.2	11	13
IPV 4 – 32	113	31	18	32	58.7	30.2	M10x15	47.5	22	M10x15	11.0	11	13

* Ensure the M10x1 plug screw, hexagon socket SW5, is tightened to a torque of 10 Nm during pumping operation. Dependent on the pump position, filling or ventilation is possible here prior to commissioning.

IPV 4

Design and Dimensions

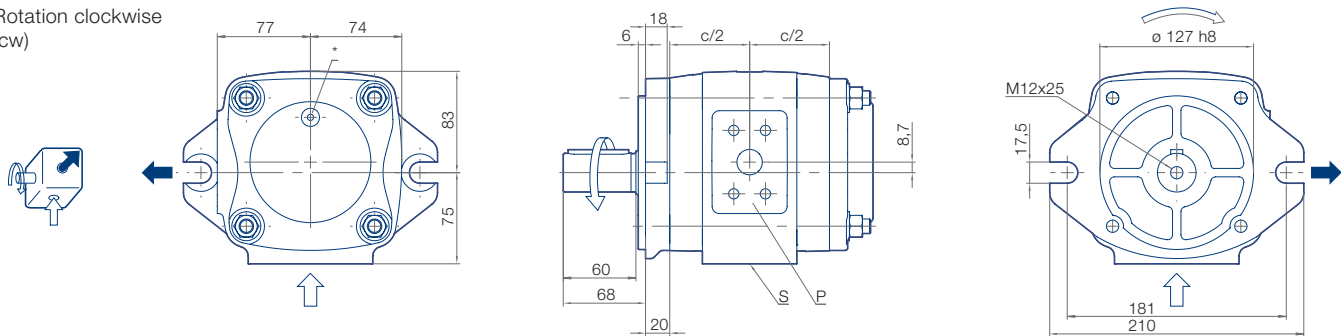
Rotation, Suction port	Mounting flange	Shaft end
Standard		
Rotation clockwise, Suction port pump	SAE 2-hole flange, dimensions on left	Keyway connection, dimensions on left
 1	 7	 1
Variant		
Rotation counterclockwise, Suction port pump	SAE 2-hole flange, dimensions on left	Keyway connection, dimensions on left
 6	 7	 1
Rotation clockwise*, Suction port pump	SAE 2-hole flange, dimensions on left	Involute gearing
 1	 7	 0
Rotation counterclockwise*, Suction port pump	SAE-4-hole flange	Keyway connection
 6	 1	 1
	VDMA-4-hole flange	Keyway connection
	 5	 1

* Direction of rotation free selectable in the illustrated mounting flange / shaft end combination.

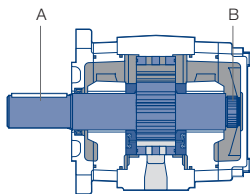
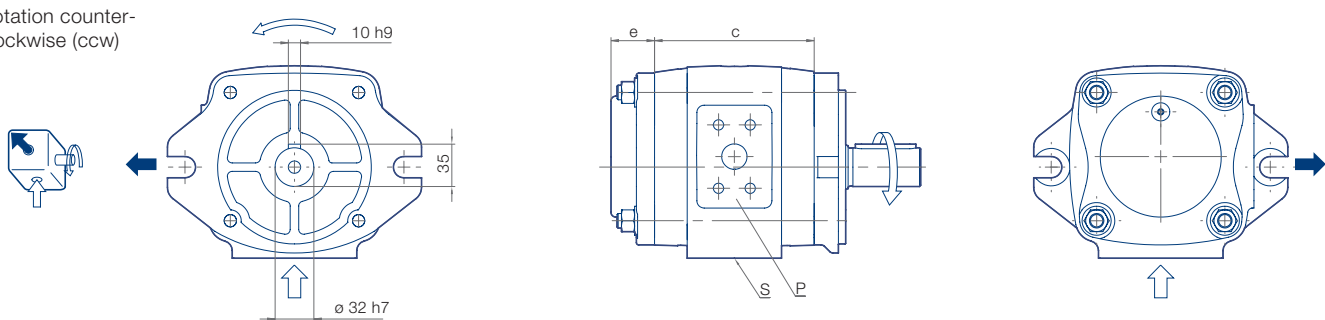
IPV 5

Rotation and Dimensions

Rotation clockwise
(cw)

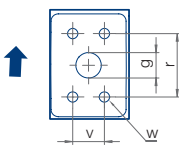


Rotation counter-
clockwise (ccw)

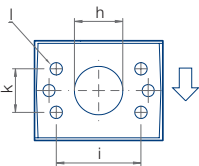


Allowed input torques:
Input shaft A: 605 Nm
Secondary shaft B: 400 Nm

Pressure port (P)



