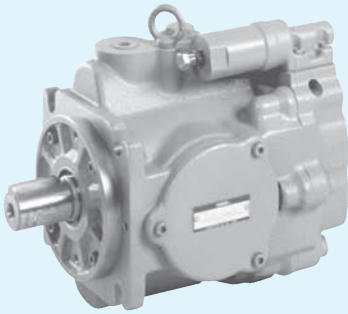
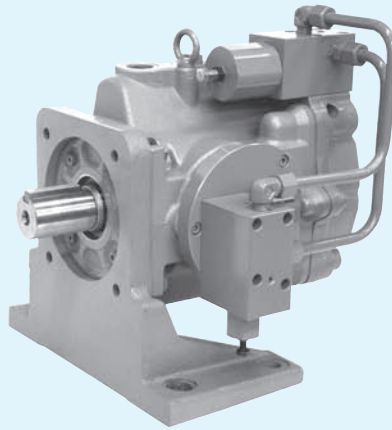


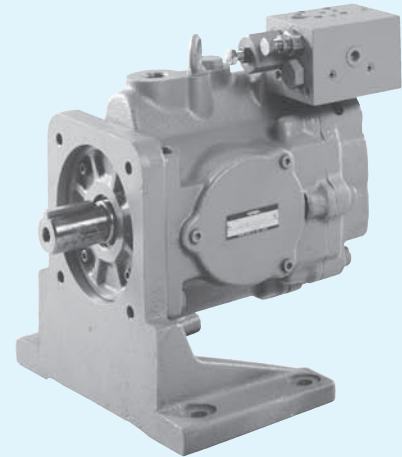
# A3H Series High Pressure Variable Displacement Piston Pumps



Pressure Compensator Type



Constant Power (Torque) Control Type



Load Sensing Type

## “A3H” Series High Pressure Variable High Pressure Displacement Piston Pumps

Pump Type	Graphic Symbol	Graphic Displacement cm <sup>3</sup> /rev								Maximum Operating Pressure MPa	Page		
		1	2	5	10	20	50	100	200			300	
<b>A3H</b> Series High Pressure Variable Displacement Piston Pumps  Single Pump★					A3H16						35	118	
					A3H37								
						A3H56							
							A3H71						
								A3H100					
									A3H145				
										A3H180			

★ Four control types are available such as pressure compensator type. Refer to page 119.

## Hydraulic Fluids

### Hydraulic Fluids

Use petroleum base oils such as anti-wear type hydraulic oils or R & O (Rust and Oxidation inhibitor) type hydraulic oils equivalent to ISO VG-32 or 46.

The recommended viscosity range is from 20 to 400 mm<sup>2</sup>/s and temperature range is from 0 to 60 °C, both of which have to be satisfied for the use of the above hydraulic oils.

### Control of Contamination

Due caution must be paid to maintaining control over contamination of the operating oil which can otherwise lead to breakdowns and shorten the life of the unit. Please maintain the degree of contamination within NAS Grade 10.

The suction port must be equipped with at least a 100 μm (150 mesh) reservoir type filter and the return line must have a line filter of under 10 μm.

## Instructions

### Mounting

When installing the pump the filling port should be positioned upwards.

### Alignment of Shaft

Employ a flexible coupling whenever possible, and avoid any stress from bending or thrust.

Maximum permissible misalignment is less than 0.1 mm TIR and maximum permissible misangular is less than 0.2°.

### Suction Pressure

Permissible suction pressure at suction port of the pump is between -16.7 and +50 kPa. In case of the speed is over 1800 r/min, adjust the pressure 0 to +50 kPa.

For piping to the suction port, use the pipes of the same diameter as that of the specified pipe flange to be used.

Make sure that the height of the pump suction port is within one metre from the oil level in the reservoir.

### Hints on Piping

When using steel pipes for the suction or discharge ports, excessive load from the piping to the pump generates excessive noise.

Whenever there is fear of excessive load, please use rubber hoses.

### Suction Piping

In case the pump is installed above the oil level, the suction piping and suction line filter should be located lower than the pump position to prevent air in the suction line.

### Drain Piping

Install drain piping according to the chart and ensure that pressure within the pump housing should be maintained at a normal pressure of less than 0.1 MPa and surge pressure of less than 0.5 MPa.

Length of piping should be less than 1 m, and the pipe end should be submerged in oil.

[Recommended Drain Piping Size]

Model	Fitting Size	Inside Dia. of Pipe
A3H16 A3H37	1/2	12 mm or more
A3H56 A3H180	3/4	19 mm or more

### Safety Valve

When delivery line is blocked suddenly, surge pressure is occurred so a safety valve should be set in the circuit to eliminate any damage on equipment and piping.

### Bleeding Air

It may be necessary to bleed air from pump case and outlet line to remove causes of vibration.

### Starting

Before first starting, fill pump case with clean operating oil via the fill port.

In order to avoid air blockage when first starting, adjust the control valves so that the discharged oil from the pump is returned direct to the tank or the actuator moves in a free load.

[Volume of Pre-fill Oil Required]

Model	Volume cm <sup>3</sup>
A3H16	400
A3H37	700
A3H56	900
A3H71	1300
A3H100	1700
A3H145	2400
A3H180	3200

## ■ Setting Discharge Pressure and Delivery

At the time of shipment, the unit has been preset to maximum delivery and minimum discharge pressure. Adjust the preset delivery and pressure to meet your system requirements.

### ● Adjustment of Discharge Pressure

Turning the adjustment screw clockwise, increases pressure.

[ Volume adjusted by each full turn of the pressure adjustment screw ]

Model Numbers	Adjustment Volume MPa
A3H16/A3H37/A3H56-01	5.5
A3H71/A3H100/A3H145-01	6.3
A3H180-01	5.7

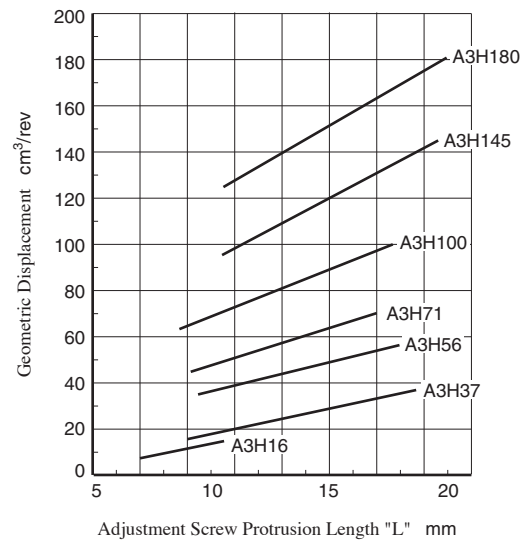
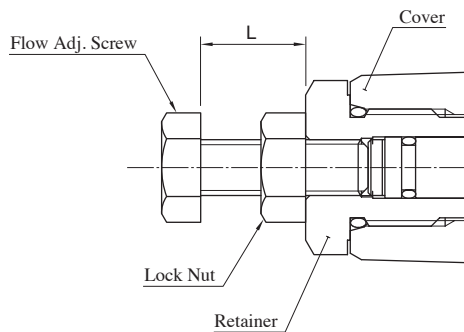
### ● Adjustment of Delivery

Turning the flow adjustment screw clockwise, decreases delivery.

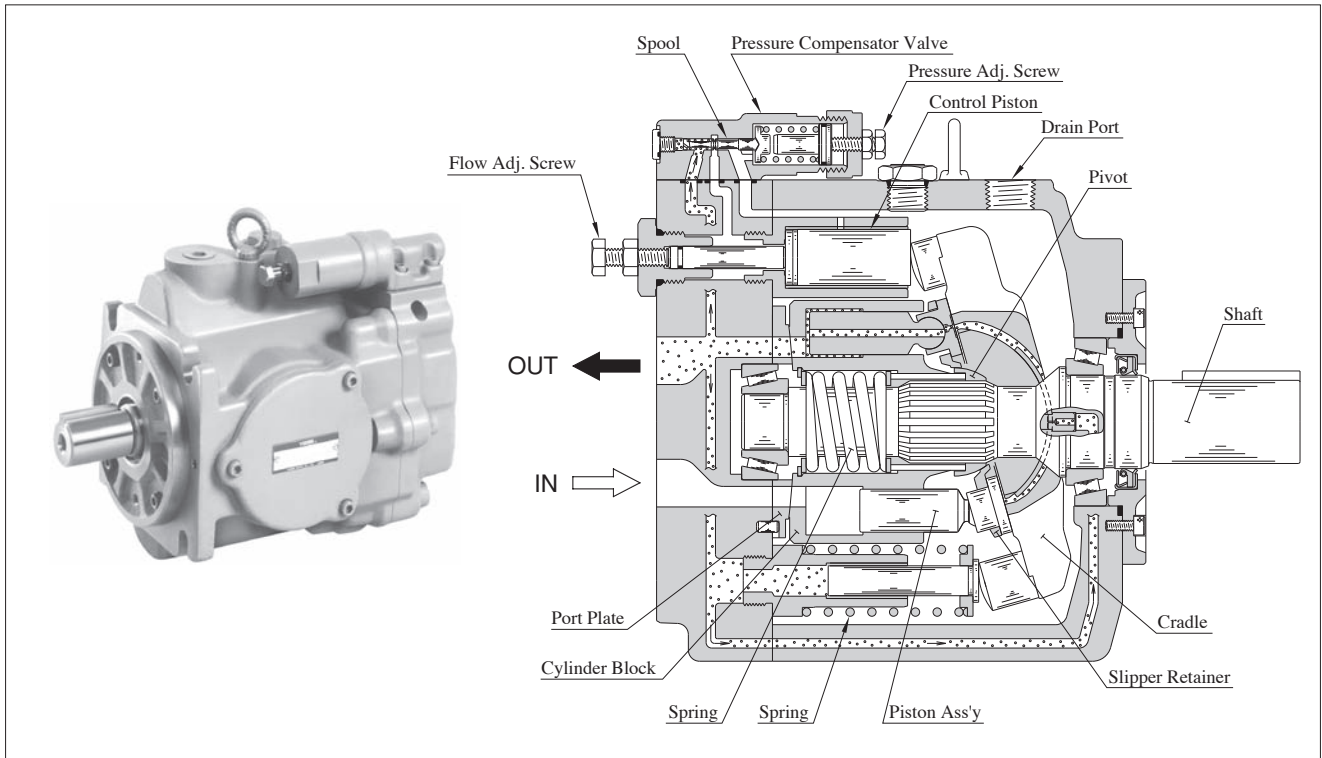
[ The minimum adjustable flow and adjustable volume of each full turn of the delivery adjustment screw ]

Model Numbers	Adjustable volume with each full turn of the adjustment screw $\text{cm}^3/\text{rev}$	Minimum adjustment flow $\text{cm}^3/\text{rev}$
A3H16	1.4	8
A3H37	3.3	16
A3H56	4.2	35
A3H71	4.9	45
A3H100	6.2	63
A3H145	9.4	95
A3H180	10.3	125

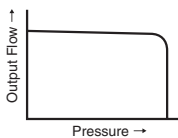
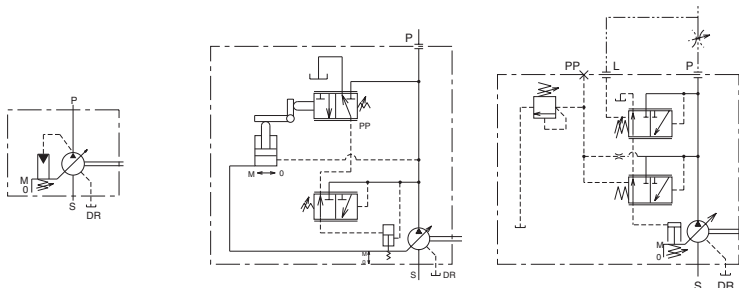
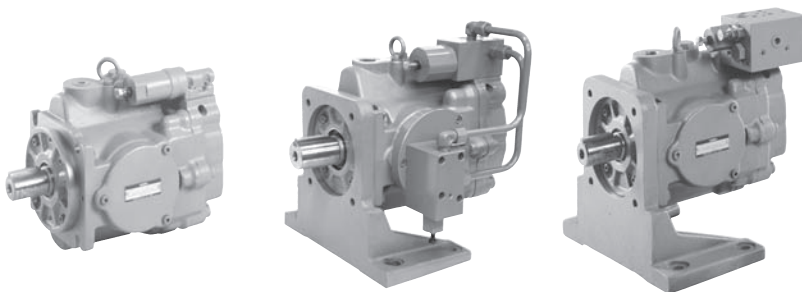
## ■ Flow Adjustment Screw Protrusion Length "L" vs. Geometric Displacement (reference)



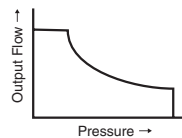
# A3H Series High Pressure Variable Displacement Piston Pumps



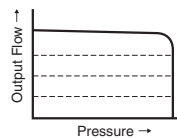
## Control Type



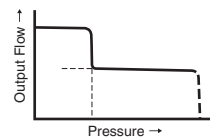
"01" Pressure Compensator Type



"09" Constant Power Control Type



"14" Load Sensing Type

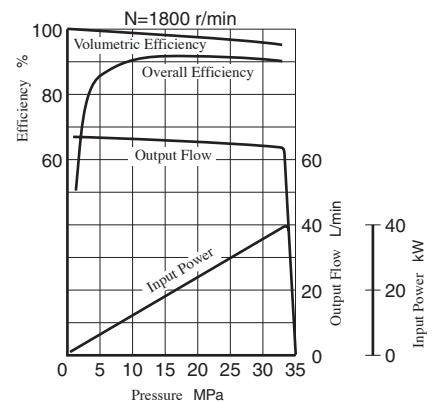


"55" Simple Two-Pressure Two-Flow Control Type

## Features

- High performance at maximum pressure 35 MPa  
Volumetric efficiency is over 95% and overall efficiency is more than 90% at 1800 r/min.


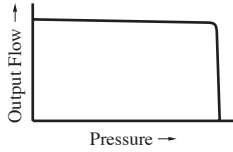
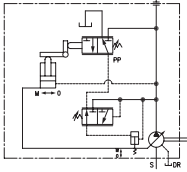
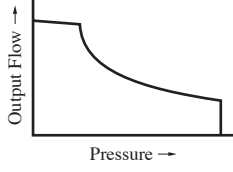
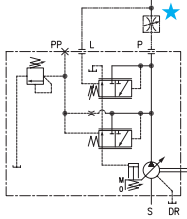
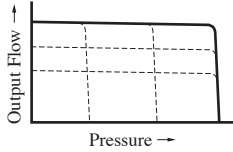
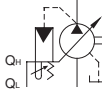
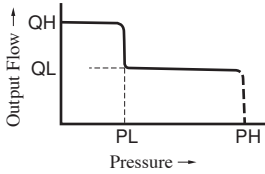
### "A3H37" type performance characteristics



## Compact size

A3H series are compact in size because output / mass ratio is large.

