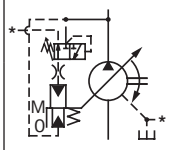
# VDC Series
# High-Pressure Type Variable Volume Vane Pump

**30 to 120ℓ/min**
**14MPa**





## Features

### ①Highly efficient and stable high-pressure operation

Innovative pressure control and pressure balance mechanisms combine with an original 3-point ring support system dramatically improves high-pressure operation. The result is outstanding performance at high pressures up to 14MPa.

### ②Low vibration and noise

A number of innovative new mechanisms are adopted to minimize vibration and noise. In particular, a 3-point support system is used for the control piston and bias piston to increase ring stability. This minimizes ring vibration and delivers quiet operation.

### ③Outstanding response, high-precision operation

An innovative new ring stopper eliminates excessive ring displacement and improves response. The result is high precision operation at all times, including during starts, stops, and load changes.

### ④Precise characteristics for a stable discharge rate

A revolutionary new pressure compensator type pressure control mechanism ensures a highly stable fixed discharge rate, even in the high pressure range.

### ⑤High efficiency operation with minimal power loss

New mechanical innovations minimize power loss, especially at full cutoff.

### ⑥Simplified maintenance and handling

Pressure adjusting and discharge rate adjusting mechanisms are located on the same side of the pump for simplified maintenance and handling.

## Specifications

| Model No. | Capacity $cm^3$/rev | No-load Discharge Rate ℓ/min | | | | Pressure Adjustment Range MPa {$kgf/cm^2$} | Allowable Peak Pressure MPa {$kgf/cm^2$} | Revolution Speed $min^{-1}$ | | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1000$min^{-1}$ | 1200$min^{-1}$ | 1500$min^{-1}$ | 1800$min^{-1}$ | | | Min. | Max. | |
| VDC-1A(B)-1A2-20<br>1A3<br>1A4<br>1A5 | 16.7 | 16.7 | 20 | 25 | 30 | 1.5 to 3.5 {15.3 to 35.7}<br>2 to 7 {20.4 to 71.4}<br>5 to 10.5 {51 to 107}<br>7 to 14 {71.4 to 143} | 14 {143}<br>21 {214} | 800 | 1800 | 9.5 |
| VDC-1A(B)-2A2-20<br>2A3 | 22 | 22 | 27 | 33 | 40 | 1.5 to 3.5 {15.3 to 35.7}<br>2 to 7 {20.4 to 71.4} | 14 {143} | 800 | 1800 | 9.5 |
| VDC-2A(B)-1A2-20<br>1A3<br>1A4<br>1A5 | 30 | 30 | 36 | 45 | 54 | 1.5 to 3.5 {15.3 to 35.7}<br>2 to 7 {20.4 to 71.4}<br>5 to 10.5 {51 to 107}<br>7 to 14 {71.4 to 143} | 14 {143}<br>21 {214} | 800 | 1800 | 25 |
| VDC-2A(B)-2A2-20<br>2A3 | 39 | 39 | 47 | 58 | 70 | 1.5 to 3.5 {15.3 to 35.7}<br>2 to 7 {20.4 to 71.4} | 14 {143} | 800 | 1800 | 25 |
| VDC-3A(B)-1A2-20<br>1A3<br>1A4<br>1A5 | 67 | 67 | 80 | 100 | 120 | 1.5 to 3.5 {15.3 to 35.7}<br>2 to 7 {20.4 to 71.4}<br>5 to 10.5 {51 to 107}<br>7 to 14 {71.4 to 143} | 14 {143}<br>21 {214} | 800 | 1800 | 47<br>(33) |

Double Pump

| Model No. | Vent Side | | | Shaft Side | | | Revolution Speed $min^{-1}$ | | Weight kg |
|---|---|---|---|---|---|---|---|---|---|
| Foot Mounting Type (Flange Mounting) | Discharge Rate ℓ/min | | Pressure Adjustment Range MPa {$kgf/cm^2$} | Discharge Rate ℓ/min | | Pressure Adjustment Range MPa {$kgf/cm^2$} | Min. | Max. | |
| | 1800$min^{-1}$ | 1500$min^{-1}$ | | 1800$min^{-1}$ | 1500$min^{-1}$ | | | | |
| VDC-11A(B)-2A3-2A3-20<br>VDC-11A(B)-2A3-1A5-20 | 40 | 33 | 2 to 7 {20.4 to 71.4} | 40<br>30 | 33<br>25 | 2 to 7 {20.4 to 71.4}<br>7 to 14 {71.4 to 143} | 800 | 1800 | Type A 27<br>Type B 20 |
| VDC-12A(B)-2A3-2A3-20<br>VDC-12A(B)-2A3-1A5-20 | 40 | 33 | 2 to 7 {20.4 to 71.4} | 70<br>54 | 58<br>45 | 2 to 7 {20.4 to 71.4}<br>7 to 14 {71.4 to 143} | 800 | 1800 | Type A 42<br>Type B 35 |
| VDC-12A(B)-1A5-2A3-20<br>VDC-12A(B)-1A5-1A5-20 | 30 | 25 | 7 to 14 {71.4 to 143} | 70<br>54 | 58<br>45 | 2 to 7 {20.4 to 71.4}<br>7 to 14 {71.4 to 143} | | | |
| VDC-22A(B)-2A3-2A3-20<br>VDC-22A(B)-2A3-1A5-20 | 70 | 58 | 2 to 7 {20.4 to 71.4} | 70<br>54 | 58<br>45 | 2 to 7 {20.4 to 71.4}<br>7 to 14 {71.4 to 143} | 800 | 1800 | Type A 62<br>Type B 50 |
| VDC-13A(B)-2A3-1A3-20<br>VDC-13A(B)-2A3-1A5-20 | 40 | 33 | 2 to 7 {20.4 to 71.4} | 120 | 100 | 2 to 7 {20.4 to 71.4}<br>7 to 14 {71.4 to 143} | 800 | 1800 | Type A 62<br>Type B 48 |
| VDC-13A(B)-1A5-1A3-20<br>VDC-13A(B)-1A5-1A5-20 | 30 | 25 | 7 to 14 {71.4 to 143} | | | 2 to 7 {20.4 to 71.4}<br>7 to 14 {71.4 to 143} | | | |

Note) 1. VDC-3A, VDC-11A, VDC-12A and VDC-13A are foot mounting types, and come with foot mountings.
2. VDC-1A and VDC-2A are sub plate types. Sub plates are not included.

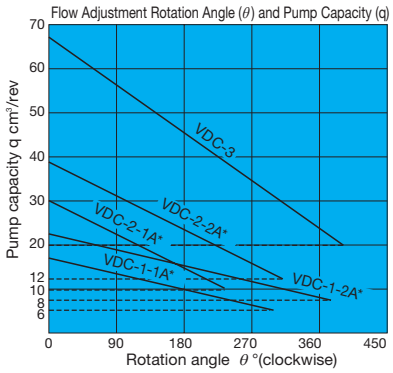
●Handling

1 Rotation Direction The direction of rotation is always is clockwise (rightward) when viewed from the shaft side.

2 Drain Drain piping must be direct piping up to a point that is below the tank fluid level, and piping should comply with the conditions shown in the table below to ensure that back pressure due to pipe resistance does not exceed 0.1MPa. When using a pump that has drain ports at two locations, use the drain port that is higher after the pump is installed.
In the case of a double pump, run separate pipes from both the shaft side and the head side drains directly connect to the tank, so the drain pipe is below the surface of the oil.

| Item \ Model No. | VDC-1 | VDC-2 | VDC-3 |
|---|---|---|---|
| Pipe Joint Size | At least 1/4" | At least 1/4" | At least 3/8" |
| Pipe I.D. | At least $\phi$7.6 | At least $\phi$7.6 | At least $\phi$9.6 |
| Pipe Length | 1m or less | 1m or less | 1m or less |

3 Discharge Volume Adjustment
The discharge flow rate is decreased by clockwise (rightward) rotation of the discharge rate adjusting screw, and increased by counterclockwise (leftward) rotation.
Loosen the lock nut before making adjustments. After adjustment is complete, re-tighten the lock nut.
The graph below provides general guidelines for the relationship between the rotation angle of the flow rate adjusting screw and the no-load discharge rate.
However: $Q=q \times N \times 10^{-3}$
Q : No-load Discharge RateQℓ/min
q : Volume $cm^3$/rev
N : Revolution Speed $min^{-1}$




Note)
The values indicated above are at maximum pump discharge volume with the flow volume adjusting screw at the 0° position. The broken line shows the flow volume adjustment range lower limit value.

4 Pressure Adjustment Pressure is increased by clockwise (rightward) rotation of the discharge rate adjusting screw, and decreased by counterclockwise (leftward) rotation.
Loosen the lock nut before making adjustments. After adjustment is complete, re-tighten the lock nut.

5 Factory Default P-Q Settings (Standard Model)
- Flow Rate Setting = Maximum flow rate for model as indicated in the catalog
- Pressure Setting = Pressure shown in table below

6 Thrust Screw and Stopper
The thrust screw and stopper are precision adjusted at the factory during assembly. Never touch them.
See callouts 15/43 and 15/38 in the VDC-1A and 2A/3A cross-section diagrams on pages B-33 and B-34.

7 An unload circuit is required when the motor is started under condition $\lambda - \Delta$. Contact your agent about the unload circuit.

8 Initial Operation
Before operating the pump for the first time, put the pump discharge side into the noload state and then repeatedly start and stop the motor to bleed all air from inside the pump and the suction piping. After confirming that the pump is discharging oil, continue the no-load operation for at least 10 minutes to discharge all the air from the circuit. Provide an air bleed valve in circuits where it is difficult to bleed air before startup.

9 Sub Plate
Use the table below for to specify a sub plate type when one is required.

10 Foot Mounting
For a double pump with VDC-3 foot mounting, the foot mounting kit and pump are sold as a set. When only the mounting feet are required, pump mounting bolts, washers and other parts are sold together as the Foot Mounting Kit.
See page B-36 for detailed dimensions.

| Factory Default Pressure Settings MPa{kgf/cm²} |
|---|
| 2 : 3.5 {35.7} |
| 3 : 3 {30.6} |
| 4 : 5 {51 } |
| 5 : 7 {71.4} |

11 For the hydraulic operating fluid, use type ISO VG32 or equivalent (viscosity index of at least 90) for pressures of 7MPa or lower, and type ISO VG68 or equivalent (viscosity index of at least 90) for pressures greater than 7MP.

