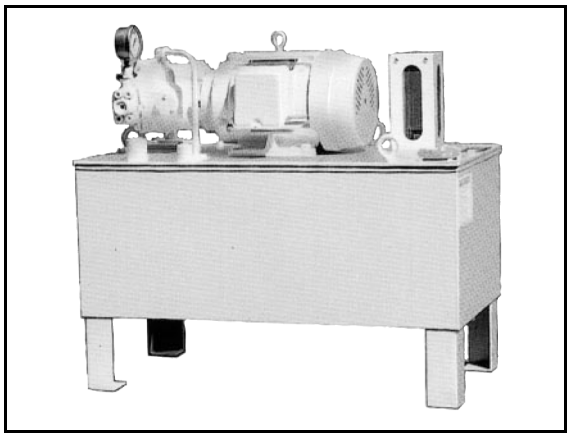
EASY MAINTENANCE HYDRAULIC POWER UNIT (MFU)



This is a ino oil replacementi type hydraulic power unit developed for realizing a clean reservoir system for failure free system operation, with no oil replacement, resource savings and preservation of the environment.

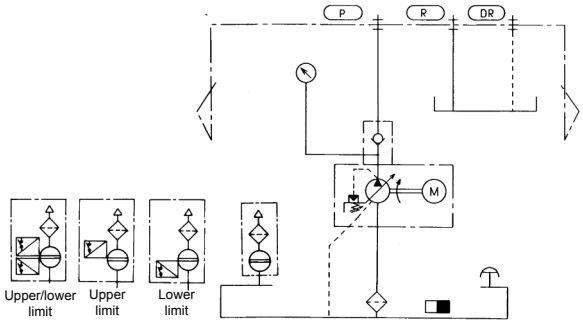
The unit was developed after a thorough study on hydraulic fluid contamination control over many years. The self-clarification function of the clean reservoir system prevents deterioration of hydraulic fluid.

- Eyebolts of a motor are provided for hoisting the motor itself. Do not use them when hoisting the hydraulic power unit. If you do, there is a danger that the hydraulic power unit will be damaged or fall.
- Always ground the hydraulic power unit. Failure to ground it will cause electrocution or fire. You are recommended to install an earth leakage breaker to prevent electric shock accidents and fire with certainty.
- When starting the hydraulic power unit, fill the inside of the pump with hydraulic fluid by supplying fluid through the oil filler port. Failure to do so may cause the pump to fail.
- Use petroleum base fluid (equivalent to ISO VG22 or VG32) within the specified fluid temperature range (VG22: 0 to 50°C, VG32: 0 to 60°C). Using hydraulic fluid outside the specified temperature range may cause failure of the hydraulic power unit and deterioration of the fluid. Fire-resistant fluid (water-glycol, w/o emulsion, ester phosphate) cannot be used. When replacing the fluid, use fluid of the same brand.
- Control the contamination level of fluid to achieve better than Class 12 of NAS1638. Using contaminated fluid will shorten the service life of the hydraulic devices and damage them.
- When installing a check valve at the pump discharge side, use one that has cracking pressure of 0.005 MPa (Model: HK3-EFT005-03-10).
- The direction of rotation of the pump must be clockwise when viewed from the motor fan side.
- With MFU020 to MFU060, the tank cover is bolted, while a welded reservoir cover is used for MFU100 to MFU250.
- The MF label is supplied with the hydraulic power unit. Fill out the label with the necessary information and stick it at the side of the reservoir.
- The exterior coating is Munsell No. 10.0 GY9.0/1.
- The specifications of an optional abnormal oil level detection switch are shown below.

Use	Relay, PLC
Contact capacity	24 VDC: 5 to 20 mA

NOTE: For the contact, a “b” contact (break contact) is used. If the control voltage is 100 VAC, install the contact protection box (CD-P11) within 1 m from the switch.