## Control Type

Control Type	Graphic Symbols	Performance Characteristics	Explanation	Page
"01" Pressure Compensator Type			When the system pressure increases and comes close to the preset cut-off pressure, the pump flow decreases automatically while maintaining the set pressure as it is.	120
"09" Constant Power (Torque) Control Type			<ul style="list-style-type: none"> <li>This type of control can control the pump input power according to the motor output.</li> <li>When the system pressure increases, the pump swash plate tilt angle (output flow) decreases, in correspondence to predetermined shaft input values.</li> <li>This type of control can enable one pump to act as two pumps (low-pressure and large-flow/high-pressure and small-flow). Therefore, the motor capacity can be reduced.</li> </ul>	139
"14" Load Sensing Type			<ul style="list-style-type: none"> <li>This is an energy-saving type control which maintains the pump flow and load pressure at the absolute minimum necessary level to operate the actuator.</li> <li>This type of control automatically regulates the output flow so that the inlet-outlet differential pressure of the flow control valve at the output side is constant. To do so, the load pressure must be introduced to the load sensing port "L" of the pump through the external piping.</li> <li>This type of control provides the remote control of the full cut-off pressure by connecting a remote control relief valve to the pilot port "PP".</li> </ul>	145
"55" Simple Two-Pressure Two-Flow Control Type			<ul style="list-style-type: none"> <li>This type of control enables one pump to act as two pumps (low-pressure and large-flow/high-pressure and small-flow-rate). Therefore, the motor capacity can be reduced.</li> <li>When the system pressure increases near the preset "PL" pressure due to the load increase, the pump flow automatically decreases to "QL."</li> <li>This type of control is suitable for an application like the press, where switching from rapid advance to feed is required just when the press (pressurizing) starts.</li> <li>The PH pressure can be remote-controlled with a separately located relief valve. With this type of control, it is easy to change the applied pressure setting when materials or shapes of the press are changed.</li> </ul>	151

★ A flow control valve is not included with the pump. Install the valve separately.

## Availability of Control Type

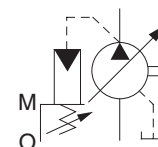
Mark "○" in the table below refers to standard model.

Model Numbers	Geometric Displacement cm <sup>3</sup> /rev	"01" Pressure Compensator Type	"09" Constant Power (Torque) Control Type	"14" Load Sensing Type	"55" Simple Two-Pressure Two-Flow Control Type
A3H 16	16.3	○		○	○
A3H 37	37.1	○	○	○	○
A3H 56	56.3	○	○	○	○
A3H 71	70.7	○	○	○	○
A3H100	100.5	○	○	○	○
A3H145	145.2	○	○	○	○
A3H180	180.7	○	○	○	○

## **A3H Series High Pressure Variable Displacement Piston Pumps, Pressure Compensator Type**



Graphic Symbol



### Specifications

Model Numbers	Geometric Displacement cm <sup>3</sup> /rev	Minimum Adj. Flow cm <sup>3</sup> /rev	Operating Pressure MPa		Shaft Speed Range r/min		Approx. Mass kg	
			Rated <sup>★1</sup>	Intermittent	Max. <sup>★2</sup>	Min.	Flange Mtg.	Foot Mtg.
A3H 16- *R01KK-10	16.3	8.0	28	35	3600	600	14.5	23.4
A3H 37- *R01KK-10	37.1	16.0			2700	600	19.5	27.0
A3H 56- *R01KK-10	56.3	35.0			2500	600	25.7	33.2
A3H 71- *R01KK-10	70.7	45.0			2300	600	35.0	42.5
A3H100- *R01KK-10	100.5	63.0			2100	600	44.9	72.9
A3H145- *R01KK-10	145.2	95.0			1800	600	60.0	88.0
A3H180- *R01KK-10	180.7	125.0			1800	600	70.4	98.4

★1. Consult Yuken when pump is used over rated pressure because there is a restriction on operating condition.

★2. The maximum shaft speeds shown in the above table are at suction pressure 0 kPa.

★3. The table above shows specifications for using petroleum based oils.

Pumps (customized design) for special fluids are also available. Their operating pressure and maximum shaft speed however differ from the values in the table above depending on the fluid type.

Range of operating temperature and viscosities may differ from those of petroleum based oils due to their characteristics.

### Specifications and Design numbers for Special Fluids

Type of Fluids	Operating Pressure MPa		Allowable Maximum Shaft Speed r/min		Temperature Range °C	Viscosity Range mm <sup>2</sup> /s	Design Numbers for Special Fluid
	Rated	Intermittent	Rated	Max.			
Water-Glycols	21	21	1200	(1800) <sup>★1</sup>	0 - 50	20 - 200	1030
Phosphate Ester Type	21	21	1200	(1800) <sup>★1</sup>	0 - 60		1006
Polyol Ester Type	21	25	1200	1800	0 - 60	20 - 200	10450

★1. As the specific gravities of water-glycol fluids and phosphate ester type fluids are higher than one, an overhead reservoir is required when pumps are operated at 1500 r/min or more.

## Model Number Designation

A3H16	-F	R	01	K	K	-10
Series Number	Mounting	Direction of Rotation	Control Type	Pres. Adj. Range MPa	Shaft Extension	Design Number
A3H16 (16.3 cm <sup>3</sup> /rev)	F: Flange Mtg. L: Foot Mtg.	(Viewed from) Shaft End )  R: Clockwise (Normal)	01: Pressure Compensator Type	K: 5 - 35	K: Keyed Shaft	10
A3H37 (37.1 cm <sup>3</sup> /rev)						10
A3H56 (56.3 cm <sup>3</sup> /rev)						10
A3H71 (70.7 cm <sup>3</sup> /rev)						10
A3H100 (100.5 cm <sup>3</sup> /rev)						10
A3H145 (145.2 cm <sup>3</sup> /rev)						10
A3H180 (180.7 cm <sup>3</sup> /rev)						10

## Pipe Flange Kits

Pipe flange kits are available. When ordering, specify the kit number from the table below.

Pump Model Numbers	Name of Port	Threaded Connection	Socket Welding	Butt Welding
A3H16- *R01	Suction	F5-08-A-10	F5-08-B-10	F5-08-C-10
	Discharge	F6-06-A-M-10 <sup>★1</sup>	F6-06-B-M-10	—
A3H37- *R01	Suction	F5-10-A-10	F5-10-B-10	F5-10-C-10
	Discharge	F6-08-A-M-10 <sup>★1</sup>	F6-08-B-M-10	—
A3H56- *R01	Suction	F5-12-A-10	F5-12-B-10	F5-12-C-10
	Discharge	F6-08-A-M-10 <sup>★1</sup>	F6-08-B-M-10	—
A3H71- *R01	Suction	F5-16-A-10	F5-16-B-10	F5-016-C-10
	Discharge	F6-10-A-M-10 <sup>★1</sup>	F6-10-B-M-10	—
A3H100- *R01 A3H145- *R01	Suction	F5-20-A-10	F5-20-B-10	F5-20-C-10
	Discharge	F6-10-A-M-10 <sup>★1</sup>	F6-10-B-M-10	—
A3H180- *R01	Suction	F5-24-A-10	F5-24-B-10	—
	Discharge	F6-12-A-M-10 <sup>★1</sup>	F6-12-B-M-10	—

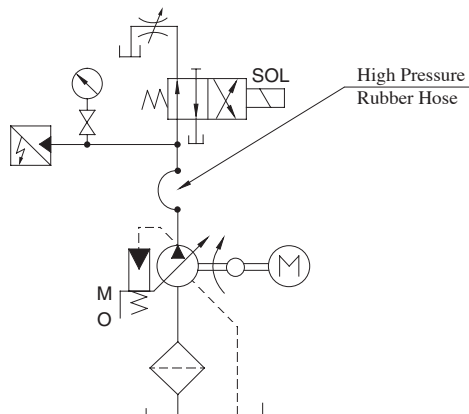
★1. These flanges are with tapered threaded port, maximum pressure is restricted at 31 MPa.

● Details of the pipe flange kits are shown on page 262 to 264.

**Response Characteristics Change in Accordance with Circuits and Operating Conditions.**

■ The Circuit and Conditions

● Circuit



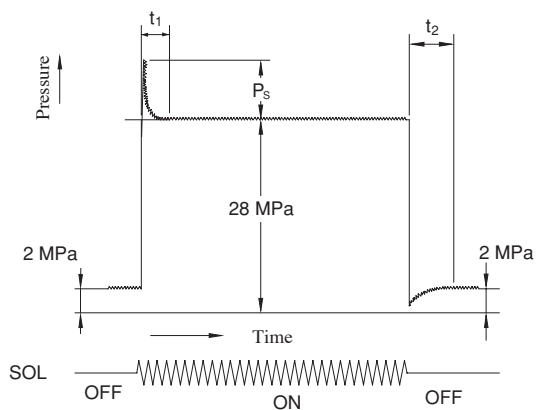
● Size of High Pressure Rubber House

Model	High Pressure Rubber Housea
A3H16	3/4B × 1500 mm
A3H37/56/71	3/4B × 2000 mm
A3H100/145	1-1/4B × 2000 mm
A3H180	1-1/4B × 2500 mm

● Conditions

Drive Speed : 1500 r/min  
 Hydraulic Fluid : ISO VG32 Oil  
 Oil Temperature: 40°C [Viscosity 32 mm<sup>2</sup>/s]

■ Result of Measurement

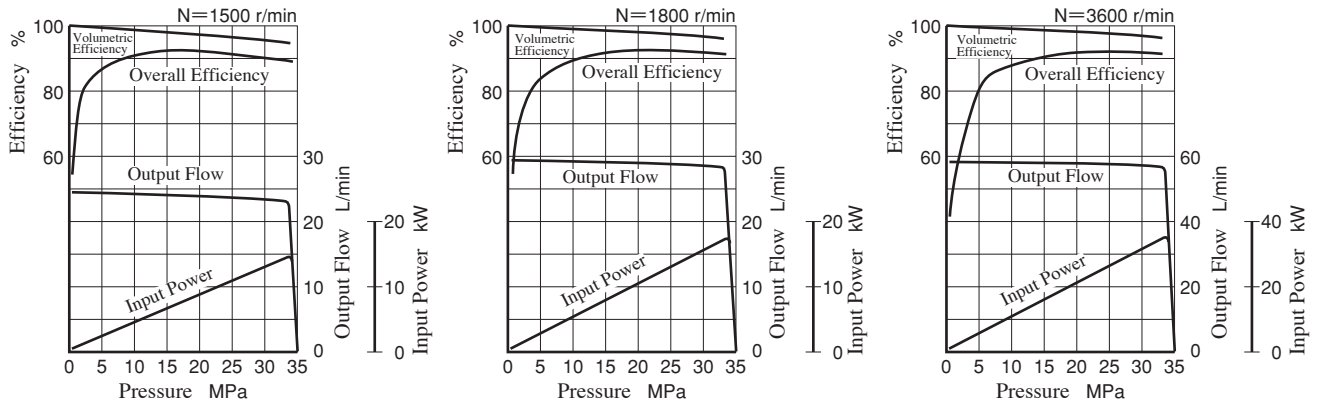


Model	Response Time ms		P <sub>s</sub> Overshoot Pres. MPa
	t <sub>1</sub>	t <sub>2</sub>	
A3H 16	30	140	2.5
A3H 37	40	80	3.5
A3H 56	50	90	7.5
A3H 71	50	140	10.0
A3H100	70	170	11.0
A3H145	70	180	12.5
A3H180	70	220	12.0

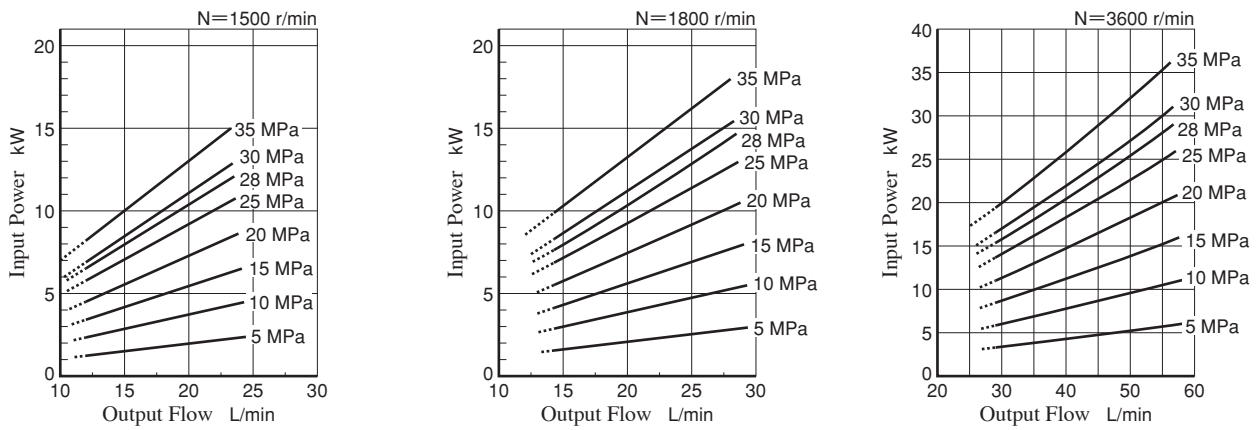


## Typical Performance Characteristics of Type **A3H16** at Viscosity 32 mm<sup>2</sup>/s [ISO VG32 oils, 40°C]

### Performance Characteristic Curve

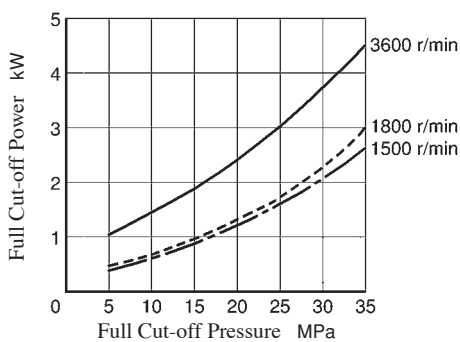


### Input Power

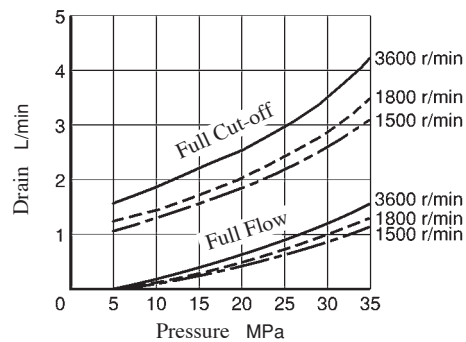


Note) The dotted line in the graph indicates less than minimum adjustable flow.

