

ITH Series

Internal gear pump with radial and axial seal clearance compensation

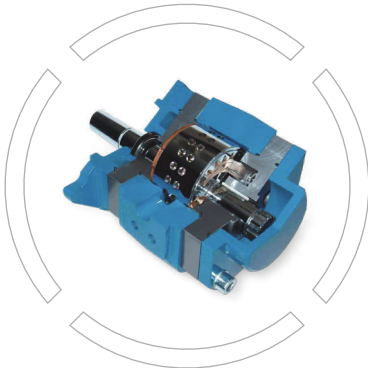
Displacement:

2: 8, 11, 13, 16, 20

3: 25, 32, 40, 50, 64

6: 80, 100, 125, 145, 160

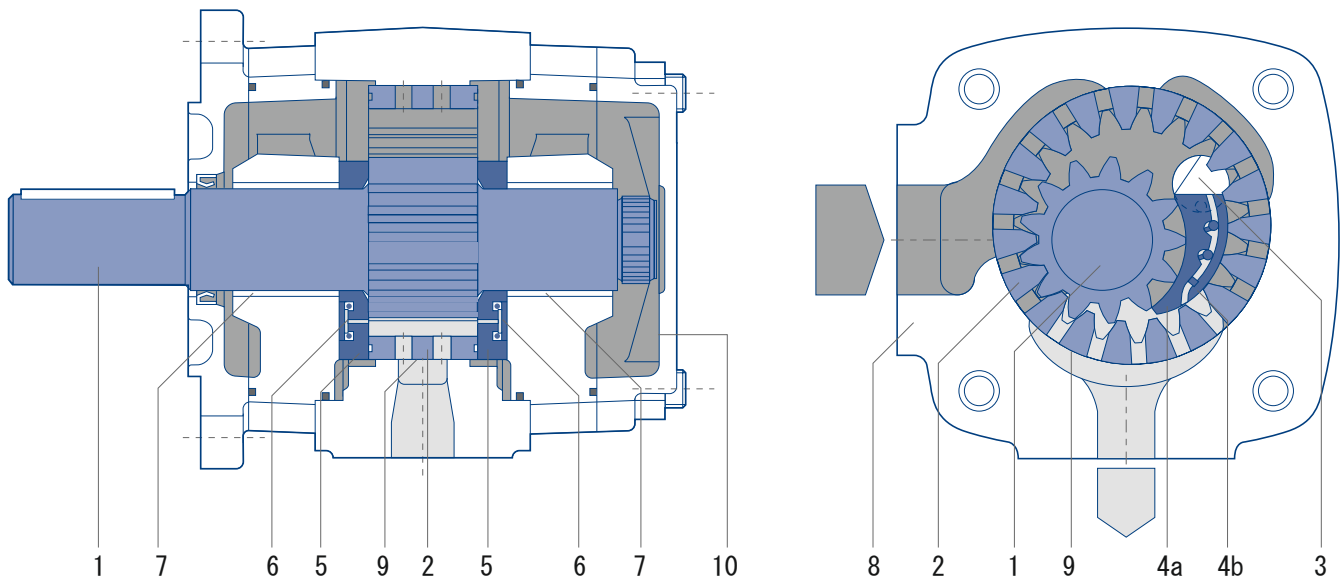
Maximum pressure up to 345 Bar



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Design and Functionality



- 1. Pinion shaft
- 2. Internal gear
- 3. Crescent block positioning pin
- 4a. Crescent block body
- 4b. Crescent block seal
- 5. Axial support disc

- 6 Axial pressure zone
- 7 sliding bearings
- 8 pump housing
- 9 hydrostatic bearings
- 10 rear end cover

Oil suction chamber
 Pressure chamber

Function

When the gear pair in the pump rotates, it sucks pressure fluid (usually hydraulic oil) into the small teeth between the wheel and the internal gear. The two gears mesh smoothly to ensure excellent self-priming ability. The gear cavity in the radial direction is sealed by meshing teeth and crescent blocks. Axial upward, using axial support

The support plate forms an almost gap-free seal forming the pressure chamber. This design minimizes Volume loss is reduced, thereby improving efficiency. When the gear rotates, the tooth head enters the gear tooth. The gap between them discharges the pressure oil.



Technical data

Design	Internal gear pump with radial and axial seal clearance compensation
Type	ITH
Installation type	SAE bore flange; ISO 3019/1
Line installation	SAE Suction and Pressure Flange J 518 C Code 61
Turn around	Rotate right
Installation location	Arbitrary
Shaft load	For details on radial and axial drive shaft loads please contact Your local Mahos Turbo H + L Hydraulic representative
Input pressure	0.8...3 bar absolute pressure (0.6 bar for short start-up)
Pressure fluid	HLP mineral oil DIN 51524, part 2 or 3
Pressure fluid viscosity range	10...300 square millimeters per second (cSt) up to $n=1\,800$ revolutions per minute 10...100 mm ² per second (cSt) up to $n_{\max}$
Allowable starting viscosity	Maximum value is 2 000 square millimeters per second (cSt)
Required pressure fluid purity per NAS 1638	-20...+80 degrees Celsius
Filter	Class 19 / 17 / 14 (ISO 4406), Class 8 (NAS 1638)
Permissible ambient temperature	Filtration ratio, minimum $\beta_{20} \geq 75$, recommended $\beta_{10} \geq 100$ (longer life)
Permissible ambient temperature	-20...+ 60 degrees Celsius

