

IPH Series IP Pump

.21 to 7.68 in³/rev
4350 psi

This is a new design series in which all pump types are installation compatible with previous designs. Note, however, that there is no longer compatibility for some of the seal components between the IPH-3 and IPH-4 sizes and design numbers 10 and 12.

Features

A patented axial and radial pressure loading system provides high efficiency and generates pressures up to 4350 psi.

Outstanding durability and very long life. A modified involute short-tooth gear enables internal gearing for greatly reduced pulsation and noise, and

exceptionally quiet operation. A simple structure makes maintenance and inspection easier.

Specifications

| Model No. | Capacity cm ³ /rev (in ³) | Rated Pressure psi | Maximum Operating Pressure psi | Minimum Revolution Speed min ⁻¹ | Maximum Revolution Speed min ⁻¹ | Weight lbs | |
|----------------------|---|-----------------------|--------------------------------------|--|--|------------|--------|
| | | | | | | Type A | Type B |
| IPH-2A(B)- 3.5-11 | 5 | 3625 | 4350 | 600 | 2000 | 9.7 | 5.2 |
| | 6.5 | | | | | 9.9 | 5.5 |
| | 8 | | | | | 10.1 | 5.7 |
| | | | | | | 10.5 | 6.1 |
| IPH-3A(B) - 10-20 | 13 | 3625 | 4350 | 600 | 2000 | 23.1 | 10.5 |
| | 16 | | | | | 23.5 | 11.0 |
| | | | | | | 24.2 | 11.6 |
| IPH-4A(B) - 20-20 | 25 | 3625 | 4350 | 500 | 2000 | 33.5 | 20.9 |
| | 32 | | | | | 34.6 | 22.0 |
| | | | | | | 35.7 | 23.1 |
| IPH-5A(B)- 40-21(11) | 50 | 3625 | 4350 | 400 | 2000 | 70.5 | 41.8 |
| | 64 | | | | | 72.7 | 44.1 |
| | | | | | | 74.9 | 46.3 |
| IPH-6A(B)- 80-21(11) | 100 | 3625 | 4350 | 300 | 2000 | 136.7 | 85.9 |
| | 125 | | | | | 141.1 | 90.4 |
| | | | | | | 145.5 | 94.8 |

Note:

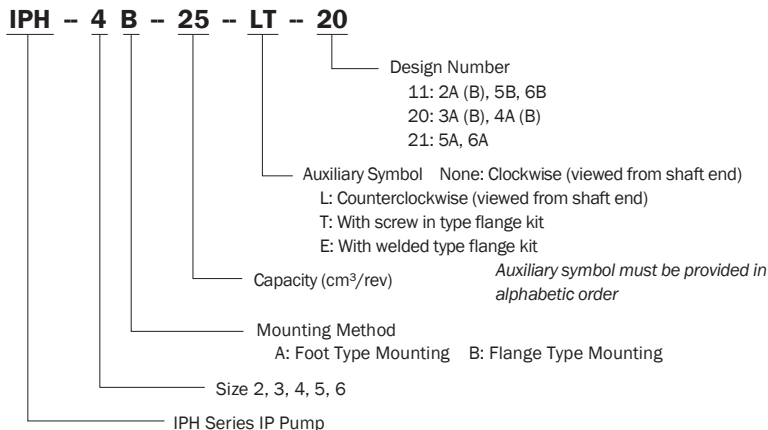
- Suction Pressure: 3.6 psi.
- Maximum working pressure shown here is the pressure limit when there are frequent pressure changes.
- Avoid installation with the suction port towards the bottom of the pump.
- Specify using the model number format shown below when pipe flanges are required.

- Handling
- For the hydraulic operating fluid, use an R&O type and wear-resistant type of ISO VG32 to 68 or equivalent (viscosity index of at least 90). Use hydraulic operating fluid that provides kinematic viscosity during operation in the range of 20 to 150 centistokes.
 - The operating temperature range is 40 to 149 °F. When the oil temperature at

- startup is 40 °F or less, perform a warm-up operation at low pressure until the oil temperature reaches 40 °F. Use the pump in an area where the temperature is within the range of 32 to 140 °F.
- Suction pressure 3.6 psi, and the suction port flow rate should be to greater than 5 ft/sec.
- Avoid pulley, gear, and other drive systems that impart a radial or thrust load on the end of the pump shaft.
- Mount the hydraulic pump so its pump shaft is oriented horizontally. Provide a suction strainer with a filtering grade of about 100µm (150 mesh). For the return line to the tank, use a 10µm line filter.
- Manage hydraulic operating fluid so contamination is maintained at class NAS10 or lower. Take care to avoid contamination with water and other foreign matter, and watch out for discoloration. Whitish fluid indicates that air has contaminated the fluid, and brownish fluid indicates the fluid is dirty.

(continued on following page)

Understanding Model Numbers



- 7 Operate within the RPM range in the catalog for the minimum RPM of the pump. Unload the pump's load pressure to operate at variable speeds. Condition of inflow piping must produce as little inflow load pressure as possible to minimize effect of cavitation.
- 8 When using water- or glycol-based hydraulic operating fluid, refer to page O-3 for details on applicable models
- 9 At startup, repeat the inching operation (start-stop) to bleed air from the pump and pipes.
- 10 Equip an air bleed valve in circuits where it is difficult to bleed air before startup. See page C-13 for more information.
- 11 To ensure proper lubrication of the pump's rubbing surfaces, supply oil to the interior of the pump before starting operation.
- 12 When centering the pump shaft, eccentricity with the motor shaft should be no greater than 0.001 in. Use a pump mounting base of sufficient rigidity. The angle error should be no greater than 1°.
- 13 Contact your agent for information about engines.

Discharge Rate and Required Input for Each Pump Speed

| Speed | Pressure psi | | Discharge Rate gpm | | | | | Required Input hp | | | | | | |
|------------------------|-----------------------------|--------|--------------------|------|------|------|------|-------------------|------|------|-------|------|-------|------|
| | Model No. | | 100 | 1015 | 2030 | 3045 | 3625 | 4350 | 100 | 1015 | 2030 | 3045 | 3625 | 4350 |
| 1200 min ⁻¹ | IPH-2A(B)- 5 6.5 8 | 3.5-11 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | .14 | .68 | 1.6 | 2.4 | 2.8 | 3.5 |
| | | 13 | 1.6 | 1.6 | 1.5 | 1.5 | 1.5 | 1.4 | .20 | 1.2 | 2.3 | 3.5 | 4.1 | 5.0 |
| | | 20 | 2.0 | 2.0 | 1.9 | 1.9 | 1.8 | 1.8 | .25 | 1.5 | 2.9 | 4.3 | 5.1 | 6.2 |
| | | 25 | 2.5 | 2.5 | 2.4 | 2.4 | 2.3 | 2.3 | .30 | 1.9 | 3.6 | 5.3 | 6.3 | 7.6 |
| | IPH-3A(B)- 13 16 | 10-20 | 3.2 | 3.1 | 3.0 | 3.0 | 2.9 | 2.9 | .40 | 2.4 | 4.3 | 6.6 | 7.9 | 9.6 |
| 25 | | 4.2 | 4.2 | 4.0 | 3.9 | 3.9 | 3.8 | .52 | 3.1 | 5.7 | 8.6 | 10.1 | 12.4 | |
| 32 | | 4.9 | 4.8 | 4.8 | 4.7 | 4.6 | 4.5 | .60 | 3.7 | 6.8 | 10.2 | 12 | 14.8 | |
| 20-20 | | 6.5 | 6.7 | 6.28 | 6.1 | 6.1 | 6.0 | .83 | 5.0 | 8.9 | 13.2 | 15.8 | 19.0 | |
| IPH-4A(B)- 25 32 | 25 | 8.1 | 8.0 | 7.8 | 7.7 | 7.6 | 7.5 | 1.0 | 6.1 | 11.0 | 16.4 | 19.7 | 23.4 | |
| | 32 | 10.2 | 10.0 | 9.8 | 9.7 | 9.5 | 9.4 | 1.2 | 7.5 | 13.9 | 20.7 | 24.6 | 29.5 | |
| | 40-21(11) | 12.9 | 12.6 | 12.4 | 12.1 | 12.0 | 11.8 | 1.6 | 9.9 | 17.2 | 26.1 | 30.9 | 38.0 | |
| | 50 | 15.9 | 15.6 | 15.4 | 15.1 | 14.9 | 14.7 | 1.9 | 11.9 | 21.7 | 32.1 | 38.3 | 45.9 | |
| IPH-5A(B)- 50 64 | 64 | 20.2 | 19.8 | 19.5 | 19.2 | 19.0 | 18.8 | 2.4 | 15.0 | 27.6 | 40.9 | 48.6 | 58.3 | |
| | 80-21(11) | 25.7 | 25.2 | 24.7 | 24.2 | 24.0 | 23.8 | 3.2 | 19.1 | 35.1 | 51.8 | 61.9 | 75.2 | |
| | 100 | 32.2 | 31.6 | 31.0 | 30.5 | 30.2 | 30.2 | 3.9 | 23.4 | 43.3 | 64.9 | 77.3 | 92.7 | |
| | 125 | 39.8 | 39.2 | 38.5 | 37.8 | 37.4 | 37.0 | 4.8 | 28.8 | 53.7 | 86.5 | 96.0 | 115.1 | |
| 1800 min ⁻¹ | IPH-2A(B)- 5 6.5 8 | 3.5-11 | 1.7 | 1.6 | 1.6 | 1.5 | 1.5 | 1.5 | .22 | 1.5 | 2.7 | 3.9 | 4.6 | 5.5 |
| | | 13 | 2.4 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | .32 | 1.9 | 3.5 | 4.6 | 6.1 | 7.5 |
| | | 20 | 3.0 | 3.0 | 2.9 | 2.9 | 2.8 | 2.8 | .40 | 2.3 | 4.3 | 6.5 | 7.6 | 9.2 |
| | | 25 | 3.8 | 3.8 | 3.7 | 3.6 | 3.5 | 3.5 | .49 | 2.9 | 5.4 | 8.1 | 9.4 | 11.4 |
| | IPH-3A(B)- 13 16 | 10-20 | 4.8 | 4.7 | 4.6 | 4.5 | 4.5 | 4.4 | .65 | 3.8 | 6.7 | 10.0 | 11.9 | 14.4 |
| 25 | | 6.3 | 6.2 | 6.1 | 5.9 | 5.9 | 5.8 | .83 | 4.9 | 8.8 | 12.9 | 15.1 | 18.6 | |
| 32 | | 7.3 | 7.3 | 7.2 | 7.1 | 7.0 | 6.9 | .96 | 5.7 | 10.4 | 15.2 | 18.1 | 22.1 | |
| 20-20 | | 9.8 | 9.6 | 9.5 | 9.3 | 9.2 | 9.1 | 1.3 | 7.5 | 13.4 | 19.9 | 23.6 | 28.4 | |
| IPH-4A(B)- 25 32 | 25 | 12.2 | 12.0 | 11.8 | 11.7 | 11.5 | 11.4 | 1.6 | 9.1 | 16.6 | 24.8 | 29.0 | 35.2 | |
| | 32 | 15.3 | 15.1 | 14.9 | 14.6 | 14.5 | 14.3 | 1.9 | 11.3 | 20.9 | 30.9 | 36.8 | 44.2 | |
| | 40-21(11) | 19.3 | 19.0 | 18.7 | 18.4 | 18.2 | 17.9 | 2.6 | 15.6 | 27.0 | 40.2 | 47.7 | 58.6 | |
| | 50 | 23.9 | 23.5 | 23.2 | 22.8 | 22.6 | 22.4 | 3.1 | 18.9 | 33.0 | 49.4 | 58.7 | 70.5 | |
| IPH-5A(B)- 50 64 | 64 | 30.3 | 29.9 | 29.4 | 29.0 | 28.8 | 28.5 | 3.9 | 23.6 | 42.3 | 62.7 | 74.6 | 89.7 | |
| | 80-21(11) | 38.6 | 37.9 | 37.3 | 36.7 | 36.3 | 35.8 | 5.2 | 30.0 | 53.9 | 79.9 | 95.0 | 115 | |
| | 100 | 46.2 | 47.6 | 46.9 | 46.2 | 45.8 | 45.3 | 6.3 | 37.1 | 67.4 | 99.7 | 118 | 142 | |
| | 125 | 59.8 | 58.9 | 58.1 | 57.3 | 56.8 | 56.1 | 7.4 | 45.3 | 83.4 | 123.7 | 147 | 176 | |

Note: Values in the table are general values at an operating fluid viscosity of 46 centistokes. Use the values when selecting the model for your needs.

Parts for IPH Pump (Standard)

| Single Pump | Seal Kit | Najimi 3 Parts Set* | Radial Piston Kit** | Axial Plate Kit*** |
|-------------------|--------------------------------|---------------------|---------------------|--------------------|
| | Mineral Oil/ Water Glycoloi | Mineral Oil | Mineral Oil | Mineral Oil |
| IPH-2B-***-(L)-11 | IHAS-2S2***-10 | FZD-7004-*** | IHP-2-***-10 | IHQ-2-10 |
| IPH-3B-***-(L)-20 | IHAS-2S30***-20 | FZD-7004-0** | IHP-3-0***-10 | IHQ-3-10 |
| IPH-4B-***-(L)-20 | IHAS-2S40***-30 | FZD-7004-0** | IHP-4-0***-10 | IHQ-4-10 |
| IPH-5B-***-(L)-11 | IHAS-2S50***-10 | FZD-7004-0** | IHP-5-0***-10 | IHQ-5-10 |
| IPH-6B-***-(L)-11 | IHAS-2S6***-10 | FZD-7004-*** | IHP-6-***-10 | IHQ-6-10 |

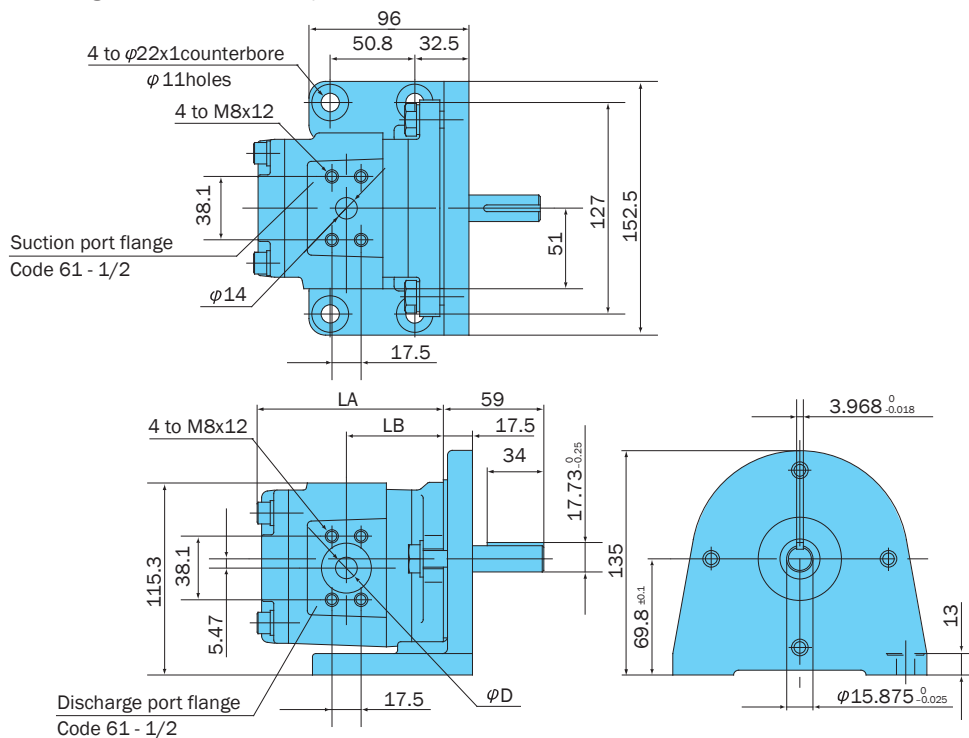
*Najimi set includes: Stopper-pin, axial plate-1, axial plate-2, feeler piece, axial backup ring, O-ring; **Radial Piston Kit includes: Radial piston, radial backup ring, backup ring, O-ring and washer
***Axial Plate Kit includes: Axial plate-1, axial plate-2, axial backup ring and O-ring

| Double Pump | Head (Rear) Side Pump | | Shaft Side Pump | |
|--------------------|-----------------------|-----------------|--------------------|-----------------|
| | Pump Model | Seal Kit | Pump Model | Seal Kit |
| IPH-22B-***-(L)-11 | IPH-2H-***-(L)-11 | IHAS-2H2***-10 | IPH-2S-***-(L)-11 | IHAS-2S2***-10 |
| IPH-23B-***-(L)-11 | IPH-2H-***-(L)-11 | IHAS-2H2***-10 | IPH-3S-***-(L)-11 | IHAS-2S30***-20 |
| IPH-24B-***-(L)-11 | IPH-2H-***-(L)-11 | IHAS-2H2***-10 | IPH-4S-***-H(L)-11 | IHAS-2S40***-30 |
| IPH-25B-***-(L)-11 | IPH-2H-***-(L)-11 | IHAS-2H2***-10 | IPH-5S-***-H(L)-11 | IHAS-2S50***-10 |
| IPH-26B-***-(L)-11 | IPH-2H-***-(L)-11 | IHAS-2H2***-10 | IPH-6S-***-H(L)-11 | IHAS-2S6***-10 |
| IPH-33B-***-(L)-11 | IPH-3H-***-(L)-11 | IHAS-2H30***-20 | IPH-3S-***-(L)-11 | IHAS-2S30***-20 |
| IPH-34B-***-(L)-11 | IPH-3H-***-(L)-11 | IHAS-2H30***-20 | IPH-4S-***-(L)-11 | IHAS-2S40***-30 |
| IPH-35B-***-(L)-11 | IPH-3H-***-(L)-11 | IHAS-2H30***-20 | IPH-5S-***-H(L)-11 | IHAS-2S50***-10 |
| IPH-36B-***-(L)-11 | IPH-3H-***-(L)-11 | IHAS-2H30***-20 | IPH-6S-***-H(L)-11 | IHAS-2S6***-10 |
| IPH-44B-***-(L)-11 | IPH-4H-***-(L)-11 | IHAS-2H40***-30 | IPH-4S-***-(L)-11 | IHAS-2S40***-30 |
| IPH-45B-***-(L)-11 | IPH-4H-***-(L)-11 | IHAS-2H40***-30 | IPH-5S-***-(L)-11 | IHAS-2S50***-10 |
| IPH-46B-***-(L)-11 | IPH-4H-***-(L)-11 | IHAS-2H40***-30 | IPH-6S-***-H(L)-11 | IHAS-2S6***-10 |
| IPH-55B-***-(L)-11 | IPH-5H-***-(L)-11 | IHAS-2H50***-10 | IPH-5S-***-F(L)-11 | IHAS-2S50***-10 |
| IPH-56B-***-(L)-11 | IPH-5H-***-(L)-11 | IHAS-2H50***-10 | IPH-6S-***-F(L)-11 | IHAS-2S6***-10 |
| IPH-66B-***-(L)-11 | IPH-6H-***-(L)-11 | IHAS-2H6***-10 | IPH-6S-***-F(L)-11 | IHAS-2S6***-10 |