Suction port (S)

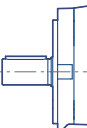
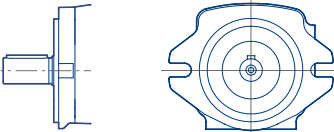
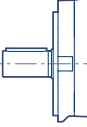
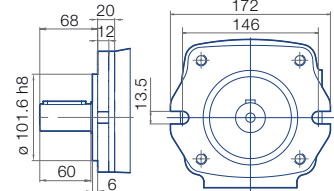
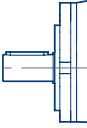
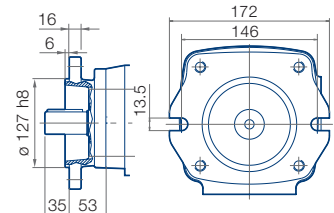
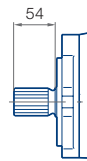
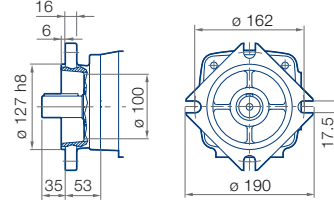
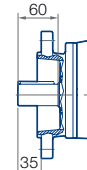
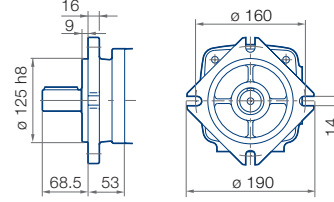
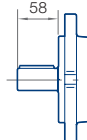


Type/ Delivery	Dimensions and Weight										SAE Flange No.		
	c	e	g	h	i	k	l	r	v	w	Weight		
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Thread	[mm]	[mm]	Thread	[kg]		
IPV 5 – 32	119	36	18	32	58.7	30.2	M10x15	47.5	22	M10x15	15.5	11	13
IPV 5 – 40	125	36	19	35	70	36	M12x20	52.4	26.2	M10x15	16.3	12	30
IPV 5 – 50	132	36	21	40	70	36	M12x20	52.4	26.2	M10x15	17.4	12	30
IPV 5 – 64	143	36	23	40	70	36	M12x20	52.4	26.2	M10x16	18.7	12	30

* Ensure the M10x1 plug screw, hexagon socket SW5, is tightened to a torque of 10 Nm during pumping operation. Dependent on the pump position, filling or ventilation is possible here prior to commissioning.

IPV 5

Design and Dimensions

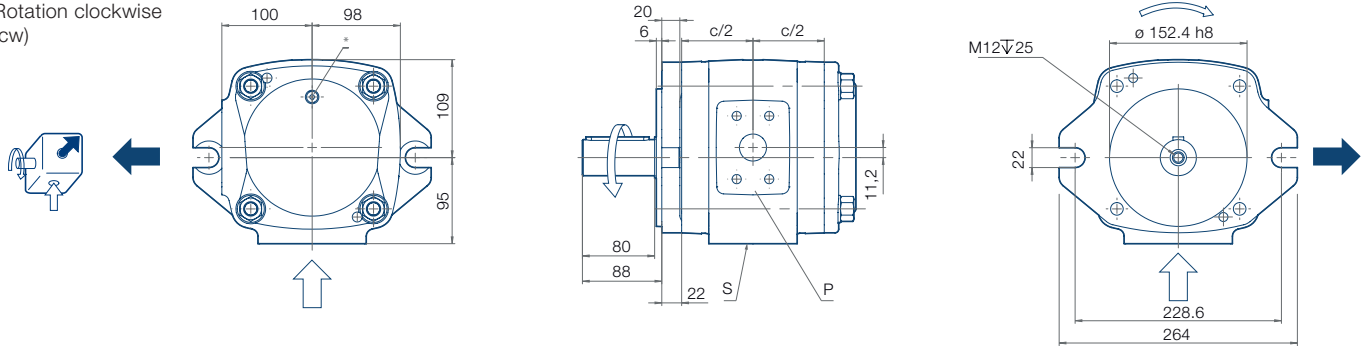
Rotation, Suction port	Mounting flange	Shaft end
Standard		
Rotation clockwise, Suction port pump  1	SAE 2-hole flange, dimensions on left  0	Keyway connection, dimensions on left  1
Variant		
Rotation counterclockwise, Suction port pump  6	SAE 2-hole flange, dimensions on left  0	Keyway connection, dimensions on left  1
Rotation clockwise*, Suction port pump  1	SAE 2-hole flange  7	Keyway connection  1
Rotation counterclockwise*, Suction port pump  6	SAE 2-hole flange  7	Involute gearing  0 ANSI B92.1a 14T 12/24 DP 30°
	SAE-4-hole flange  1	Keyway connection  1
	VDMA-4-hole flange  5	Keyway connection  1

* Direction of rotation free selectable in the illustrated mounting flange / shaft end combination.