Pump Flow : $Q = V_{g\ th} \cdot n \cdot \eta_v \cdot 10^{-3}$ [L/min]

Power: $P = \frac{Q \cdot \Delta p}{600 \cdot \eta_g}$ [kilowatt]

$V_{g\ th}$: pump volume per revolution [cubic centimeters]

n : speed [revolutions per minute]

η_v : volumetric efficiency

η_g : overall efficiency

Δp : differential pressure [bar]



Specifications

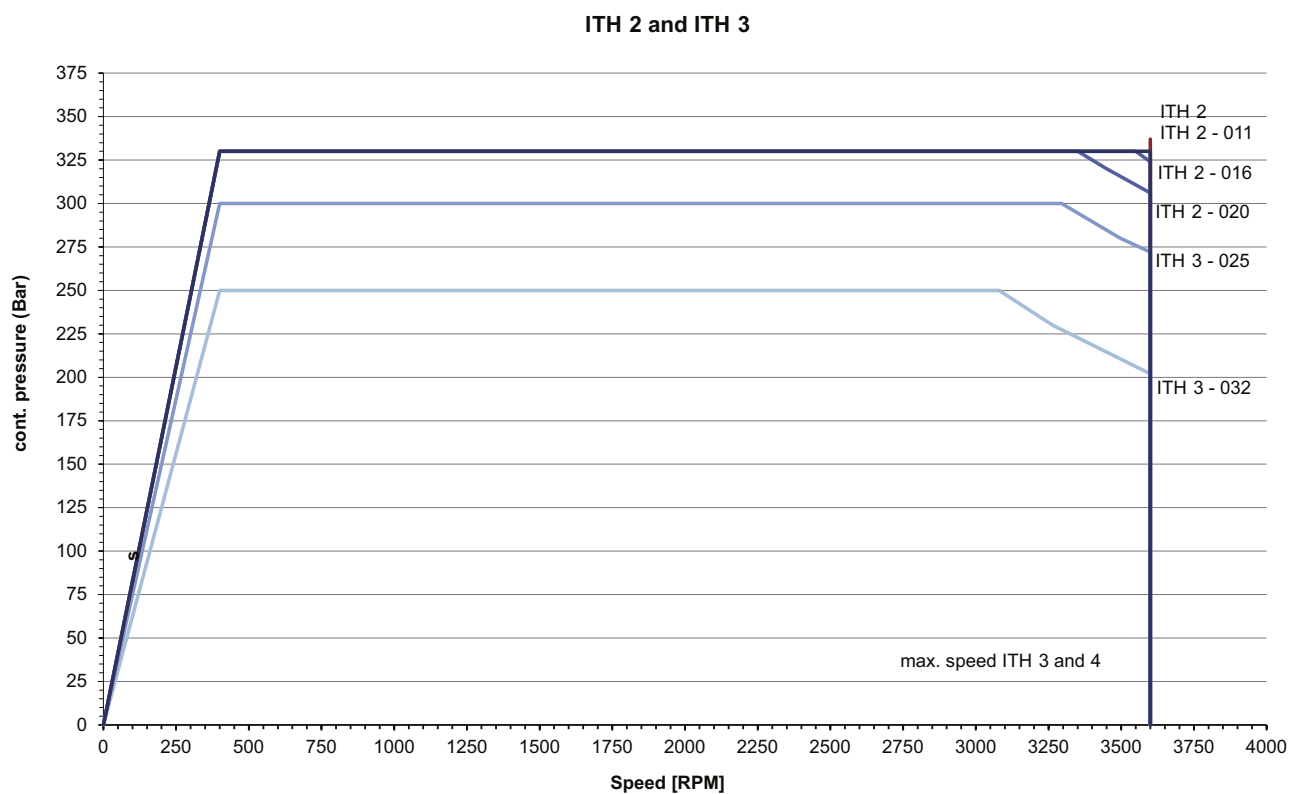
Type, Size - Displacement	Displacement cc/rev.	Speed		Max. Flow		Pressure		Moment of inertia
		Minimum rpm	Maximum rpm	1500 rpm L/min	Maximum L/min	Cont. Pressure Bar	Maximum Pressure Bar	kg ² cm
ITH 2 - 008 - 101	8.2	400	3600	12.3	29.5	330	345	0.58
ITH 2 - 011 - 101	10.2	400	3600	15.3	36.7	330	345	0.70
ITH 2 - 013 - 101	13.3	400	3600	19.9	47.9	330	345	2.25
ITH 2 - 016 - 101	15.8	400	3600	23.7	56.9	330	345	2.64
ITH 2 - 020 - 101	20.7	400	3600	31.0	74.5	330	345	3.29
ITH 3 - 025 - 101	25.4	400	3600	38.1	91.4	300	330	3.70
ITH 3 - 032 - 101	32.6	400	3600	48.9	117.4	280	315	4.44
ITH 3 - 040 - 101	41.0	400	3000	61.5	123.0	280	315	10.20
ITH 3 - 050 - 101	50.3	400	3000	75.4	150.9	280	315	11.60
ITH 3 - 064 - 101	64.9	400	3000	97.3	194.7	250	280	14.40
ITH 6 - 080 - 101	80.7	400	2600	121.0	209.8	280	315	30.90
ITH 6 - 100 - 101	101.3	400	2600	151.9	263.4	250	300	36.10
ITH 6 - 125 - 101	126.2	400	2600	189.3	328.1	250	300	43.70
ITH 6 - 145 - 101	145.8	400	2500	228.6	350.2	210	250	84.05
ITH 6 - 160 - 101	160.8	400	2500	241.5	402.0	210	250	102.60