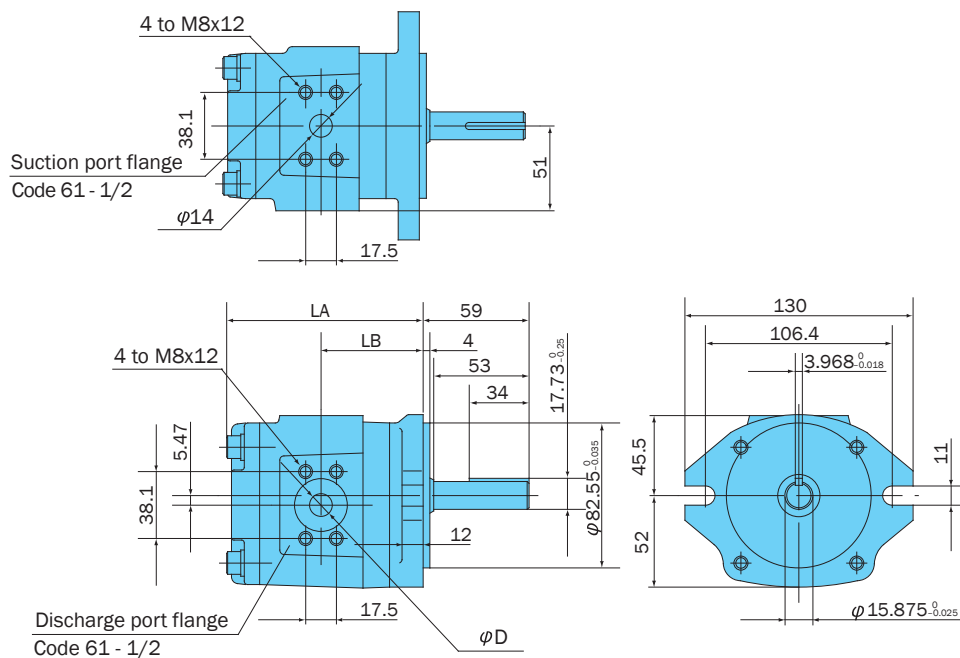
*Regarding Shaft side pump: H, F means the way of the bolt - H: 2-Bolt type, F: 4-Bolt type

Installation Dimension Drawings

IPH-2A-*-11 (Foot Mounting, Clockwise Rotation)



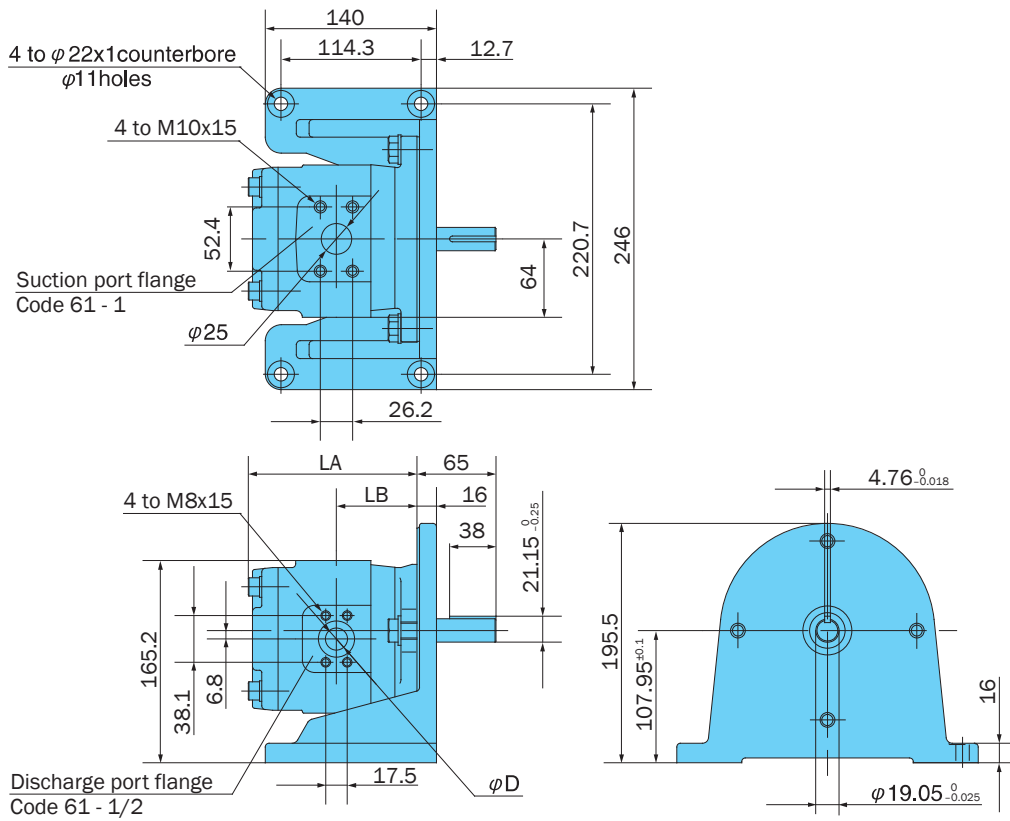
IPH-2B-*-11 (Flange Mounting, Clockwise Rotation) SAE A Mount



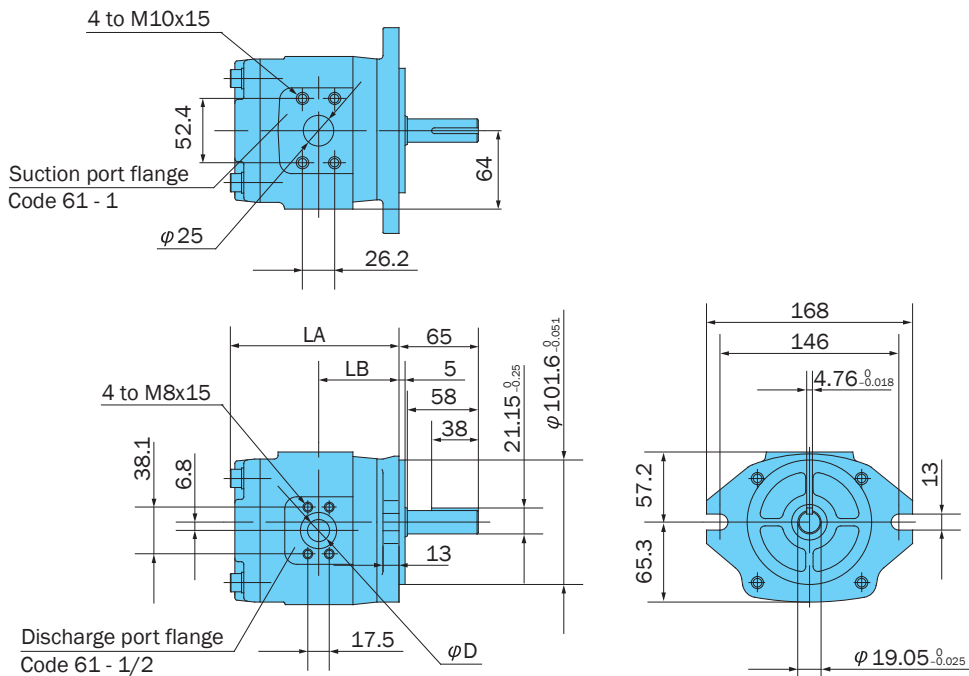
| Model No. | Dimensions (mm) | | |
|-----------------|-----------------|------|-----------------|
| | LA | LB | $\varnothing D$ |
| IPH-2*-3.5-*-11 | 107 | 51.0 | 8.9 |
| IPH-2*-5-*-11 | 112 | 53.5 | 11 |
| IPH-2*-6.5-*-11 | 116 | 55.5 | 12 |
| IPH-2*-8-*-11 | 121 | 58.0 | 13 |

Note: IPH-2A (B)-*-L-11 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the suction port flange is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-3A-*-20 (Foot Mounting, Clockwise Rotation)



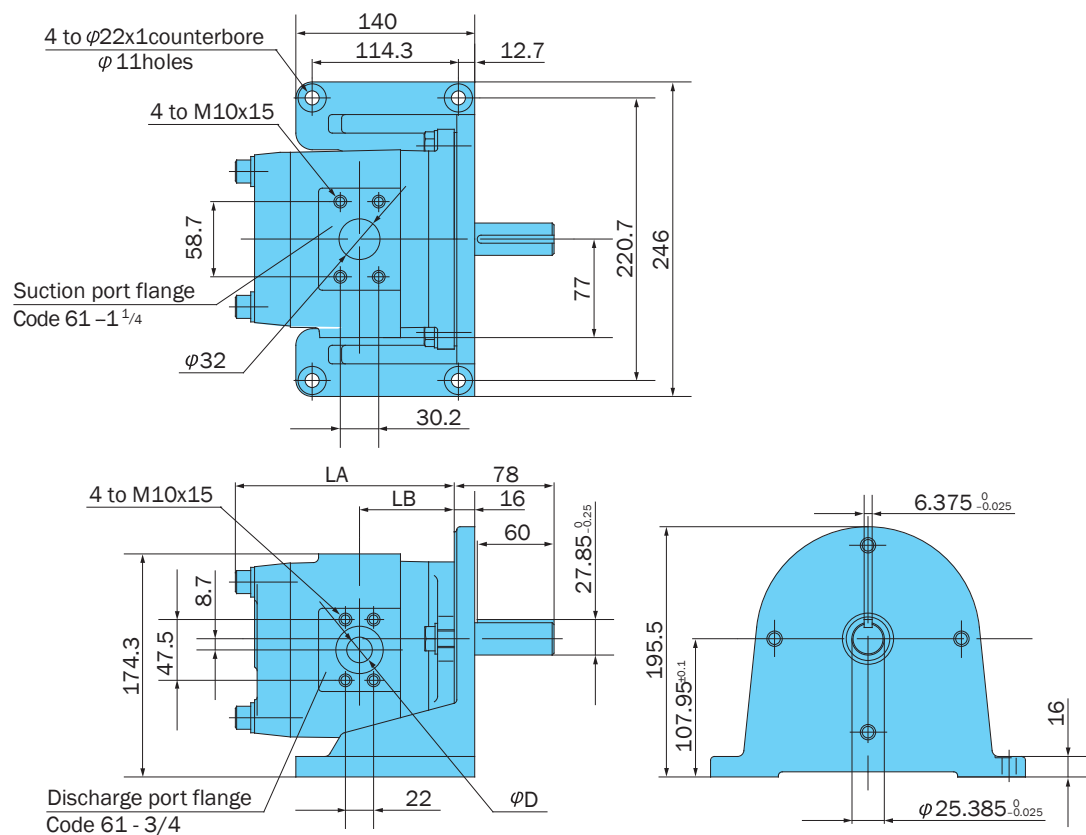
IPH-3B-*-20 (Flange Mounting, Clockwise Rotation) SAE B Mount 3/4 Shaft



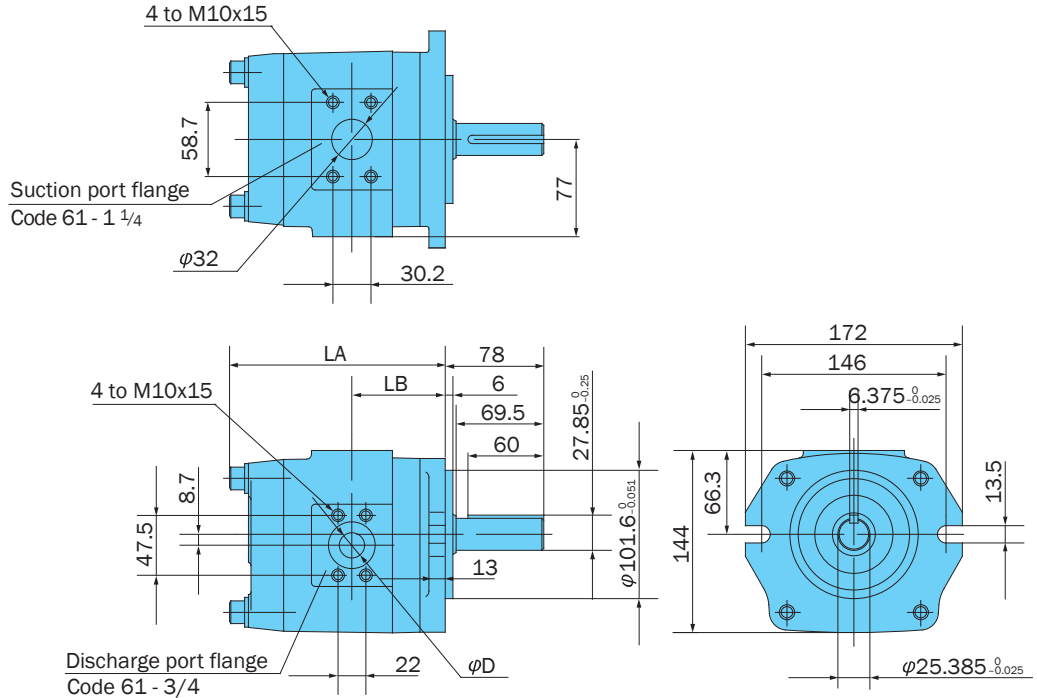
| Model No. | Dimensions (mm) | | |
|----------------|-----------------|------|----------|
| | LA | LB | ϕD |
| IPH-3*-10-*-20 | 128.5 | 60.0 | 14 |
| IPH-3*-13-*-20 | 134.5 | 63.0 | 17 |
| IPH-3*-16-*-20 | 139.5 | 65.5 | 18 |

Note: IPH-3A (B)-*-L-20 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the suction port flange is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-4A-*-20 (Foot Mounting, Clockwise Rotation)



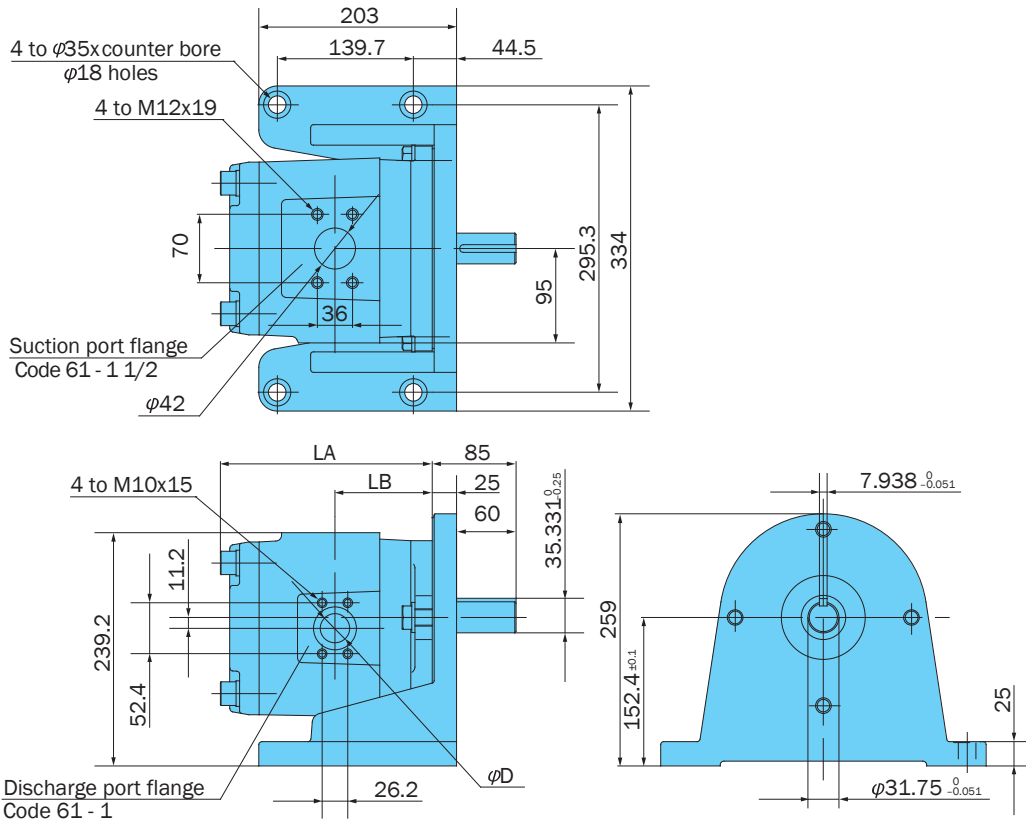
IPH-4B-*-20 (Flange Mounting, Clockwise Rotation) SAE BB Mount