- Hydraulic Circuit Diagram



MODEL DESIGNATION

MFU 100 - D3 - E - 00 (L)

Oil-replacement-free hydraulic power unit

Reservoir capacity
- 020: 20L
- 040: 40L
- 060: 60L
- 100: 100L
- 160: 160L
- 250: 250L

Abbreviated pump model name
- B3: HPP-VB2V-F8A3
- C3: HPP-VC2V-F14A3-A
- D3: HPP-VD2V-F31A3-A
- F3: HPP-VF2V-L63A3-A

Motor capacity
- B: 0.75 kW 4P
- C: 1.5 kW 4P
- D: 2.2 kW 4P
- E: 3.7 kW 4P
- F: 5.5 kW 4P
- G: 7.5 kW 4P
- H: 11 kW 4P

Level switch (option)
- 00: Not used
- 0B: With lower limit level switch
- B0: With upper limit level switch
- BB: With upper/lower limit level switches

With/without leak test by filling with water
- No code: No testing
- L: Testing performed

SPECIFICATIONS

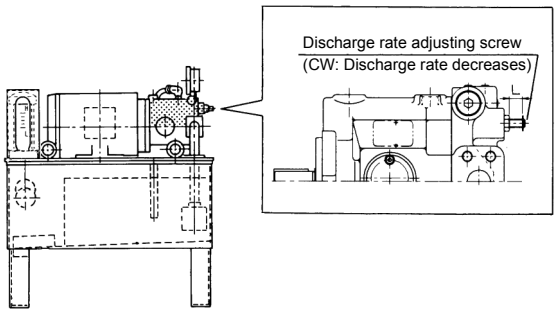
*1: Value at 1,800 min^{-1} *2: Value at 1,500 min^{-1} *3: Fluid is not included.

Model	Reservoir Capacity (L)	Motor Capacity	Discharge Rate Adjustment Range (L/min)		Max. Operating Pressure (MPa)	Pressure Adjustment Range (MPa)	Voltage	Mass*3 (kg)
			*160 Hz	*250 Hz				
MFU020-B3-B-**	20	0.75 kW 4P	4 to 14	4 to 12	7	1 to 7	Power line: 200 VAC 50/60 Hz 220 VAC 60 Hz Control line: 24 VDC	55
MFU040-C3-C-**	40	1.5 kW 4P	5 to 26	5 to 21				85
MFU060-C3-D-**	60	2.2 kW 4P						100
MFU100-D3-E-**	100	3.7 kW 4P	12 to 56	12 to 47				155
MFU160-F3-F-**	160	5.5 kW 4P	23 to 113	23 to 94				280
MFU250-F3-G-**	250	7.5 kW 4P						330
MFU250-F3-H-**	250	11 kW 4P						400

NOTE 1: If a special voltage is required, please consult us.
NOTE 2: A pressure adjustment range of 3 to 14 MPa is available upon request.
NOTE 3: The control voltage of the level switch is 24 VDC.

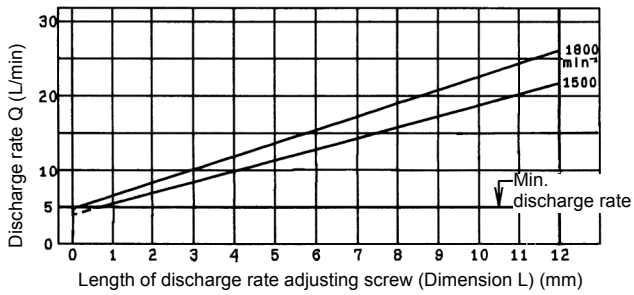
ADJUSTING THE DISCHARGE RATE USING THE PUMP DISCHARGE RATE ADJUSTING SCREW

Adjust or set the discharge rate using the discharge rate adjusting screw; set the discharge rate using the length of the screw (dimension L) in the figure below as the reference. The relationship between dimension L and the discharge rate Q is shown in the graphs below.