12 The operating temperature range is 15 to 60°C. When the oil temperature at startup is 15°C or less, perform a warm-up operation at low pressure until the oil temperature reaches 15°C. Use the pump in an area where the temperature is within the range of 0 to 60°C.

13 Suction pressure is -0.03 to +0.03MPa (-0.3 to +0.3kgf/$cm^2$), and the suction port flow rate should be no greater than 2m/sec.

14 Avoid pulley, gear, and other drive systems that impart a radial or thrust load on the end of the pump shaft.
Mount the pump so its pump shaft is oriented horizontally.

15 Provide a suction strainer with a filtering grade of about 100$\mu$m (150 mesh). For the return line to the tank, use a 25$\mu$m line filter.

16 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.

17 Contact your agent about using water- and glycol-based hydraulic operating fluids.

18 At startup, repeat the inching operation (start-stop) to prime the pump and bleed air from the pump and pipes. (This pump has no fluid supply port.)

(Continued on following page)

Sub Plate Number

| Pump Model No. | Sub Plate Number | Motor kW |
|---|---|---|
| VDC-1A-1A*-20 | MVD-1-115-10 | 0.75 to 1.5 |
| | MVD-1-135-10 | 2.2 to 3.7 |
| VDC-1A-2A*-20 | MVD-1-115Y-10 | 0.75 to 1.5 |
| | MVD-1-135Y-10 | 2.2 to 3.7 |
| VDC-2A-*A*-20 | MVD-2-135-10 | 2.2 to 3.7 |
| | MVD-2-160-10 | 5.5 |
| VDC-2A-2A*-20 | MVD-2-160Z-10 | 5.5 |

Note) See pages B-17 and B-18 for detailed dimensions.

19 Equip an air bleed valve in circuits where it is difficult to bleed air before startup. See page C-13 for more information.

20 When centering the pump shaft, eccentricity with the motor shaft should be no greater than 0.05mm. Use a pump mounting base of sufficient rigidity.
The angle error should be no greater than 1°.

● Inverter Drive Precautions

1 Set the revolution speed within the range of the pump specification revolution speed.

2 Changing the revolution speed may also affect the pump performance curves. Before using the inverter, check if the pressure and motor load factor are within the range of use.



## Explanation of model No.

Single Pump

**VDC – 2 A – 1 A 2 – 20**

- Design number
- Pressure adjustment range
  2: 1.5 to 3.5MPa {15.3 to 35.7kgf/cm²}
  3: 2 to 7MPa {20.4 to 71.4kgf/cm²}
  4: 5 to 10.5MPa {51 to 107kgf/cm²}
  5: 7 to 14MPa {71.4 to 143kgf/cm²}
  Note: Ring size: In the case of 2, maximum setting pressure is 7Mpa (71.4kgf/cm²).
- Flow characteristics A: Constant discharge type
- Ring size

at 1800min⁻¹

| Ring size | VDC-1 | VDC-2 | VDC-3 |
|---|---|---|---|
| 1 | 30ℓ/min | 54ℓ/min | 120ℓ/min |
| 2 | 40ℓ/min | 70ℓ/min | – |

- Mounting method
  A: Foot type mounting B: Flange type mounting
- Pump size
  1: Type 1 2: Type 2 3: Type 3
- Pump Type: VDC Series High-pressure Variable Discharge Rate Vane Pump

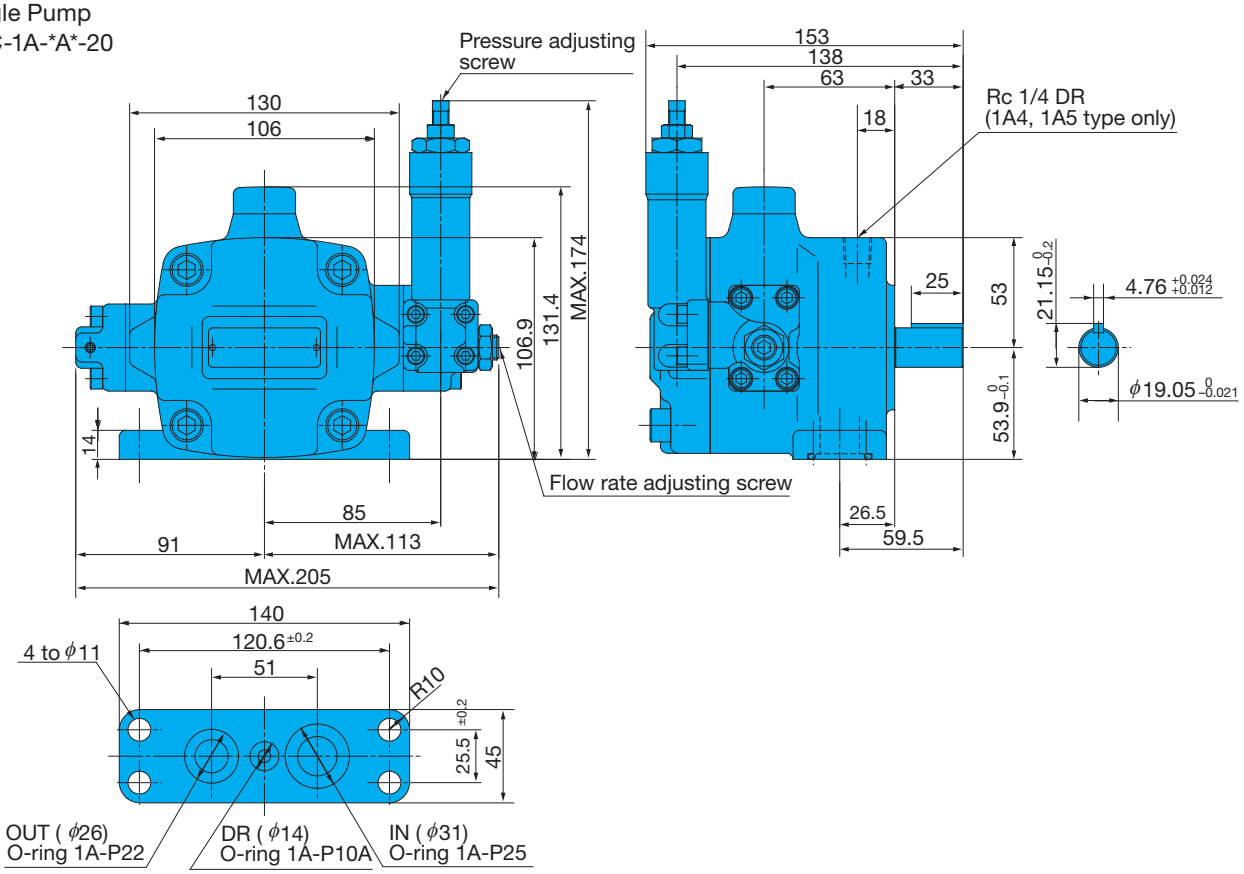
Double Pump

**VDC – 1 2 A – 1 A 5 – 2 A 3 – 20**

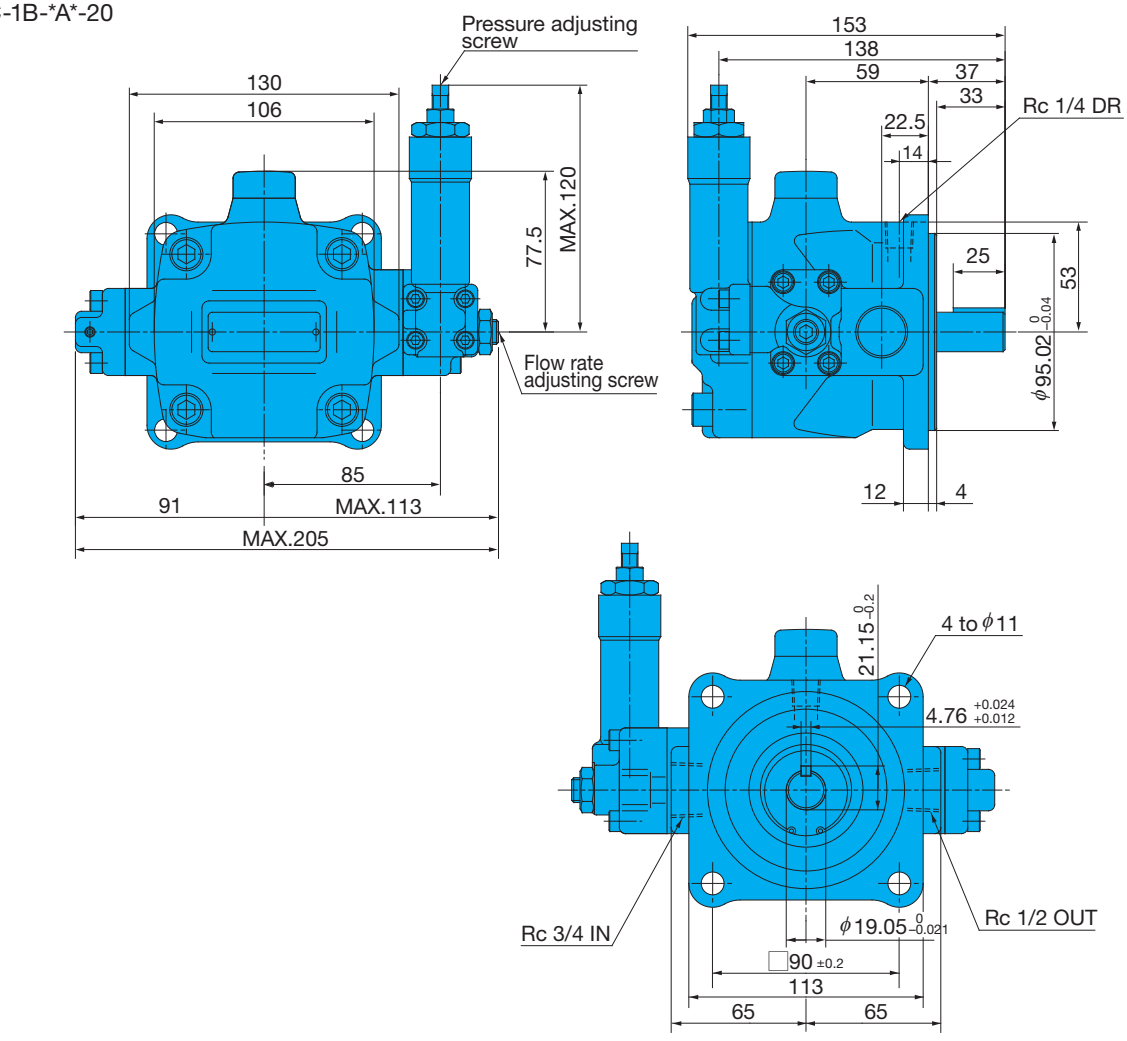
- Design number
- Shaft side pressure adjustment range
  3: 2 to 7MPa {20.4 to 71.4kgf/cm²}
  5: 7 to 14MPa {71.4 to 143kgf/cm²}
- Shaft side flow rate characteristics A: Constant discharge rate type
- Shaft side ring size 1, 2
  (Size 1 only for VDC-3)
- Head side pressure adjustment range 3, 5
- Head side flow rate characteristics A: Constant discharge rate type
- Head side ring size 1, 2
- Mounting method
  A: Foot type mounting B: Flange type mounting
- Shaft side pump size 1, 2, 3
- Head side pump size 1, 2
- Pump Type: VDC Series High-pressure Variable Discharge Rate Vane Pump