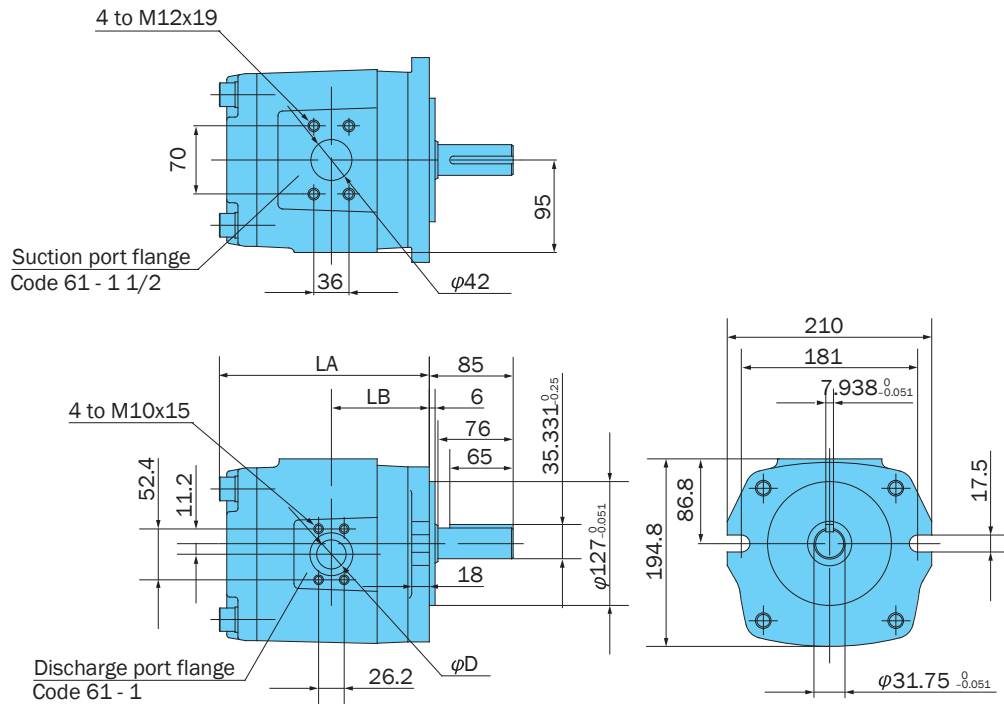
| Model No. | Dimensions (mm) | | |
|----------------|-----------------|----|----------|
| | LA | LB | ϕD |
| IPH-4*-20-*-20 | 164.5 | 71 | 18 |
| IPH-4*-25-*-20 | 170.5 | 74 | 20 |
| IPH-4*-32-*-20 | 178.5 | 78 | 24 |

Note: IPH-4A (B)-*-L-20 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the suction port flange is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-5A-*-21 (Foot Mounting, Clockwise Rotation)



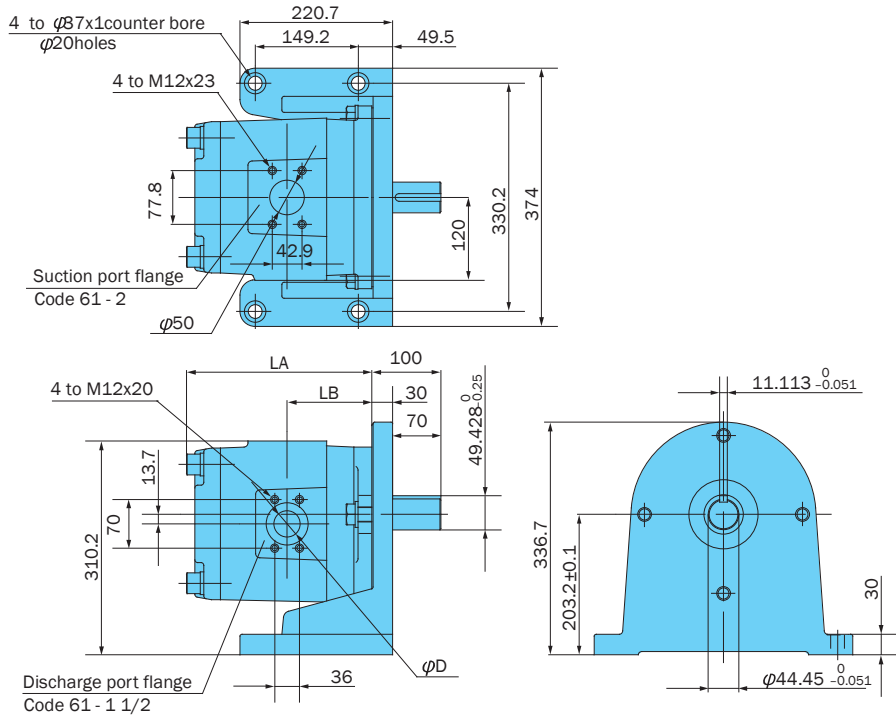
IPH-5B-*-11 (Flange Mounting, Clockwise Rotation) SAE C Mount



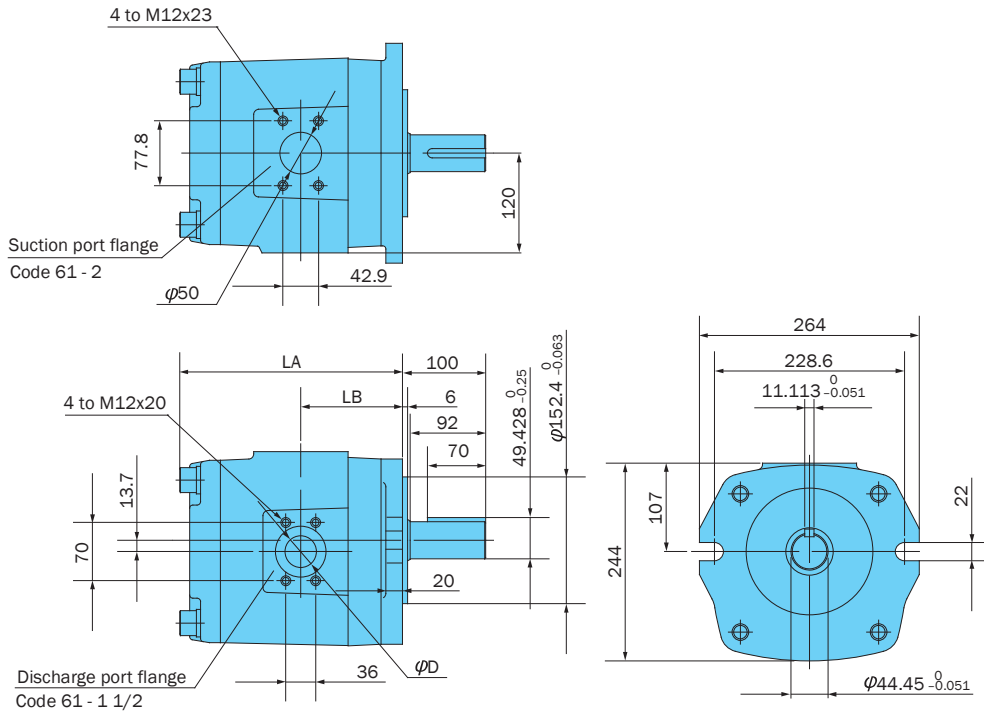
| Model No. | Dimensions (mm) | | |
|---------------------|-----------------|------|----------|
| | LA | LB | ϕD |
| IPH-5*-40-*-21 (11) | 201.5 | 91.0 | 24 |
| IPH-5*-50-*-21 (11) | 208.5 | 94.5 | 26 |
| IPH-5*-64-*-21 (11) | 218.5 | 99.5 | 28 |

Note: IPH-5A (B)-*-L-21 (11) (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the suction port flange is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-6A-*-21 (Foot Mounting, Clockwise Rotation)



IPH-6B-*-11 (Flange Mounting, Clockwise Rotation) SAE D Mount

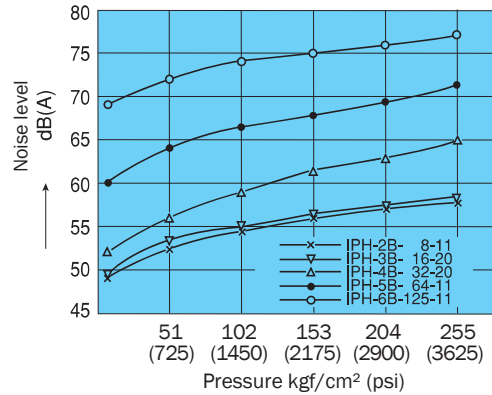
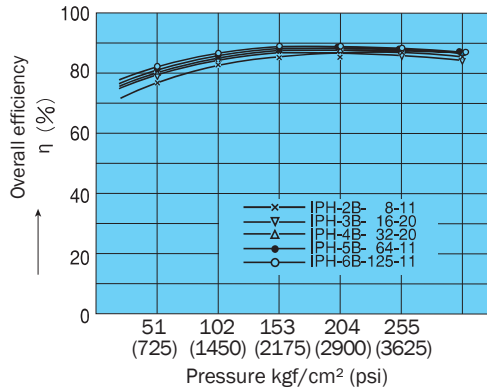
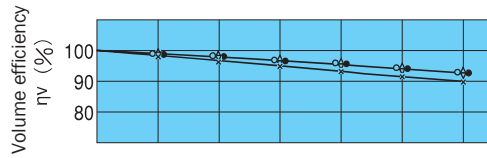


| Model No. | Dimensions (mm) | | |
|----------------------|-----------------|-------|----------|
| | LA | LB | ϕD |
| IPH-6*- 80-*-21 (11) | 241.5 | 111.5 | 32 |
| IPH-6*-100-*-21 (11) | 251.5 | 116.5 | 36 |
| IPH-6*-125-*-21 (11) | 263.5 | 122.5 | 38 |

Note: IPH-6A (B)-*-L-21 (11) (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the suction port flange is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

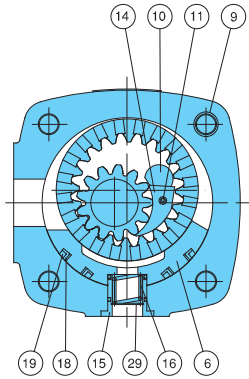
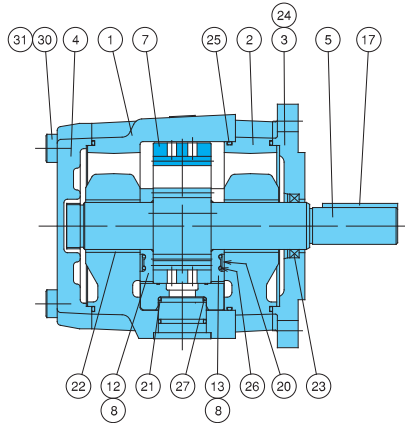
Performance Curves

Revolution Speed 1200 rpm
 Operating Hydraulic Fluid Viscosity 46 centistokes
 Representative Characteristics Under Above Conditions

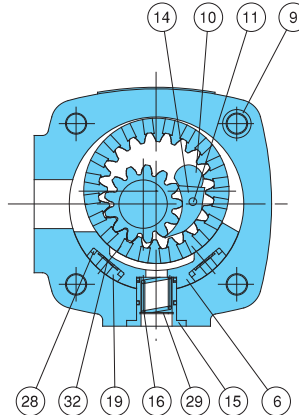
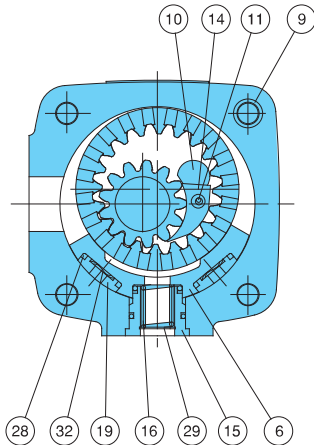


Cross-sectional Drawing

IPH-*B-*-**



Note: Drawings shown above are the IPH-5 and IPH-6.
 The lower left cross-sectional drawing is the IPH-4, the radial seal #18 was removed and a wave washer was added.
 The lower right cross-sectional drawing is the IPH-2 and IPH-3, the bushing #8 was removed, the spring pin #11
 was replaced with a guide pin, and the radial seal #18 was removed and a wave washer #32 was added.

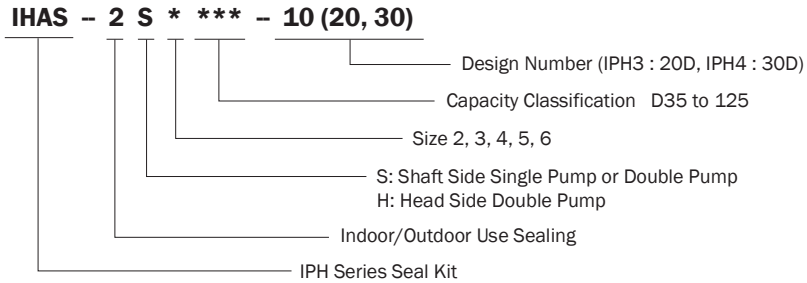


| Part No. | Part Name |
|----------|------------------------|
| 1 | Body -1 |
| 2 | Body -2 |
| 3 | Mounting |
| 4 | Rear cover |
| 5 | Pinion shaft |
| 6 | Radial piston |
| 7 | Internal gear |
| 8 | Bushing |
| 9 | Knock pin |
| 10 | Stopper pin |
| 11 | Spring pin (guide pin) |
| 12 | Axial plate -1 |
| 13 | Axial plate -2 |
| 14 | Feeler piece |
| 15 | Spring holder |
| 16 | Spring |
| 17 | Key |
| 18 | Radial seal |
| 19 | Radial backup ring |
| 20 | Axial backup ring |
| 21 | Backup ring |
| 22 | Bearing |
| 23 | Oil seal |
| 24 | Pin |
| 25 | O-ring |
| 26 | O-ring |
| 27 | O-ring |
| 28 | O-ring |
| 29 | Snap ring |
| 30 | Screw |
| 31 | Washer |
| 32 | Wave washer |