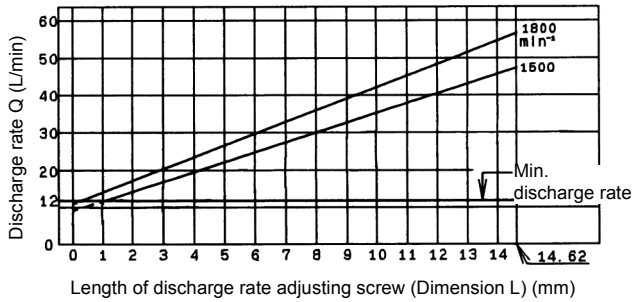


● HPP-VB2V-*8A*

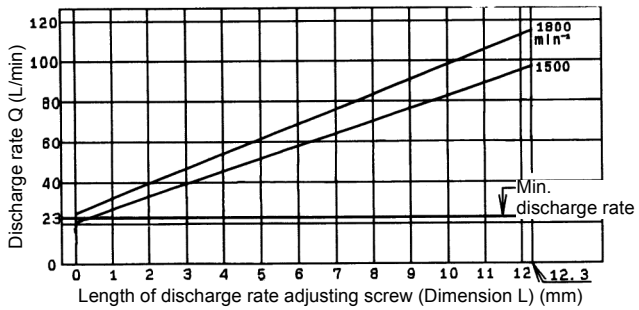
● HPP-VC2V-*14A*-A



● HPP-VD2V-*31A*-A

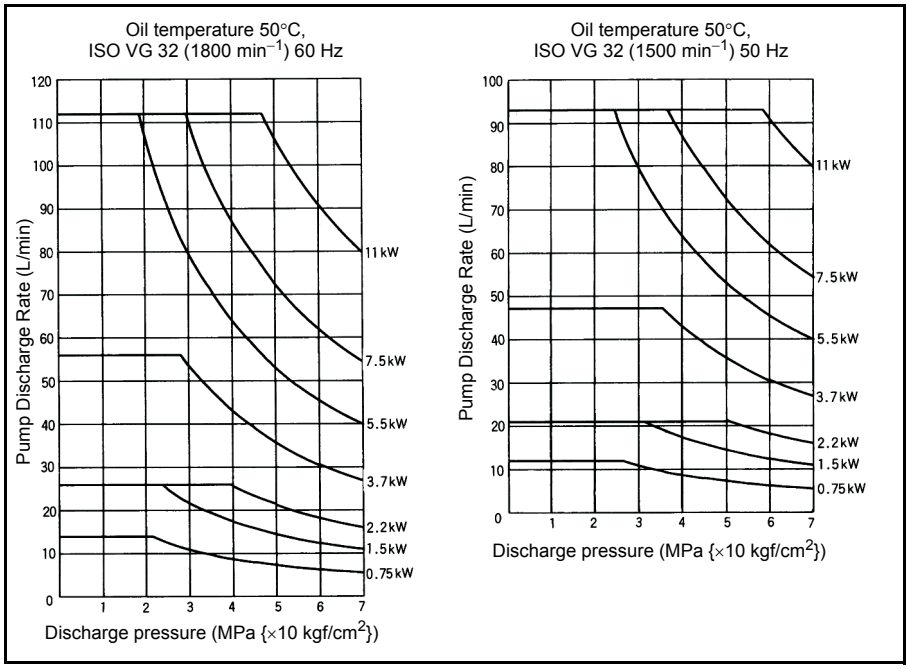


● HPP-VF2V-*63A3-A



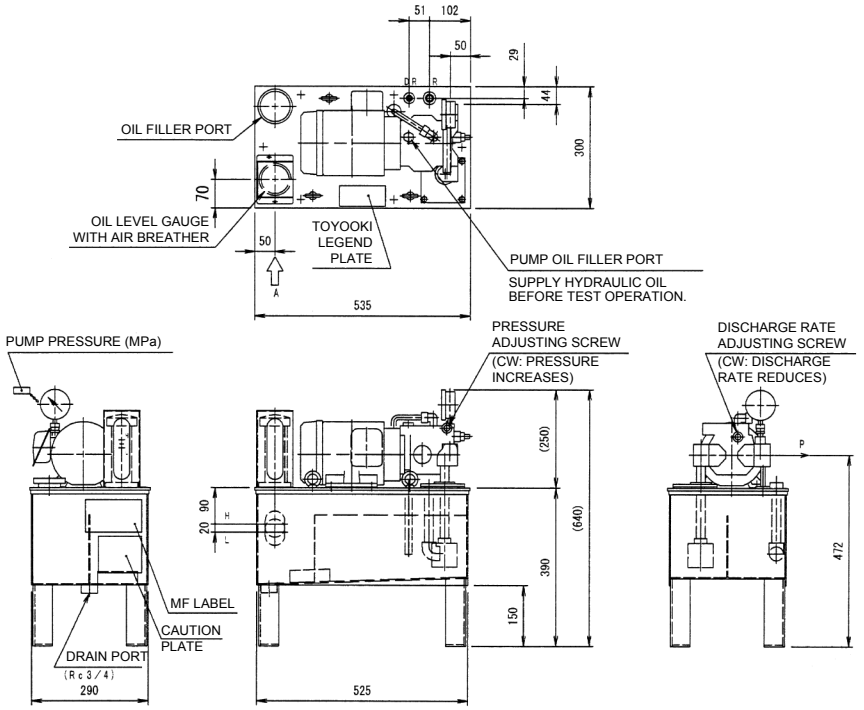
NOTE: The minimum discharge rate must be larger than the value indicated below, regardless of the speed of rotation.
Pump model HPP-VB2V: 4 L/min
Pump model HPP-VC2V: 5 L/min
Pump model HPP-VD2V: 12 L/min