# Installation Dimension Drawings

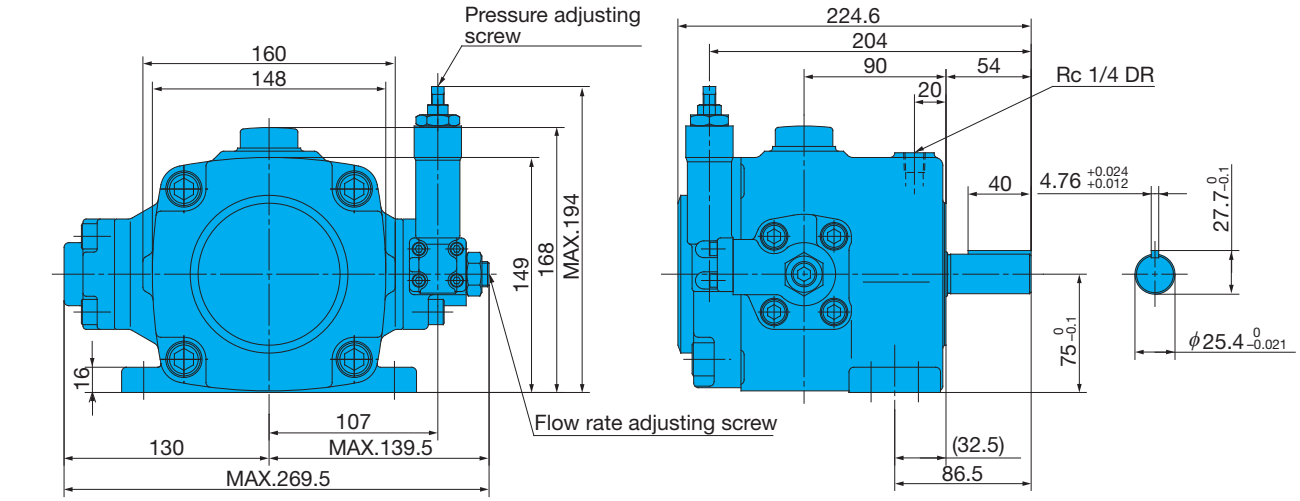
Single Pump
VDC-1A-*A*-20

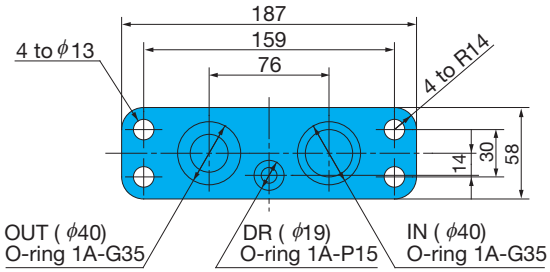



VDC-1B-*A*-20



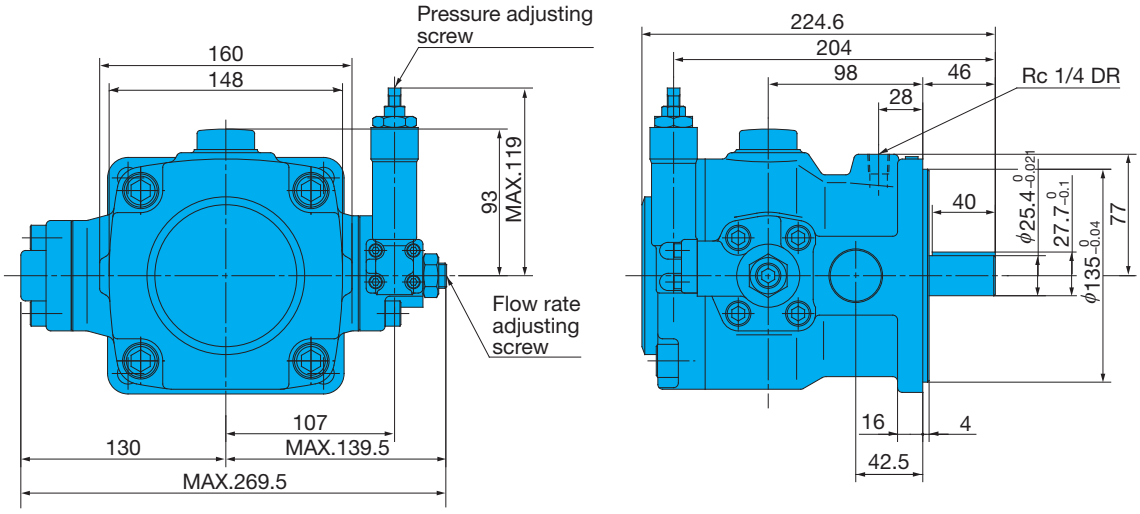
VDC-2A-*A*-20

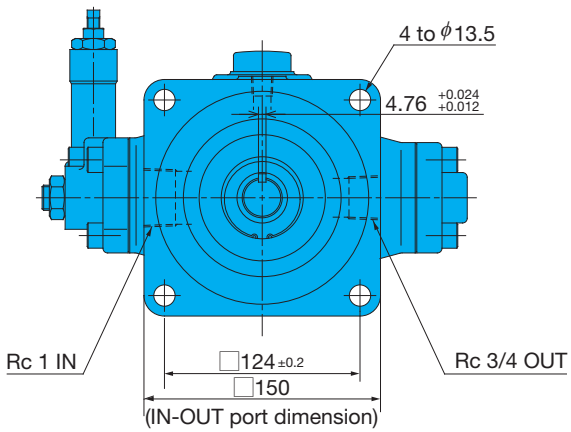


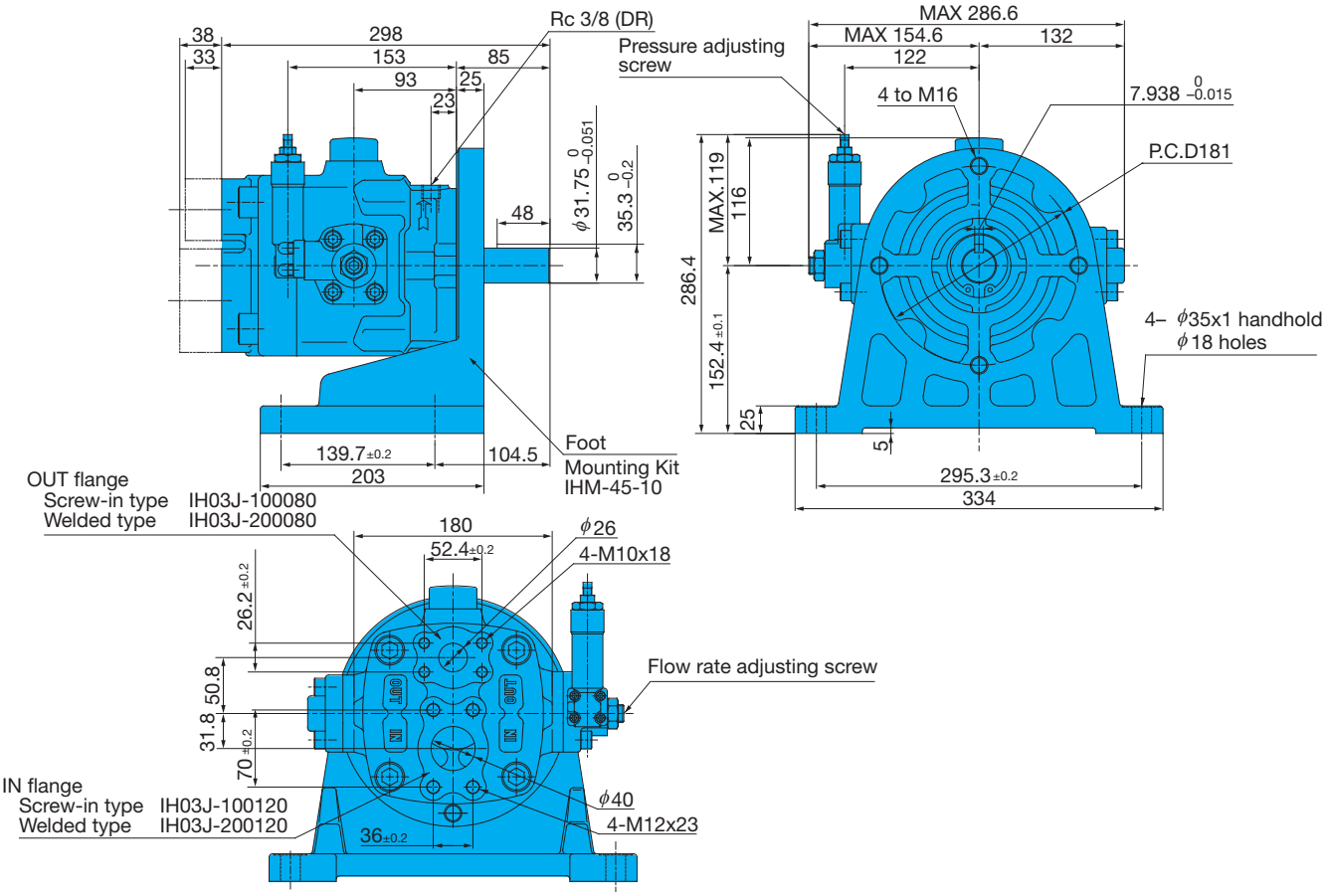

Note) O-ring 1A-** refers to JIS B2401-1A-**.