*Note: See page C2 for Parts/Kit Numbers

IPH Series Seal Kit

Understanding Seal Kit Model Numbers :



| Seal Kit Number | Applicable Pump Model No. | Component Part Numbers | | | | | | | |
|-----------------|---------------------------|------------------------|------|--------------------|------|-------------------|------|--------------|------|
| | | 18 | | 19 | | 20 | | 21 | |
| | | Radial Seal | Q'ty | Radial Backup Ring | Q'ty | Axial Backup Ring | Q'ty | Backup ring | Q'ty |
| IHAS-2S2D35-10 | IPH-2A(B)-3.5-11 | | | IH34J-102D35-1A | 2 | IH34J-202000 | 2 | IH34J-402D35 | 1 |
| 2S2005-10 | 5 | | | 102005-1A | 2 | " | 2 | 402005 | 1 |
| 2S2D65-10 | 6.5 | | | 102D65-1A | 2 | " | 2 | 402D65 | 1 |
| 2S2008-10 | 8 | | | 102008-1A | 2 | " | 2 | 402008 | 1 |
| IHAS-2S3010-20 | IPH-3A(B)-10-20 | | | IH34J-103010-1A | 2 | IH34J-203000 | 2 | IH34J-403010 | 1 |
| 2S3013-20 | 13 | | | 103013-1A | 2 | " | 2 | 403013 | 1 |
| 2S3016-20 | 16 | | | 103016-1A | 2 | " | 2 | 403016 | 1 |
| IHAS-2S4020-30 | IPH-4A(B)-20-20 | | | IH34J-104020-2A | 2 | IH34J-204000-1A | 2 | IH34J-404020 | 1 |
| 2S4025-30 | 25 | | | 104025-2A | 2 | " | 2 | 404025 | 1 |
| 2S4032-30 | 32 | | | 104032-2A | 2 | " | 2 | 404032 | 1 |
| IHAS-2S5040-10 | IPH-5A(B)-40-21(11) | IH33J-105040-1A | 2 | IH34J-105040-1A | 2 | IH34J-205000 | 2 | IH34J-405040 | 1 |
| 2S5050-10 | 50 | 105050-1A | 2 | 105050-1A | 2 | " | 2 | 405050 | 1 |
| 2S5064-10 | 64 | 105064-1A | 2 | 105064-1A | 2 | " | 2 | 405064 | 1 |
| IHAS-2S6080-10 | IPH-6A(B)-80-21(11) | IH33J-106080-1A | 2 | IH34J-106080-1A | 2 | IH34J-206000 | 2 | IH34J-406080 | 1 |
| 2S6100-10 | 100 | 106100-1A | 2 | 106100-1A | 2 | " | 2 | 406100 | 1 |
| 2S6125-10 | 125 | 106125-1A | 2 | 106125-1A | 2 | " | 2 | 406125 | 1 |

| Seal Kit Number | Component Part Numbers | | | | | | | | | |
|-----------------|------------------------|------|----------|------|-----------|------|-----------|------|-----------|------|
| | 23 | | 25 | | 26 | | 27 | | 28 | |
| | Oil seal | Q'ty | O-ring | Q'ty | O-ring | Q'ty | O-ring | Q'ty | O-ring | Q'ty |
| IHAS-2S2D35-10 | ISD-20328 | 1 | R68 × 2 | 3 | R23 × 2 | 2 | R10 × 2 | 1 | R10 × 2 | 2 |
| 2S2005-10 | " | 1 | " | 3 | " | 2 | R12 × 2 | 1 | R12 × 2 | 2 |
| 2S2D65-10 | " | 1 | " | 3 | " | 2 | R14 × 2 | 1 | R14 × 2 | 2 |
| 2S2008-10 | " | 1 | " | 3 | " | 2 | R16 × 2 | 1 | R16 × 2 | 2 |
| IHAS-2S3010-20 | ISD-25388 | 1 | R86 × 2 | 3 | R30 × 2 | 2 | R15 × 2.5 | 1 | R15 × 2.5 | 2 |
| 2S3013-20 | " | 1 | " | 3 | " | 2 | R18 × 2.5 | 1 | R18 × 2.5 | 2 |
| 2S3016-20 | " | 1 | " | 3 | " | 2 | R20 × 2.5 | 1 | R20 × 2.5 | 2 |
| IHAS-2S4020-30 | ISD-32458 | 1 | R108 × 3 | 3 | R38 × 2.5 | 2 | R21 × 2.5 | 1 | R21 × 2.5 | 2 |
| 2S4025-30 | " | 1 | " | 3 | " | 2 | R23 × 3 | 1 | R23 × 3 | 2 |
| 2S4032-30 | " | 1 | " | 3 | " | 2 | R26 × 3 | 1 | R26 × 3 | 2 |
| IHAS-2S5040-10 | ISD-40558 | 1 | R140 × 3 | 3 | R49 × 3 | 2 | R26 × 3 | 1 | | |
| 2S5050-10 | " | 1 | " | 3 | " | 2 | R29 × 3.5 | 1 | | |
| 2S5064-10 | " | 1 | " | 3 | " | 2 | R33 × 3.5 | 1 | | |
| IHAS-2S6080-10 | ISD-50659 | 1 | R172 × 4 | 3 | R60 × 3.5 | 2 | R34 × 3.5 | 1 | | |
| 2S6100-10 | " | 1 | " | 3 | " | 2 | R38 × 4 | 1 | | |
| 2S6125-10 | " | 1 | " | 3 | " | 2 | R43 × 4 | 1 | | |

Note: 1. Oil seals are manufactured by Nippon Oil Seal Industry Co. Ltd. (NOK).
2. O-rings are not available through retail sources. Consult your agent for more information.

IPH Series Pipe Flange Kit

Understanding Flange Kit Model Numbers :

The pipe flange kit combines the flanges, bolts, washers, and O-rings required for each type of pump into a single kit.

The component parts table shows the screw in type flange kit. In the case of the welded type flange, the flange part number is IH03J-200040 (1 of IH03J-100040 changes to 2). All other included parts are the same.

IHF - 3 - T - 20

Design Number
: 20 Design
T : Screw in Type
E : Welded Type

Pump Size
: Single Pump
2 to 6
: Double Pump
22 to 46

IPH Series Flange Kit
Note: O-ring 1B-* *
refers to JIS B2401-1B-* *

| Screw in type Flange Kit model No. | Applicable Pump Model No. | Code 61 | IN Flange | | | | | | | |
|---------------------------------------|------------------------------|---------|-----------------|---|------------|---|---------|---|--------|---|
| | | Size | Flange Part No. | | Bolt | | Washer | | O-ring | |
| IHF-2-T-20 | IPH-2A(B)-*-11 | 1/2" | IH03J-100040 | 1 | TH- 8 × 45 | 4 | WS-B- 8 | 4 | IB-P22 | 1 |
| IHF-3-T-20 | IPH-3A(B)-*-20 | 1" | IH03J-100080 | 1 | TH-10 × 50 | 4 | WS-B-10 | 4 | IB-G35 | 1 |
| IHF-4-T-20 | IPH-4A(B)-*-20 | 1 1/4" | IH03J-100100 | 1 | TH-10 × 55 | 4 | " | 4 | IB-G40 | 1 |
| IHF-5-T-20 | IPH-5A(B)-*-21(11) | 1 1/2" | IH03J-100120 | 1 | TH-12 × 55 | 4 | WS-B-12 | 4 | IB-G50 | 1 |
| IHF-6-T-20 | IPH-6A(B)-*-21(11) | 2" | IH03J-100160 | 1 | TH-12 × 60 | 4 | " | 4 | IB-G60 | 1 |

| Code 61 | OUT Flange | | | | | | | | Plug | |
|---------|-----------------|---|------------|---|---------|---|--------|---|----------|---|
| Size | Flange Part No. | | Bolt | | Washer | | O-ring | | | |
| 1/2" | IH03J-100040 | 1 | TH- 8 × 45 | 4 | WS-B- 8 | 4 | IB-P22 | 1 | TPHA-1/4 | 2 |
| 1/2" | IH03J-100040 | 1 | TH- 8 × 45 | 4 | " | 4 | IB-P22 | 1 | " | 2 |
| 3/4" | IH03J-100060 | 1 | TH-10 × 50 | 4 | WS-B-10 | 4 | IB-G30 | 1 | " | 1 |
| 1" | IH03J-100080 | 1 | TH-10 × 50 | 4 | " | 4 | IB-G35 | 1 | " | 2 |
| 1 1/2" | IH03J-100120 | 1 | TH-12 × 60 | 4 | WS-B-12 | 4 | IB-G50 | 1 | " | 1 |

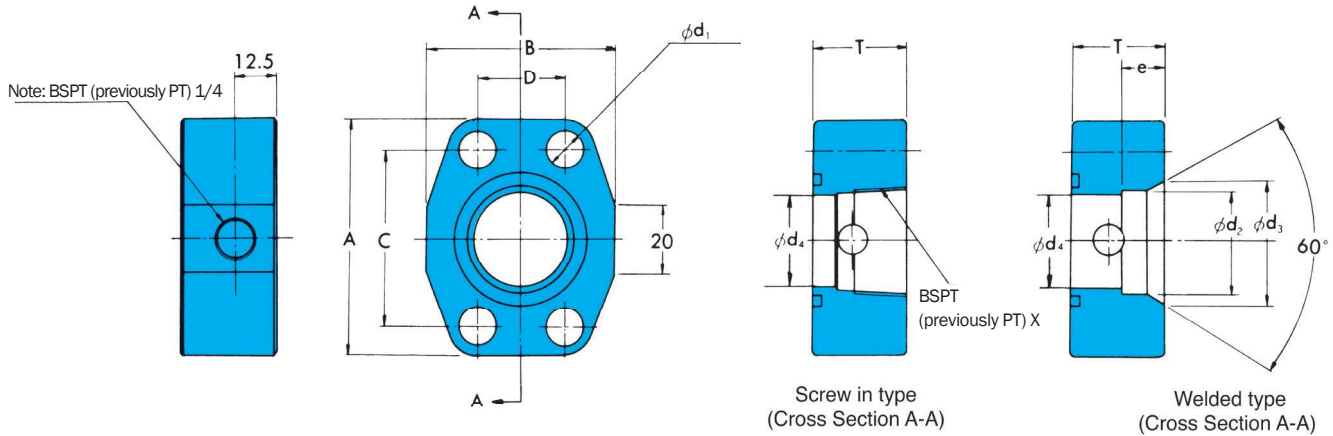
Note: 1. In the case of a double pump, the flange kit includes three flanges: one for the common IN port and two OUT port flanges. When using separate IN ports, use separate single pump flange kits, one each for the head side and the shaft side.

Note: 2. There is no common IN port in the case of the double pump models IPH-55, IPH-56, and IPH-66, or a single IN port is used.

| Screw in type Flange Kit model No. | Applicable Pump Model No. | IN Flange | | | | | | | |
|---------------------------------------|------------------------------|-----------------|---|------------|---|---------|---|--------|---|
| | | Flange Part No. | | Bolt | | Washer | | O-ring | |
| IHF-22-T-20 | IPH- 22B-*-*-11 | IH03J-100060 | 1 | TH-10 × 50 | 4 | WS-B-10 | 4 | IB-G30 | 1 |
| IHF-23-T-20 | 23 | IH03J-100080 | 1 | " | 4 | " | 4 | IB-G35 | 1 |
| IHF-24-T-20 | 24 | IH03J-100120 | 1 | TH-12 × 55 | 4 | WS-B-12 | 4 | IB-G50 | 1 |
| IHF-25-T-20 | 25 | IH03J-100160 | 1 | TH-12 × 60 | 4 | " | 4 | IB-G60 | 1 |
| IHF-26-T-20 | 26 | IH03J-100200 | 1 | TH-12 × 65 | 4 | " | 4 | IB-G75 | 1 |
| IHF-33-T-20 | IPH- 33B-*-*-11 | IH03J-100100 | 1 | TH-10 × 55 | 4 | WS-B-10 | 4 | IB-G40 | 1 |
| IHF-34-T-20 | 34 | IH03J-100120 | 1 | TH-12 × 55 | 4 | WS-B-12 | 4 | IB-G50 | 1 |
| IHF-35-T-20 | 35 | IH03J-100160 | 1 | TH-12 × 60 | 4 | " | 4 | IB-G60 | 1 |
| IHF-36-T-20 | 36 | IH03J-100200 | 1 | TH-12 × 60 | 4 | " | 4 | IB-G75 | 1 |
| IHF-44-T-20 | IPH- 44B-*-*-11 | IH03J-100120 | 1 | TH-12 × 55 | 4 | " | 4 | IB-G50 | 1 |
| IHF-45-T-20 | 45 | IH03J-100200 | 1 | TH-12 × 65 | 4 | " | 4 | IB-G75 | 1 |
| IHF-46-T-20 | 46 | IH03J-100240 | 1 | TH-16 × 75 | 4 | WS-B-16 | 4 | IB-G85 | 1 |

*IPH Numbers include both Inlet and Outlet Flange Kits

| OUT Flange (Shaft Side) | | | | | | | | OUT Flange (Head Side) | | | | | | | | Plug | |
|-------------------------|---|------------|---|---------|---|--------|---|------------------------|---|------------|---|---------|---|--------|---|----------|---|
| Flange Part No. | | Bolt | | Washer | | O-ring | | Flange Part No. | | Bolt | | Washer | | O-ring | | | |
| IH03J-100040 | 1 | TH- 8 × 45 | 4 | WS-B- 8 | 4 | IB-P22 | 1 | IH03J-100040 | 1 | TH- 8 × 45 | 4 | WS-B- 8 | 4 | IB-P22 | 1 | TPHA-1/4 | 3 |
| IH03J-100040 | 1 | " | 4 | " | 4 | IB-P22 | 1 | " | 1 | " | 4 | " | 4 | " | 1 | " | 3 |
| IH03J-100060 | 1 | TH-10 × 50 | 4 | WS-B-10 | 4 | IB-G30 | 1 | " | 1 | " | 4 | " | 4 | " | 1 | " | 3 |
| IH03J-100080 | 1 | " | 4 | " | 4 | IB-G35 | 1 | " | 1 | " | 4 | " | 4 | " | 1 | " | 2 |
| IH03J-100120 | 1 | TH-12 × 60 | 4 | WS-B-12 | 4 | IB-G50 | 1 | " | 1 | " | 4 | " | 4 | " | 1 | " | 2 |
| IH03J-100040 | 1 | TH- 8 × 45 | 4 | WS-B- 8 | 4 | IB-P22 | 1 | IH03J-100040 | 1 | TH- 8 × 45 | 4 | WS-B- 8 | 4 | IB-P22 | 1 | " | 2 |
| IH03J-100060 | 1 | TH-10 × 50 | 4 | WS-B-10 | 4 | IB-G30 | 1 | " | 1 | " | 4 | " | 4 | " | 1 | " | 3 |
| IH03J-100080 | 1 | " | 4 | " | 4 | IB-G35 | 1 | " | 1 | " | 4 | " | 4 | " | 1 | " | 2 |
| IH03J-100120 | 1 | TH-12 × 60 | 4 | WS-B-12 | 4 | IB-G50 | 1 | " | 1 | " | 4 | " | 4 | " | 1 | " | 2 |
| IH03J-100060 | 1 | TH-10 × 50 | 4 | WS-B-10 | 4 | IB-G30 | 1 | IH03J-100060 | 1 | TH-10 × 50 | 4 | WS-B-10 | 4 | IB-G30 | 1 | " | 3 |
| IH03J-100080 | 1 | " | 4 | " | 4 | IB-G35 | 1 | " | 1 | " | 4 | " | 4 | " | 1 | " | 2 |
| IH03J-100120 | 1 | TH-12 × 60 | 4 | WS-B-12 | 4 | IB-G50 | 1 | " | 1 | " | 4 | " | 4 | " | 1 | " | 2 |

Pipe Flange Installation Dimension Diagram

Screw in type

| Pipe Flange Kit Part Number | SAE Standard Code 61 | Nominal Diameter | Dimensions (mm) | | | | | | | Weight lbs |
|-----------------------------|----------------------|------------------|-----------------|-----|-------|------|----|------------|------------|------------|
| | | | A | B | C | D | T | ϕd_1 | ϕd_4 | |
| IH03J -100040 | SAE J518b 1/2 | 1/2 | 54 | 46 | 38.1 | 17.5 | 33 | 9 | 12.7 | .88 |
| -100060 | SAE J518b 3/4 | 3/4 | 65 | 52 | 47.5 | 22.0 | 33 | 11 | 20 | 1.3 |
| -100080 | SAE J518b 1 | 1 | 70 | 59 | 52.4 | 26.2 | 33 | 11 | 27 | 1.3 |
| ☆ -100100 | SAE J518b 1 1/4 | 1 1/4 | 79 | 73 | 58.7 | 30.2 | 38 | 11 | 33 | 2.2 |
| -100120 | SAE J518b 1 1/2 | 1 1/2 | 94 | 83 | 70.0 | 36.0 | 38 | 13 | 37.5 | 3.0 |
| ☆ -100160 | SAE J518b 2 | 2 | 102 | 97 | 77.8 | 42.9 | 38 | 13 | 50 | 3.7 |
| ☆ -100200 | SAE J518b 2 1/2 | 2 1/2 | 114 | 109 | 88.9 | 50.8 | 43 | 13 | 60 | 4.6 |
| ☆ -100240 | SAE J518b 3 | 3 | 135 | 131 | 106.4 | 61.9 | 48 | 17.5 | 71 | 7.2 |

Welded Type

| Pipe Flange Kit Part Number | SAE Standard Code 61 | Pipe Diameter | Dimensions (mm) | | | | | | | | | | Weight lbs |
|-----------------------------|----------------------|---------------|-----------------|-----|-------|------|----|----|------------|------------|------------|------------|------------|
| | | | A | B | C | D | T | e | ϕd_1 | ϕd_2 | ϕd_3 | ϕd_4 | |
| IH03J -200040 | SAE J518b 1/2 | 1/2 | 54 | 46 | 38.1 | 17.5 | 33 | 11 | 9 | 22.2 | 27 | 12.7 | .88 |
| -200060 | SAE J518b 3/4 | 3/4 | 65 | 52 | 47.5 | 22.0 | 33 | 12 | 11 | 27.7 | 35 | 20 | 1.3 |
| -200080 | SAE J518b 1 | 1 | 70 | 59 | 52.4 | 26.2 | 33 | 14 | 11 | 34.5 | 42 | 27 | 1.3 |
| ☆ -200100 | SAE J518b 1 1/4 | 1 1/4 | 79 | 73 | 58.7 | 30.2 | 38 | 16 | 11 | 43.2 | 48 | 33 | 2.2 |
| -200120 | SAE J518b 1 1/2 | 1 1/2 | 94 | 83 | 70.0 | 36.0 | 38 | 18 | 13 | 49.1 | 58 | 37.5 | 3.0 |
| ☆ -200160 | SAE J518b 2 | 2 | 102 | 97 | 77.8 | 42.9 | 38 | 19 | 13 | 61.1 | 68 | 50 | 3.7 |
| ☆ -200200 | SAE J518b 2 1/2 | 2 1/2 | 114 | 109 | 88.9 | 50.8 | 43 | 22 | 13 | 77.1 | 82 | 60 | 4.6 |
| ☆ -200240 | SAE J518b 3 | 3 | 135 | 131 | 106.4 | 61.9 | 48 | 25 | 17.5 | 90.0 | 97 | 71 | 7.2 |

Recommended Tightening Torque for Flange Installation Bolts
For aluminum body

| Mounting bolt | Tightening Torque ft/lbs |
|---------------|--------------------------|
| M8 | 14 to 17 |
| M10 | 36 to 43 |
| M12 | 65 to 83 |

For cast body (shared IN port)

| Mounting bolt | Tightening Torque ft/lbs |
|---------------|--------------------------|
| M10 | 36 to 47 |
| M12 | 64 to 82 |
| M16 | 158 to 202 |

Note: There is no BSPT (previously PT) 1/4 tap for the above flange numbers (exclusively for suction port use) marked with a star (☆).