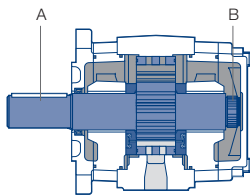
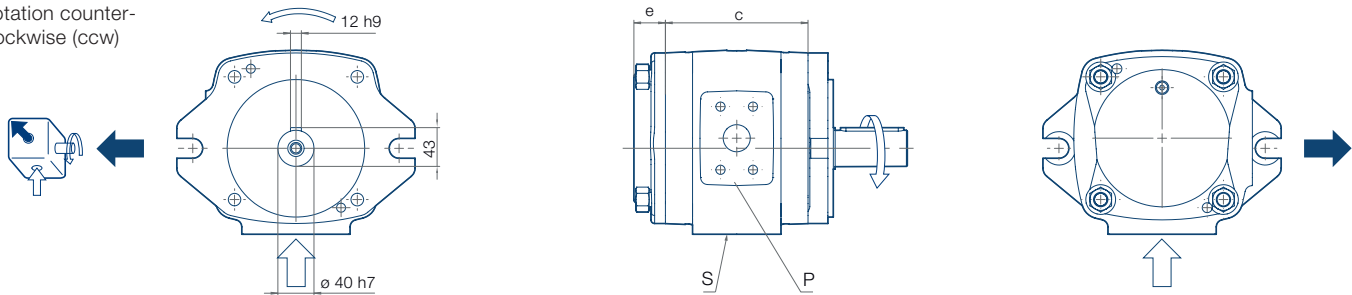
IPV 6

Rotation and Dimensions

Rotation clockwise
(cw)

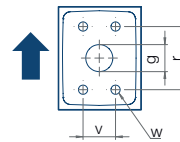


Rotation counter-
clockwise (ccw)

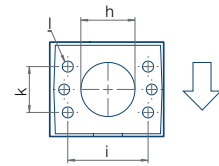


Allowed input torques:
Input shaft A: 1050 Nm
Secondary shaft B: 780 Nm

Pressure port (P)



Suction port (S)

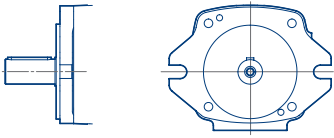
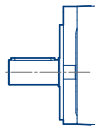
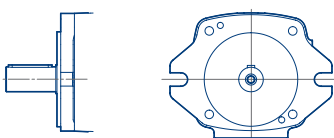
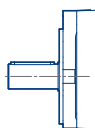
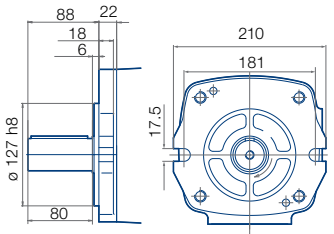
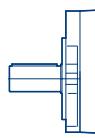
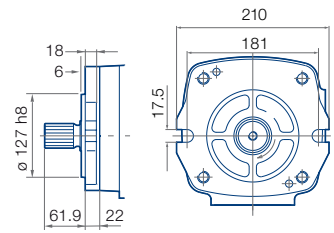
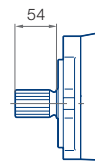
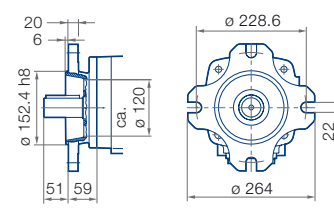
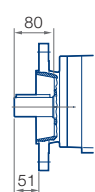
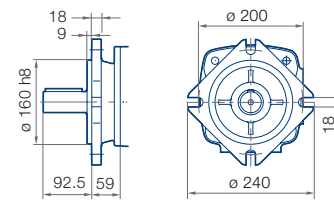
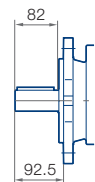


Type/ Delivery	Dimensions and Weight											SAE Flange No.	
	c	e	g	h	i	k	l	r	v	w	Weight		
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Thread	[mm]	[mm]	Thread	[kg]		
IPV 6 – 64	140	40	23	40	70	36	M12x20	52.4	26.2	M10x15	29.2	12	30
IPV 6 – 80	148	35	23	45	77.8	42.9	M12x20	70	36	M12x20	30.7	14	15
IPV 6 – 100	158	35	27	50	77.8	42.9	M12x20	70	36	M12x20	32.6	14	15
IPV 6 – 125	170	40	30	50	77.8	42.9	M12x20	70	36	M12x20	35.0	14	15

* Ensure the M10x1 plug screw, hexagon socket SW5, is tightened to a torque of 10 Nm during pumping operation. Dependent on the pump position, filling or ventilation is possible here prior to commissioning.