VDC-2B-*A*-20

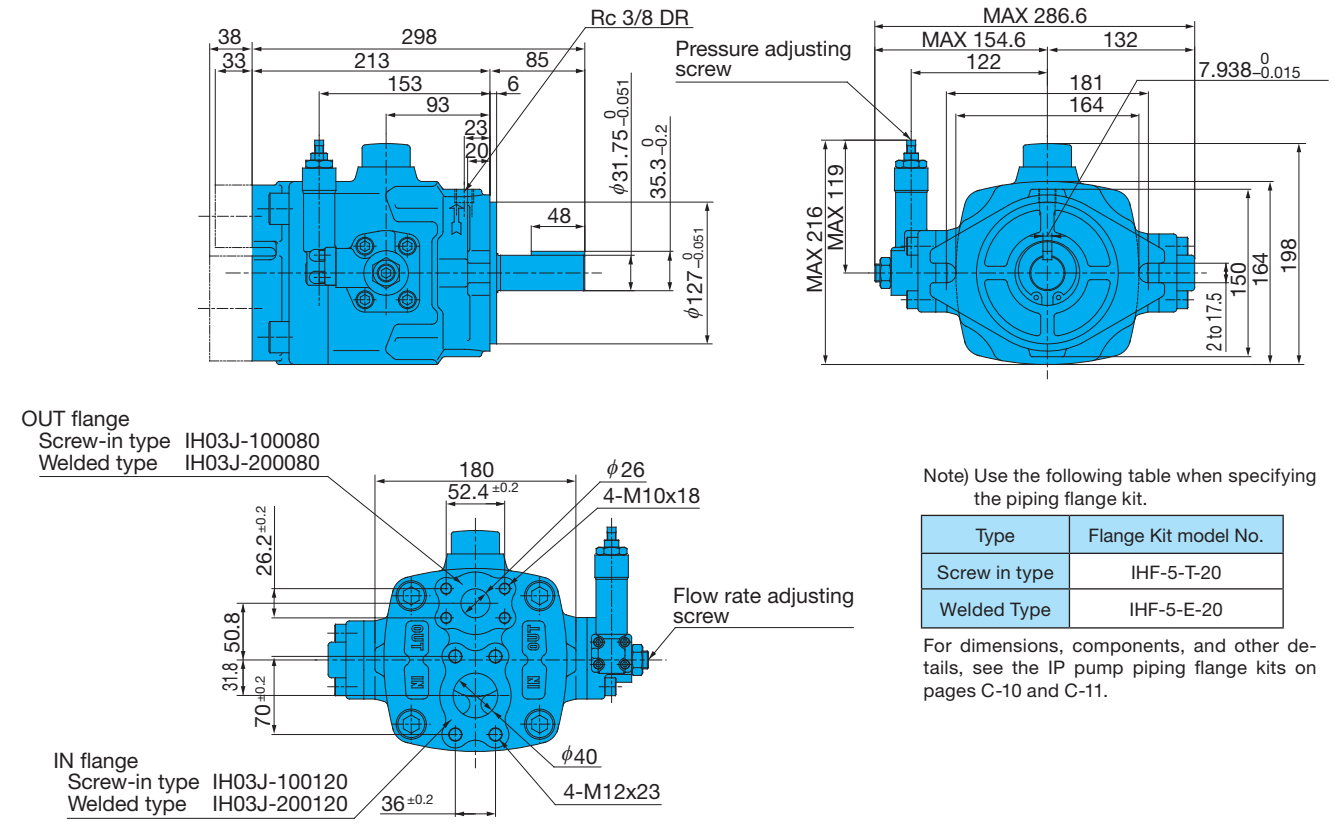


VDC-3A-1A*-20




VDC-3B-1A*-20

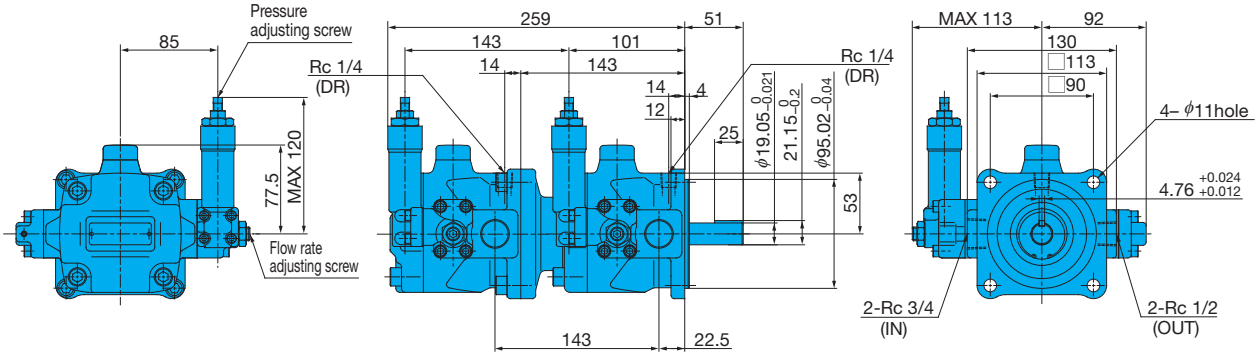



Note) Use the following table when specifying the piping flange kit.

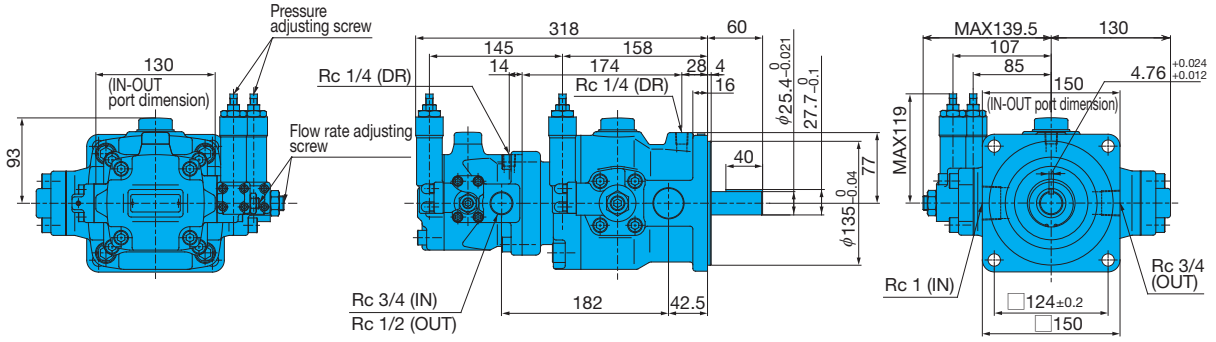
| Type | Flange Kit model No. |
|---|---|
| Screw in type | IHF-5-T-20 |
| Welded Type | IHF-5-E-20 |

For dimensions, components, and other details, see the IP pump piping flange kits on pages C-10 and C-11.

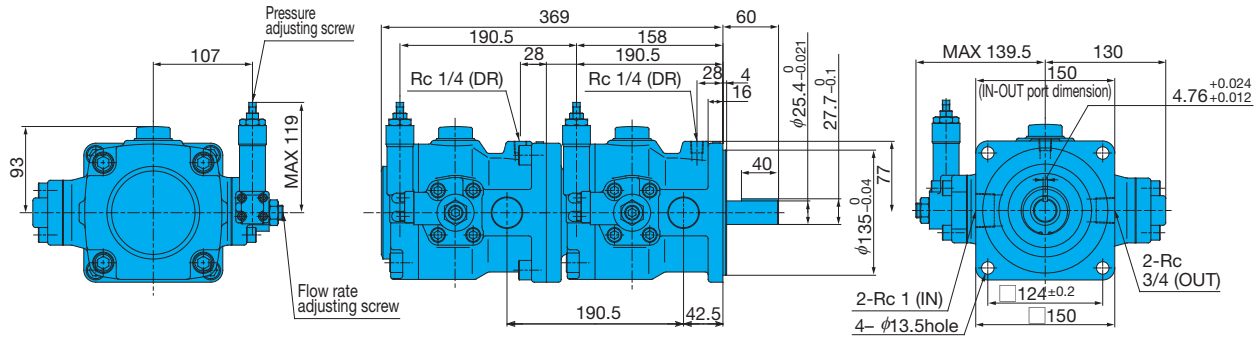
Double Pump
VDC-11B-*A*-*A*-20



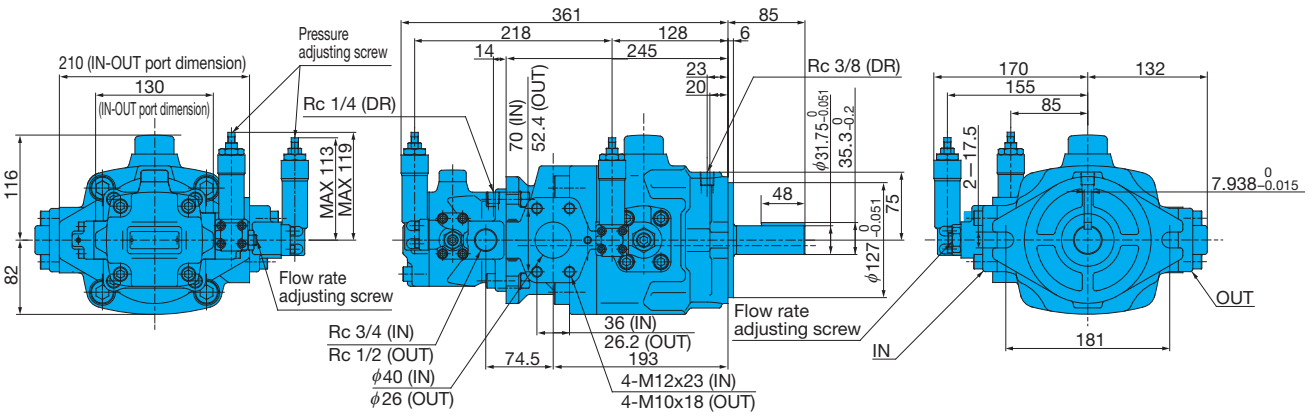

VDC-12B-*A*-*A*-20




VDC-22B-*A*-*A*-20




VDC-13B-*A*-*A*-20

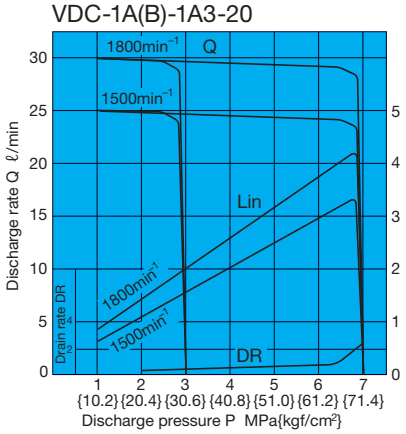



Note) 1. VDC-**A has the foot mounting kit shown on page B-36 installed.
2. Rc-* previously was PT*.