IPH Series Pipe Flange Kit

Understanding Foot Mounting Kit Numbers:

When only the mounting feet are required for a single pump or double pump, pump mounting bolts, washers and other parts are sold together as the Foot Mounting Kit.

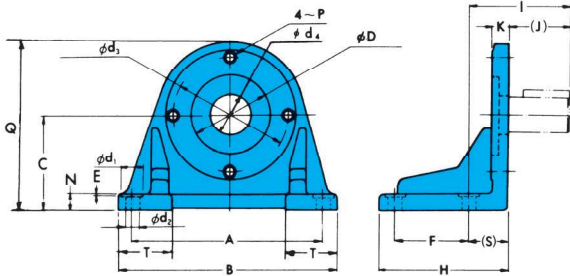
IHM - 2 - 10

Design Number

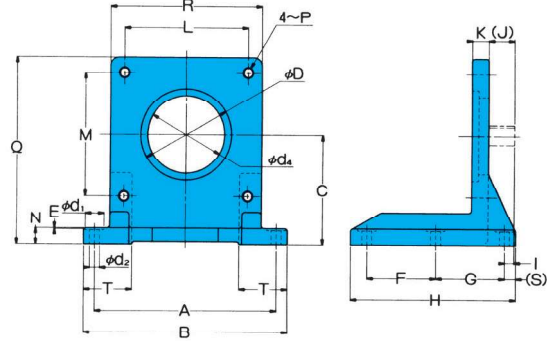
Pump Size: Single Pump 2 to 6
: Double Pump 22 to 66

IPH Series Foot Mounting Kit

Foot Mounting Installation Measurement Chart SAE-2BOLT-MOUNTING



SAE-4BOLT-MOUNTING



SAE-2BOLT-MOUNTING

| Foot Mounting Kit Model No. | Applicable Pump Model No. | | Accessories | | | | Dimensions (mm) | | | | | |
|-----------------------------|---------------------------|------------------------|-------------|------|--------|------|-----------------|-------|--------|---|-------|-------|
| | SINGLE PUMP | DOUBLE PUMP | Bolt | Q'ty | Washer | Q'ty | A | B | C | E | F | H |
| IHM-2-10 | IPH-2 | - | TB-10 × 30 | 2 | WP-10 | 2 | 127 | 152.5 | 69.8 | 1 | 50.8 | 96 |
| IHM-4-10 | IPH-3 | - | TB-12 × 30 | 2 | WG-12 | 2 | 220.7 | 246 | 107.95 | 1 | 114.3 | 140 |
| IHM-4-10 | IPH-4 | - | TB-12 × 30 | 2 | WG-12 | 2 | 220.7 | 246 | 107.95 | 1 | 114.3 | 140 |
| IHM-22-10 | | IPH-22 | TB-10 × 30 | 2 | WP-10 | 2 | 171.45 | 204 | 107.95 | 1 | 95.25 | 150 |
| IHM-44-10 | | IPH23, IPH-33 | TB-12 × 30 | 2 | WG-12 | 2 | 235 | 267 | 139.7 | 1 | 127 | 193 |
| IHM-44-10 | | IPH-24, IPH-34, IPH-44 | TB-12 × 30 | 2 | WG-12 | 2 | 235 | 267 | 139.7 | 1 | 127 | 193 |
| IHM-45-10 | IPH-5 | IPH-25, IPH-35, IPH-45 | TB-16 × 40 | 2 | WP-16 | 2 | 295.3 | 334 | 152.4 | 1 | 139.7 | 203 |
| IHM-46-10 | IPH-6 | IPH-26, IPH-36, IPH-46 | TB-20 × 50 | 2 | WP-20 | 2 | 330.2 | 374 | 203.2 | 1 | 149.2 | 220.7 |

| Foot Mounting Kit Model No. | Dimensions (mm) | | | | | | | | | | | | | Weight lbs |
|-----------------------------|-----------------|------|------|----|-----|-------|------|------|-------|-----------------|-----------------|-----------------|-----------------|------------|
| | I | (J) | K | N | P | Q | (S) | T | φD | φd ₁ | φd ₂ | φd ₃ | φd ₄ | |
| IHM-2-10 | 74 | 41.5 | 17.5 | 13 | M10 | 135 | 32.5 | 36.5 | 82.55 | 22 | 11 | 106.4 | 50 | 4.4 |
| IHM-4-10 | 61.7 | 49 | 16 | 16 | M12 | 195.5 | 12.7 | 53 | 101.6 | 22 | 11 | 146 | 40 | 12.1 |
| IHM-4-10 | 74.7 | 62 | 16 | 16 | M12 | 195.5 | 12.7 | 53 | 101.6 | 22 | 11 | 146 | 40 | 12.1 |
| IHM-22-10 | 73.5 | 41 | 18 | 18 | M10 | 180 | 32.5 | 50 | 82.55 | 22 | 11 | 106.4 | 40 | 14.3 |
| IHM-44-10 | 89.5 | 45 | 20 | 20 | M12 | 232 | 44.5 | 57.5 | 101.6 | 22 | 14 | 146 | 40 | 26.4 |
| IHM-44-10 | 102.5 | 58 | 20 | 20 | M12 | 232 | 44.5 | 57.5 | 101.6 | 22 | 14 | 146 | 40 | 26.4 |
| IHM-45-10 | 104.5 | 60 | 25 | 25 | M16 | 259 | 44.5 | 61 | 127 | 35 | 18 | 181 | 86 | 29.7 |
| IHM-46-10 | 119.5 | 70 | 30 | 30 | M20 | 337 | 49.5 | 64 | 152.4 | 37 | 20 | 228.6 | 100 | 48.5 |

*IHM-2-10, IHM-4-10, and IHM-45-10 are the same as PVS pump foot mounting PSM-101000, PSM102000, and PSM103000 respectively.

SAE-4BOLT-MOUNTING

| Foot Mounting Kit Model No. | Applicable Pump Model No. | Accessories | | | | Dimensions (mm) | | | | | | | | |
|-----------------------------|---------------------------|-------------|------|---------|------|-----------------|-----|-----|---|-----|-----|-----|----|--|
| | DOUBLE PUMP | Bolt | Q'ty | Washer | Q'ty | A | B | C | E | F | G | H | I | |
| IHM-55-10 | IPH-55 | TH-20 × 50 | 4 | WS-B-20 | 4 | 330 | 370 | 200 | 1 | 125 | 125 | 300 | 17 | |
| IHM-66-10 | IPH56, IPH-66 | TH-24 × 60 | 4 | WS-B-24 | 4 | 380 | 430 | 260 | 1 | 140 | 140 | 340 | 17 | |

| Foot Mounting Kit Model No. | Dimensions (mm) | | | | | | | | | | | | | Weight lbs | |
|-----------------------------|-----------------|----|-------|-------|----|-----|-----|-----|-----|-----|-------|-----------------|-----------------|------------|-----------------|
| | (J) | K | L | M | N | P | Q | R | (S) | T | φD | φd ₁ | φd ₂ | | φd ₄ |
| IHM-55-10 | 47 | 30 | 224.6 | 224.6 | 30 | M20 | 340 | 275 | 20 | 90 | 165.1 | 34 | 18 | 140 | 70.5 |
| IHM-66-10 | 52 | 40 | 247.5 | 247.5 | 40 | M24 | 415 | 310 | 25 | 105 | 177.8 | 34 | 18 | 150 | 105.8 |

Air Bleed-off Valve

Equipping an air bleed-off valve on the pump's discharge side helps to simplify air bleeding during test operation.

Specifications

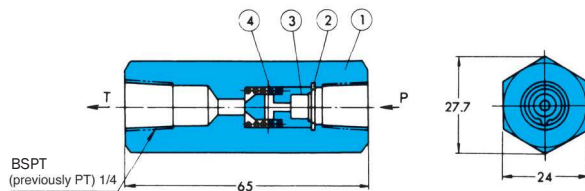
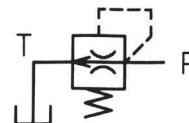
Air inside the pump and the suction pipe is exhausted rapidly when the pump is started up.

When discharge pressure reaches 29 psi or greater after the pump intakes oil, a valve closes to prevent oil from leaking.

Maximum operating pressure: 4350 psi.

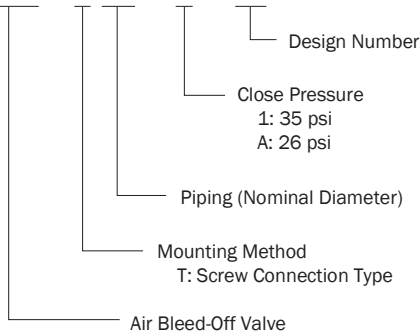
Provide piping to ensure that the tank port is under the oil level surface.

JIS symbol



Understanding Model Numbers

CAB - T 02 - 1 - 11



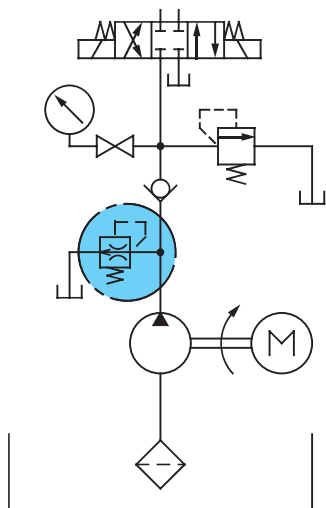
| Part No. | Part Name | Q'ty |
|----------|------------|------|
| 1 | Valve body | 1 |
| 2 | Snap ring | 1 |
| 3 | Valve | 1 |
| 4 | Spring | 1 |

Note: 1) If chattering occurs in a circuit when CAB-T02-1-11 is used, use CAB-T02-A-11 instead.
 2) If chattering occurs in a circuit when CAB-T02-A-11 is used, use of a CAB air bleed-off valve is not required.

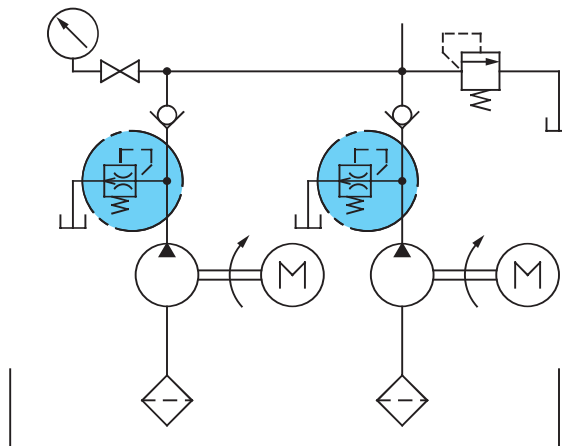
Application Examples

Example of Circuits that Require an Air Bleed-off Valve:

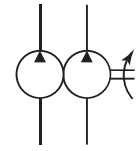
- 1) When using a Type 2 or Type 3 check valve (Sample Circuit A)
- 2) When unload circuit function cannot be achieved (Sample Circuit A)
- 3) When the discharge sides of multiple pumps run together (Sample Circuit B)



Circuit Diagram A



Circuit Diagram B



IPH Series Double IP Pump

.21 to 7.68 in³/rev
4350 psi

All the types in this new design (11D) series are installation compatible with the previous design (10D). Note, however, that there is no longer compatibility for some of the seal components between the IPH-3 and IPH-4 sizes and the 3 and 4 sizes.

Features

Configured with the high-pressure, low-noise IPH Series and IP pumps, these double pumps greatly expand

the range of application for the IP pump.
A wide selection of pump combinations

provides options that are perfect for just about any type of application imaginable.

Specifications

| Model No. | Discharge Rate (1200min ⁻¹ No-load) | | Revolution Speed | | Operating Pressure MPa (psi) | Required Power at 1200min ⁻¹ , 3045 psi hp |
|---|--|---|---------------------------|---------------------------|--|---|
| | Vent Side gpm | Shaft Side gpm | Min. min ⁻¹ | Max. min ⁻¹ | | |
| IPH-22B-*(*)-11 IPH-23B IPH-24B IPH-25B IPH-26B | 1.1 to 2.5 | 4.3 to 9.8 12.2 to 18.9 24.8 to 38.7 48.9 to 76.6 97.5 to 151.0 | 600 | 2000 | Rated: 21 (3045) Max: 30 (4350) | 10.7 15.5 26.1 46.2 85.8 |
| IPH-33B IPH-34B IPH-35B IPH-36B | | 12.2 to 18.9 24.8 to 38.7 48.9 to 76.6 97.5 to 151.0 | | | | 20.5 30.9 51.0 90.7 |
| IPH-44B IPH-45B IPH-46B | | 24.8 to 38.7 48.9 to 76.6 97.5 to 151.0 | | | | 41.5 61.6 101.3 |
| IPH-55B IPH-56B | | 48.9 to 76.6 97.5 to 151.0 | | | | 81.8 121.4 |
| IPH-66B | | 25.7 to 39.8 97.5 to 151.0 | | | | 159.9 |

Note:

- Maximum Pressure: Maximum pressure limit when there are frequent pressure changes. However, maximum pressure is the same as rated pressure when load is applied to the head side and shaft side simultaneously.
- Suction Pressure: 4.3 psi
- Avoid installation with the suction port towards the bottom of the pump. If the revolution speed will exceed 1800mm-1, provide separate piping for shaft side and head size IN ports.
- Specify using the model number format shown below when pipe flange is required.

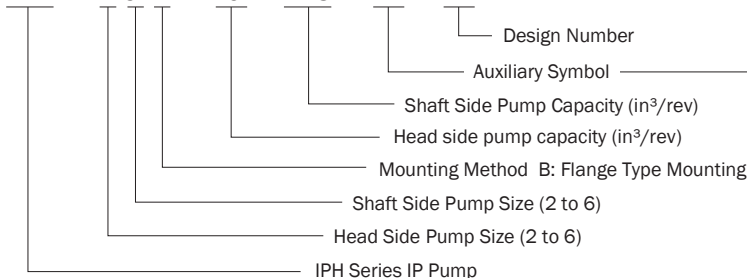
- Working pressure is continuous operating pressure when the same pressure exists on the head side and shaft side.
- Individual pump performance on the head side and shaft side is the same as that of the single pumps. Required power is the sum of the power required by each of the two pumps.
- The "Required Power at 1200min-1, 3045 psi (hp)" column in the above table are based on combinations that provide the maximum capacity for each model number, when pressure at both the head side and shaft side is 3045 psi. Examples

combinations that provide "the maximum capacity for each model number" are IPH-22B-8-8-11 for IPH-22b, and IPH-46B-32- 125-11 for IPH-46B.

- Handling
- 1 Handling is in accordance with procedures for the IPH pump. See page C-1 for more information.

Understanding Model Numbers

IPH - 4 6 B - 20 - 125 - LT - 11



- None: Clockwise (viewed from shaft end)
- L : Counterclockwise (viewed from shaft end)
- T : Includes Screw IN Flange Kit (for shared IN port)
- TT : Includes Screw IN Flange Kit (for individual IN port)
- E : Includes Welded Flange Kit (for shared IN port)
- EE : Includes Welded Flange Kit (for individual IN port)

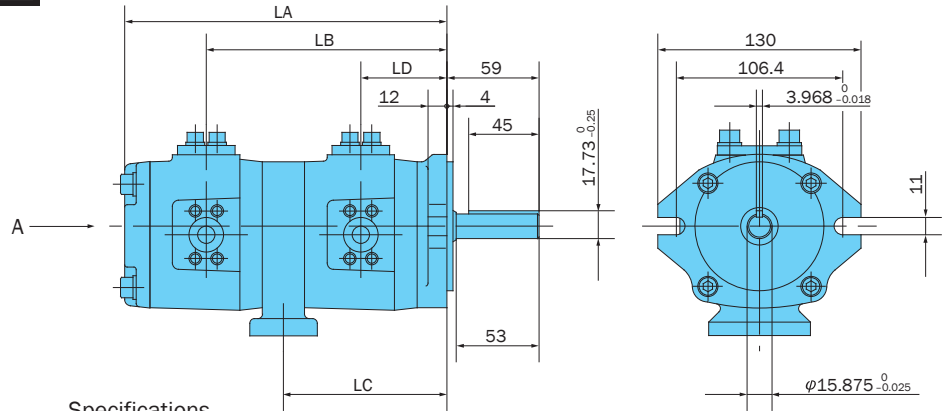
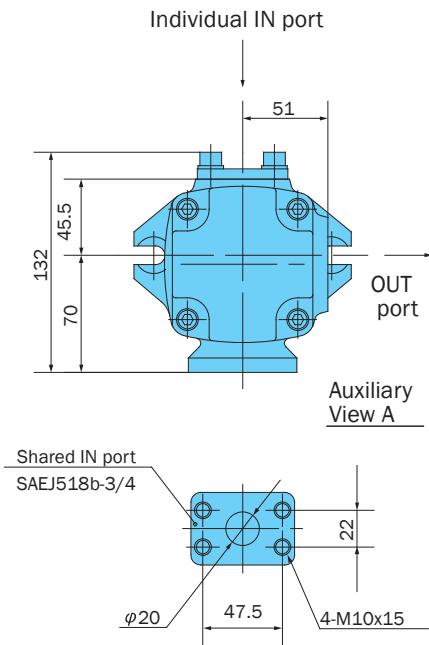
Auxiliary symbol must be provided in alphabetic order.