IPV 6

Design and Dimensions

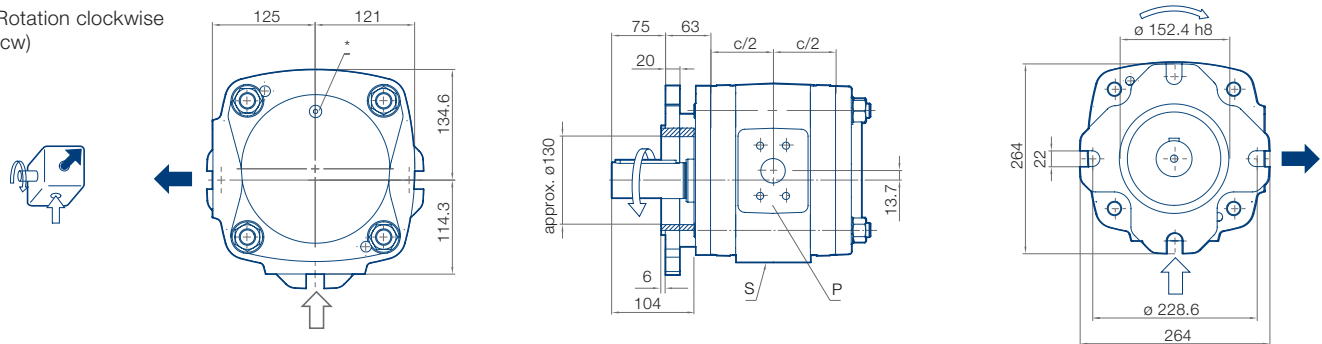
Rotation, Suction port	Mounting flange	Shaft end
Standard		
Rotation clockwise, Suction port pump  1	SAE 2-hole flange, dimensions on left  0	Keyway connection, dimensions on left  1
Variant		
Rotation counterclockwise, Suction port pump  6	SAE 2-hole flange, dimensions on left  0	Keyway connection, dimensions on left  1
Rotation clockwise*, Suction port pump  1	SAE 2-hole flange  7	Keyway connection  1
Rotation counterclockwise*, Suction port pump  6	SAE 2-hole flange  7	Involute gearing  0 ANSI B92.1a 17T 12/24 DP 30°
	SAE-4-hole flange  1	Keyway connection  1
	VDMA-4-hole flange  5	Keyway connection  1

* Direction of rotation free selectable in the illustrated mounting flange / shaft end combination.

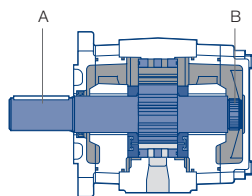
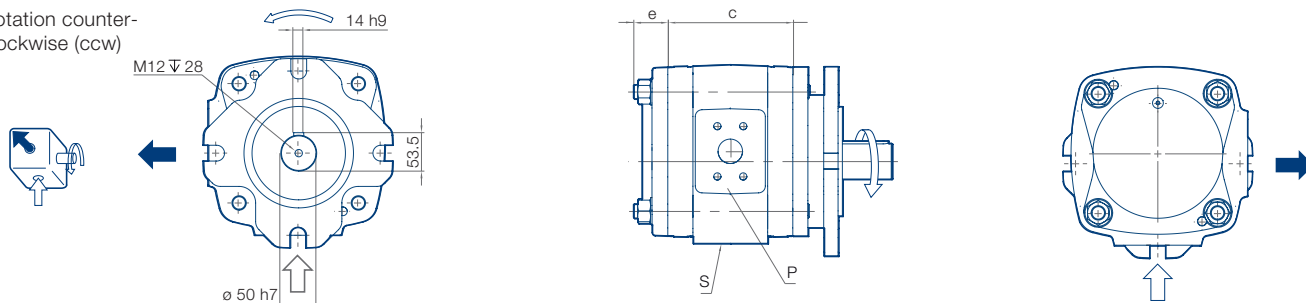
IPV 7

Rotation and Dimensions

Rotation clockwise
(cw)

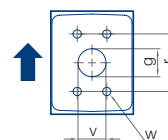


Rotation counter-
clockwise (ccw)