The above values apply to:
Pumping mineral oil with a viscosity of 20...40 mm²/s
Input pressure absolute value 0.8...3.0 bar

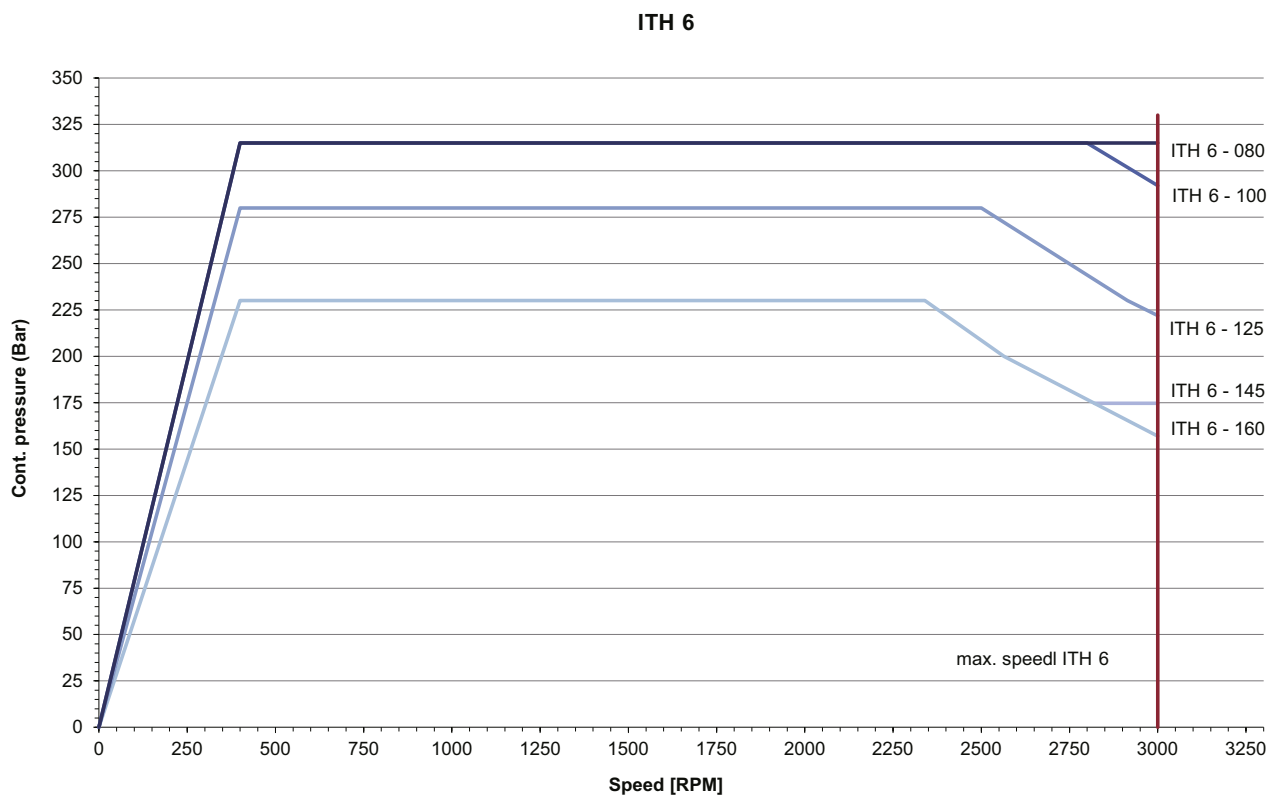
Notice:
Peak pressure 15% of total operating time, maximum cycle time 1 minute.
Please inquire yourself for peak pressure at non-standard speeds.
Taking into account manufacturing tolerances, the volume of the pump may be reduced by up to 1.5 %.
Maximum speed depends on pressure.
Speed range 0-400 rpm depending on pressure. Please check on the following page
Find schematic data.