• IPH Series Double IP Pump Foot Mounting Kit
See the IPH Series (single) IP pump section in page C-12.

• IPH Series Double IP Pump Pipe Flange
See the IPH Series (single) IP pump section in page C-10.

Installation Dimension Drawings

IPH-22B-*-*-11 (Flange Mounting, Clockwise Rotation)

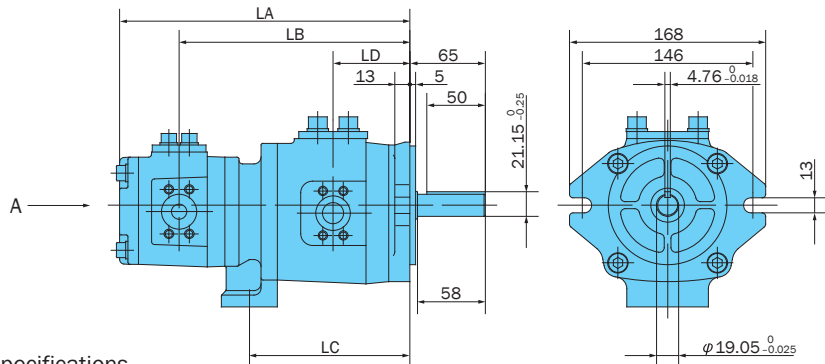
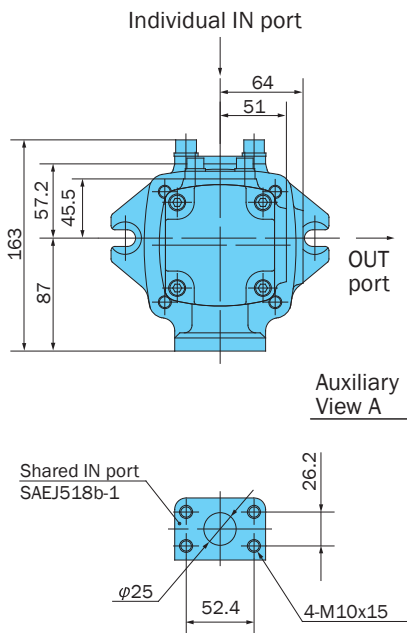


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|--------------------|------------------------|------------|---------------|-----------------|-------|-------|------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-22B-3.5-3.5-11 | .21 | .21 | 12.7 | 211.5 | 160 | 105.5 | 51 |
| -5 | | .31 | 13.0 | 216.5 | 165 | 110.5 | 53.5 |
| -6.5 | | .39 | 13.2 | 220.5 | 169 | 114.5 | 55 |
| -8 | | .49 | 13.6 | 225.5 | 174 | 119.5 | 58 |
| IPH-22B-5-5-11 | .31 | .31 | 13.2 | 221.5 | 167.5 | 110.5 | 53.5 |
| -6.5 | | .39 | 13.4 | 225.5 | 171.5 | 114.5 | 55 |
| -8 | | .49 | 13.8 | 230.5 | 176.5 | 119.5 | 58 |
| IPH-22B-6.5-6.5-11 | .39 | .39 | 13.6 | 229.5 | 173.5 | 114.5 | 55 |
| -8 | | .49 | 14.1 | 234.5 | 178.5 | 119.5 | 58 |
| IPH-22B-8-8-11 | .49 | .49 | 14.5 | 239.5 | 181 | 119.5 | 58 |

Note: Dimensions shown in this diagram are for a single pump.

IPH-23B-*-*-11 (Flange Mounting, Clockwise Rotation)

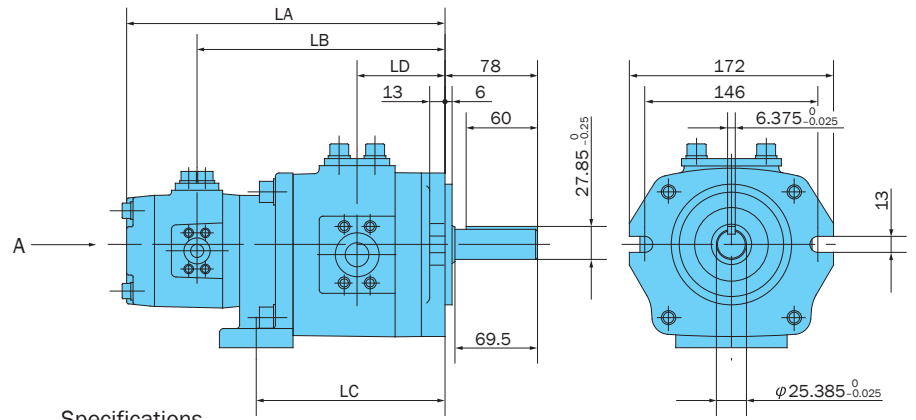
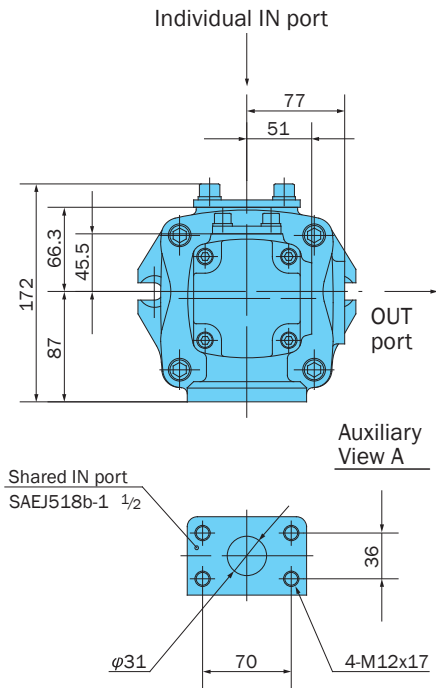


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|-------------------|------------------------|------------|---------------|-----------------|-------|-----|------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-23B-3.5-10-11 | .21 | .62 | 18.0 | 230.5 | 179 | 126 | 60 |
| -13 | | .81 | 18.5 | 236.5 | 185 | 132 | 63 |
| -16 | | .96 | 19.1 | 241.5 | 190 | 137 | 65.5 |
| IPH-23B-5-10-11 | .31 | .62 | 18.3 | 235.5 | 181.5 | 126 | 60 |
| -13 | | .81 | 18.7 | 241.5 | 187.5 | 132 | 63 |
| -16 | | .96 | 19.4 | 246.5 | 192.5 | 137 | 65.5 |
| IPH-23B-6.5-10-11 | .39 | .62 | 18.5 | 239.5 | 183.5 | 126 | 60 |
| -13 | | .81 | 18.9 | 245.5 | 189.5 | 132 | 63 |
| -16 | | .96 | 19.6 | 250.5 | 194.5 | 137 | 65.5 |
| IPH-23B-8-10-11 | .49 | .62 | 18.9 | 244.5 | 186 | 126 | 60 |
| -13 | | .81 | 19.4 | 250.5 | 192 | 132 | 63 |
| -16 | | .96 | 20.0 | 255.5 | 197 | 137 | 65.5 |

Note: IPH-22B (23B)-*-*-L-11 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the individual port is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-24B-*-11
(Flange Mounting, Clockwise Rotation)

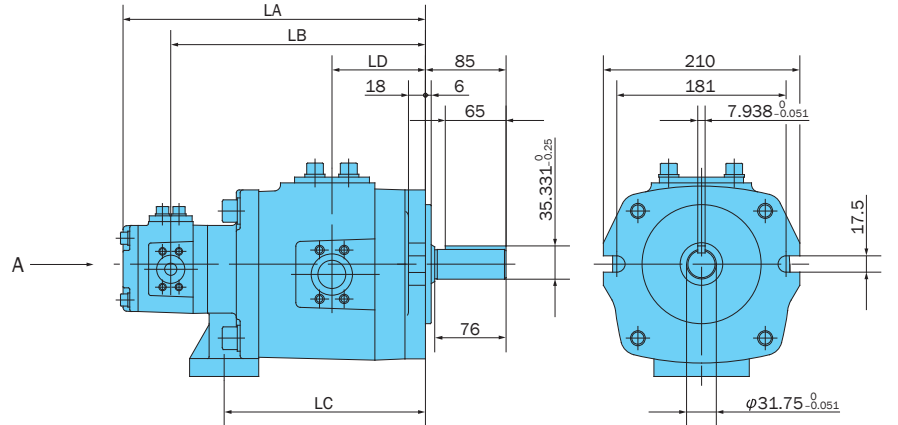
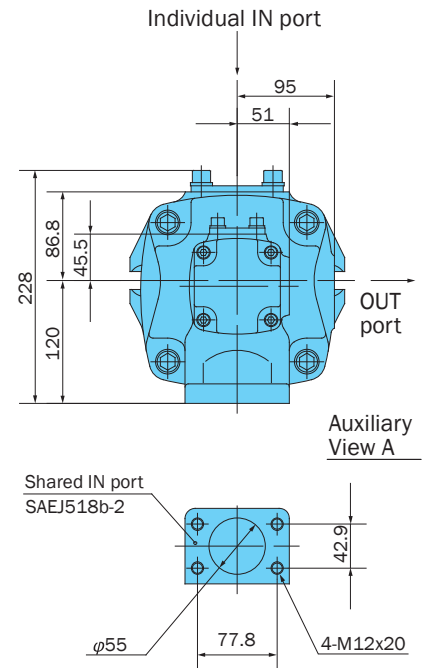


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|--------------------|------------------------|------------|---------------|-----------------|-------|-----|----|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-24B-3.5 -20-11 | .21 | 1.26 | 28.2 | 250.5 | 199 | 153 | 71 |
| -25 | | 1.56 | 19.3 | 256.5 | 205 | 159 | 74 |
| -32 | | 1.97 | 30.4 | 264.5 | 213 | 167 | 78 |
| IPH-24B-5 -20-11 | .31 | 1.26 | 28.4 | 255.5 | 201.5 | 153 | 71 |
| -25 | | 1.56 | 29.5 | 261.5 | 207.5 | 159 | 74 |
| -32 | | 1.97 | 30.6 | 269.5 | 215.5 | 167 | 78 |
| IPH-24B-6.5 -20-11 | .39 | 1.26 | 28.6 | 259.5 | 203.5 | 153 | 71 |
| -25 | | 1.56 | 29.7 | 265.5 | 209.5 | 159 | 74 |
| -32 | | 1.97 | 30.8 | 273.5 | 217.5 | 167 | 78 |
| IPH-24B-8 -20-11 | .49 | 1.26 | 29.1 | 264.5 | 206 | 153 | 71 |
| -25 | | 1.56 | 30.2 | 270.5 | 212 | 159 | 74 |
| -32 | | 1.97 | 31.3 | 278.5 | 220 | 167 | 78 |

Note: Dimensions shown in this diagram are for a single pump.

IPH-25B-*-11
(Flange Mounting, Clockwise Rotation)

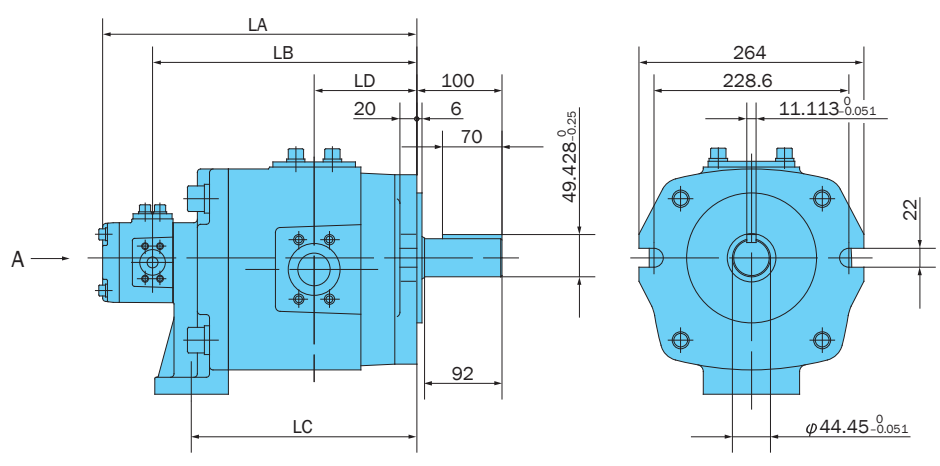
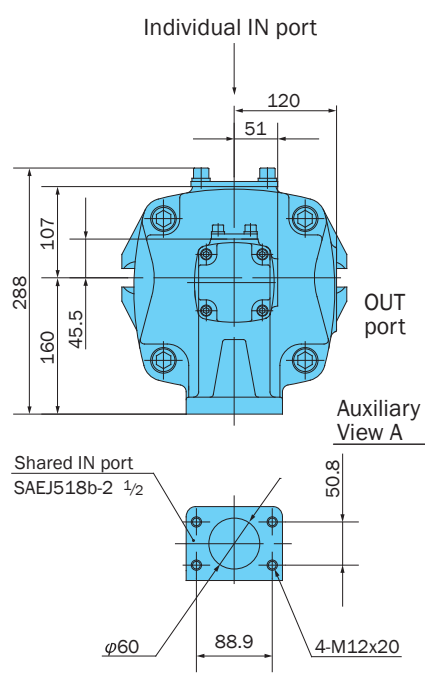


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|--------------------|------------------------|------------|---------------|-----------------|-------|-----|------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-25B-3.5 -40-11 | .21 | 2.48 | 53.1 | 298.5 | 247 | 197 | 91 |
| -50 | | 3.06 | 55.3 | 305.5 | 254 | 204 | 94.5 |
| -64 | | 3.89 | 57.5 | 315.5 | 264 | 214 | 99.5 |
| IPH-25B-5 -40-11 | .31 | 2.48 | 53.3 | 303.5 | 249.5 | 197 | 91 |
| -50 | | 3.06 | 55.5 | 310.5 | 256.5 | 204 | 94.5 |
| -64 | | 3.89 | 57.7 | 320.5 | 266.5 | 214 | 99.5 |
| IPH-25B-6.5 -40-11 | .39 | 2.48 | 53.5 | 307.5 | 251.5 | 197 | 91 |
| -50 | | 3.06 | 55.7 | 314.5 | 258.5 | 204 | 94.5 |
| -64 | | 3.89 | 57.9 | 324.5 | 268.5 | 214 | 99.5 |
| IPH-25B-8 -40-11 | .49 | 2.48 | 54.0 | 312.5 | 254 | 197 | 91 |
| -50 | | 3.06 | 56.2 | 319.5 | 261 | 204 | 94.5 |
| -64 | | 3.89 | 58.4 | 329.5 | 271 | 214 | 99.5 |

Note: IPH-24B (25B)-*-*-L-11 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the individual IN port is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-26B-*-11
(Flange Mounting, Clockwise Rotation)

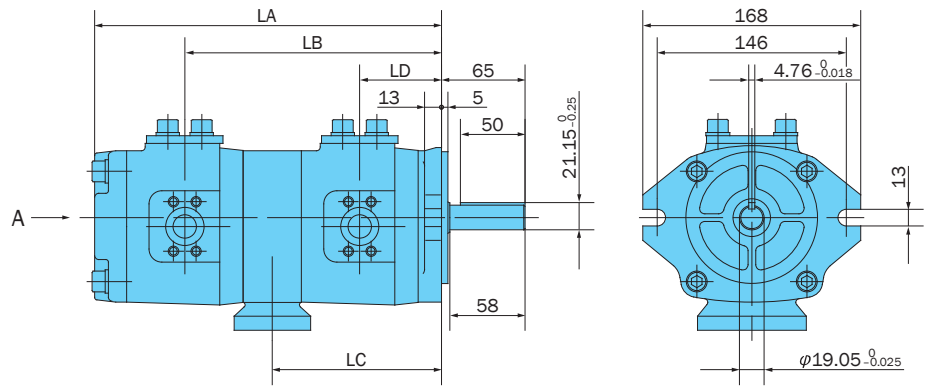
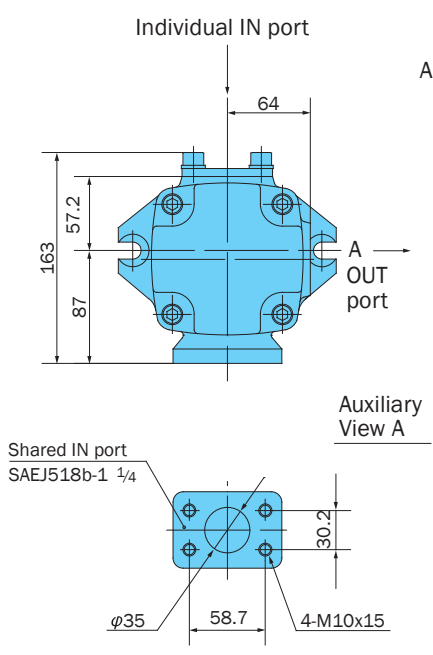


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|--------------------|------------------------|------------|------------|-----------------|-------|-----|-------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-26B-3.5- 80-11 | .21 | 4.96 | 101 | 345.5 | 294 | 240 | 111.5 |
| | | 6.19 | 105 | 355.5 | 304 | 250 | 116.5 |
| | | 7.68 | 110 | 367.5 | 316 | 262 | 122.5 |
| IPH-26B-5 - 80-11 | .31 | 4.96 | 101 | 350.5 | 296.5 | 240 | 111.5 |
| | | 6.19 | 105 | 360.5 | 306.5 | 250 | 116.5 |
| | | 7.68 | 110 | 372.5 | 318.5 | 262 | 122.5 |
| IPH-26B-6.5- 80-11 | .39 | 4.96 | 101 | 354.5 | 298.5 | 240 | 111.5 |
| | | 6.19 | 106 | 364.5 | 308.5 | 250 | 116.5 |
| | | 7.68 | 110 | 376.5 | 320.5 | 262 | 122.5 |
| IPH-26B-8 - 80-11 | .49 | 4.96 | 102 | 357 | 301 | 240 | 111.5 |
| | | 6.19 | 106 | 367 | 311 | 250 | 116.5 |
| | | 7.68 | 110 | 379 | 323 | 262 | 122.5 |

Note: Dimensions shown in this diagram are for a single pump.