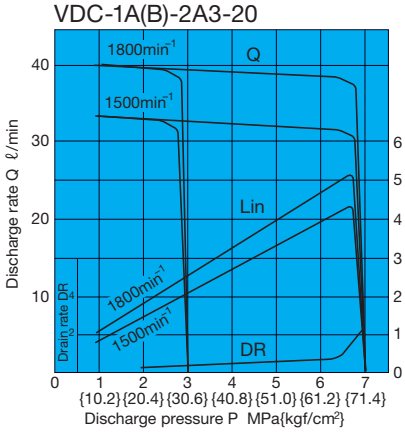
# Performance Curves

**Typical characteristics at hydraulic operating fluid kinematic viscosity of 32 mm²/s**

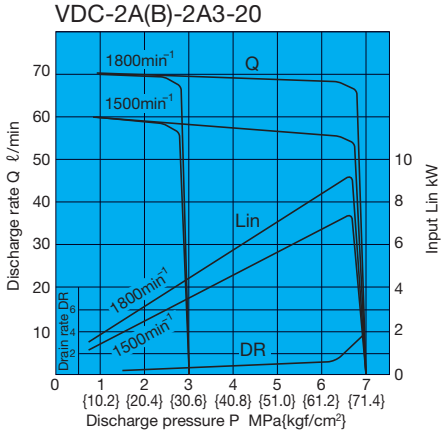
VDC-1A(B)-1A3-20



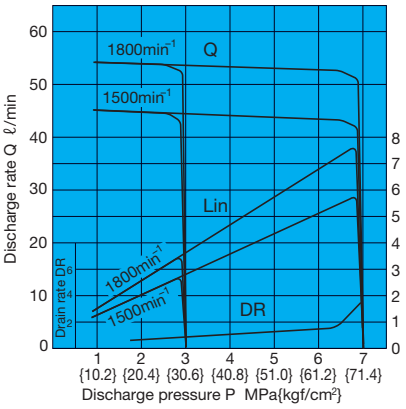

VDC-1A(B)-2A3-20



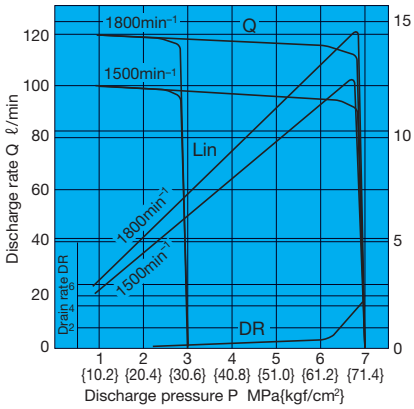

VDC-2A(B)-2A3-20



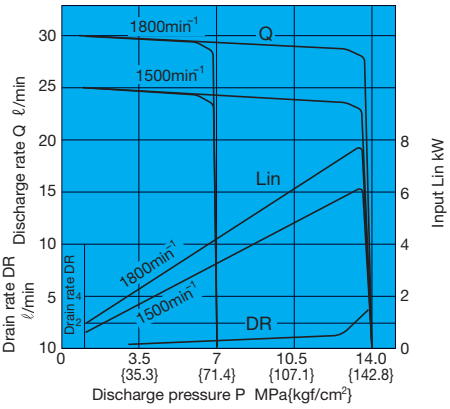

VDC-2A(B)-1A3-20



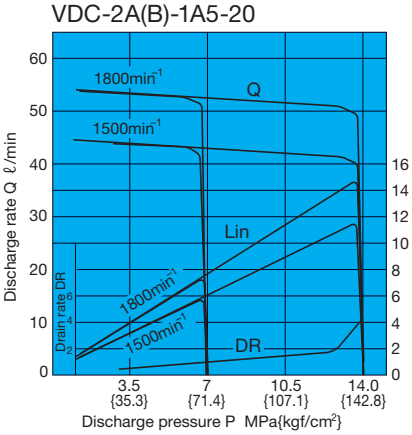

VDC-3A(B)-1A3-20



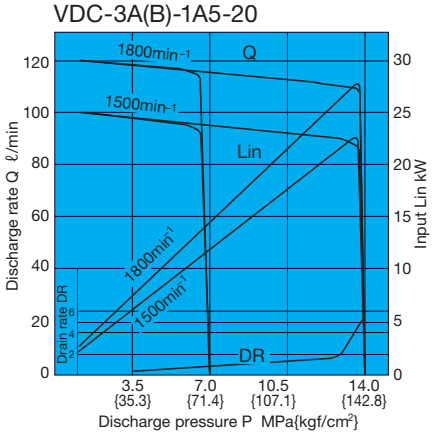

VDC-1A(B)-1A5-20




VDC-2A(B)-1A5-20

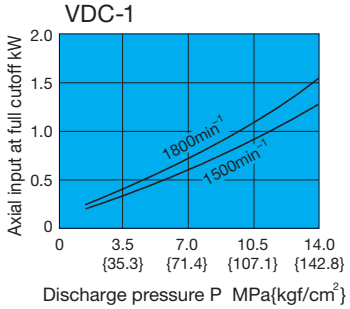



VDC-3A(B)-1A5-20

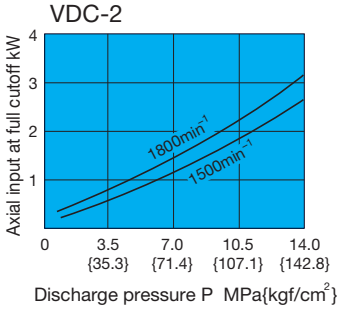



Axial input at full cutoff

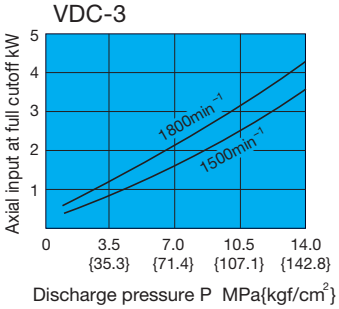
VDC-1



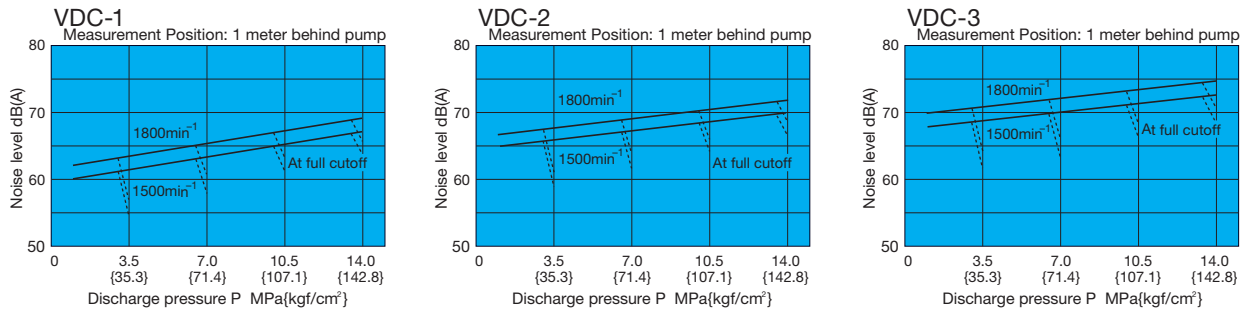

VDC-2




VDC-3

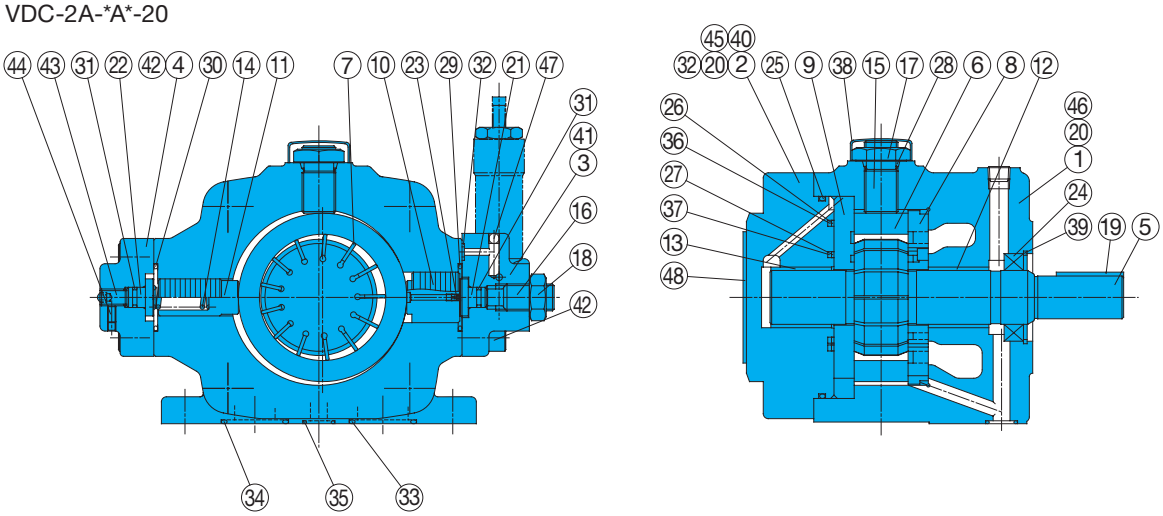


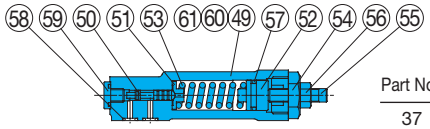
Noise Characteristics




## Cross-sectional Drawings

VDC-1A-*A*-20
VDC-2A-*A*-20




Seal Component Table (VDC-1*,VDC-2*)

| Part No. | Applicable Pump Model No. | VDC-1A-*-20 | | VDC-2A-*-20 | |
|---|---|---|---|---|---|
| | Seal Kit Number | VCBS-101A00 | | VCBS-102A00 | |
| | Part Name | Part Number | Q'ty | Part Number | Q'ty |
| 24 | Oil seal | TCV-224211-V | 1 | TCN-325211-V | 1 |
| 25 | O-ring | S85(NOK) | 1 | NBR-70-1 G115 | 1 |
| 26 | O-ring | AS568-034 | 1 | AS568-150 | 1 |
| 27 | O-ring | AS568-026 | 1 | AS568-134 | 1 |
| 28 | O-ring | NBR-70-1 P14 | 1 | NBR-70-1 P18 | 1 |
| 29 | O-ring | NBR-70-1 P22 | 1 | NBR-70-1 G35 | 1 |
| 30 | O-ring | NBR-70-1 P20 | 1 | NBR-70-1 G35 | 1 |
| 31 | O-ring | NBR-70-1 P5 | 2 | NBR-70-1 P9 | 2 |
| 32 | O-ring | NBR-70-1 P6 | 4 | NBR-70-1 P7 | 4 |
| 33 | O-ring | NBR-70-1 P25 | 1 | NBR-70-1 G35 | 1 |
| 34 | O-ring | NBR-70-1 P22 | 1 | NBR-70-1 G35 | 1 |
| 35 | O-ring | NBR-70-1 P10A | 1 | NBR-70-1 P15 | 1 |
| 36 | Backup ring | VCB34-101000 | 1 | VCB34-102000 | 1 |
| 37 | Backup ring | VCB34-201000 | 1 | VCB34-202000 | 1 |
| 57 | O-ring | NBR-70-1 P14 | 1 | NBR-70-1 P14 | 1 |
| 58 | O-ring | NBR-90 P6 | 3 | NBR-90 P6 | 3 |