Schematic ITH 2, ITH 3 - continuous pressure dependent on speed



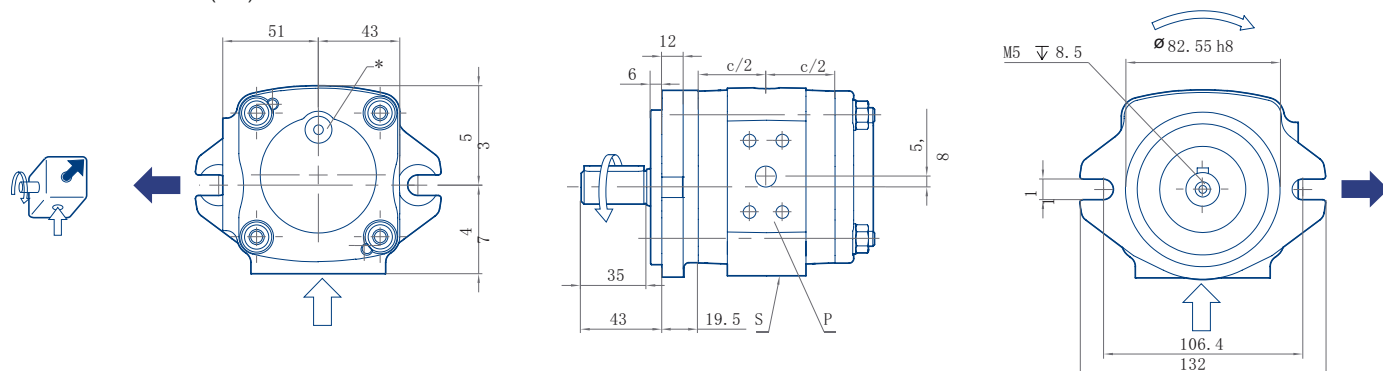
Schematic ITH 6 - Continuous Pressure Dependent on Speed



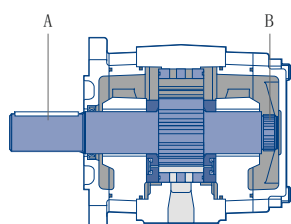
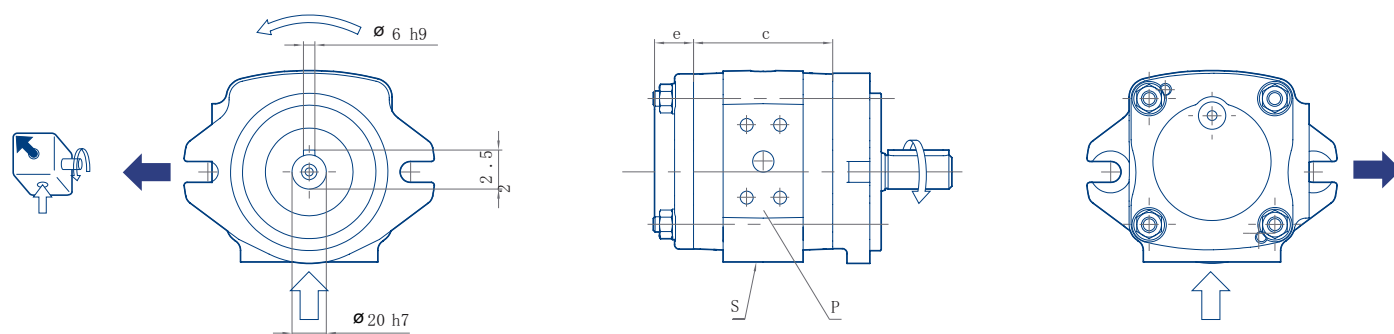


ITH Size 2, Rotation and Size

Rotate clockwise (cw)

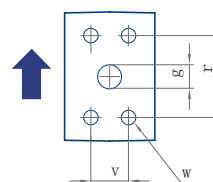


Rotate counter-clockwise (ccw)

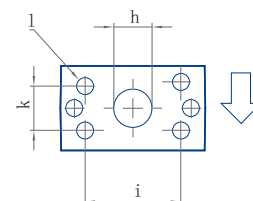


Allowable input torque:
Input shaft A: 160 Nm
Countershaft B: 80 Nm

Pressure port (P)



Oil suction port (S)



Dimensions and weight

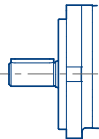
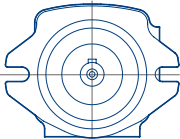
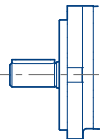
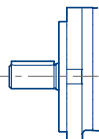
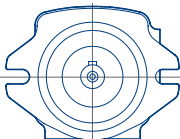
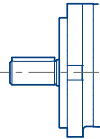
SAE flange number

Type / Displacement	c	e	g	h	i	k	l	r	v	w	weight	SAE flange number	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Thread	[mm]	[mm]	Thread	[kilogram]	↑	↓
ITH 2-008-101	66	20.5	9	19	47.6	22.2	M10x15	38.1	17.5	M8x15	4.4	10	10
ITH 2-011-101	70	20.5	13	20	52.4	26.2	M10x15	38.1	17.5	M8x15	4.6	10	10
ITH 2-013-101	73	20.5	13	20	52.4	26.2	M10x15	38.1	17.5	M8x15	4.9	10	11
ITH 2-016-101	77.5	20.5	13	20	52.4	26.2	M10x15	38.1	17.5	M8x15	5.2	10	11
ITH 2-020-101	82.5	20.5	13	26	52.4	26.2	M10x15	38.1	17.5	M8x15	5.6	10	12

* Ensure that the M10×1 plug screw (hexagonal hole SW5) is tightened during pump operation and its tightening torque remains 10 Nm.
Depending on the position of the pump, filling can be carried out before commissioning.