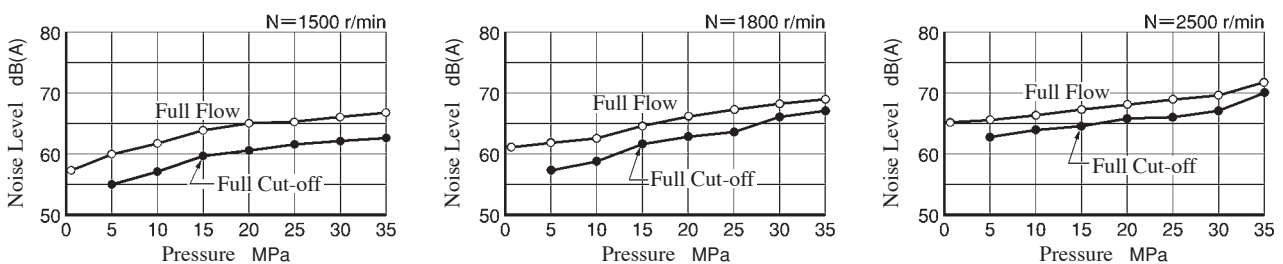
### Full Cut-off Power



### Drain

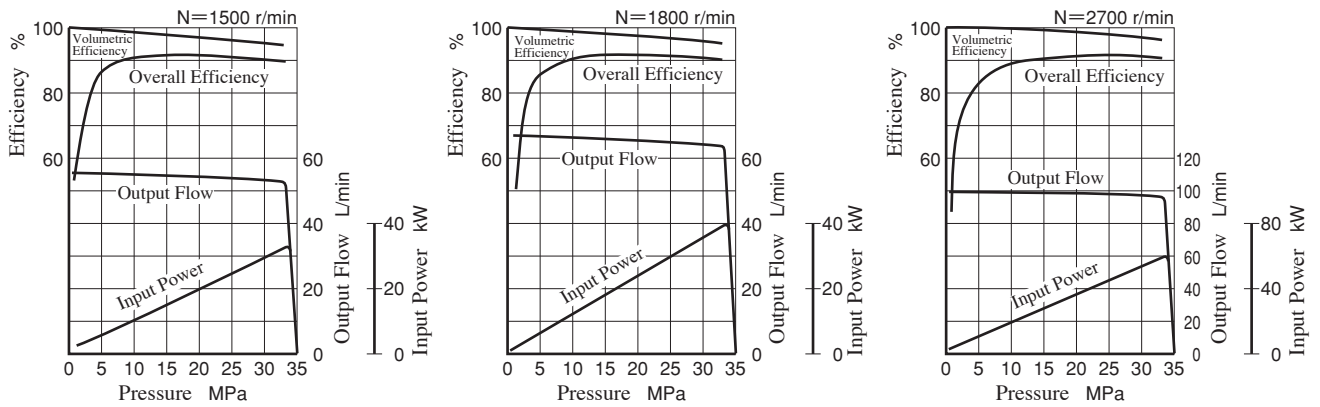


### Noise Level [One metre horizontally away from pump head cover]

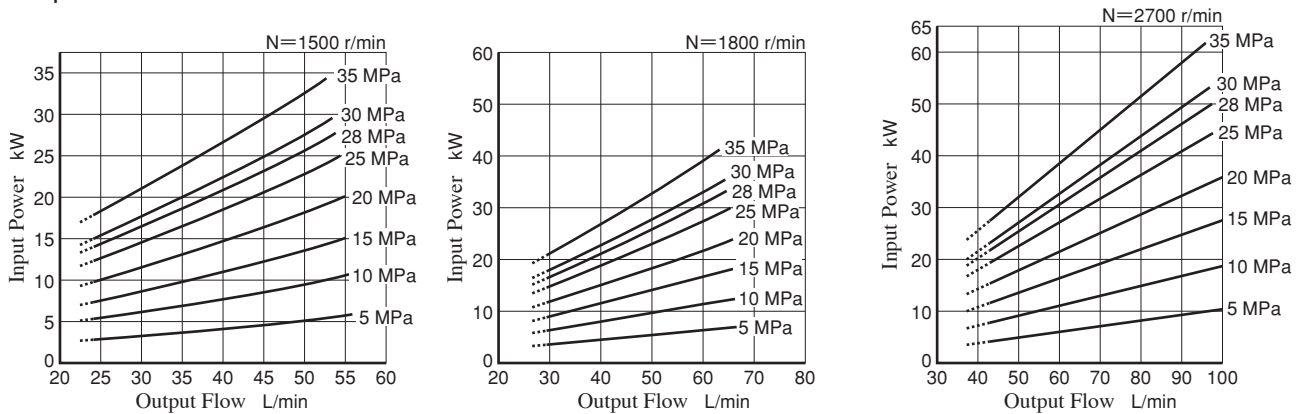


Typical Performance Characteristics of Type **A3H37** at Viscosity 32 mm<sup>2</sup>/s [ISO VG32 oils, 40°C]

**Performance Characteristic Curve**

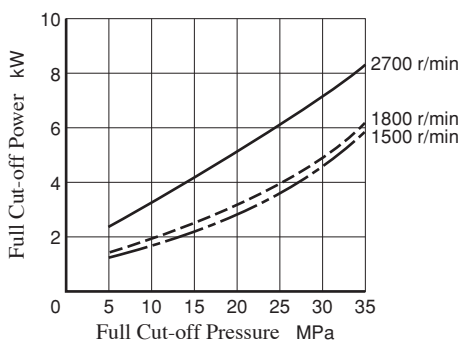


**Input Power**

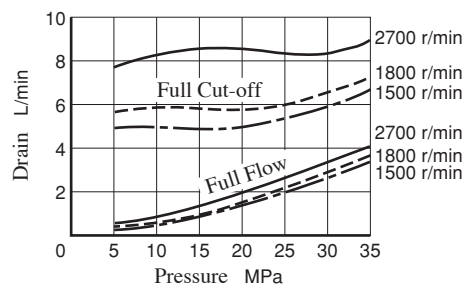


Note) The dotted line in the graph indicates less than minimum adjustable flow.

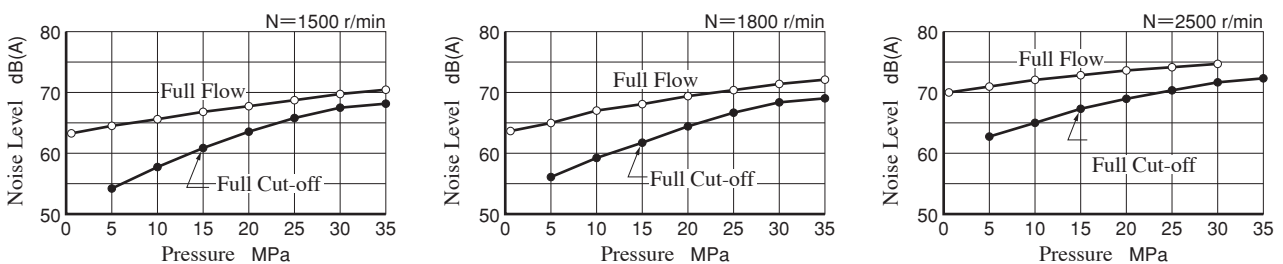
**Full Cut-off Power**



**Drain**

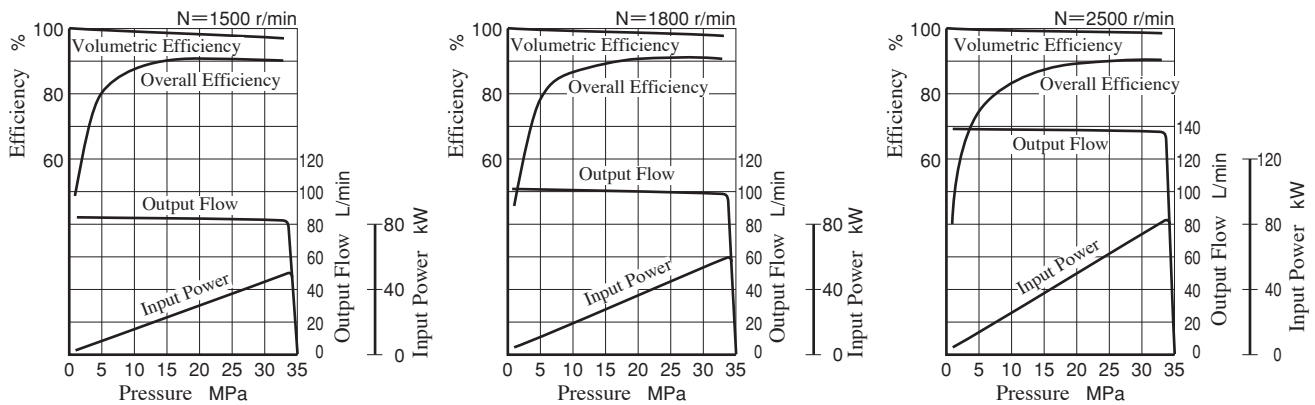


**Noise Level [One metre horizontally away from pump head cover]**

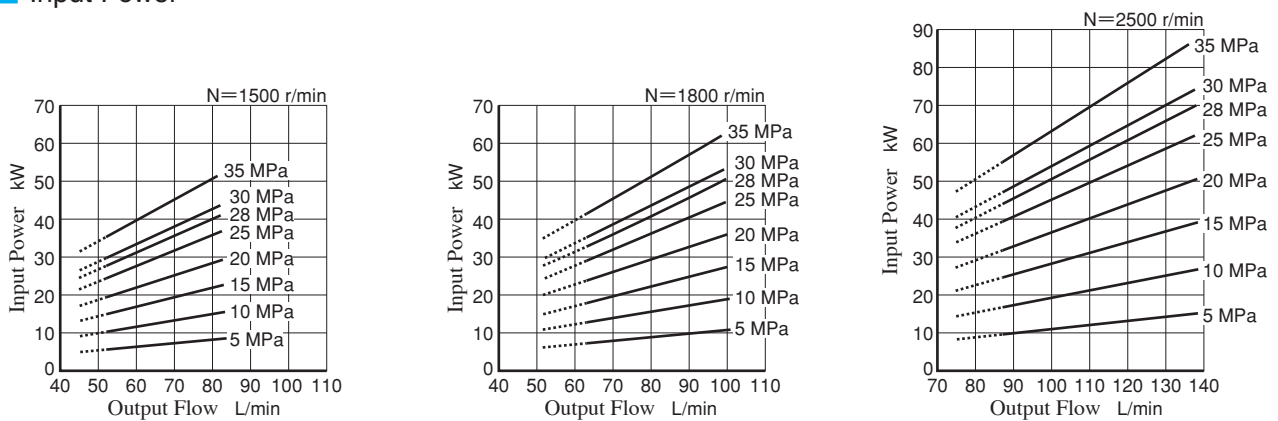


## Typical Performance Characteristics of Type **A3H56** at Viscosity 32 mm<sup>2</sup>/s [ISO VG32 oils, 40°C]

### Performance Characteristic Curve

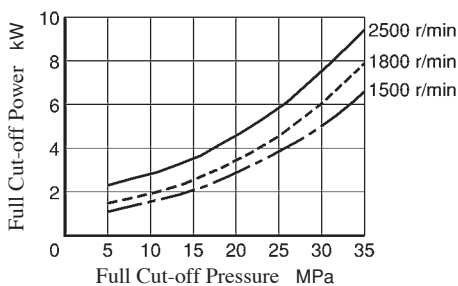


### Input Power

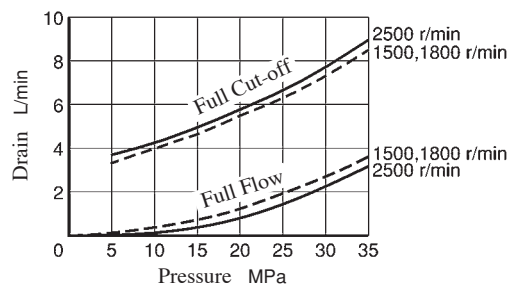


Note) The dotted line in the graph indicates less than minimum adjustable flow.

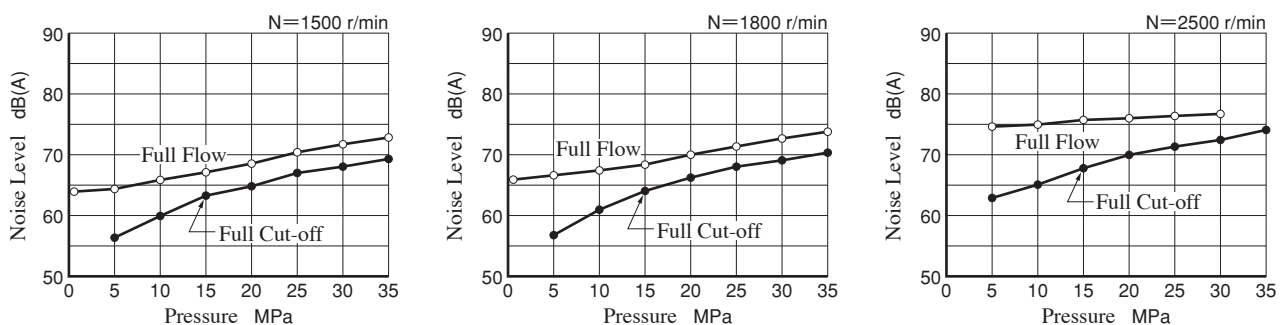
### Full Cut-off Power



### Drain

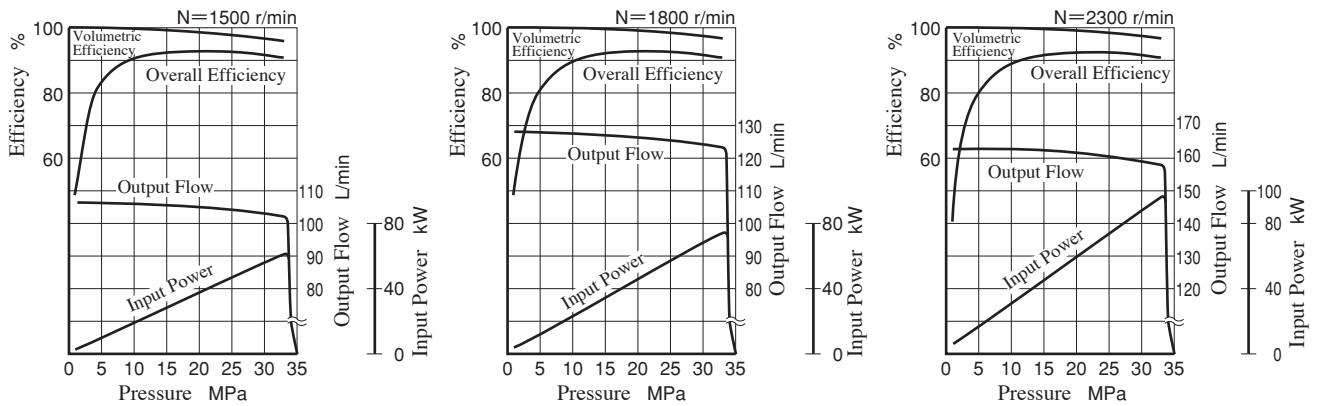


### Noise Level [One metre horizontally away from pump head cover]

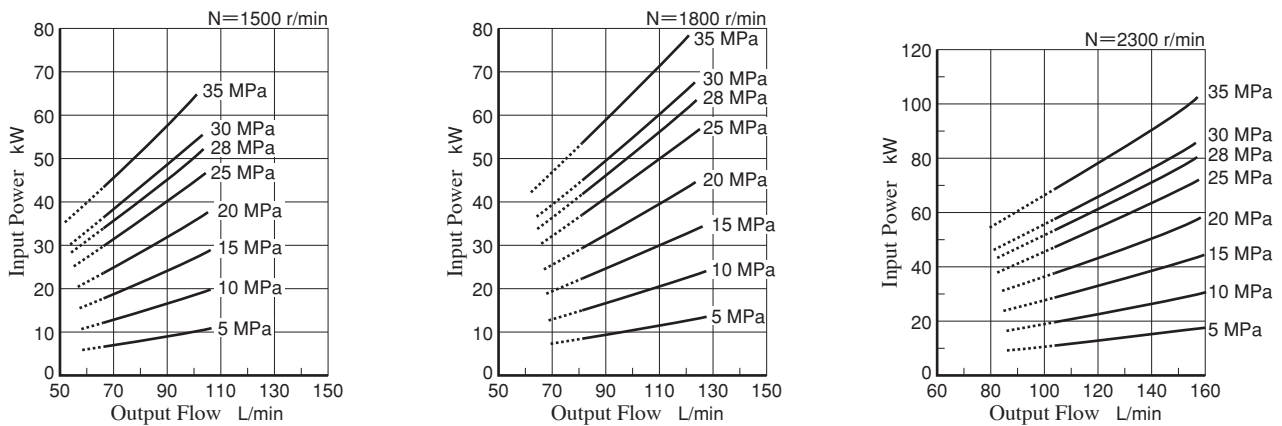


Typical Performance Characteristics of Type **A3H71** at Viscosity 32 mm<sup>2</sup>/s [ISO VG32 oils, 40°C]