Pump model HPP-VF2V: 23 L/min

MODEL SELECTION CHART

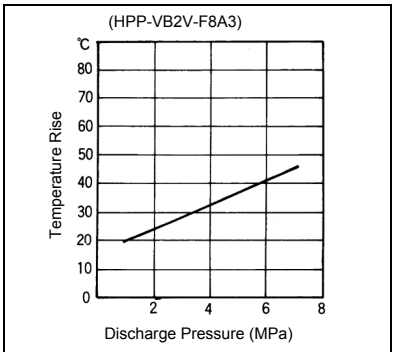


EXTERNAL DIMENSIONS (BASE MODELS)

- MFU020-B3-B-**



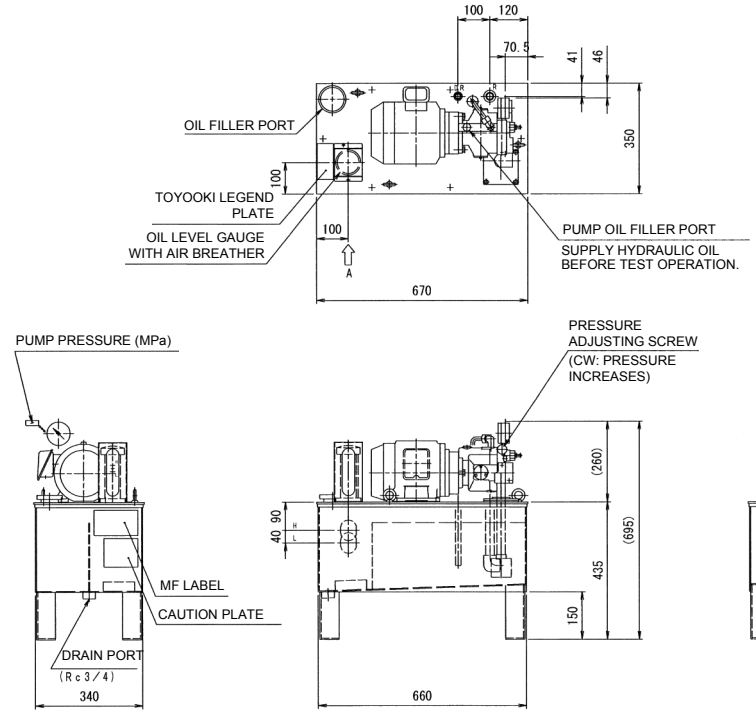
- Fluid Temperature Rise Chart
  (Fluid Temperature
  = Room Temperature + Temperature



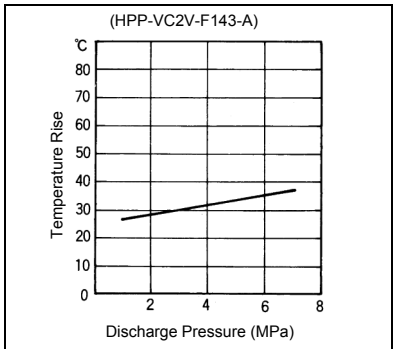
- Model name in ( ):
  Model name of installed pump
- Temperature rise measuring conditions:
  DH continuous operation under clamped state.