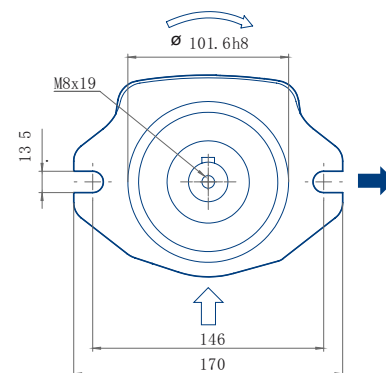
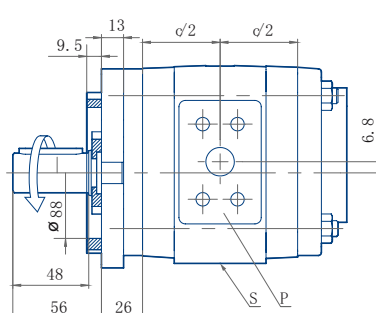
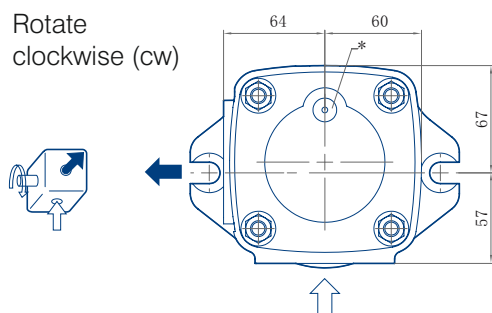
ITH size 2, design and dimensions

Rotation, Suction port	Mounting Flange	Shaft End
Standard		
Clockwise rotation, Suction port connection	SAE - 2 hole flange	Flat key shaft with keyway connection
 1	  0	 1
Variants		
Counter-Clockwise rotation, Suction port connection	SAE - 2 hole flange	Flat key shaft with keyway connection
 6	  0	 1

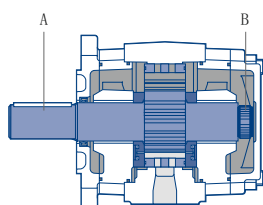
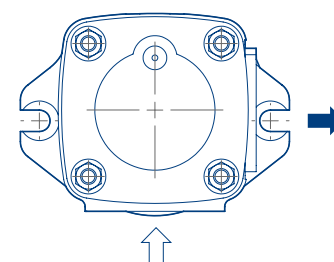
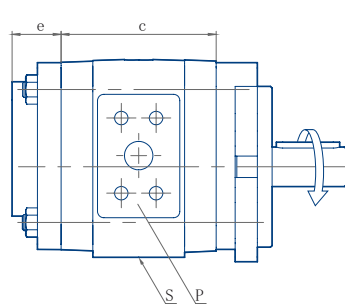
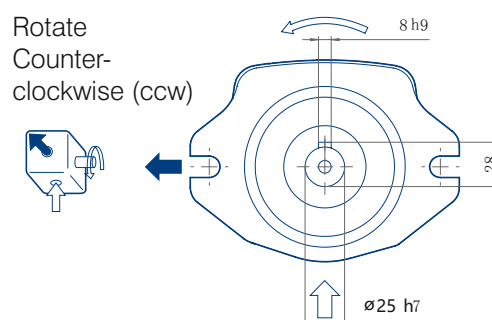


ITH size 3, rotation and size

Rotate
clockwise (cw)

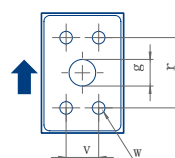


Rotate
Counter-
clockwise (ccw)

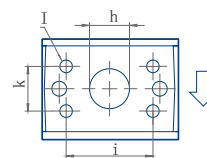


Allowable input torque:
Input shaft A: 335 Nm
Countershaft B: 190 Nm

Pressure port (P)



Oil suction port (S)



Dimensions and weight

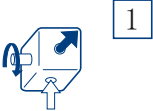
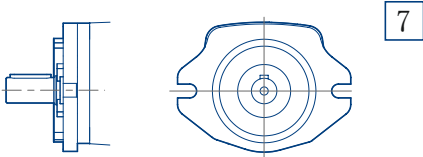
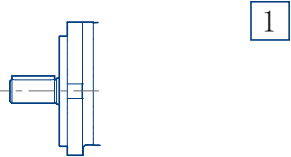
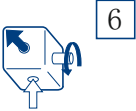
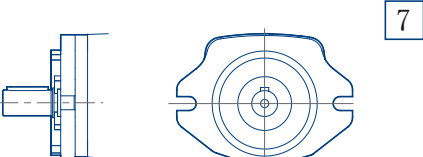
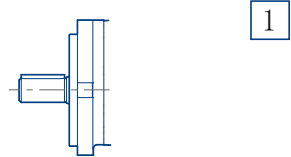
SAE flange number