**Performance Characteristic Curve**

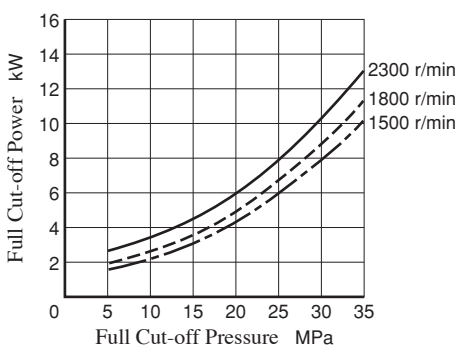


**Input Power**

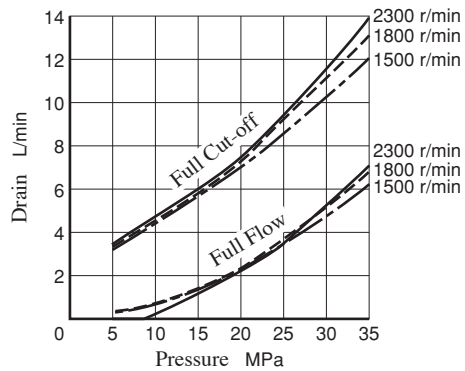


Note) The dotted line in the graph indicates less than minimum adjustable flow.

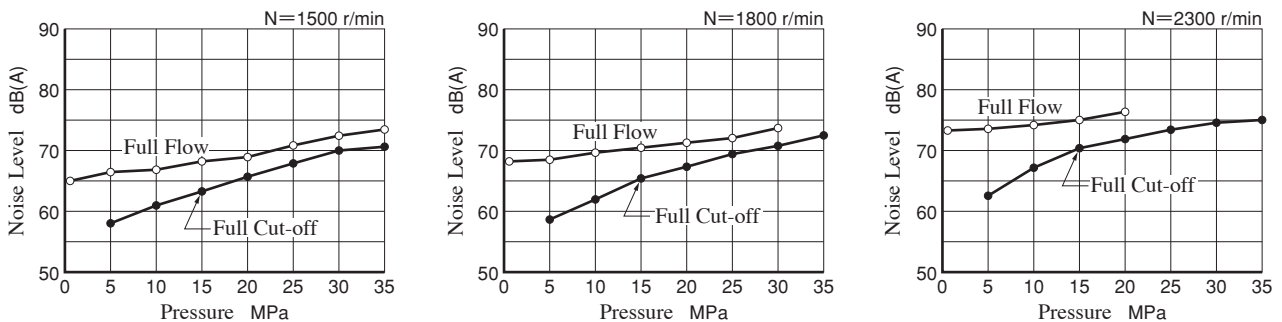
**Full Cut-off Power**



**Drain**

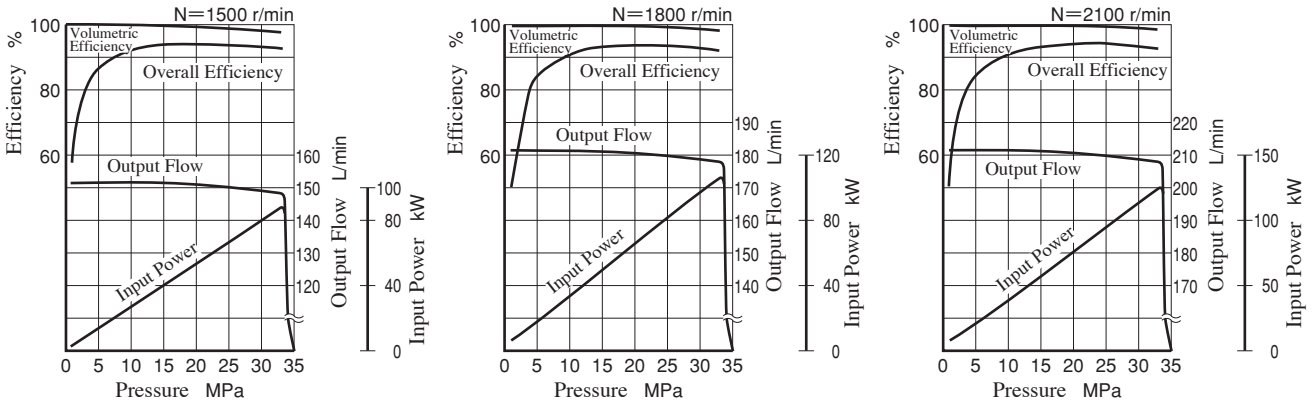


**Noise Level** [One metre horizontally away from pump head cover]

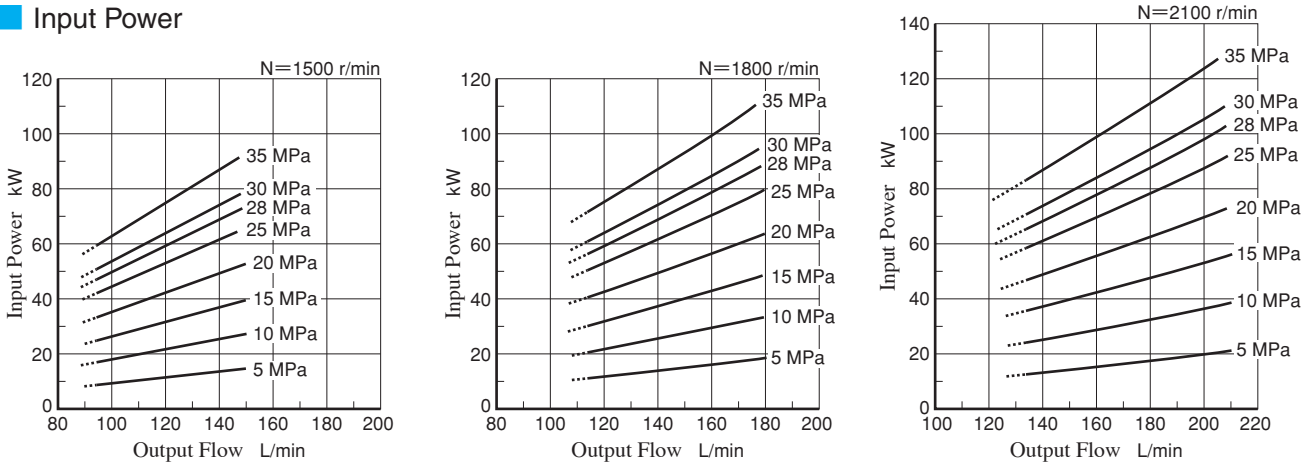


## Typical Performance Characteristics of Type **A3H100** at Viscosity 32 mm<sup>2</sup>/s [ISO VG32 oils, 40°C]

### Performance Characteristic Curve

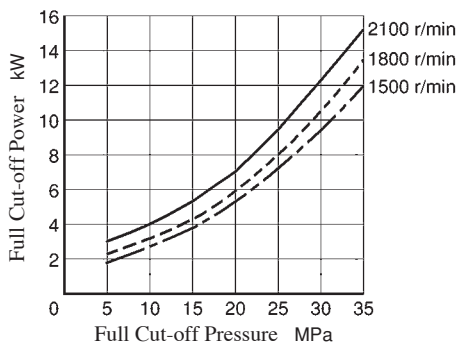


### Input Power

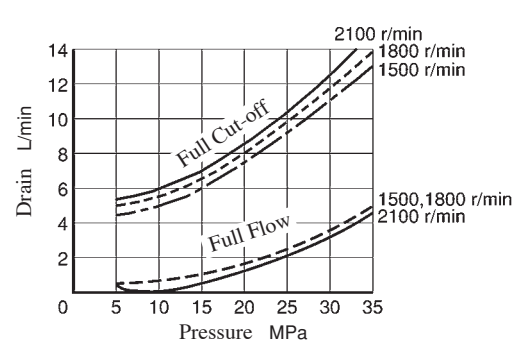


Note) The dotted line in the graph indicates less than minimum adjustable flow.

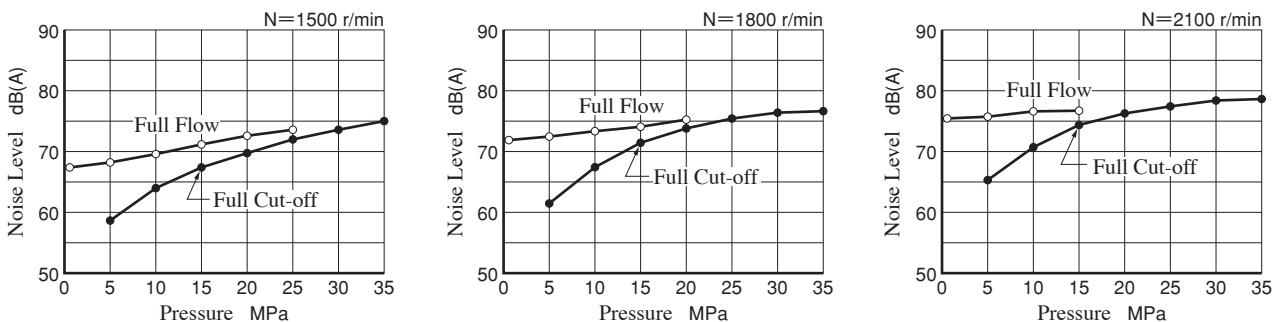
### Full Cut-off Power



### Drain

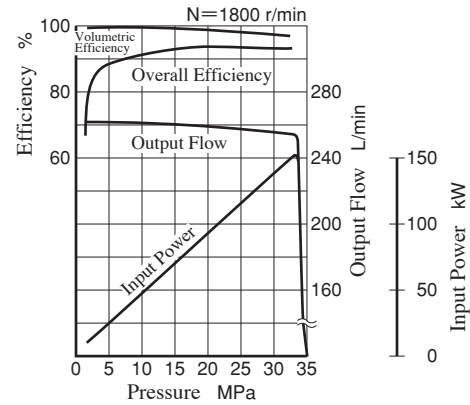
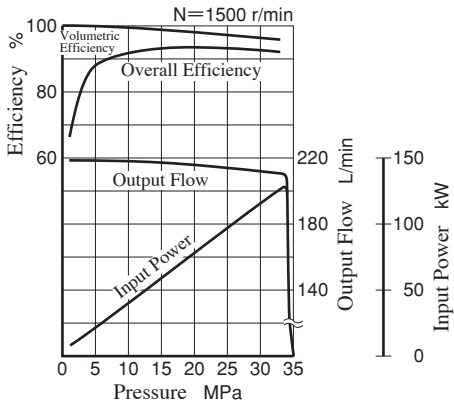


### Noise Level [One metre horizontally away from pump head cover]

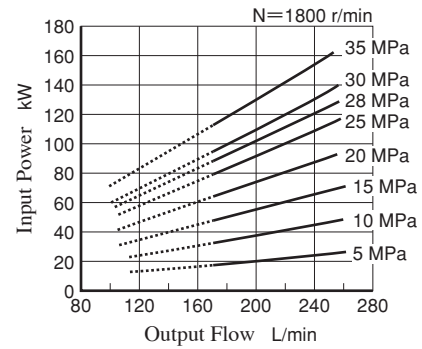
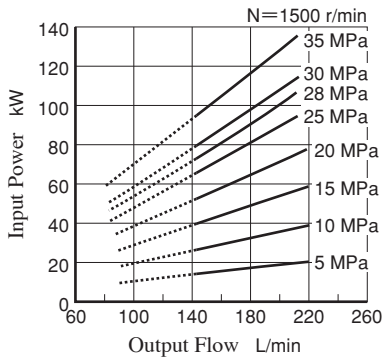


Typical Performance Characteristics of Type **A3H145** at Viscosity 32 mm<sup>2</sup>/s [ISO VG32 oils, 40°C]

**Performance Characteristic Curve**

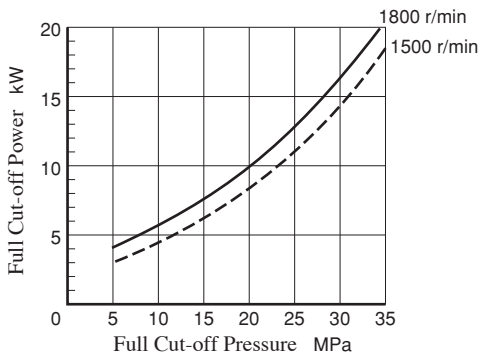


**Input Power**

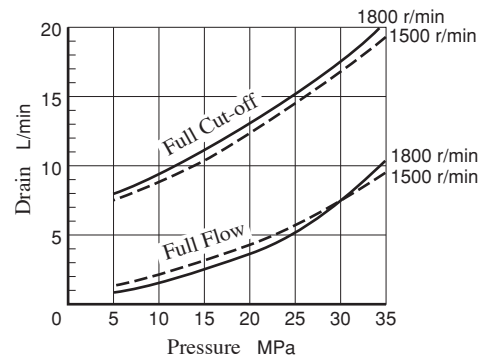


Note) The dotted line in the graph indicates less than minimum adjustable flow.