EXTERNAL DIMENSIONS (BASE MODELS)

● MFU040-C3-C-**

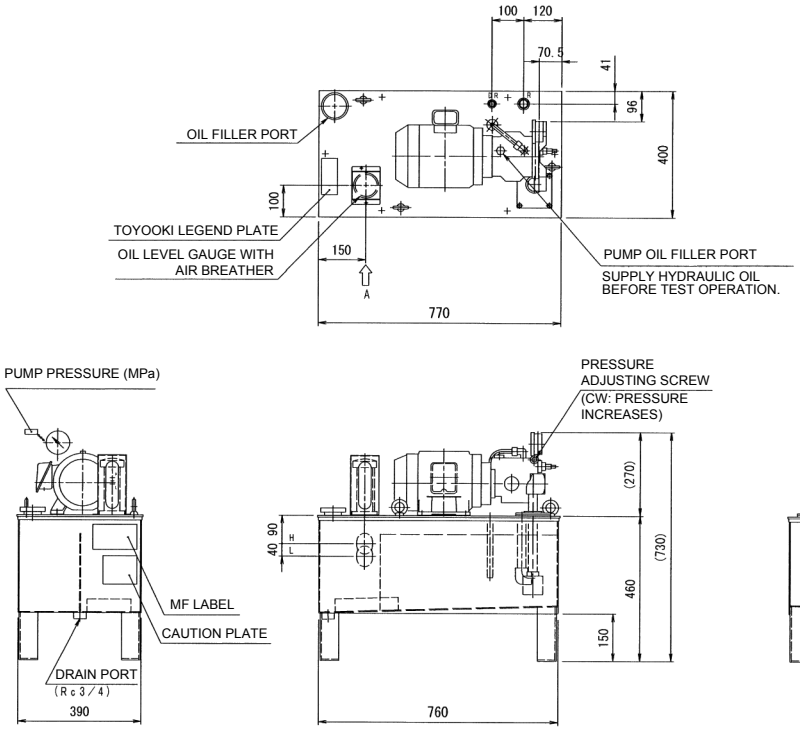


● Fluid Temperature Rise Chart (Fluid Temperature = Room Temperature + Temperature Rise)

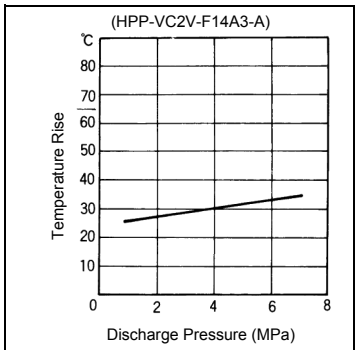


- Model name in ( ): Model name of installed pump
- Temperature rise measuring conditions: DH continuous operation under clamped state.

● MFU060-C3-D-**



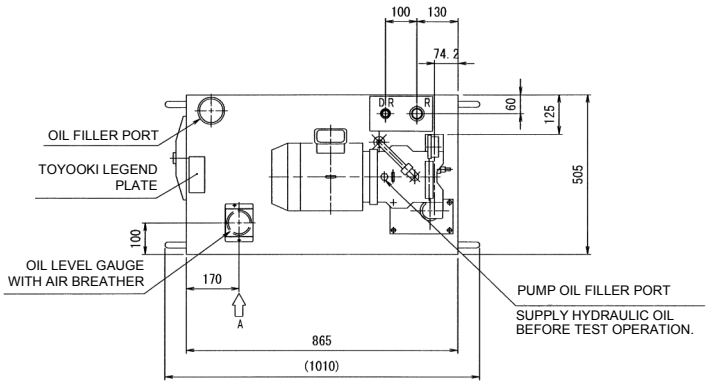
● Fluid Temperature Rise Chart (Fluid Temperature = Room Temperature + Temperature Rise)