Type / Displacement	c	e	g	h	i	k	l	r	v	w	weight	SAE flange number	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Thread	[mm]	[mm]	Thread	[kilogram]	↑	↓
ITH 3-025-101	88.5	31	21	33	58.7	30.2	M10x18	52.4	26.2	M10X18	14.3	10	12
ITH 3-032-101	92.5	31	21	33	58.7	30.2	M10x18	52.4	26.2	M10X18	15.8	10	12
ITH 3-040-101	98	31	21	33	58.7	30.2	M10x18	52.4	26.2	M10X18	16.7	11	13
ITH 3-050-101	104	31	21	33	58.7	30.2	M10x18	52.4	26.2	M10X18	17.8	11	13
ITH 3-064-101	113	31	21	33	58.7	30.2	M10x18	52.4	26.2	M10X18	19.5	11	13

* Ensure that the M10×1 plug screw (hexagonal hole SW5) is tightened during pump operation and its tightening torque remains 10 Nm.
Depending on the position of the pump, filling can be carried out before commissioning.

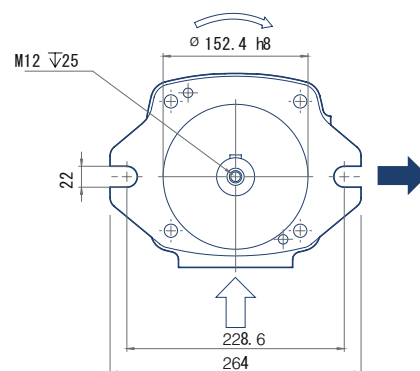
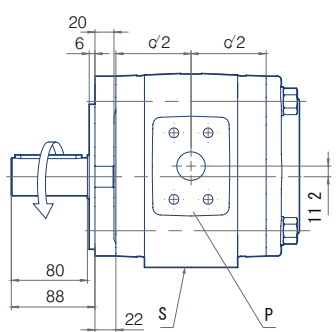
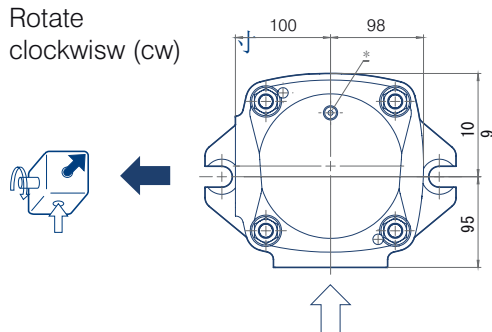


ITH size 3, design and dimensions

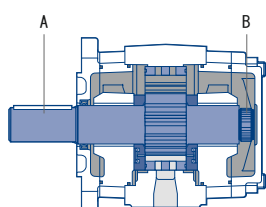
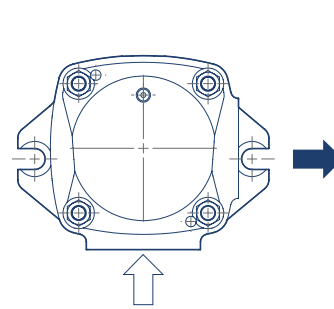
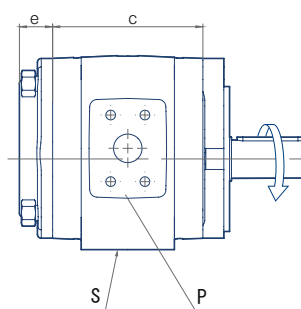
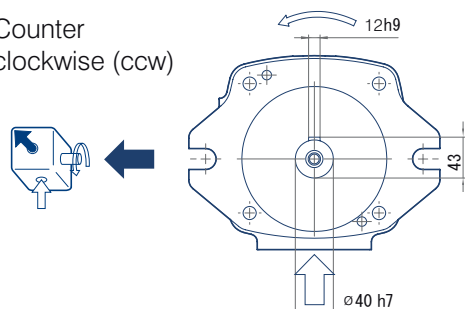
Rotation, Suction port	Mounting Flange	Shaft End
Standard		
Clockwise rotation, Suction port connection	SAE - 2 hole flange	Flat key shaft with keyway connection
		
Variants		
Counter-Clockwise rotation, Suction port connection	SAE - 2 hole flange	Flat key shaft with keyway connection
		

ITH size 6, rotation and size

Rotate
clockwisw (cw)



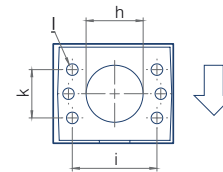
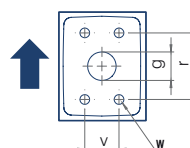
Counter
clockwise (ccw)



Allowable input torque:
Input shaft: A 1050 Nm
Secondary shaft: B 780 Nm rpm

Pressure port (P)

Oil suction port (S)



Dimensions and weight

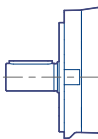
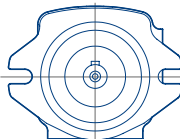
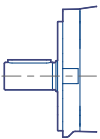
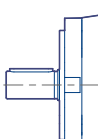
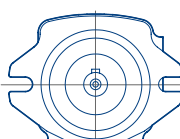
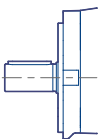
SAE flange number