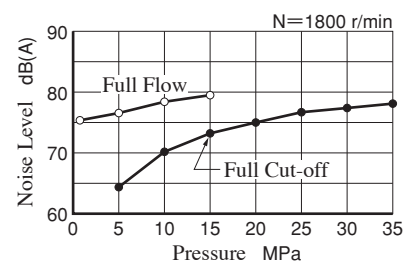
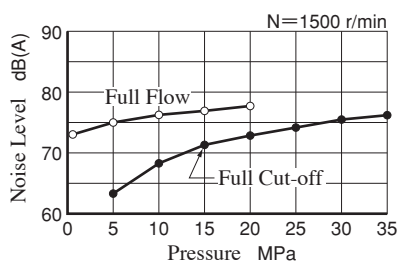
**Full Cut-off Power**



**Drain**

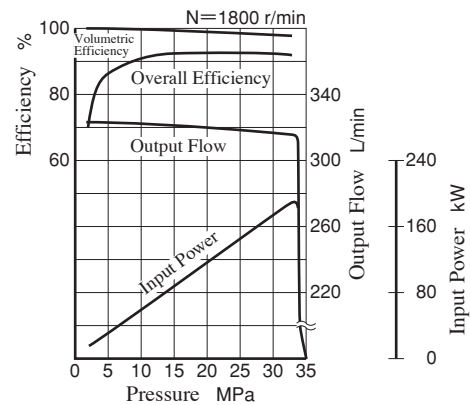
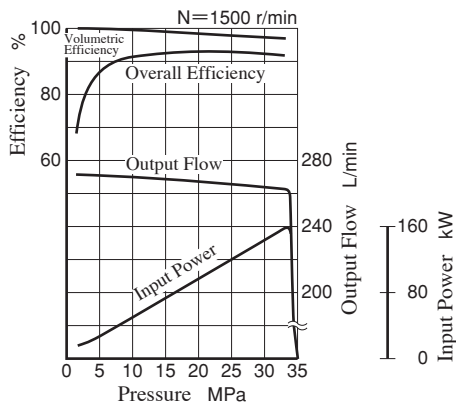


**Noise Level** [One metre horizontally away from pump head cover]

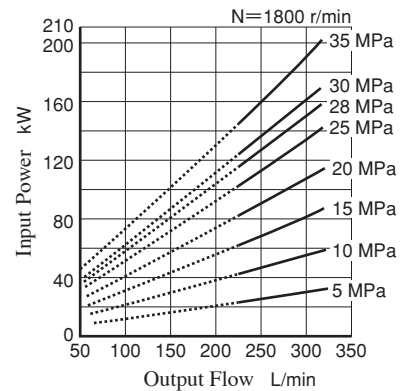
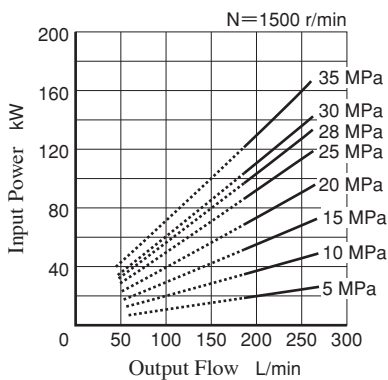


## Typical Performance Characteristics of Type **A3H180** at Viscosity 32 mm<sup>2</sup>/s [ISO VG32 oils, 40°C]

### Performance Characteristic Curve

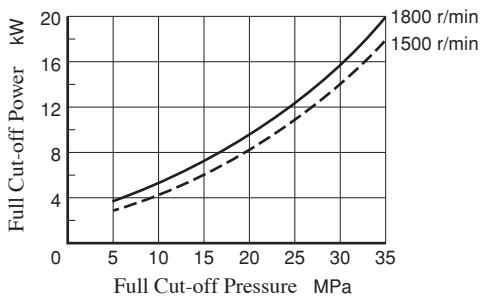


### Input Power

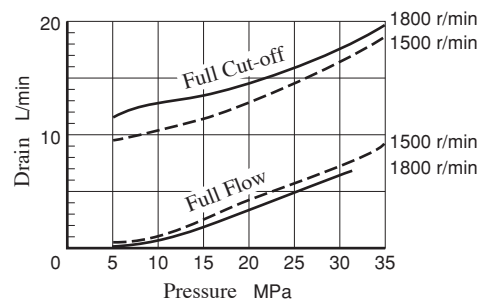


Note) The dotted line in the graph indicates less than minimum adjustable flow.

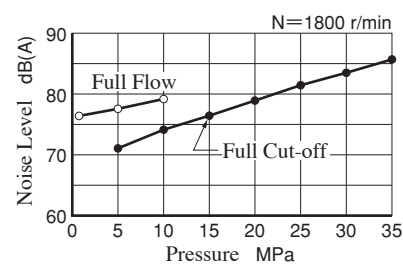
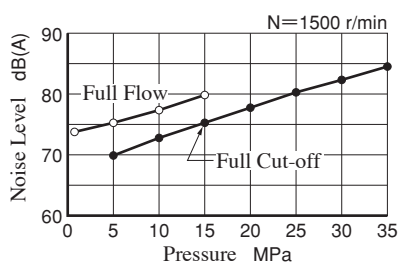
### Full Cut-off Power



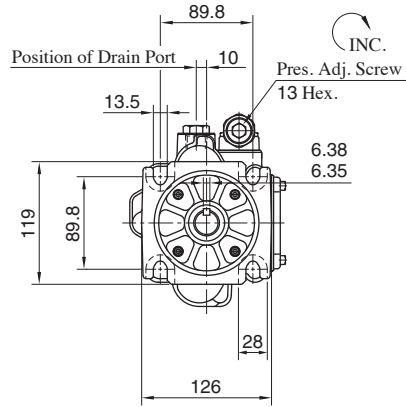
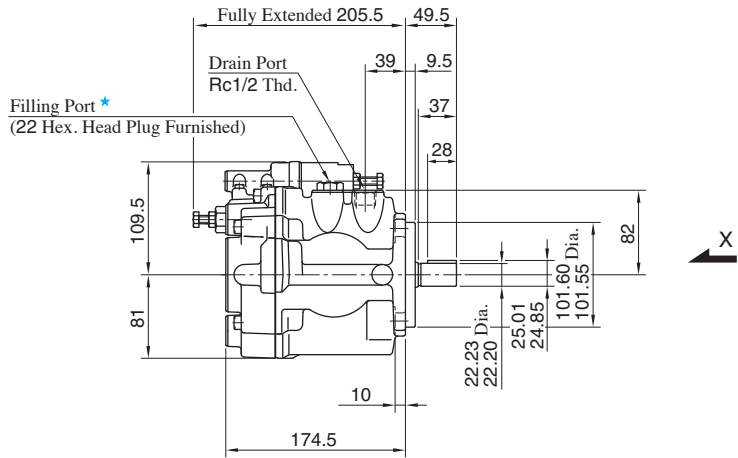
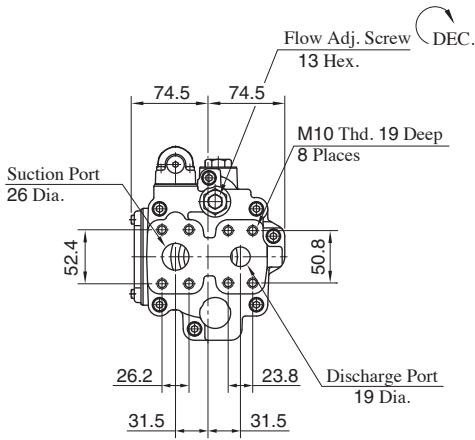
### Drain



### Noise Level [One metre horizontally away from pump head cover]



**Flange Mtg. : A3H16-FR01KK**

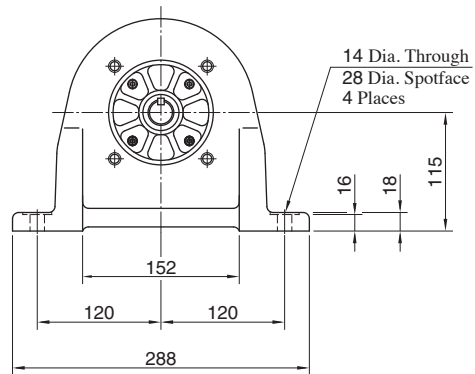
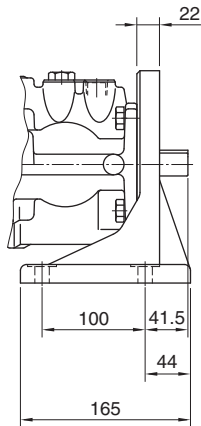


★ Install the pump so that the "Filling port" is at the top.

**View Arrow X**

**DIMENSIONS IN MILLIMETRES**

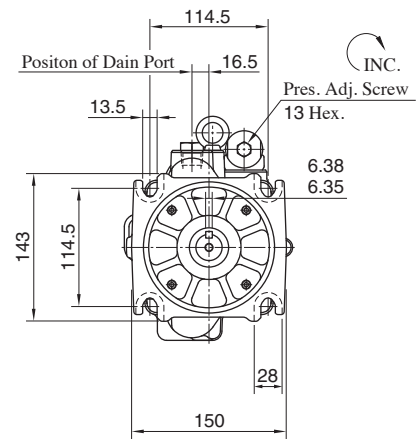
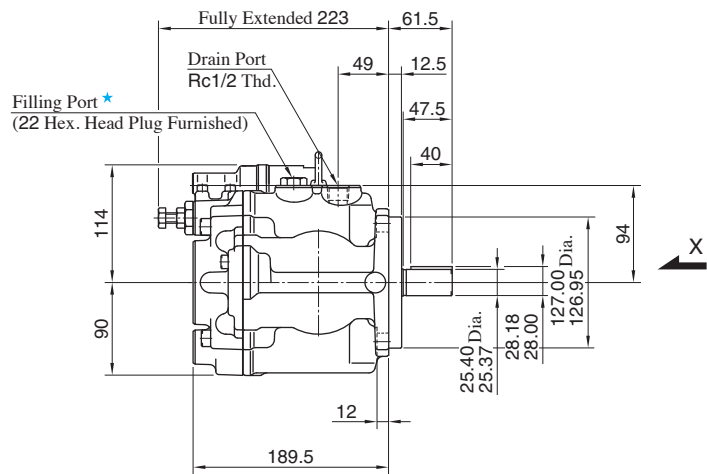
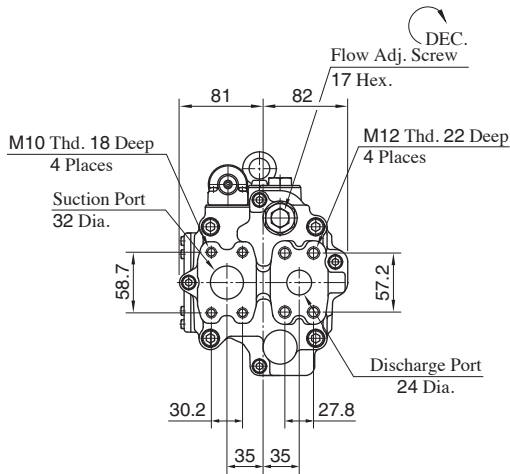
**Foot Mtg. : A3H16-LR01KK**



● For other dimensions, refer to "Flange Mtg.".



Flange Mtg. : A3H37-FR01KK

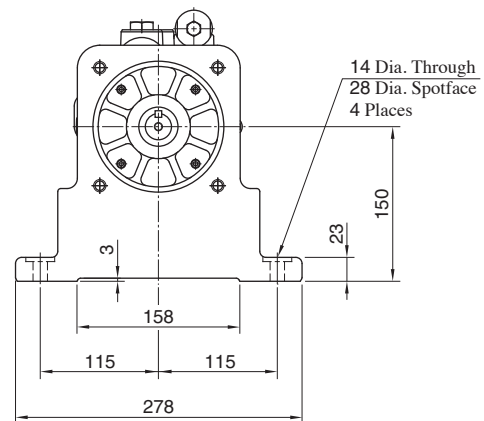
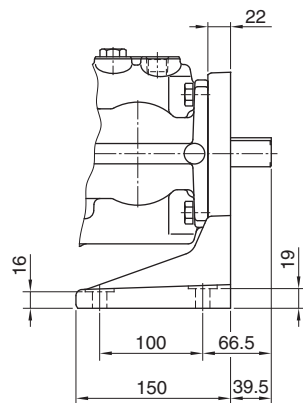


View Arrow X

★ Install the pump so that the "Filling port" is at the top.

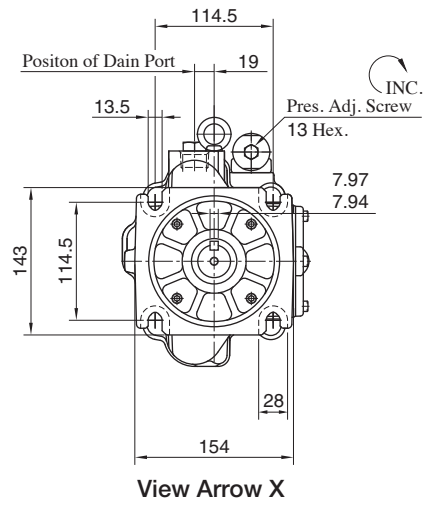
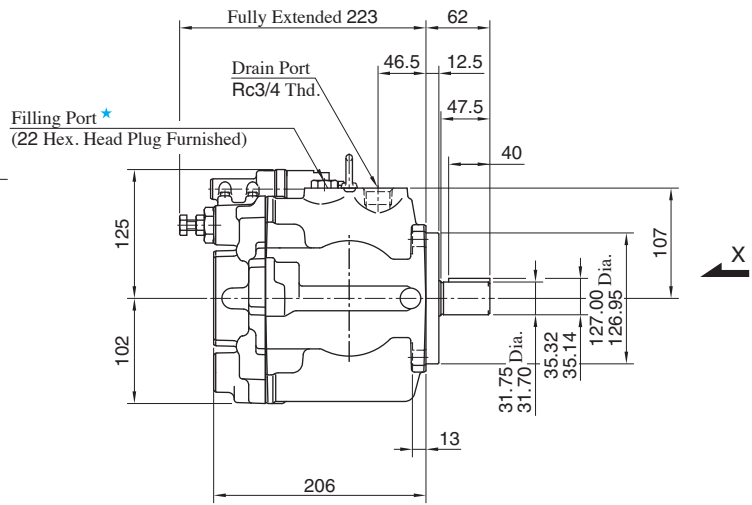
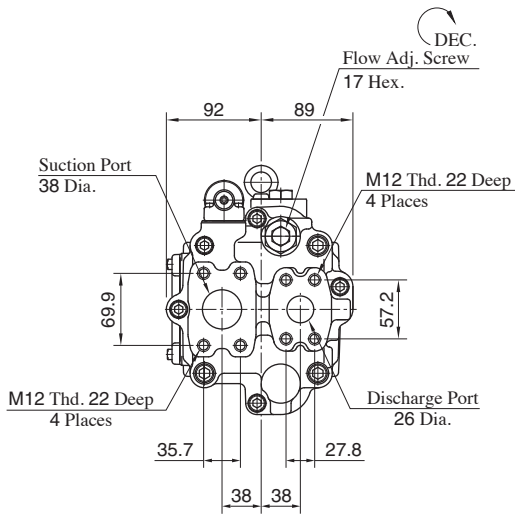
DIMENSIONS IN MILLIMETRES

Foot Mtg. : A3H37-LR01KK



● For other dimensions, refer to "Flange Mtg.".