IPH-33B-*-11
(Flange Mounting, Clockwise Rotation)

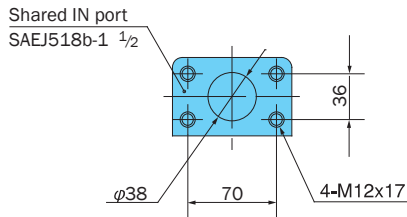
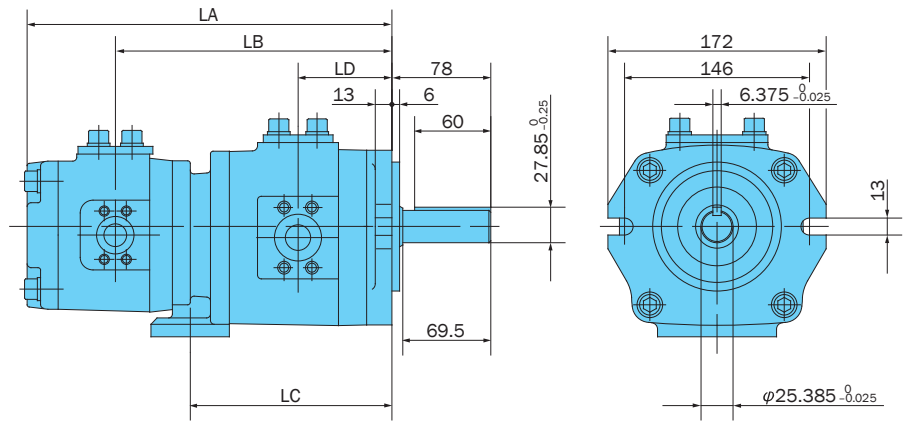
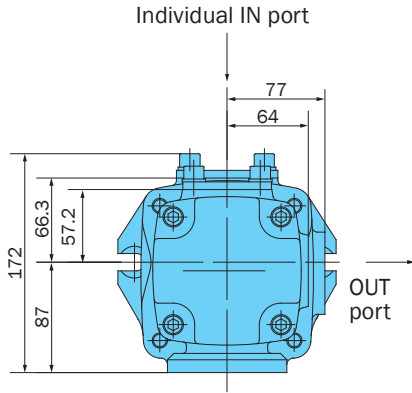


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|-------------------|------------------------|------------|------------|-----------------|-------|-------|------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-33B-10 -10-11 | .62 | .62 | 22.7 | 255.5 | 189 | 124.5 | 60 |
| | | .81 | 23.1 | 261.5 | 195 | 130.5 | 63 |
| | | .96 | 23.8 | 266.5 | 200 | 135.5 | 65.5 |
| IPH-33B-13 -13-11 | .81 | .81 | 23.1 | 267.5 | 198 | 130.5 | 63 |
| | | .96 | 24.2 | 272.5 | 203 | 135.5 | 65.5 |
| IPH-33B-16 -16-11 | .96 | .96 | 24.9 | 277.5 | 205.5 | 135.5 | 65.5 |

Note: IPH-26B (33B)-*-*-L-11 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the individual IN port is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-34B-*-11
(Flange Mounting, Clockwise Rotation)

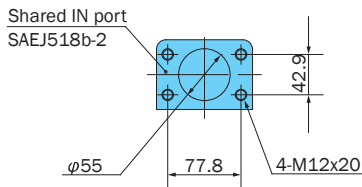
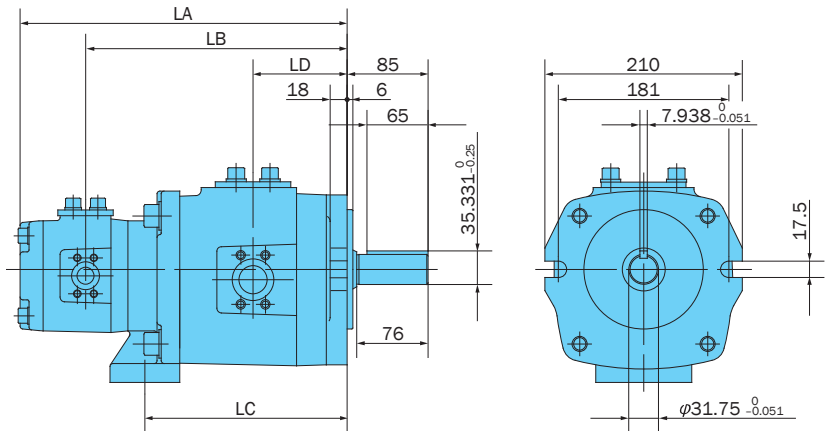
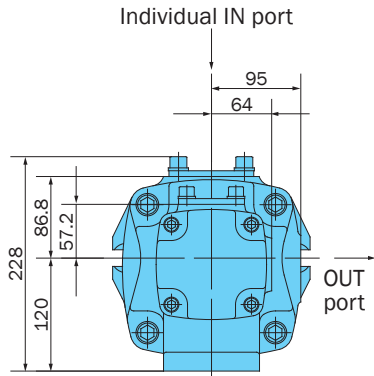


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|-------------------|------------------------|------------|---------------|-----------------|-------|-----|----|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-34B-10 -20-11 | .62 | 1.26 | 32.8 | 272 | 209 | 153 | 71 |
| -25 | | 1.56 | 33.9 | 278 | 215 | 159 | 74 |
| -32 | | 1.97 | 35.0 | 286 | 223 | 167 | 78 |
| IPH-34B-13 -20-11 | .81 | 1.26 | 33.2 | 278 | 212 | 153 | 71 |
| -25 | | 1.56 | 34.3 | 284 | 218 | 159 | 74 |
| -32 | | 1.97 | 35.5 | 292 | 226 | 167 | 78 |
| IPH-34B-16 -20-11 | .96 | 1.26 | 33.9 | 283 | 214.5 | 153 | 71 |
| -25 | | 1.56 | 35.0 | 289 | 220.5 | 159 | 74 |
| -32 | | 1.97 | 36.1 | 297 | 228.5 | 167 | 78 |

Note: Dimensions shown in this diagram are for a single pump.

IPH-35B-*-11
(Flange Mounting, Clockwise Rotation)

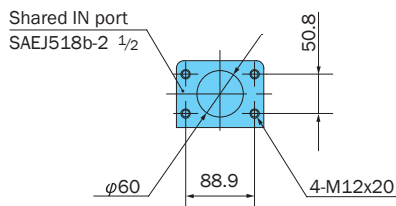
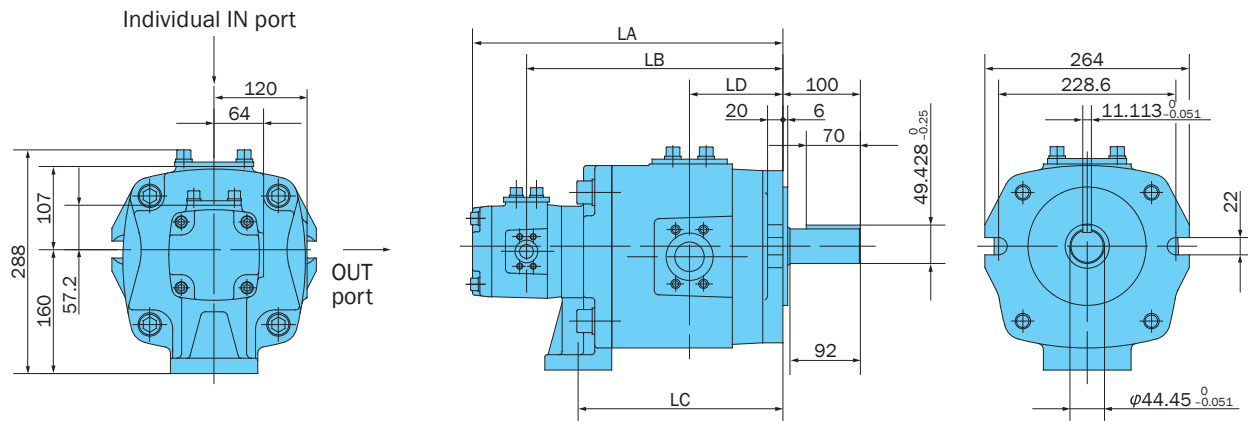


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|-------------------|------------------------|------------|---------------|-----------------|-------|-----|------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-35B-10 -40-11 | .62 | 2.48 | 58.2 | 323.5 | 257 | 197 | 91 |
| -50 | | 3.06 | 60.4 | 330.5 | 264 | 204 | 94.5 |
| -64 | | 3.89 | 62.6 | 340.5 | 274 | 214 | 99.5 |
| IPH-35B-13 -40-11 | .81 | 2.48 | 58.6 | 329.5 | 260 | 197 | 91 |
| -50 | | 3.06 | 60.8 | 336.5 | 267 | 204 | 94.5 |
| -64 | | 3.89 | 63.0 | 346.5 | 277 | 214 | 99.5 |
| IPH-35B-16 -40-11 | .96 | 2.48 | 59.3 | 334.5 | 262.5 | 197 | 91 |
| -50 | | 3.06 | 61.5 | 341.5 | 269.5 | 204 | 94.5 |
| -64 | | 3.89 | 62.7 | 351.5 | 279.5 | 214 | 99.5 |

Note: IPH-34B (35B)-*-L-11 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the individual IN port is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-36B-*-*-11
(Flange Mounting, Clockwise Rotation)

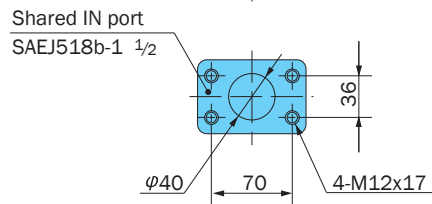
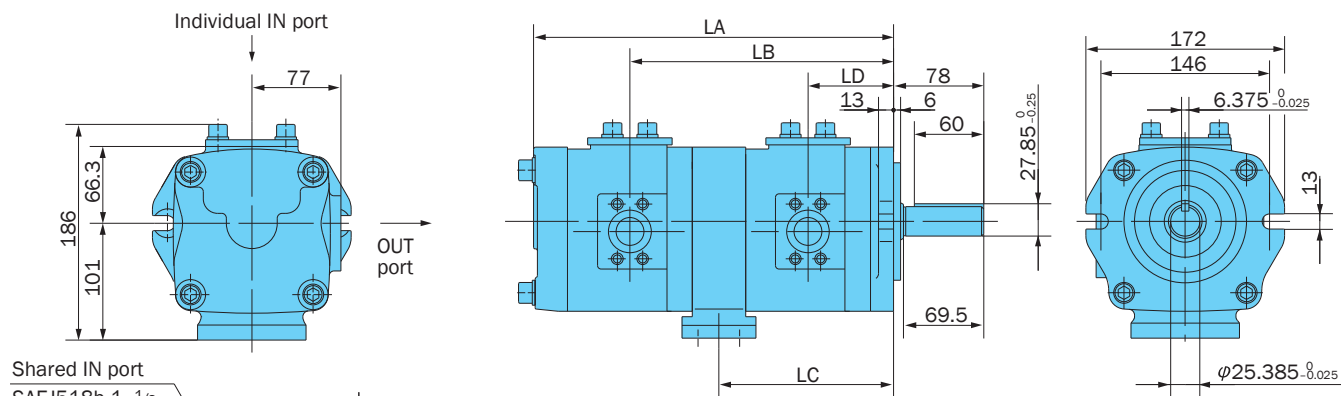


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|--------------------|------------------------|------------|---------------|-----------------|-------|-----|-------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-36B-10 - 80-11 | .62 | 4.96 | 105 | 370.5 | 304 | 240 | 111.5 |
| | | 6.19 | 110 | 380.5 | 314 | 250 | 116.5 |
| | | 7.68 | 114 | 392.5 | 326 | 262 | 122.5 |
| IPH-36B-13 - 80-11 | .81 | 4.96 | 106 | 376.5 | 307 | 240 | 111.5 |
| | | 6.19 | 110 | 386.5 | 317 | 250 | 116.5 |
| | | 7.68 | 115 | 398.5 | 329 | 262 | 122.5 |
| IPH-36B-16 - 80-11 | .96 | 4.96 | 106 | 381.5 | 309.5 | 240 | 111.5 |
| | | 6.19 | 111 | 391.5 | 319.5 | 250 | 116.5 |
| | | 7.68 | 115 | 403.5 | 331.5 | 262 | 122.5 |

Note) Dimensions shown in this diagram are for a single pump.

IPH-44B-*-*-11
(Flange Mounting, Clockwise Rotation)

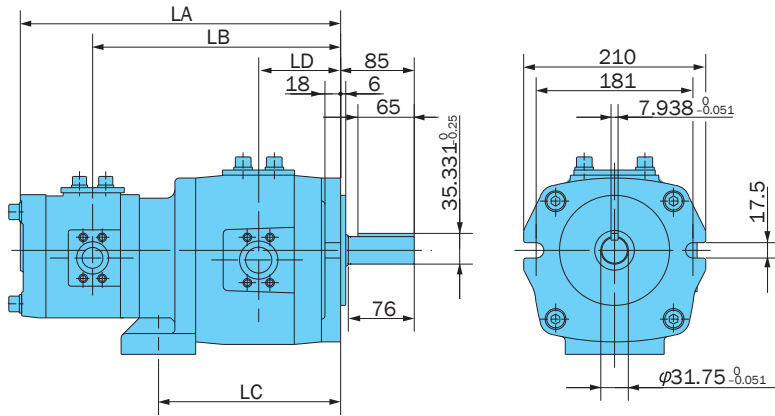
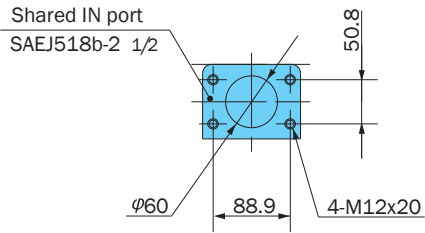
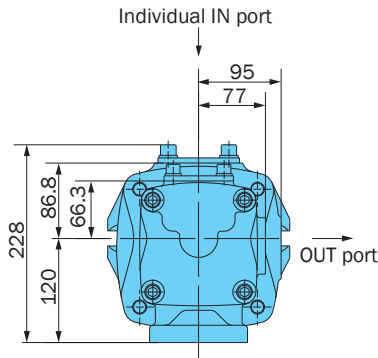


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|-------------------|------------------------|------------|---------------|-----------------|-----|-----|----|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-44B-20 -20-11 | 1.26 | 1.26 | 42.9 | 307 | 219 | 145 | 71 |
| | | 1.56 | 44.1 | 313 | 225 | 151 | 74 |
| | | 1.97 | 45.2 | 321 | 233 | 159 | 78 |
| IPH-44B-25 -25-11 | 1.56 | 1.56 | 45.2 | 319 | 228 | 151 | 74 |
| | | 1.97 | 46.3 | 327 | 236 | 159 | 78 |
| IPH-44B-32 -32-11 | 1.97 | 1.97 | 47.4 | 335 | 240 | 159 | 78 |

Note: IPH-36B (44B)-*-*-L-11 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the individual IN port is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-45B-*-11
(Flange Mounting, Clockwise Rotation)