Type / Displacement	c	e	g	h	i	k	l	r	v	w	weight	SAE flange number	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Thread	[mm]	[mm]	Thread	[kilogram]	↑	↓
IPH 6-080-101	140	40	38	64	89	50.8	M12x20	70	36	M12x20	43.6	12	30
IPH 6-100-101	148	35	38	64	89	50.8	M12x20	70	36	M12x20	45.7	14	15
IPH 6-125-101	158	35	38	64	89	50.8	M12x20	70	36	M12x20	48.1	14	15
PH 6-145-101	170	40	38	76	106.4	61.8	M16x25	70	36	M12x20	50.2	14	15
IPH 6-160-101	180	45	38	76	106.4	61.8	M16x25	70	36	M12x20	52	14	15

* Ensure that the M10×1 plug screw (hexagonal hole SW5) is tightened during pump operation and its tightening torque remains 10 Nm.
Depending on the position of the pump, filling can be carried out before commissioning.



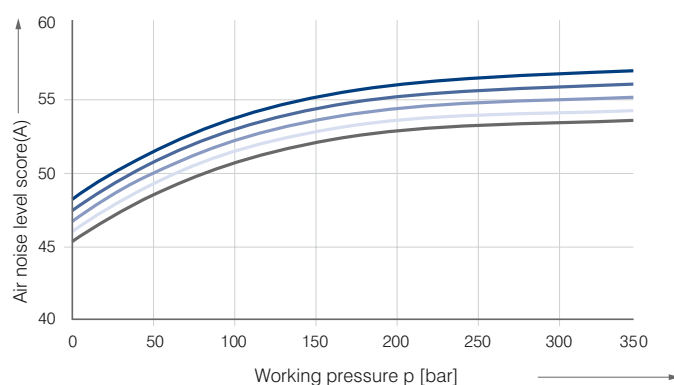
ITH size 6, design and dimensions

Rotation, Suction port	Mounting Flange	Shaft End
Standard		
Clockwise rotation, Suction port connection  1	SAE - 2 hole flange   0	Flat key shaft with keyway connection  1
Variants		
Counter-Clockwise rotation, Suction port connection  6	SAE - 2 hole flange   0	Flat key shaft with keyway connection  1



Measured values – air noise level, efficiency

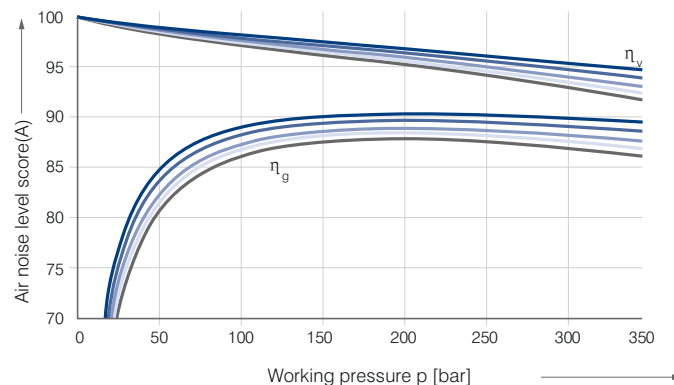
IPH 2 - Airborne noise level (measured at 1 meter axial position)



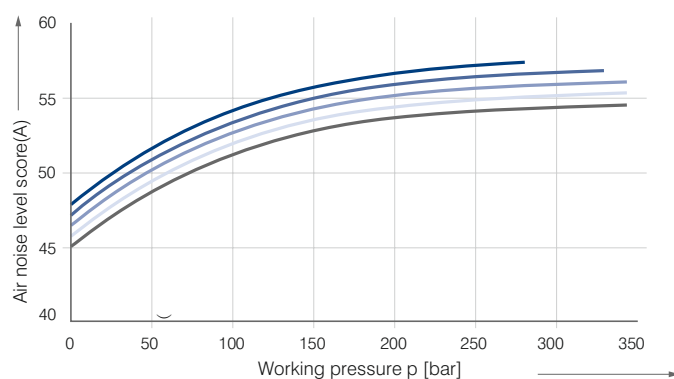
Characteristic curve:

IPH 2-020 IPH 2-016 IPH 2-013 IPH 2-011 IPH 2-008

IPH2-nv & ng efficiency



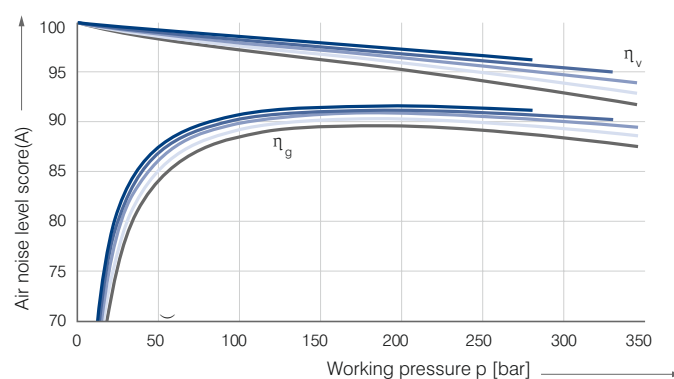
IPH 3 - Airborne noise level (measured at 1 meter axial position)