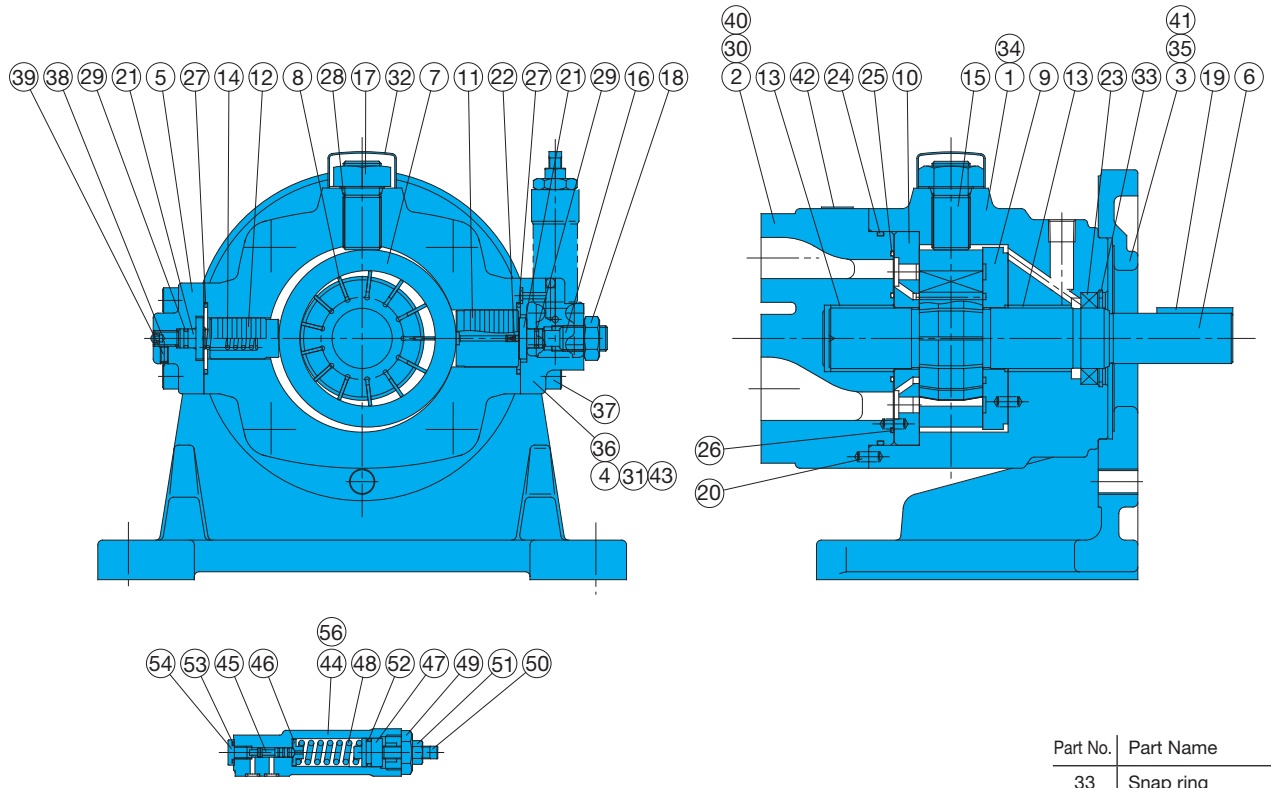
Note) 1. Oil seals are manufactured by Nippon Oil Seal Industry Co. Ltd. (NOK).
2. The materials and hardness of the O-ring conform with JIS B2401.
3. For VDR-*B-*-20, the seal kit number becomes VDBS-10*B00, without the 33, 24, and 35 O-rings.

| Part No. | Part Name |
|---|---|
| 1 | Body (1) |
| 2 | Body (2) |
| 3 | Cover (1) |
| 4 | Cover (2) |
| 5 | Shaft |
| 6 | Ring |
| 7 | Vane |
| 8 | Plate (S) |
| 9 | Plate (H) |
| 10 | Piston (1) |
| 11 | Piston (2) |
| 12 | Bearing |
| 13 | Bearing |
| 14 | Spring |
| 15 | Thrust screw |
| 16 | Screw |
| 17 | Nut |
| 18 | Nut |

| Part No. | Part Name |
|---|---|
| 19 | Key |
| 20 | Pin |
| 21 | Holder |
| 22 | Holder |
| 23 | Orifice |
| 24 | Oil seal |
| 25 | O-ring |
| 26 | O-ring |
| 27 | O-ring |
| 28 | O-ring |
| 29 | O-ring |
| 30 | O-ring |
| 31 | O-ring |
| 32 | O-ring |
| 33 | O-ring |
| 34 | O-ring |
| 35 | O-ring |
| 36 | Backup ring |

| Part No. | Part Name |
|---|---|
| 37 | Backup ring |
| 38 | Cap |
| 39 | Snap ring |
| 40 | Screw |
| 41 | Screw |
| 42 | Screw |
| 43 | Screw (stopper) |
| 44 | Screw |
| 45 | Plug |
| 46 | Plug |
| 47 | Pole |
| 48 | Nameplate |
| 49 | Valve body |
| 50 | Spool |
| 51 | Holder |
| 52 | Plunger |
| 53 | Spring |
| 54 | Retainer |
| 55 | Screw |
| 56 | Nut |
| 57 | O-ring |
| 58 | O-ring |
| 59 | Plug |
| 60 | Plug |
| 61 | Screw |

VDC-3A-1A*-20



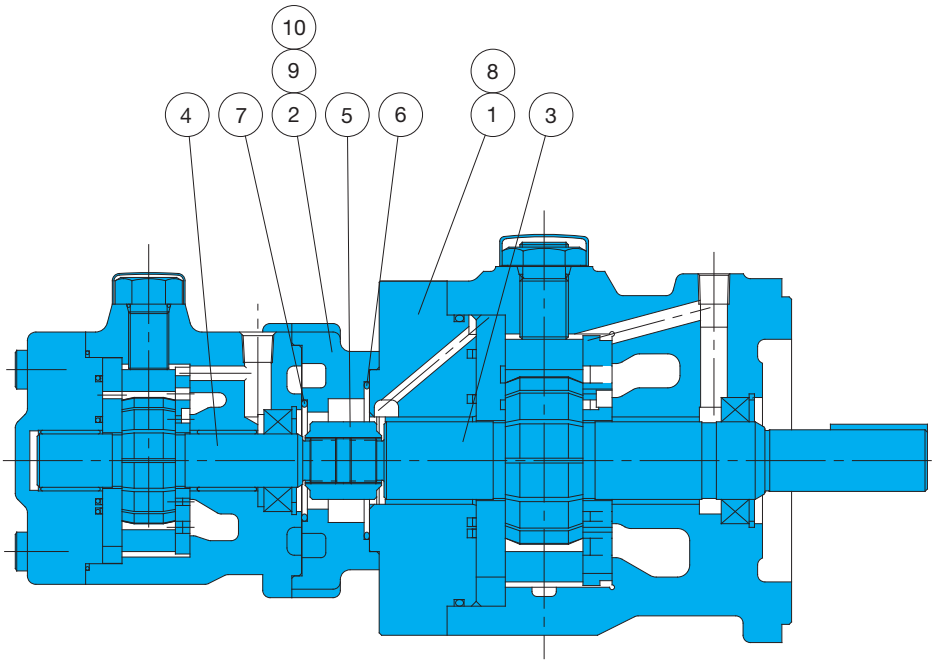

Seal Component Table (VDC-3*)

| Part No. | Applicable Pump Model No. | VDC-3A(B)-*-20 | |
|---|---|---|---|
| | Seal Kit Number | VCBS-103B00 | |
| | Part Name | Part Number | Q'ty |
| 23 | Oil seal | TCN-385811-V | 1 |
| 24 | O-ring | NBR-70-1 G130 | 1 |
| 25 | O-ring | AS568-154(NBR-90) | 1 |
| 26 | O-ring | AS568-151(NBR-90) | 1 |
| 27 | O-ring | NBR-70-1 G40 | 2 |
| 28 | O-ring | NBR-70-1 P22 | 1 |
| 29 | O-ring | NBR-70-1 P9 | 2 |
| 30 | O-ring | NBR-70-1 P7 | 2 |
| 31 | O-ring | NBR-70-1 P7 | 2 |
| 52 | O-ring | NBR-70-1 P14 | 1 |
| 53 | O-ring | NBR-90 P6(NBR-90) | 3 |

Note) 1. Oil seals are manufactured by Nippon Oil Seal Industry Co. Ltd. (NOK).
2. The materials and hardness of the O-ring conform with JIS B2401.

| Part No. | Part Name | Part No. | Part Name |
|---|---|---|---|
| 1 | Body (1) | 17 | Nut |
| 2 | Body (2) | 18 | Nut |
| 3 | Mounting | 19 | Key |
| 4 | Cover (1) | 20 | Pin |
| 5 | Cover (2) | 21 | Holder |
| 6 | Shaft | 22 | Orifice |
| 7 | Ring | 23 | Oil seal |
| 8 | Vane | 24 | O-ring |
| 9 | Plate (S) | 25 | O-ring |
| 10 | Plate (H) | 26 | O-ring |
| 11 | Piston (1) | 27 | O-ring |
| 12 | Piston (2) | 28 | O-ring |
| 13 | Bearing | 29 | O-ring |
| 14 | Spring | 30 | O-ring |
| 15 | Thrust screw | 31 | O-ring |
| 16 | Screw | 32 | Cap |

| Part No. | Part Name |
|---|---|
| 33 | Snap ring |
| 34 | Screw |
| 35 | Screw |
| 36 | Screw |
| 37 | Screw |
| 38 | Screw (stopper) |
| 39 | Screw |
| 40 | Plug |
| 41 | Washer |
| 42 | Nameplate |
| 43 | Pole |
| 44 | Valve body |
| 45 | Spool |
| 46 | Holder |
| 47 | Plunger |
| 48 | Spring |
| 49 | Retainer |
| 50 | Screw |
| 51 | Nut |
| 52 | O-ring |
| 53 | O-ring |
| 54 | Plug |
| 55 | Plug |
| 56 | Screw |




| Part No. | Part Name |
|---|---|
| 1 | Body (2) |
| 2 | Body (3) |
| 3 | Shaft (S) |
| 4 | Shaft (H) |
| 5 | Joint |
| 6 | O-ring |
| 7 | O-ring |
| 8 | Screw |
| 9 | Screw |
| 10 | Screw |

Note) In the case of a double pump, use single pump parts in addition to the 10 parts listed above.