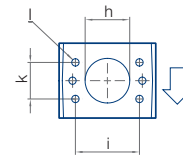


Allowed input torques:
Input shaft A: 1960 Nm
Secondary shaft B: 1200 Nm

Pressure port (P)



Suction port (S)

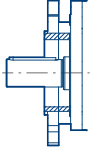
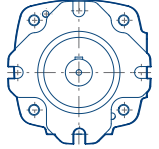
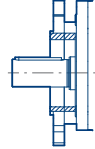
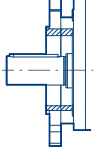
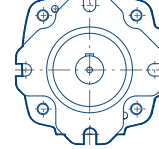
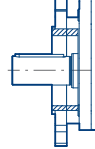
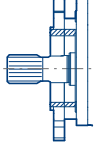
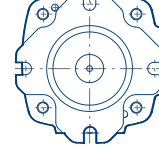
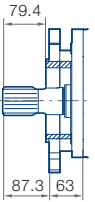
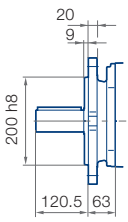
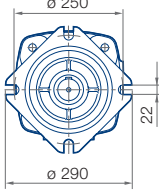
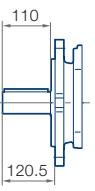


Type/ Delivery	Dimensions and Weight											SAE Flange No.	
	c	e	g	h	i	k	l	r	v	w	Weight		
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Thread	[mm]	[mm]	Thread	[kg]		
IPV 7 – 125	152	48	30	50	77.8	42.9	M12x20	70	36	M12x20	46.5	14	15
IPV 7 – 160	162	48	30	56	89	50.8	M12x20	70	36	M12x20	50	14	16
IPV 7 – 200	174	46	34	62	89	50.8	M12x20	70	36	M12x20	54	14	16
IPV 7 – 250	188	42	38	72	106.3	62	M16x25	70	36	M12x20	59	14	17

* Ensure the M10x1 plug screw, hexagon socket SW5, is tightened to a torque of 10 Nm during pumping operation. Dependent on the pump position, filling or ventilation is possible here prior to commissioning.

IPV 7

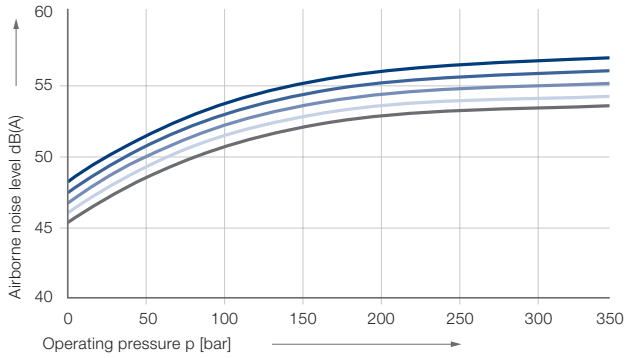
Design and Dimensions

Rotation, Suction port	Mounting flange	Shaft end
Standard		
Rotation clockwise, Suction port pump	SAE-4-hole flange, dimensions on left	Keyway connection, dimensions on left
 1	  1	 1
Variant		
Rotation counterclockwise, Suction port pump	SAE-4-hole flange, dimensions on left	Keyway connection, dimensions on left
 6	  1	 1
Rotation clockwise*, Suction port pump	SAE-4-hole flange, dimensions on left	Involute gearing
 1	  1	 0 ANSI B92.1a 15T 8/16 DP 30°
Rotation counterclockwise*, Suction port pump	VDMA-4-hole flange	Keyway connection
 6	  5	 1

* Direction of rotation free selectable in the illustrated mounting flange / shaft end combination.

Measurements

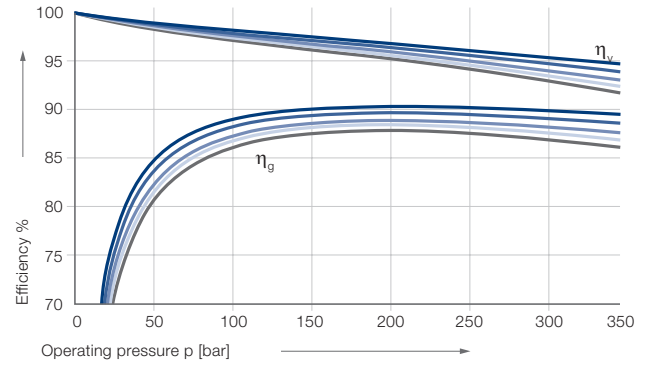
IPV 3 – Airborne noise level (measuring location 1 m axial)