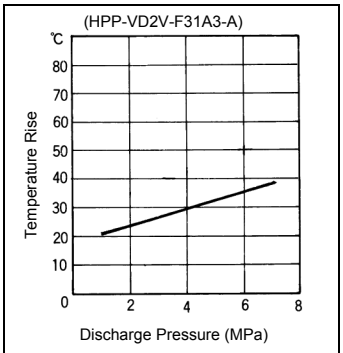
- Model name in ( ): Model name of installed pump
- Temperature rise measuring conditions: DH continuous operation under clamped state.

EXTERNAL DIMENSIONS (BASE MODELS)

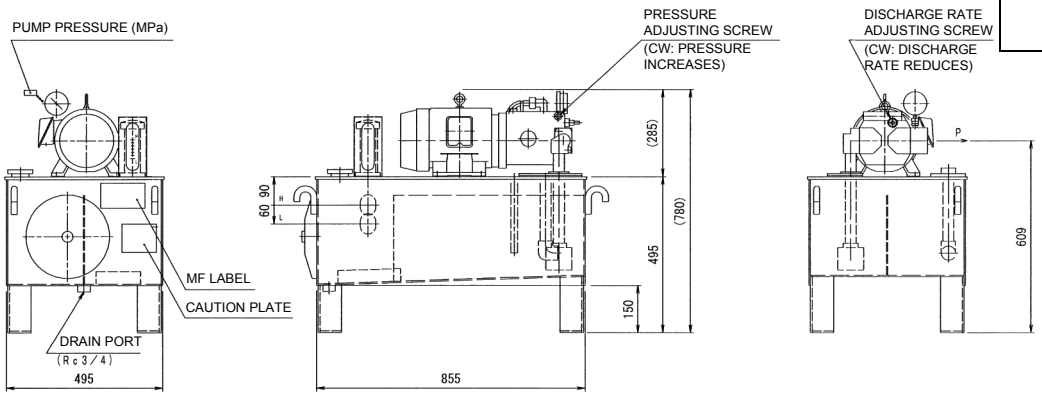
● MFU100-D3-E-**



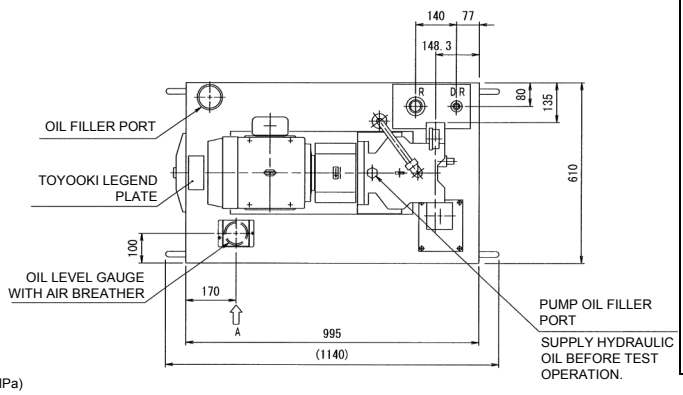
● Fluid Temperature Rise Chart (Fluid Temperature = Room Temperature + Temperature Rise)



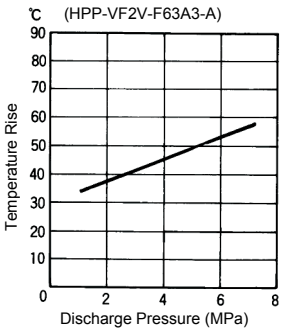
- Model name in ( ): Model name of installed pump
- Temperature rise measuring conditions: DH continuous operation under clamped state.