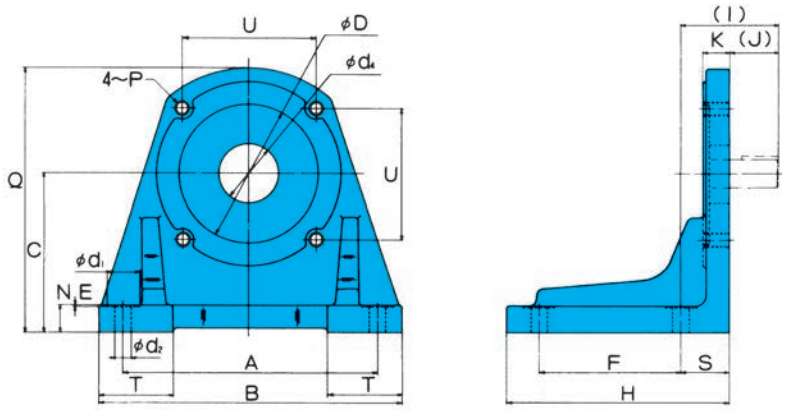
## List of Sealing Parts

| Part No. | Part Name | VDC-11A-*-*-20 | | VDC-12A-*-*-20 | | VDC-22A-*-*-20 | | VDC-13A-*-*-20 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Part Number | Q'ty | Part Number | Q'ty | Part Number | Q'ty | Part Number | Q'ty |
| 6 | O-ring | – | | NBR-70-1 G60 | 1 | NBR-70-1 G60 | 1 | – | |
| 7 | O-ring | NBR-70-1 G85 | 1 | NBR-70-1 G45 | 1 | NBR-70-1 G60 | 1 | NBR-70-1 G85 | 1 |

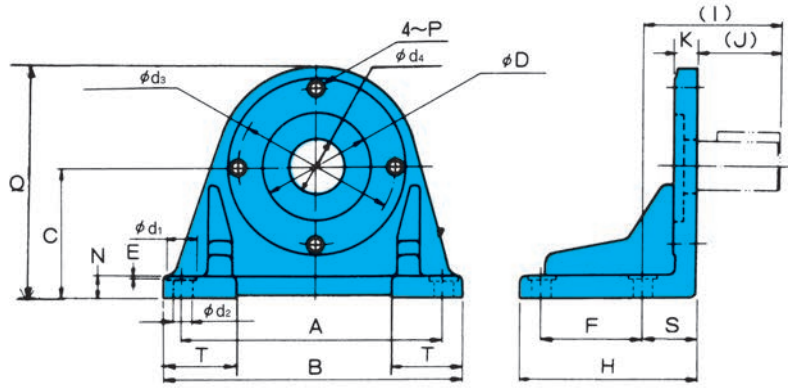
Note) 1. See the description of the single pump for seal parts that are not included in the list.
2. The materials and hardness of the O-ring conform with JIS B2401.

# Foot Mounting Installation Measurement Chart

For VDC-11A, VDC-12 and VDC-22 (for double pump)




For VDC-3A and VDC-13A




| Foot Mounting Kit Model No. | Applicable Pump Model No. | Accessories | | | | Dimensions mm | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Bolt | Q'ty | Washer | Q'ty | A | B | C | E | F | H |
| VCM-11-20 | VDC-1<br>VDC-11 | TH-10×30 | 4 | WS-B-10 | 4 | 171.45 | 204 | 107.95 | 1 | 95.25 | 150 |
| VCM-22-20 | VDC-2<br>VDC-12<br>VDC-22 | TH-12×35 | 4 | WS-B-12 | 4 | 235 | 267 | 139.7 | 1 | 127 | 193 |
| IHM-45-10 | VDC-3<br>VDC-13 | TB-16×40 | 2 | WP-16 | 2 | 295.3 | 334 | 152.4 | 1 | 139.7 | 203 |

| Foot Mounting Kit Model No. | Dimensions mm | | | | | | | | | | | | | | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (I) | (J) | K | N | P | Q | S | T | U | φD | φd1 | φd2 | φd3 | φd4 | |
| VCM-11-20 | 66.5 | 33 | 18 | 18 | M10 | 180 | 32.5 | 50 | 90 | 95.02 | 22 | 11 | – | 40 | 6.5 |
| VCM-22-20 | 84.5 | 40 | 20 | 20 | M12 | 232 | 44.5 | 57.5 | 124 | 135 | 22 | 14 | – | 40 | 12.0 |
| IHM-45-10 | 104.5 | 60 | 25 | 25 | M16 | 259 | 44.5 | 61 | – | 127 | 35 | 18 | 181 | 86 | 13.5 |

# Uni-pump Specifications

**(CE mark standard compliant)**

Single Pump

**UVC – 1 A – 2 A 2 – 1.5 – 4 – 40**

- Design number
- Number of motor poles: 4(P)
- Motor output (kW) 0.75, 1.5, 2.2, 3.7
- Pressure adjustment range
  2: 1.5 to 3.5MPa {15.3 to 35.7kgf/cm²}
  3: 2.0 to 7.0MPa {20.4 to 71.4kgf/cm²}
  4: 5 to 10.5MPa {51 to 107kgf/cm²}
- Flow characteristics A: Constant discharge type
- Ring size None: 30ℓ/min, 2: 40ℓ/min } at 1800min⁻¹
- A: Foot type mounting
- Pump size 1: VDC–1B(20D) 2: VDC–2B(20D)
- Pump Type: VDC Series Uni-pump

Double Pump

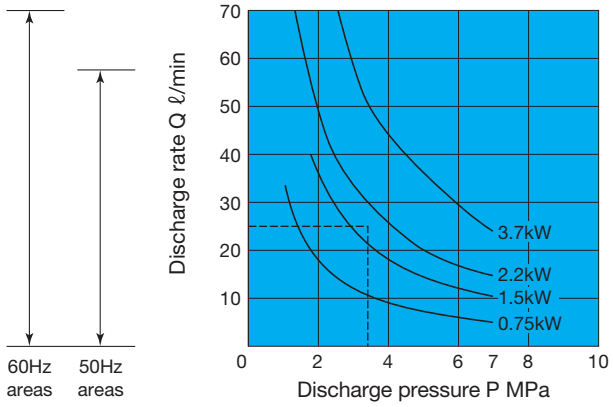
**UVC – 11 A – 2 A 2 – 2 A 2 – 3.7 – 4 – 40**

- Design number
- Number of motor poles: 4(P)
- Motor output (kW) 1.5, 2.2, 3.7
- Shaft side pump pressure adjustment range
  2: 1.5 to 3.5MPa {15.3 to 35.7kgf/cm²}
  3: 2.0 to 7.0MPa {20.4 to 71.4kgf/cm²}
- Shaft side pump flow rate characteristics A: Constant discharge type
- Shaft side pump ring size None: 30ℓ/min, 2: 40ℓ/min } at 1800min⁻¹
- Head side pump pressure adjustment range: Same as the shaft side pump
- Head side pump flow rate characteristics A: Constant discharge type
- Head side pump ring size None: 30ℓ/min, 2: 40ℓ/min } at 1800min⁻¹
- A: Foot type mounting
- Pump size 11: VDC–11B(20D)
- Pump Type: VDC Series Uni-pump

Specifications

| Model No. | Maximum Working Pressure MPa{kgf/cm²} | Maximum Flow Rate ℓ/min (A*) | | Maximum Flow Rate ℓ/min (2A*) | |
|---|---|---|---|---|---|
| | | 50Hz | 60Hz | 50Hz | 60Hz |
| UVC- 1A | 7 {71.4} | 25 | 30 | 33 | 40 |
| UVC- 2A | 7 {71.4} | 45 | 54 | 58 | 70 |
| UVC-11A | 7 {71.4} | 25-25 | 30-30 | 33-33 | 40-40 |

Motor selection curves




●Selecting a motor

The area under a motor output curve in the graph to the left is the operating range for that motor under the rated output for that motor.

Example:

To find the motor that can produce pressure of 3.5MPa and a discharge rate of 25.0 ℓ/min.

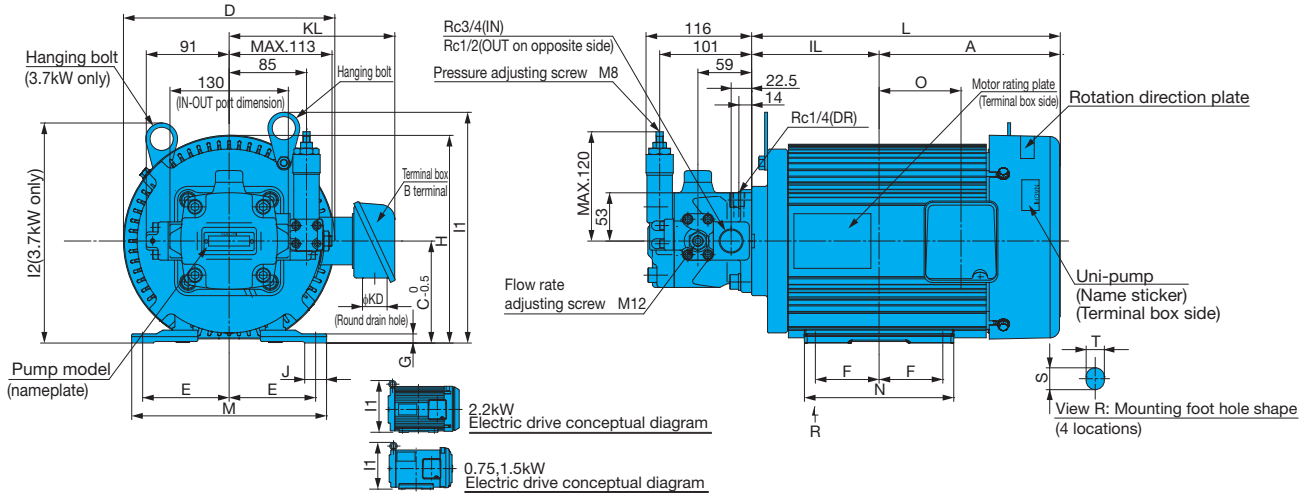
Selection Process

Since the intersection of the two broken lines from a pressure of 3.5MPa and discharge rate of 25.0 ℓ/min intersect in the area under the 2.2kW curve, it means that a 2.2kW motor should be used. In the case of a double pump configuration, select a motor that is larger than the total power required by both pumps.