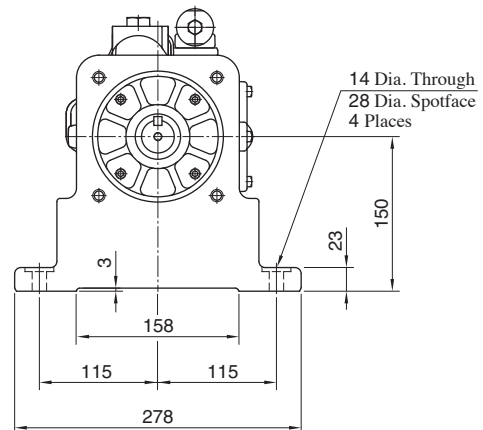
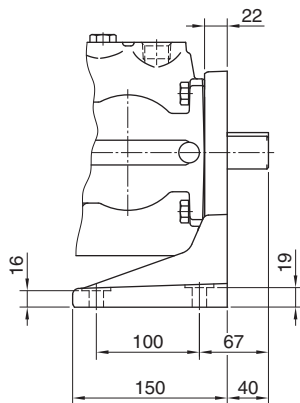
**Flange Mtg. : A3H56-FR01KK**



★ Install the pump so that the "Filling port" is at the top.

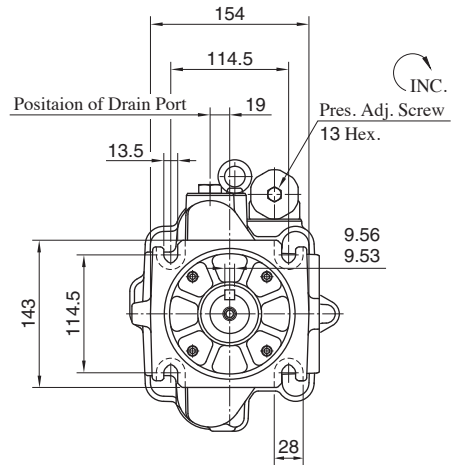
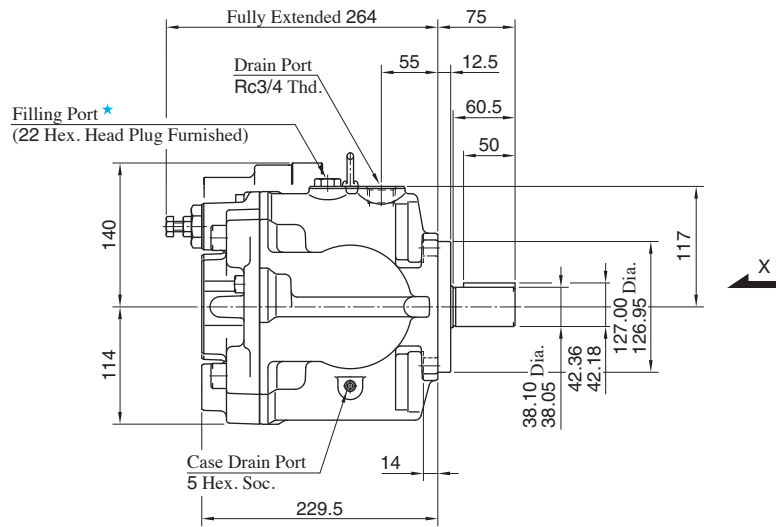
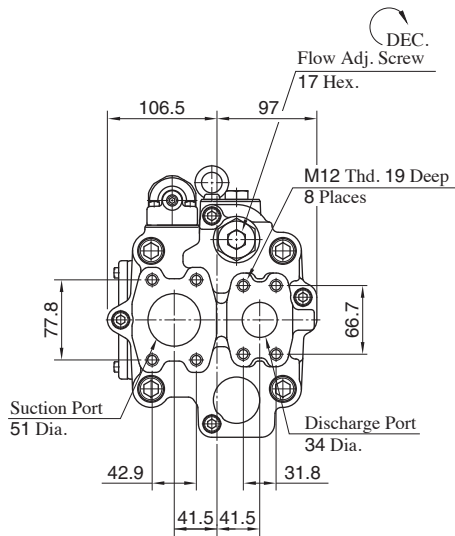
**DIMENSIONS IN MILLIMETRES**

**Foot Mtg. : A3H56-LR01KK**



● For other dimensions, refer to "Flange Mtg.".

Flange Mtg. : A3H71-FR01KK

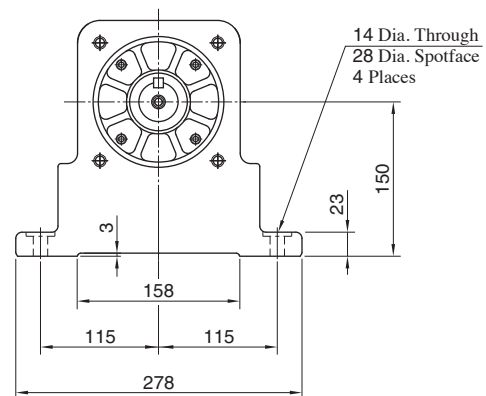
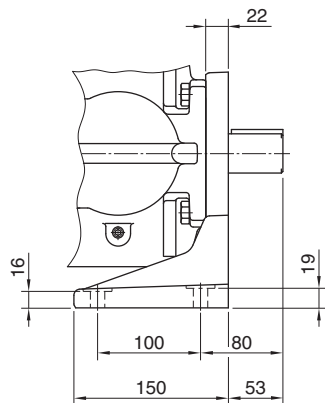


View Arrow X

★ Install the pump so that the "Filling port" is at the top.

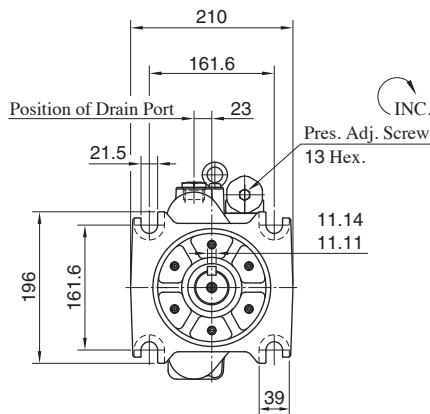
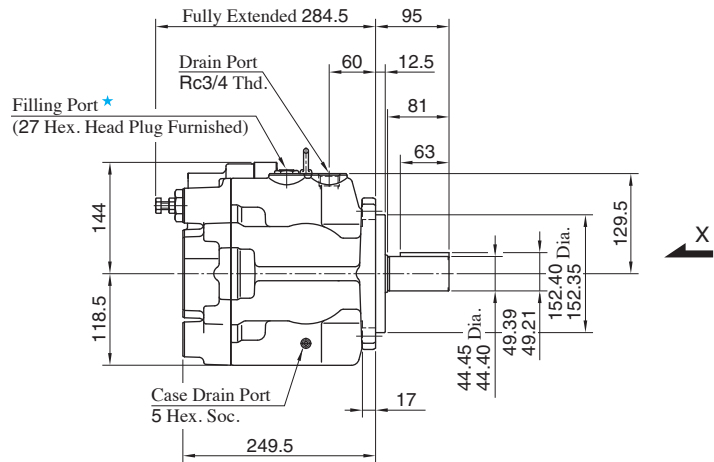
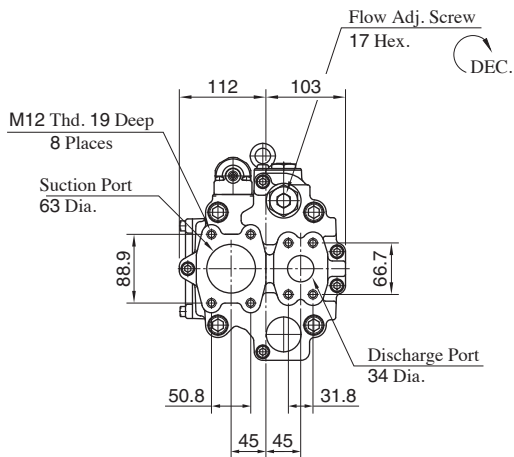
DIMENSIONS IN MILLIMETRES

Foot Mtg. : A3H71-LR01KK



● For other dimensions, refer to "Flange Mtg."

**Flange Mtg. : A3H100-FR01KK**

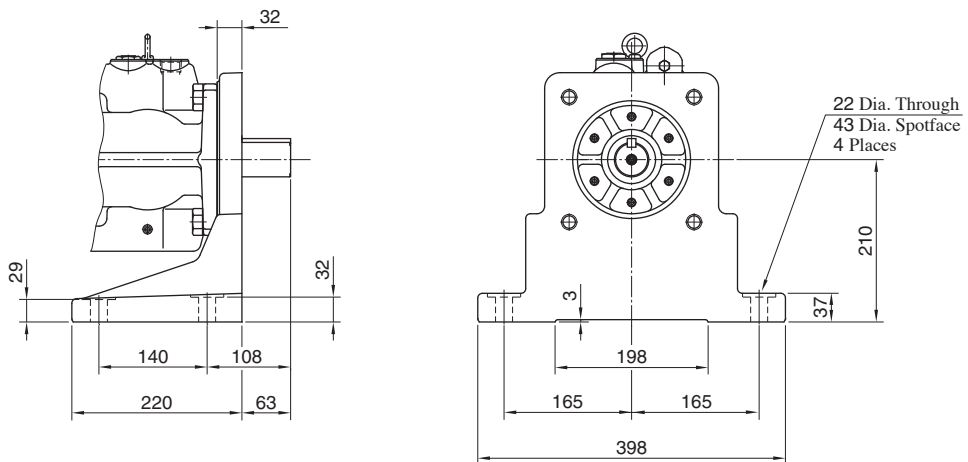


**View Arrow X**

★ Install the pump so that the "Filling port" is at the top.

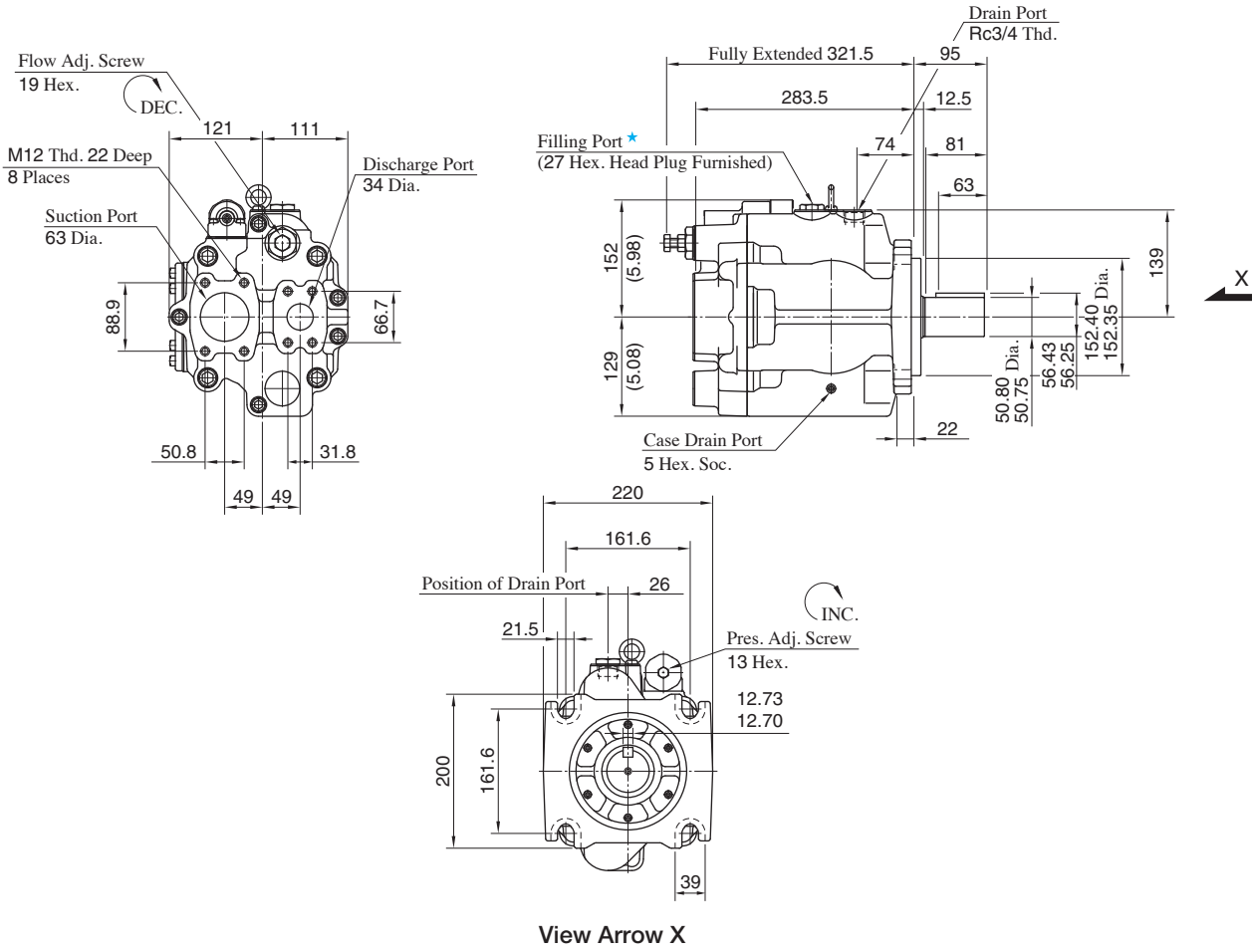
**DIMENSIONS IN MILLIMETRES**

**Foot Mtg. : A3H100-LR01KK**



● For other dimensions, refer to "Flange Mtg.".

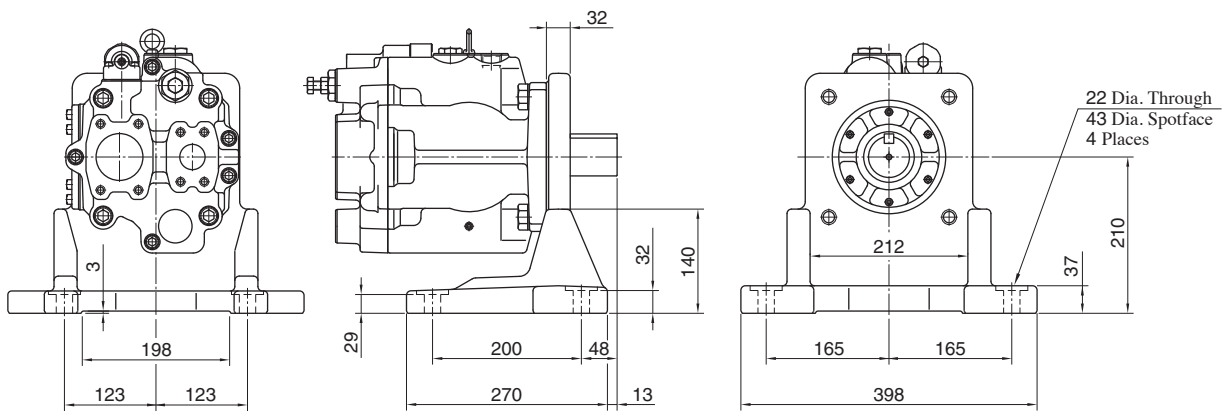
Flange Mtg. : A3H145-FR01KK



★ Install the pump so that the "Filling port" is at the top.