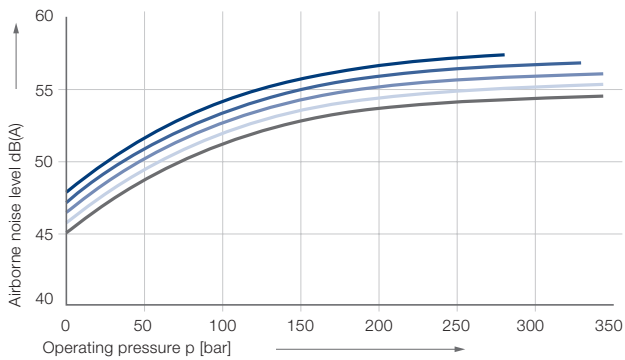
Characteristic curves:

— IPV 3 – 10 — IPV 3 – 8 — IPV 3 – 6.3 — IPV 3 – 5 — IPV 3 – 3.5

IPV 3 – Efficiency η_v and η_g



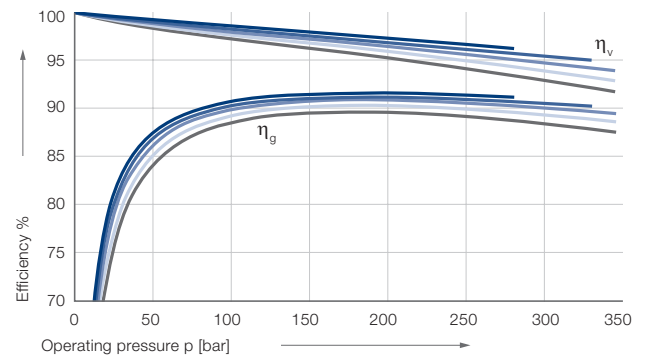
IPV 4 – Airborne noise level (measuring location 1 m axial)



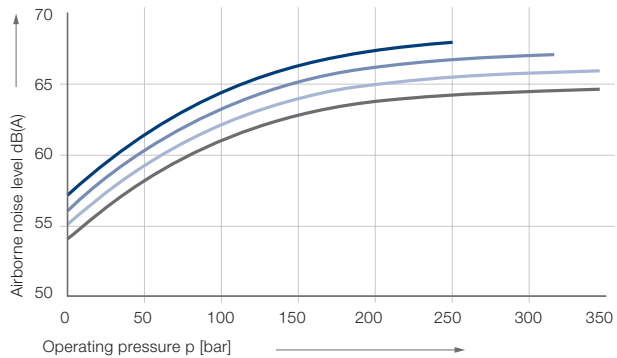
Characteristic curves:

— IPV 4 – 32 — IPV 4 – 25 — IPV 4 – 20 — IPV 4 – 16 — IPV 4 – 13

IPV 4 – Efficiency η_v and η_g



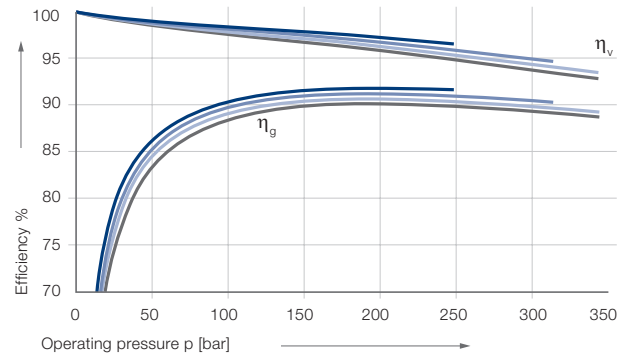
IPV 5 – Airborne noise level (measuring location 1 m axial)



Characteristic curves:

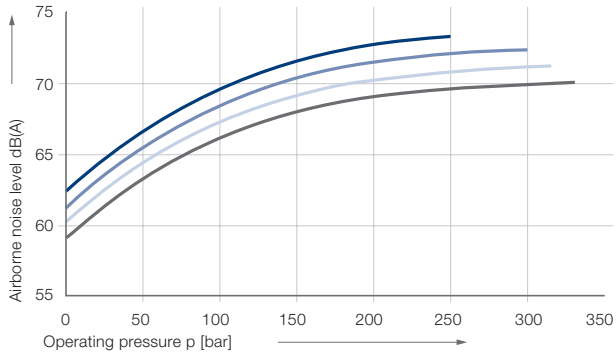
— IPV 5 – 64 — IPV 5 – 50 — IPV 5 – 40 — IPV 5 – 32