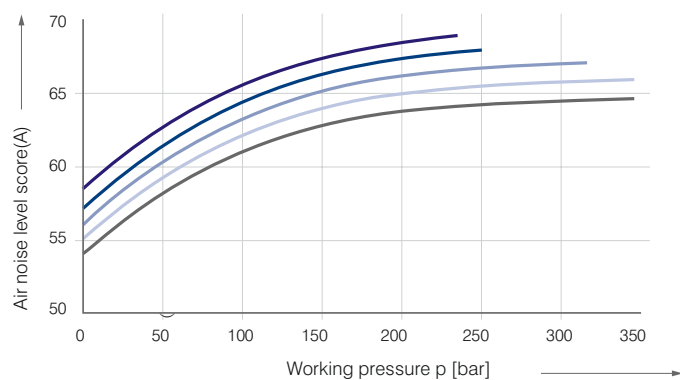
Characteristic curve:

IPH 3-064 IPH 3-050 IPH 3-040 IPH 3-032 IPH 3-025

IPH3-nv & ng efficiency



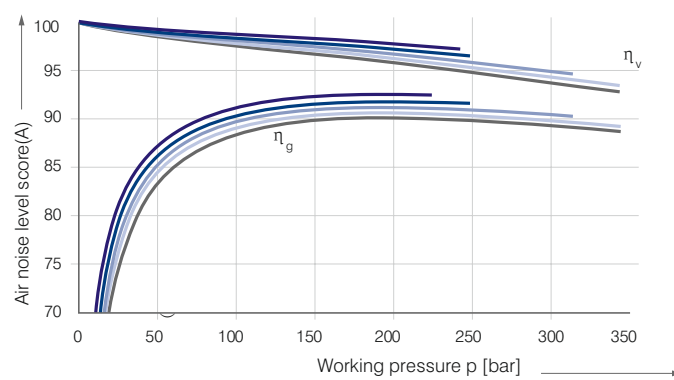
IPH 6 - Airborne noise level (measured at 1 meter axial position)



Characteristic curve:

IPH 6-160 IPH 6-145 IPH 6-125 IPH 6-100 IPH 6-080

IPH6-nv & ng efficiency



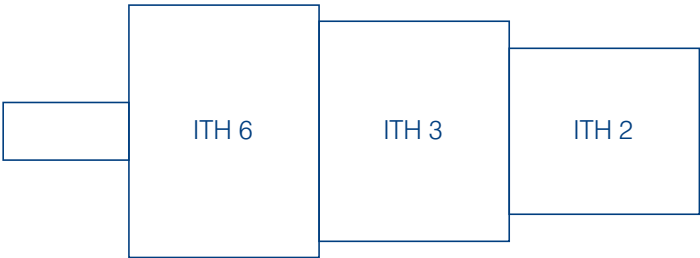


Ordering Code

Type	= ITH				
Size	= 2/3/6				
Displacement: 2: 8, 11, 13, 16, 20 3: 25, 32, 40, 50, 64 6: 80, 100, 125, 145, 160					
Rotation, suction port Clockwise rotation, radial suction port radial Counterclockwise rotation, radial suction port radial Clockwise rotation, special design Counterclockwise rotation, special design				= 1 = 6 = 4 = 9	
Mounting flange SAE double hole SAE four holes SAE double hole, variant					= 0 = 1 = 7
shaft end Flat key shaft with keyway					= 1



Multi-flow pumps, pump units, pump units by type and size



Pump unit

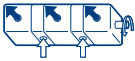
IPH pumps of the same size or different sizes can be combined into manifold pumps.
All sizes of relevant pump displacement are available with duplex or triple pumps; quadruple pumps must
Designed by Mahos Turbo H + L Hydraulic.
Pumps are arranged in increasing order of frame size and displacement.

Choose

- 1. Determine the pressure range and then select the appropriate pump series.
- 2. Determine the pump volume and then select the appropriate size.
- 3. Determine the sequence of pumps.
- 4. Check the torque.
- 5. Determine the rotation and suction ports.
- 6.Specify installation

Installation and assembly

Multi-flow pumps are usually flange mounted to the transmission.

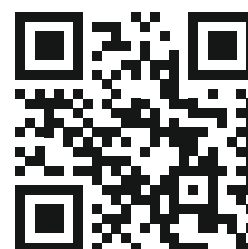
Rotation and suction	Mounting flange		Shaft end
clockwise rotation (cw)  Counter-clockwise rotation (ccw) 			
 27 			
 16 	0	1	1
 27 	4		
 16 	7	For design and dimensions, see the relevant pump series Table of contents.	
Special design 49 Special design	For design and dimensions see related pumps Table of contents for the series.		
	0 SAE double hole flange		
	7 SAE double hole flange (variant)		
	1 SAE four hole flange		

The specified data is for product description purposes only and may not be deemed to be guaranteed unless expressly confirmed in the contract.



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