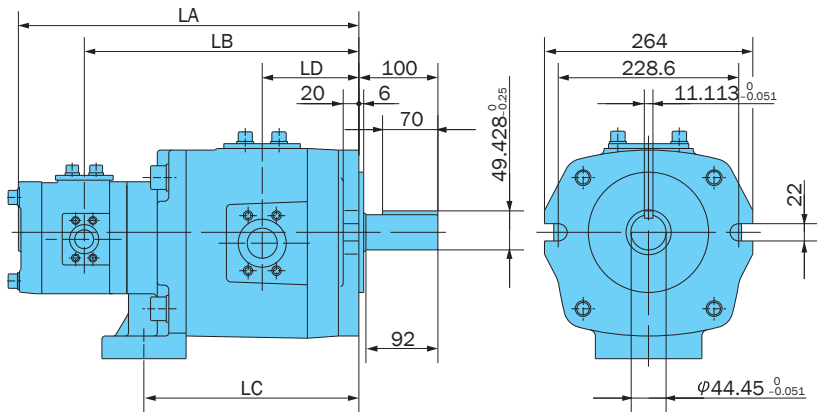
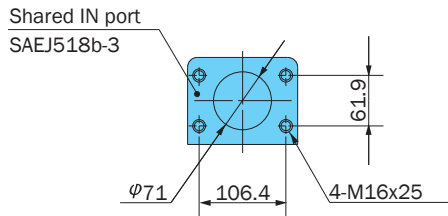
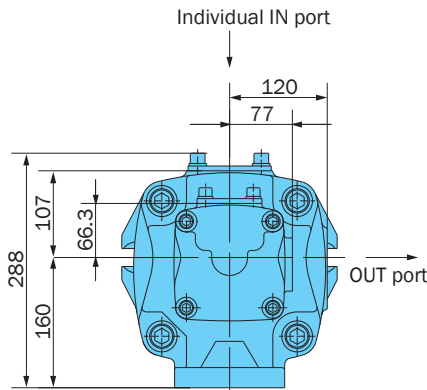


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|-------------------|------------------------|------------|------------|-----------------|-----|-----|------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-45B-20 -40-11 | 1.26 | 2.48 | 66.3 | 357 | 276 | 203 | 91 |
| | | 3.06 | 68.5 | 364 | 283 | 210 | 94.5 |
| | | 3.89 | 70.7 | 374 | 293 | 220 | 99.5 |
| IPH-45B-25 -40-11 | 1.56 | 2.48 | 67.4 | 363 | 279 | 203 | 91 |
| | | 3.06 | 69.6 | 370 | 286 | 210 | 94.5 |
| | | 3.89 | 71.3 | 380 | 296 | 220 | 99.5 |
| IPH-45B-32 -40-11 | 1.97 | 2.48 | 68.5 | 371 | 283 | 203 | 91 |
| | | 3.06 | 70.7 | 378 | 290 | 210 | 94.5 |
| | | 3.89 | 72.9 | 388 | 300 | 220 | 99.5 |

Note: Dimensions shown in this diagram are for a single pump.

IPH-46B-*-11
(Flange Mounting, Clockwise Rotation)



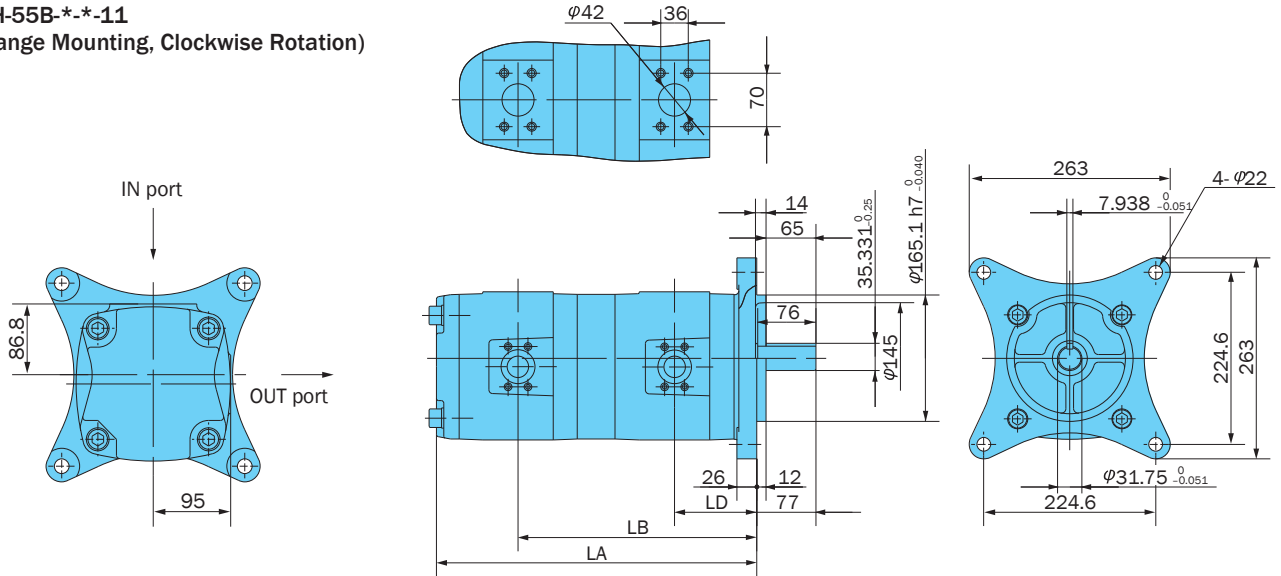
Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|--------------------|------------------------|------------|------------|-----------------|-----|-----|-------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-46B-20 - 80-11 | 1.26 | 4.96 | 115 | 404 | 323 | 250 | 111.5 |
| | | 6.19 | 119 | 414 | 333 | 260 | 116.5 |
| | | 7.68 | 124 | 426 | 345 | 272 | 122.5 |
| IPH-46B-25 - 80-11 | 1.56 | 4.96 | 116 | 410 | 326 | 250 | 111.5 |
| | | 6.19 | 120 | 420 | 336 | 260 | 116.5 |
| | | 7.68 | 125 | 432 | 348 | 272 | 122.5 |
| IPH-46B-32 - 80-11 | 1.97 | 4.96 | 117 | 418 | 330 | 250 | 111.5 |
| | | 6.19 | 121 | 428 | 340 | 260 | 116.5 |
| | | 7.68 | 126 | 440 | 352 | 272 | 122.5 |

Note: Dimensions shown in this diagram are for a single pump.

Note: IPH-45B (46B)-*-L-11 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the individual IN port is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-55B-*-11
(Flange Mounting, Clockwise Rotation)

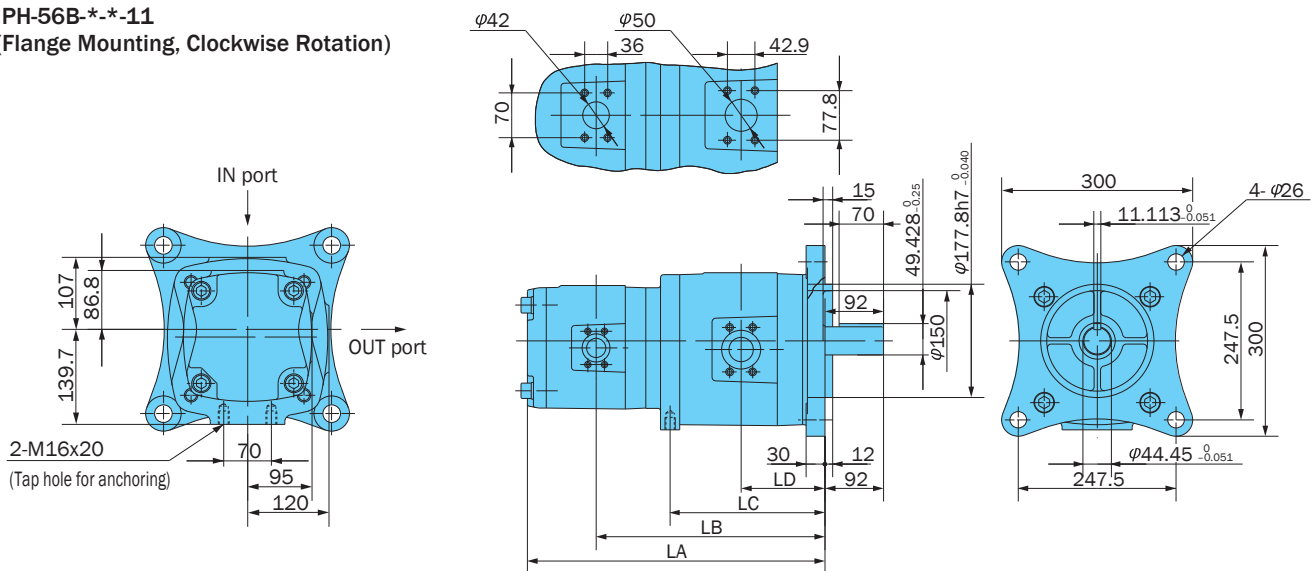


Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | |
|-------------------|------------------------|------------|------------|-----------------|-------|-------|
| | Vent Side | Shaft Side | | LA | LB | LD |
| IPH-55B-40 -40-11 | 2.48 | 2.48 | 100 | 385 | 286 | 99 |
| -50 | | 3.06 | 102 | 392 | 293 | 102.5 |
| -64 | | 3.89 | 105 | 402 | 303 | 107.5 |
| IPH-55B-50 -50-11 | 3.06 | 3.06 | 104 | 399 | 296.5 | 102.5 |
| -64 | | 3.89 | 107 | 409 | 306.5 | 107.5 |
| IPH-55B-64 -64-11 | 3.89 | 3.89 | 109 | 419 | 311.5 | 107.5 |

Note: Dimensions shown in this diagram are for a single pump.

IPH-56B-*-11
(Flange Mounting, Clockwise Rotation)



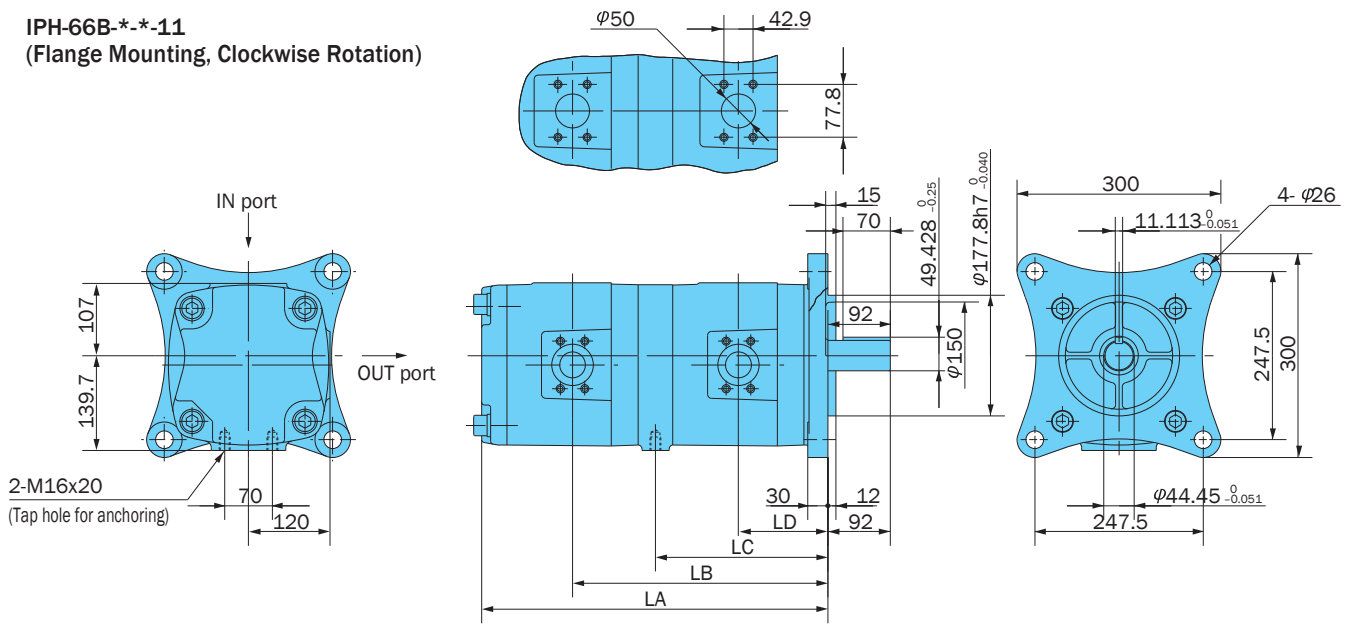
Specifications

| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|--------------------|------------------------|------------|------------|-----------------|-------|-----|-------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-56B-40 - 80-11 | 2.48 | 4.96 | 156 | 427 | 328 | 221 | 120.5 |
| -100 | | 6.19 | 160 | 437 | 338 | 231 | 125.5 |
| -125 | | 7.68 | 164 | 449 | 350 | 243 | 131.5 |
| IPH-56B-50 - 80-11 | 3.06 | 4.96 | 158 | 434 | 331.5 | 221 | 120.5 |
| -100 | | 6.19 | 162 | 444 | 341.5 | 231 | 125.5 |
| -125 | | 7.68 | 167 | 456 | 353.5 | 243 | 131.5 |
| IPH-56B-64 - 80-11 | 3.89 | 4.96 | 160 | 444 | 336.5 | 221 | 120.5 |
| -100 | | 6.19 | 164 | 454 | 346.5 | 231 | 125.5 |
| -125 | | 7.68 | 169 | 466 | 358.5 | 243 | 131.5 |

Note: Dimensions shown in this diagram are for a single pump.

Note: IPH-55B (56B)-*-*-L-11 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the individual IN port is facing upwards, the discharge port flange is positioned to the right when viewed from the shaft side.

IPH-66B-*-11
(Flange Mounting, Clockwise Rotation)



Specifications

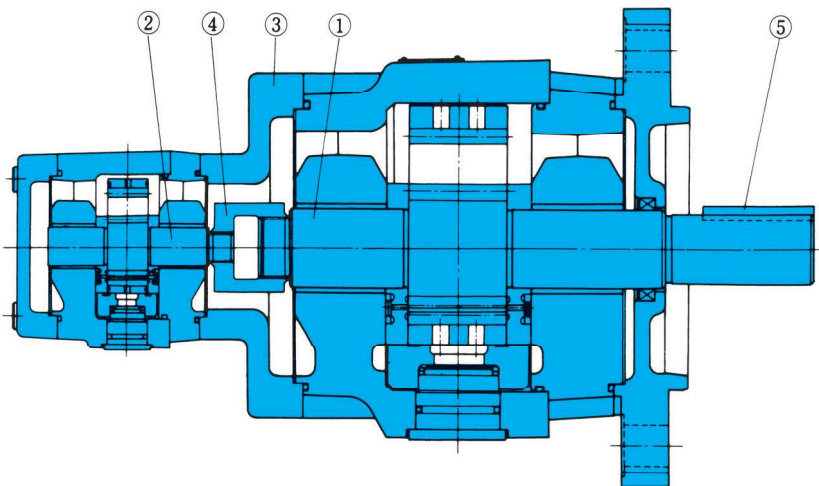
| Model No. | Volume in ³ | | Weight lbs | Dimensions (mm) | | | |
|--------------------|------------------------|------------|---------------|-----------------|-------|-----|-------|
| | Vent Side | Shaft Side | | LA | LB | LC | LD |
| IPH-66B- 80- 80-11 | 4.96 | 4.96 | 196 | 470 | 347.5 | 234 | 120.5 |
| -100 | | 6.19 | 201 | 480 | 357.5 | 244 | 125.5 |
| -125 | | 7.68 | 205 | 492 | 369.5 | 256 | 131.5 |
| IPH-66B-100-100-11 | 6.19 | 4.96 | 205 | 490 | 362.5 | 244 | 125.5 |
| -125 | | 7.68 | 209 | 502 | 374.5 | 256 | 131.5 |
| IPH-66B-125-125-11 | 7.68 | 7.68 | 214 | 514 | 380.5 | 256 | 131.5 |

Note: Dimensions shown in this diagram are for a single pump.

Note: IPH-66B-*-L-11 (foot mounting/flange mounting, counterclockwise rotation) are the mirror image of the drawings shown above. In the case the suction port flange is facing upwards, the discharge port flange position is to the right when viewed from the shaft side.

Cross-sectional Drawing

IPH Series Double IP Pump



| Part No. | Part Name |
|----------|-----------------|
| 1 | Pinion shaft -1 |
| 2 | Pinion shaft -2 |
| 3 | Body -3 |
| 4 | Joint |
| 5 | Key |

Note: In the case of a double pump, use single pump parts in addition to the 5 parts listed above.

• **IPS Series Double IP Pump Seal Kit**
The double pump seal kit combines a shaft side pump seal kit with a head pump seal kit. The shaft side pump seal kit (IHAS-2S****-**) is the same as the single pump seal

kit. The head side pump seal kit (IHAS-2H****-**) includes the same component parts as the single pump seal kit, except that it does not have a #23 oil seal. See the IPH Series (single) IP pump section in page C-9 for more information.

• **Air bleed-off valve**
See the IPH Series (single) IP pump section in page C-13.