IPV 5 – Efficiency η_v and η_g



Measurements

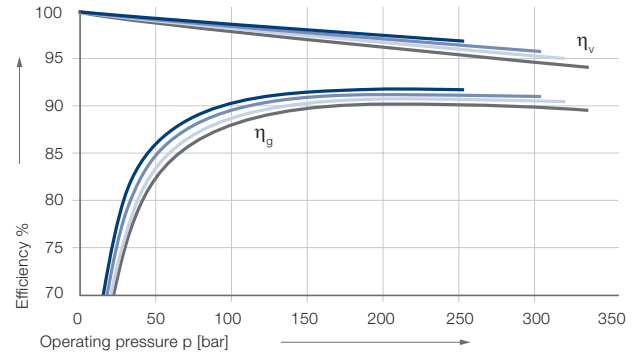
IPV 6 – Airborne noise level (measuring location 1 m axial)



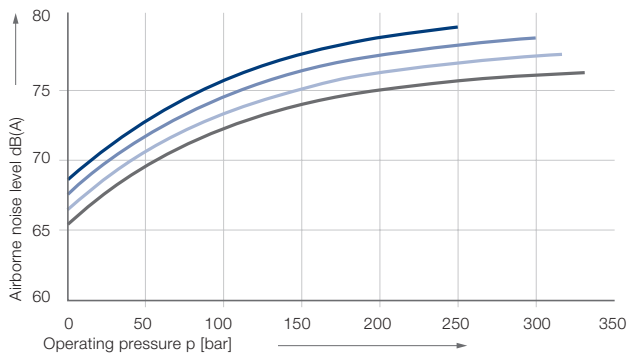
Characteristic curves:

— IPV 6 – 125 — IPV 6 – 100 — IPV 6 – 80 — IPV 6 – 64

IPV 6 – Efficiency η_v and η_g



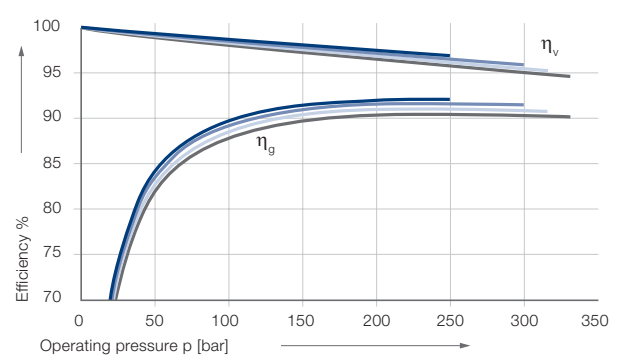
IPV 7 – Airborne noise level (measuring location 1 m axial)



Characteristic curves:

— IPV 7 – 250 — IPV 7 – 200 — IPV 7 – 160 — IPV 7 – 125

IPV 7 – Efficiency η_v and η_g



Measurement conditions:

Speed: 1500 min⁻¹ / Viscosity of pressure fluid: 46 mm²s⁻¹ / Operating temperature: 40 °C

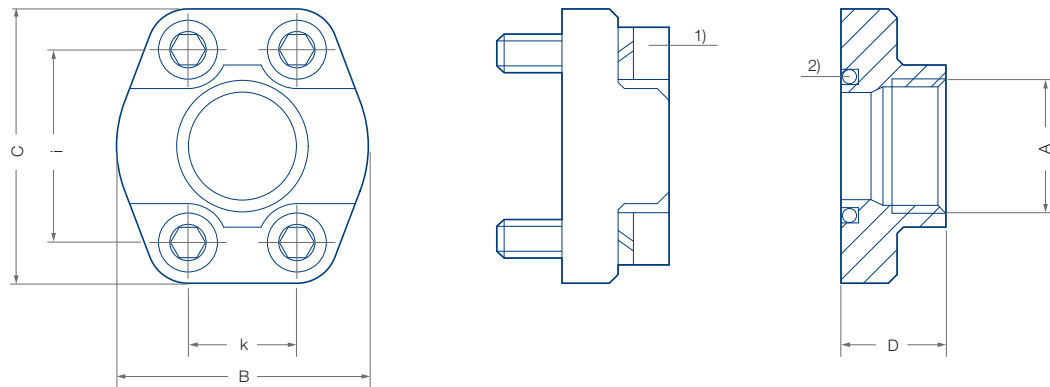
Note:

Measurement taken in a low-noise room.

In a anechoic room, the measurements are approx. 5 dB(A) lower.