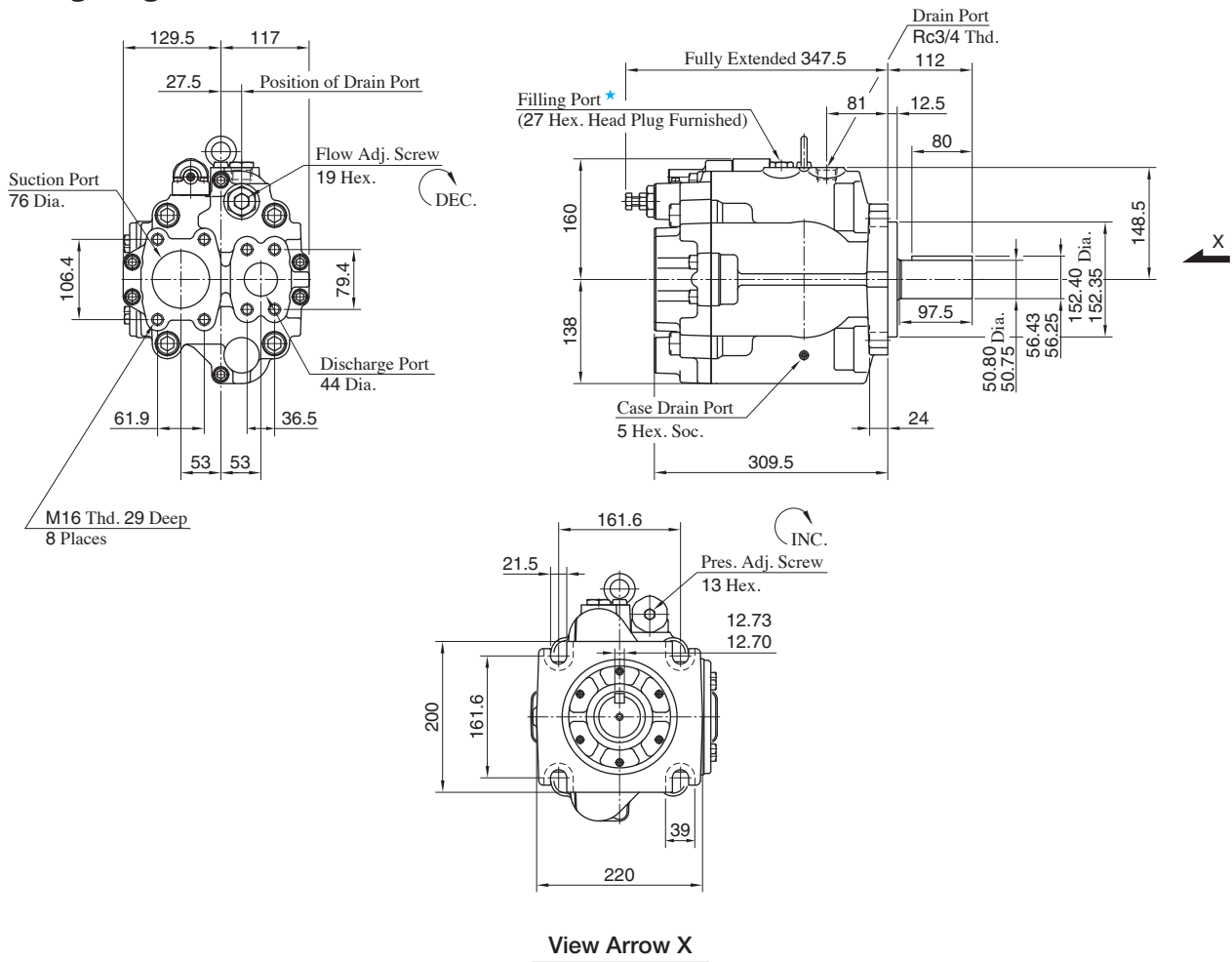
DIMENSIONS IN MILLIMETRES

Foot Mtg. : A3H145-LR01KK



● For other dimensions, refer to "Flange Mtg.".

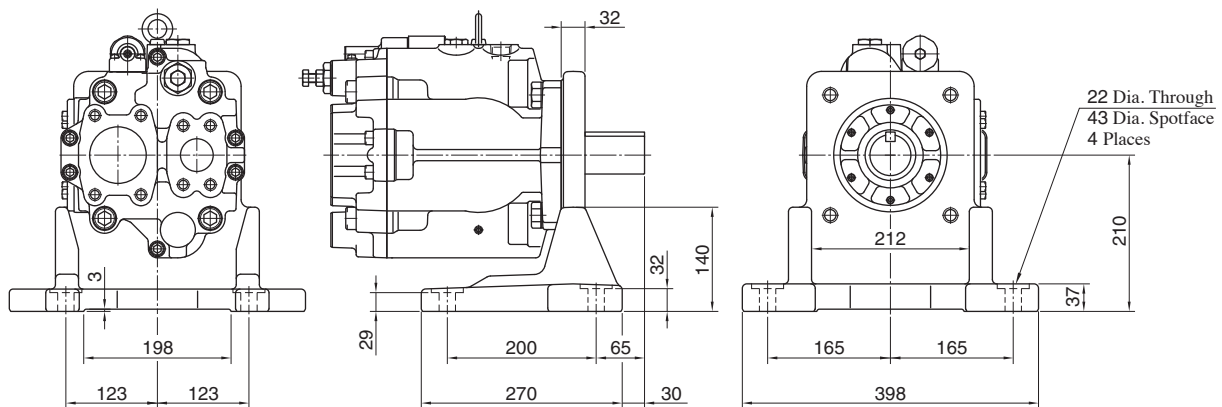
**Flange Mtg. : A3H180-FR01KK**



★ Install the pump so that the "Filling port" is at the top.

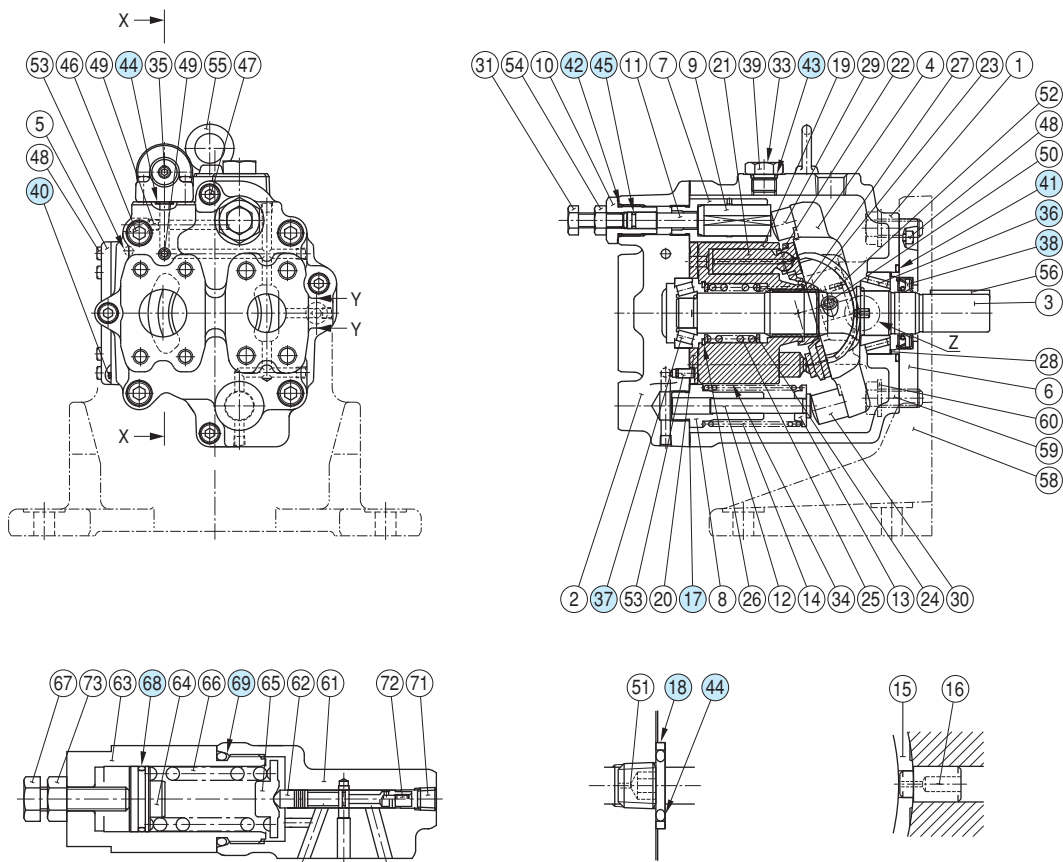
**DIMENSIONS IN  
MILLIMETRES**

**Foot Mtg. : A3H180-LR01KK**



## Spear Parts List

### A3H16/A3H37/A3H56- \*R01KK



**Detail of Section X - X**

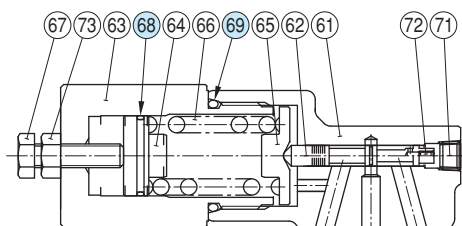
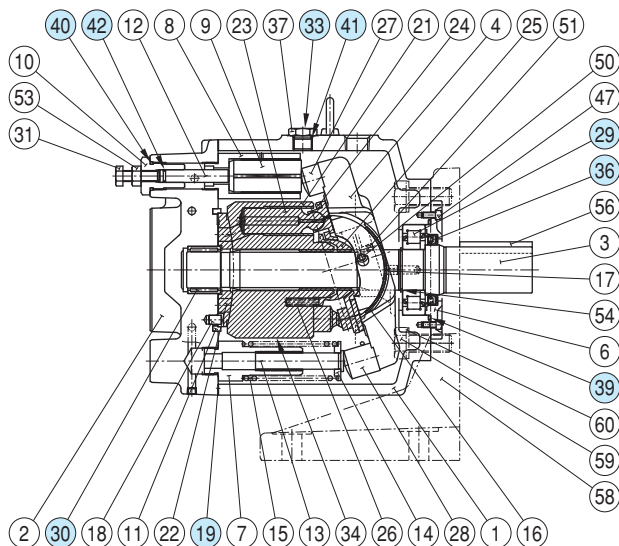
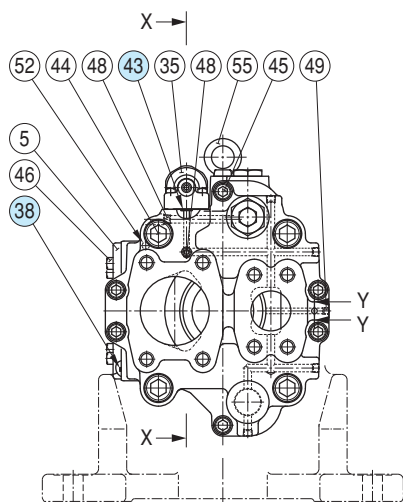
**Detail of Section Y - Y**

**Detail "Z"**

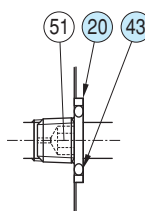
Item	Name of Parts	Part Numbers			Q'ty.
		A3H16	A3H37	A3H56	
17	Gasket	2270-PK313655-3	2271-PK-313518-3	2272-PK313433-5	1
18	Back Up Ring	1310E-PK412440-0			1
36	Cylindrical Roller Bearing	NUP205E	—	—	1
	Tapered Roller Bearing	—	4T-30204	4T-33008	
37	Needle Roller Bearing	HMK2025V2	—	—	1
	Tapered Roller Bearing	—	4T-33006	4T-32205R	
38	Oil Seal	TCN254511 (FKM)	TCN284811 (FKM)	TCN355511 (FKM)	1
40	O-Ring	S65 (NBR, Hs70)	S85 (NBR, Hs70)	S95 (NBR, Hs70)	1
41	O-Ring	SO-NA-G60	SO-NA-G60	S71 (NBR, Hs70)	1
42	O-Ring	SO-NB-P14	SO-NB-P18	SO-NB-P21	1
43	O-Ring		SO-NB-P14		1
44	O-Ring		SO-NB-P9		4
45	O-Ring	SO-NB-P6	SO-NB-P8	SO-NB-P9	1
68	O-Ring		SO-NA-A018		1
69	O-Ring		SO-NB-P26		1

**Spear Parts List**

**A3H71/A3H100/A3H145/A3H180- \* R01KK**



**Detail of Section X - X**

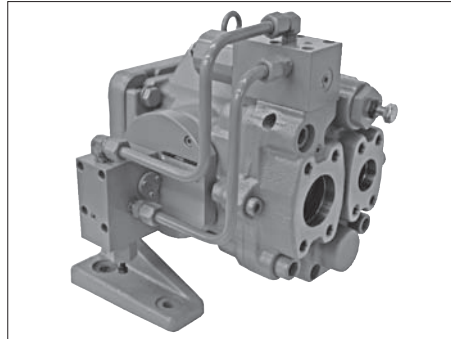


**Detail of Section Y - Y**

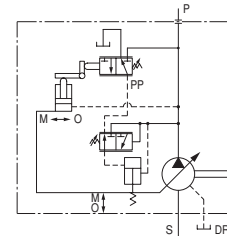
Item	Name of Parts	Part Numbers				Qty.
		A3H71	A3H100	A3H145	A3H180	
19	Gasket	2273-PK212356-0	2274-PK212368-5	2275-PK212382-6	2276-PK212301-6	1
20	Back Up Ring	1310E-PK412440-0				1
29	Tapered Roller Bearing	33009JR	4T-33206	HR33011	—	1
	Cylindrical Roller Bearing	—	—	—	2276-PK412859-1	
30	Tapered Roller Bearing	32205JR	4T-30210	4T-33206	—	1
	Needle Roller Bearing	—	—	—	2276-PK412860-9	
36	Oil Seal	TCN426512 (FKM)	TCN507212 (FKM)	TCN557812 (FKM)	TCN557812 (FKM)	1
38	O-Ring	S100 (NBR, Hs70)	S110 (NBR, Hs70)	S125 (NBR, Hs70)	S130 (NBR, Hs70)	1
39	O-Ring	SO-NA-G80	SO-NA-G95	SO-NA-G95	SO-NA-G105	1
40	O-Ring	SO-NB-P24		SO-NB-P26		1
41	O-Ring	SO-NB-P14	SO-NB-P18	SO-NB-P18		1
42	O-Ring	SO-NB-P9		SO-NB-P10A		1
43	O-Ring	SO-NB-P9				4
68	O-Ring	SO-NA-A021				1
69	O-Ring	SO-NB-P32				1



**A3H Series High Pressure Variable Displacement Piston Pumps, Constant Power (Torque) Control Type**



Graphic Symbol



**Specifications**

Model Numbers	Geometric Displacement cm <sup>3</sup> /rev	Minimum Adj. Flow cm <sup>3</sup> /rev	Max. Operating Pressure MPa	Shaft Speed Range r/min		Approx. Mass kg	
				Max.*	Min.	Flange Mtg.	Foot Mtg.
A3H 37- *R09- * * * K-10	37.1	16.0	35	2700	600	23.0	30.5
A3H 56- *R09- * * * K-10	56.3	35.0		2500	600	29.0	36.5
A3H 71- *R09- * * * K-10	70.7	45.0		2300	600	38.0	45.5
A3H100- *R09- * * * K-10	100.5	63.0		2100	600	48.3	76.3
A3H145- *R09- * * * K-10	145.2	95.0		1800	600	63.0	91.0
A3H180- *R09- * * * K-10	180.7	125.0		1800	600	74.2	102.2

★ The maximum shaft speeds shown in the above table are at suction pressure 0 kPa.