* Select a uni-pump that has a pressure and flow rate that is within the range of the drive so that the drive will not overload.
* When the startup current of the uni-pump becomes higher for the IE1 motor, breakers may need to be changed.

# Installation Dimension Drawings

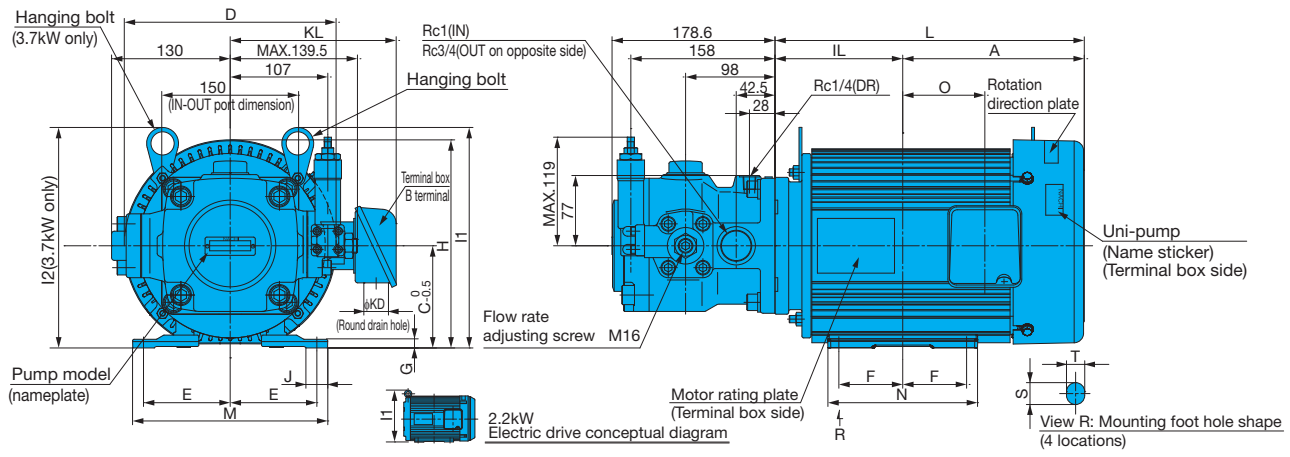
## UVC-1A




| Uni-pump | Motor Dimensions [mm] | | | | | | | | | | | | | | | | | | Frame No. | Output kW (4 poles) | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | IL | C | D | E | F | G | H | I1 | I2 | J | L | M | N | S×T | φKD | KL | O | | | |
| UVC-1A-A2-0.75-4-40 | 137 | 105 | 80 | 152 | 62.5 | 50 | 4.5 | 160 | 193 | – | 47.5 | 242 | 165 | 130 | 25×10 | 27 | 137 | 65 | 80M | 0.75 | 28.5 |
| UVC-1A-A2-1.5-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-1A-A3-1.5-4-40 | 160.5 | 118.5 | 90 | 183 | 70 | 62.5 | 4.4 | 183 | 204 | – | 22 | 279 | 165 | 152.5 | 16×10 | 27 | 142 | 68 | 90L | 1.5 | 31.5 |
| UVC-1A-2A2-1.5-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-1A-A2-2.2-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-1A-A3-2.2-4-40 | 179 | 133 | 100 | 206 | 80 | 70 | 7 | 203 | 226 | – | 39 | 312 | 206 | 170 | 14×12 | 27 | 153 | 83 | 100L | 2.2 | 45.5 |
| UVC-1A-2A2-2.2-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-1A-A3-3.7-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-1A-A4-3.7-4-40 | 199 | 140 | 112 | 233 | 95 | 70 | 10 | 228 | 253 | 242 | 24 | 339 | 214 | 164 | 14×12 | 27 | 182 | 90 | 112M | 3.7 | 49.5 |
| UVC-1A-2A2-3.7-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-1A-2A3-3.7-4-40 | | | | | | | | | | | | | | | | | | | | | |

1. Standard drive motor is the fully enclosed fan-cooled F type.
2. Standard voltage for drive motor is 200 VAC, 50/60 Hz or 220 VAC, 60 Hz.
3. Standard terminal box is B terminal (right side viewed from pump).
4. See page A-21 for the characteristics of the drive motor for the unipump (domestic standard 3 rating).

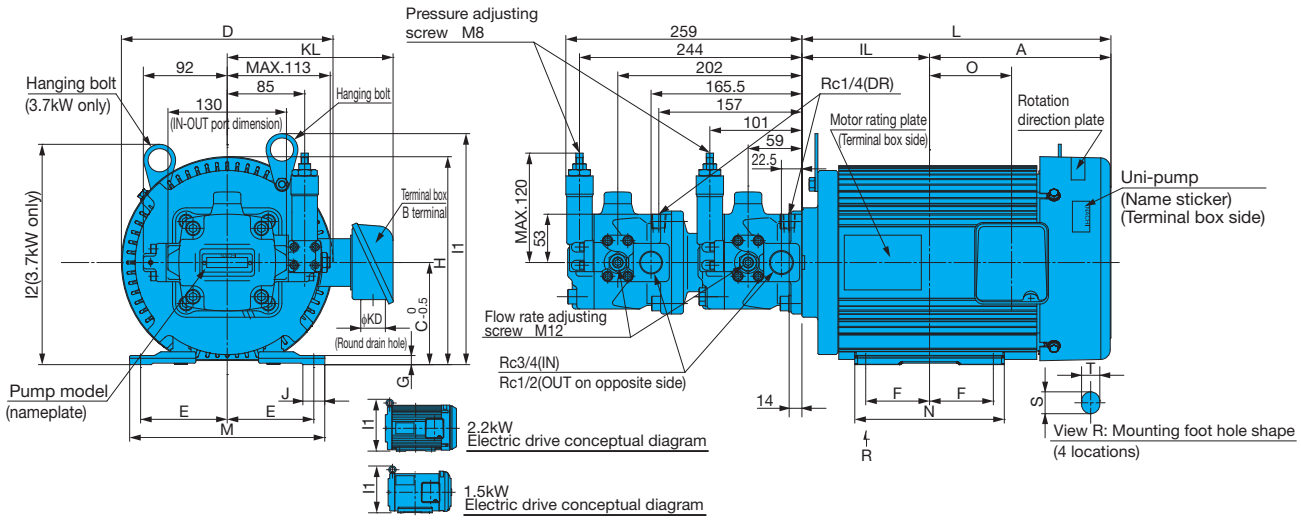
## UVC-2A




| Uni-pump | Motor Dimensions [mm] | | | | | | | | | | | | | | | | | | Frame No. | Output kW (4 poles) | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | IL | C | D | E | F | G | H | I1 | I2 | J | L | M | N | S×T | φKD | KL | O | | | |
| UVC-2A-A2-2.2-4-40 | 179 | 133 | 100 | 206 | 80 | 70 | 7 | 203 | 226 | – | 39 | 312 | 206 | 170 | 14×12 | 27 | 153 | 83 | 100L | 2.2 | 61 |
| UVC-2A-A3-2.2-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-2A-A2-3.7-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-2A-A3-3.7-4-40 | 199 | 140 | 112 | 233 | 95 | 70 | 10 | 228 | 253 | 242 | 24 | 339 | 214 | 164 | 14×12 | 27 | 182 | 90 | 112M | 3.7 | 65 |
| UVC-2A-2A2-3.7-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-2A-2A3-3.7-4-40 | | | | | | | | | | | | | | | | | | | | | |

1. Standard drive motor is the fully enclosed fan-cooled F type.
2. Standard voltage for drive motor is 200 VAC, 50/60 Hz or 220 VAC, 60 Hz.
3. Standard terminal box is B terminal (right side viewed from pump).
4. See page A-21 for the characteristics of the drive motor for the unipump (domestic standard 3 rating).

UVC-11A




| Uni-pump | Motor Dimensions [mm] | | | | | | | | | | | | | | | | | | Frame No. | Output kW (4 poles) | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | IL | C | D | E | F | G | H | I1 | I2 | J | L | M | N | S×T | φKD | KL | O | | | |
| UVC-11A-A2-A2-1.5-4-40 | 160.5 | 118.5 | 90 | 183 | 70 | 62.5 | 4.4 | 183 | 204 | – | 22 | 279 | 165 | 152.5 | 16×10 | 27 | 142 | 68 | 90L | 1.5 | 42 |
| UVC-11A-A2-A3-1.5-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-11A-A3-A3-1.5-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-11A-A2-A2-2.2-4-40 | 179 | 133 | 100 | 206 | 80 | 70 | 7 | 203 | 226 | – | 39 | 312 | 206 | 170 | 14×12 | 27 | 153 | 83 | 100L | 2.2 | 56 |
| UVC-11A-A2-A3-2.2-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-11A-A3-A3-2.2-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-11A-2A2-2A2-2.2-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-11A-A2-A2-3.7-4-40 | 199 | 140 | 112 | 233 | 95 | 70 | 10 | 228 | 253 | 242 | 24 | 339 | 214 | 164 | 14×12 | 27 | 182 | 90 | 112M | 3.7 | 60 |
| UVC-11A-A2-A3-3.7-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-11A-A3-A3-3.7-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-11A-2A2-2A2-3.7-4-40 | | | | | | | | | | | | | | | | | | | | | |
| UVC-11A-2A2-2A3-3.7-4-40 | | | | | | | | | | | | | | | | | | | | | |

1. Standard drive motor is the fully enclosed fan-cooled F type.
2. Standard voltage for drive motor is 200 VAC, 50/60 Hz or 220 VAC, 60 Hz.
3. Standard terminal box is B terminal (right side viewed from pump).
4. See page A-21 for the characteristics of the drive motor for the unipump (domestic standard 3 rating).