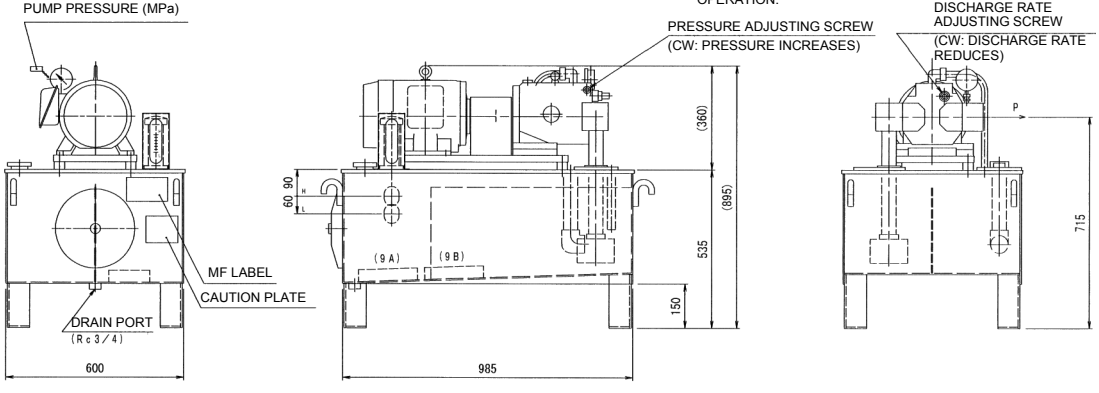
● MFU160-F3-F-**



● Fluid Temperature Rise Chart (Fluid Temperature = Room Temperature + Temperature Rise)

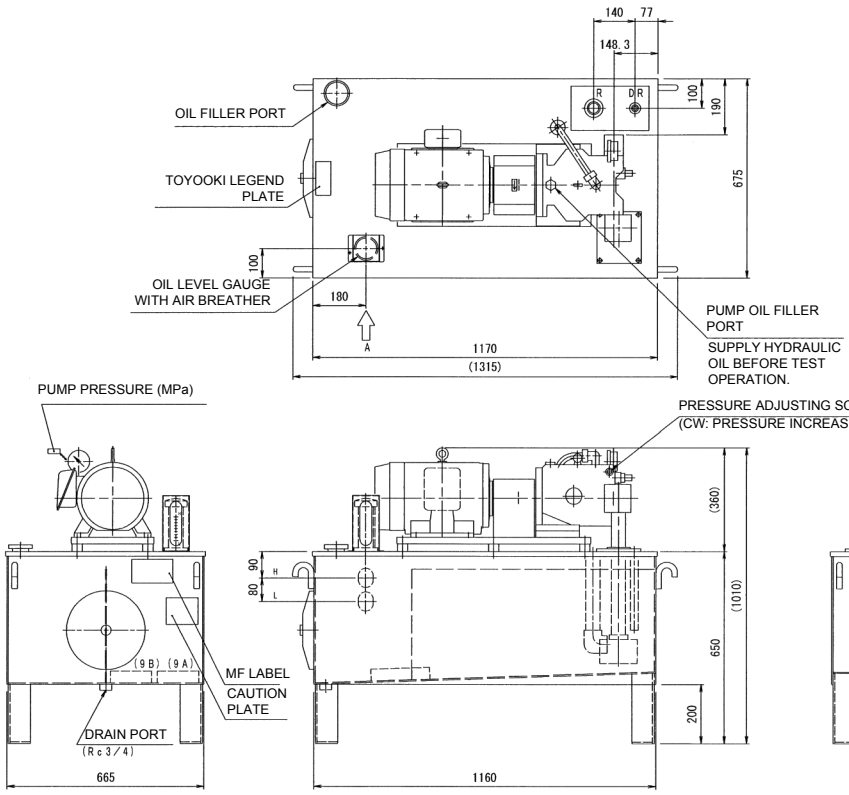


- Model name in ( ): Model name of installed pump
- Temperature rise measuring conditions: DH continuous operation under clamped state.