SAE Suction and Pressure Flanges according to SAE J 518 C Code 61

SAE flange, single-piece



SAE flange no.	A	B	C	D	E ¹⁾	i	k	S ²⁾	max. pressure
	Thread	[mm]	[mm]	[mm]	Seal ring	[mm]	[mm]	Thread	[bar]
10	G ½	46	54	36	18.66 – 3.53	38.1	17.5	M 8	345
11	G ¾	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 1-¼	68	79	41	37.69 – 3.53	58.7	30.2	M 10	276
14 ³⁾	G 1-½	82	98	50	47.22 – 3.53	70	36	M 12	345 ³⁾
30	G 1-½	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 2-½	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

Wrench torque for screws according to ISO 6162

¹⁾ Round seal ring (O-Ring) ISO-R 1629 NBR

²⁾ Screw EN ISO 4762

³⁾ Special design, deviation from SAE J 518 C Code 61

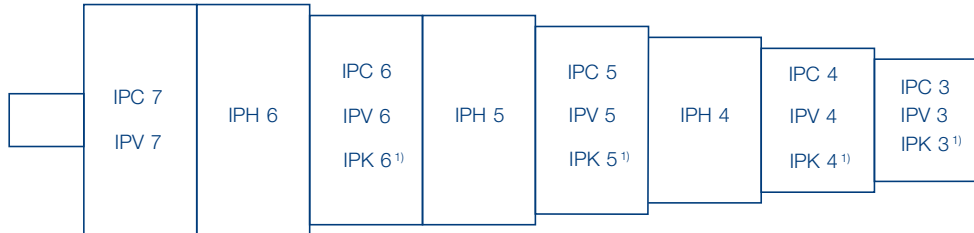
Type Code

IPV	3 –	3.5	1	0	1																																				
					Shaft end 0 Splined gear shaft ANSI B92.1a 1 Parallel shaft with keyway																																				
					Mounting flange 0 SAE-2-hole 1 SAE-4-hole 4 VDMA-2-hole 5 VDMA-4-hole 7 SAE-2-hole, variant																																				
					Rotation, Suction port 1 Clockwise rotation, suction port pump 6 Anti-clockwise rotation, suction port pump 4 Clockwise rotation, special design 9 Anti-clockwise rotation, special design																																				
					Delivery <table><tr><th>Size</th><th colspan="5">Delivery</th></tr><tr><td>3</td><td>3.5</td><td>5</td><td>6.3</td><td>8</td><td>10</td></tr><tr><td>4</td><td>13</td><td>16</td><td>20</td><td>25</td><td>32</td></tr><tr><td>5</td><td>32</td><td>40</td><td>50</td><td>64</td><td></td></tr><tr><td>6</td><td>64</td><td>80</td><td>100</td><td>125</td><td></td></tr><tr><td>7</td><td>125</td><td>160</td><td>200</td><td>250</td><td></td></tr></table>	Size	Delivery					3	3.5	5	6.3	8	10	4	13	16	20	25	32	5	32	40	50	64		6	64	80	100	125		7	125	160	200	250	
Size	Delivery																																								
3	3.5	5	6.3	8	10																																				
4	13	16	20	25	32																																				
5	32	40	50	64																																					
6	64	80	100	125																																					
7	125	160	200	250																																					
					Size 3 4 5 6 7																																				
					Type																																				

Multi-flow Pumps

Pump Combinations

Pump combinations in order of type and size



¹⁾ Following an IPK pump it is not possible to fit a pump of the series IPV, IPC or IPH.

Combinations of IPV pumps

- IPV pumps of identical or different sizes can be combined in multiflow pumps.
- All sizes of the relevant pump volume are available as two- or three-flow pumps; four-flow pumps must be designed by Voith Turbo H + L Hydraulic.
- The pumps are arranged in increasing order according to frame size and delivery.

Selection

1. Determine pressure ranges and define the appropriate pump serie(s).
2. Determine pump volume and select the appropriate size(s).
3. Define sequence of the pumps.
4. Check the torques.
5. Determine rotation and suction.
6. Specify mounting flange and shaft end.

Combinations of IPV/IP...-pumps

- It is possible to combine IPV pumps with other Voith Turbo H + L Hydraulic pump series (e.g. medium-pressure pumps IPC or low-pressure pumps IPN).
- The pumps are arranged by types and sizes as shown in the illustration above.
- If identical types or identical sizes follow each other, the pump with the higher pump flow is placed closer to the drive.

Mounting, assembly

- Multi-flow pumps are generally mounted to the drive by means of a flange. All information about the flange design and shaft end is found in the catalog of the relevant pump series.
- For more information, for example about definition of the adapter housings, refer to brochure G 1714 (Voith multi-flow pump).

Designs

Rotation and suction	Mounting flange		Shaft end
clockwise (cw)  counterclockwise (ccw) 			
	2	7	
	1	6	
	2	7	
	1	6	
	3	8	
	3	8	
Special design	4	9	Special design

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