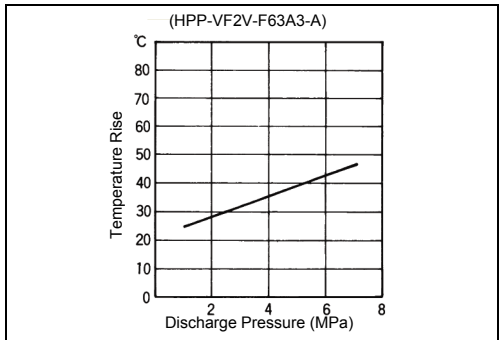


EXTERNAL DIMENSIONS (BASE MODELS)

- MFU250-F3-G-**



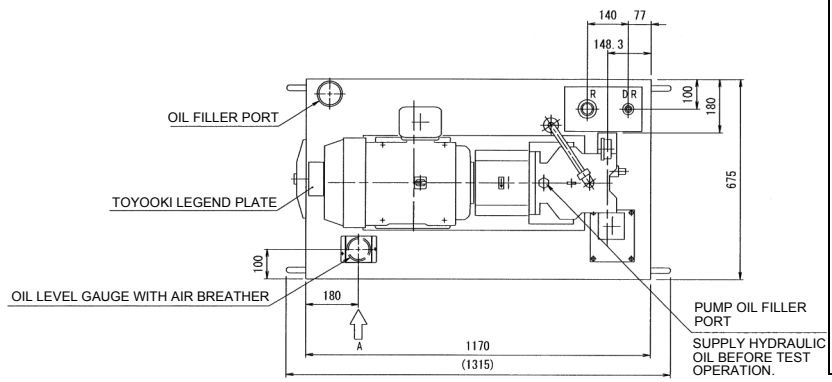
- Fluid Temperature Rise Chart
  (Fluid Temperature
  = Room Temperature + Temperature Rise)

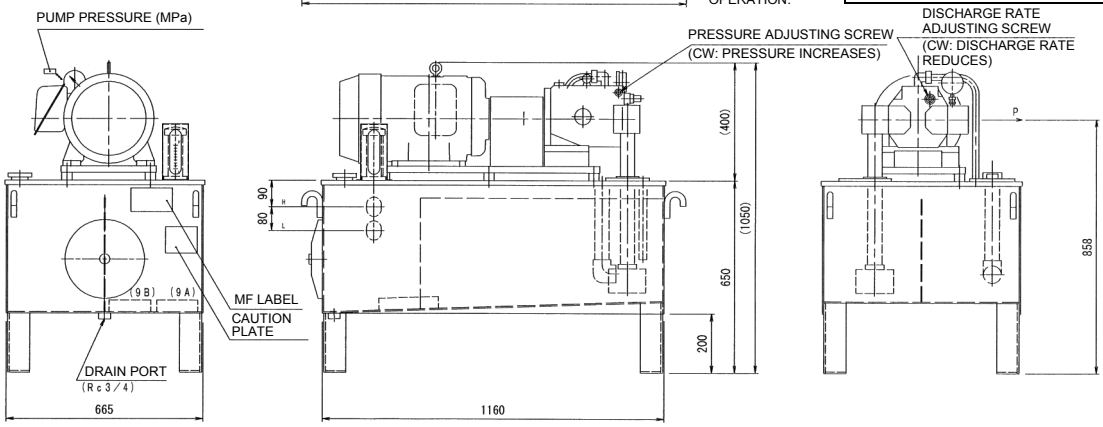


- Model name in ( ):
  Model name of installed pump
- Temperature rise measuring conditions:
  DH continuous operation under clamped state.

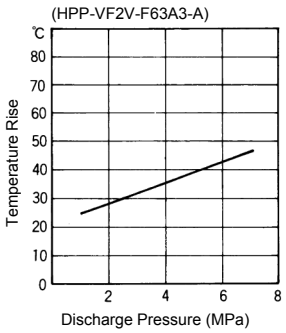
EXTERNAL DIMENSIONS (BASE MODELS)

● MFU250-F3-H-**





● Fluid Temperature Rise Chart
(Fluid Temperature
= Room Temperature + Temperature Rise)



● Model name in ( ):
Model name of installed pump

● Temperature rise measuring conditions:
DH continuous operation under clamped state.