**Model Number Designation**

A3H37	-F	R	09	-11	A	4	K	-10
Series Number	Mounting	Direction of Rotation	Control Type	Input Power Setting	Frequency of Power Source	Pole Number of Electric Motor	Shaft Extension*2	Design Number
A3H37 (37.1 cm <sup>3</sup> /rev)	F: Flange Mtg. L: Foot Mtg.	(Viewed from Shaft End) R: Clockwise*1 (Normal)	09: Constant Power (Torque) Control Type	5.5: 5.5 kW   110: 110 kW  Refer to the table on following page for combination.	A: 50 Hz B: 60 Hz	4: 4 Poles 6: 6 Poles	K: Keyed Shaft	10
A3H56 (56.3 cm <sup>3</sup> /rev)								10
A3H71 (70.7 cm <sup>3</sup> /rev)								10
A3H100 (100.5 cm <sup>3</sup> /rev)								10
A3H145 (145.2 cm <sup>3</sup> /rev)								10
A3H180 (180.7 cm <sup>3</sup> /rev)								10

★1. Available to supply pump with anti-clockwise rotation. Consult Yuken for details.

★2. We can also supply spline-type shaft extension. Consult Yuken for details.

● Combination of pump series and input power setting (○= available combinations)

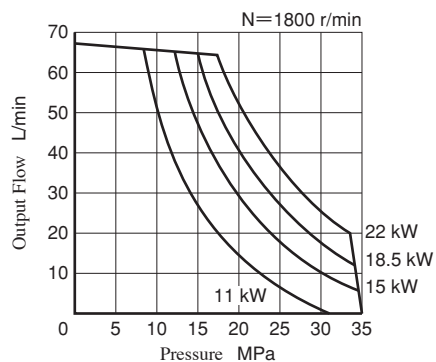
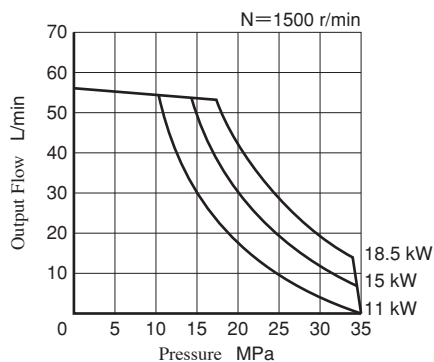
Model Numbers		Input Power Setting kW																						
		Pole Number of Electric Motor : 4P										Pole Number of Electric Motor : 6P												
		11	15	18.5	22	30	37	45	55	75	90	110	5.5	7.5	11	15	18.5	22	30	37	45	55	75	
A3H 37	50 Hz	○	○	○																				
	60 Hz	○	○	○	○																			
A3H 56	50 Hz		○	○	○	○																		
	60 Hz			○	○	○	○																	
A3H 71	50 Hz			○	○	○	○																	
	60 Hz				○	○	○	○														○		
A3H100	50 Hz				○	○	○	○	○															
	60 Hz					○	○	○	○													○	○	
A3H145	50 Hz					○	○	○	○	○													○	○
	60 Hz						○	○	○	○	○											○	○	○
A3H180	50 Hz						○	○	○	○	○												○	○
	60 Hz							○	○	○	○	○										○	○	○

■ Pipe Flange Kits

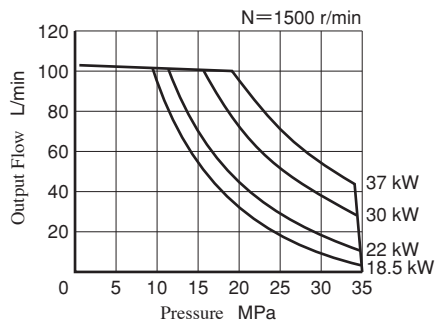
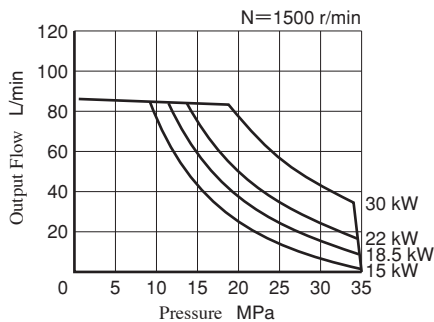
For pipe flange, refer to form of pressure compensator type on page 121.

Typical Performance Characteristics of Control Type 09 at Viscosity 32 mm<sup>2</sup>/s [ISO VG32 oils, 40°C]

● A3H37

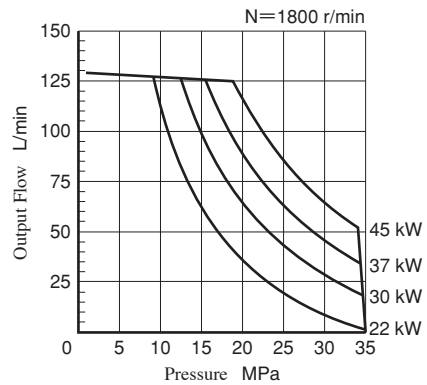
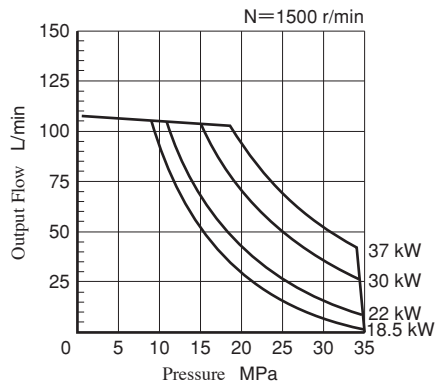


● A3H56

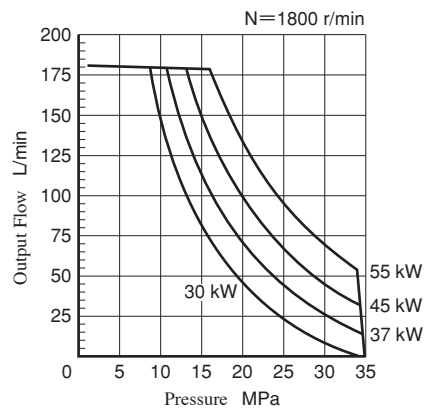
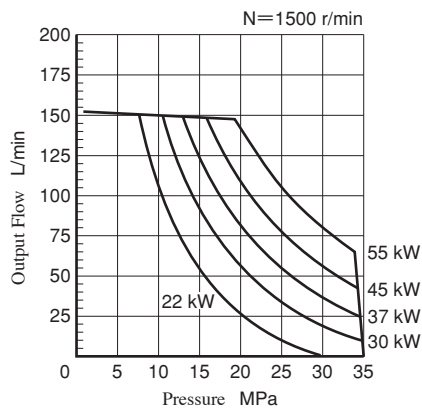


Typical Performance Characteristics of Type **A3H-09** at Viscosity 32 mm<sup>2</sup>/s [ISO VG32 oils, 40°C]

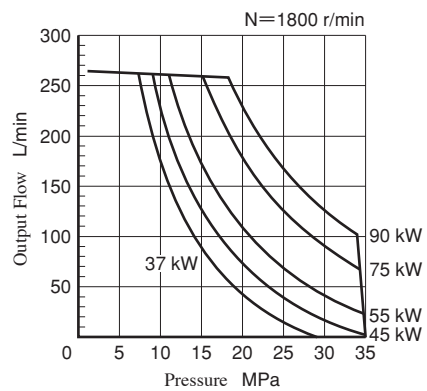
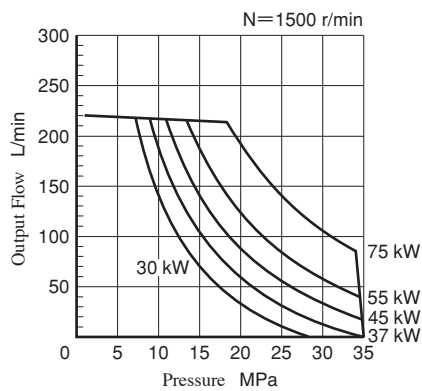
● **A3H71**



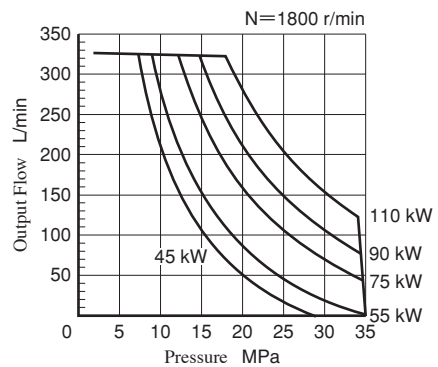
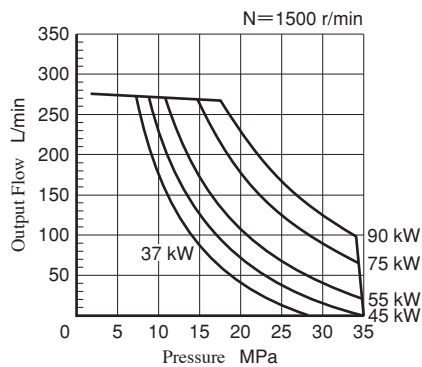
● **A3H100**



● **A3H145**

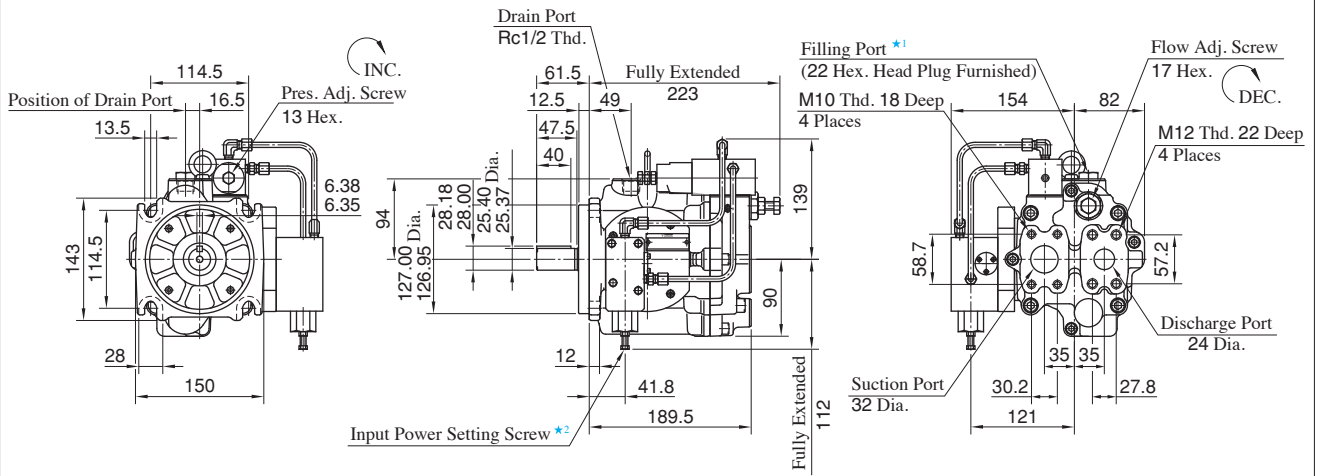


● **A3H180**



**Flange Mtg. : A3H37-FR09-\*\*\*K**

**DIMENSIONS IN MILLIMETRES**



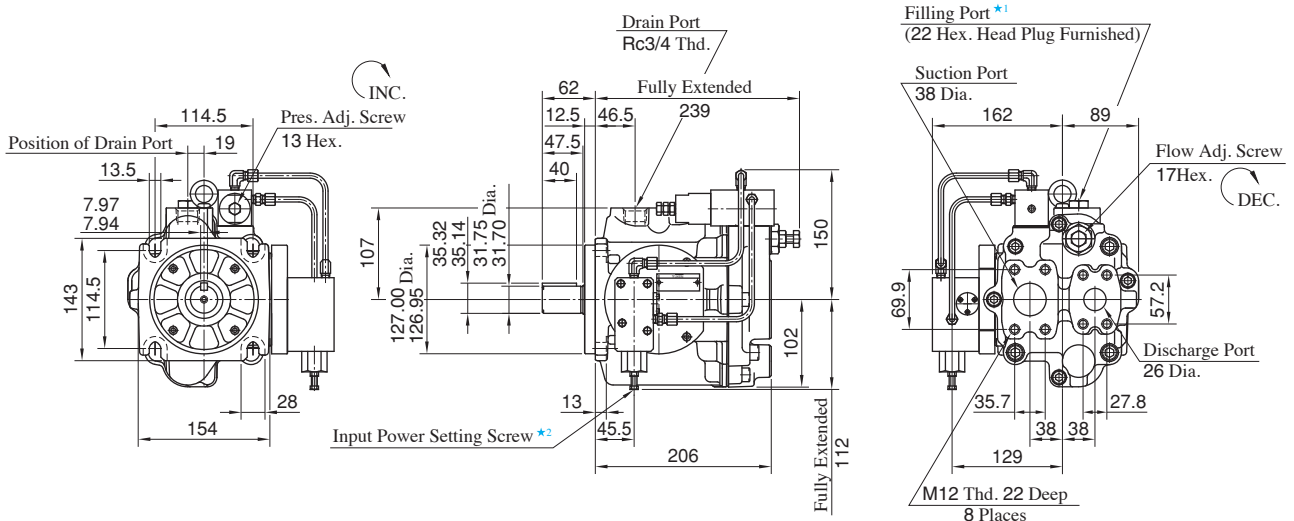
- ★1. Install the pump so that the "Filling Port" is at the top.
- ★2. Do not touch the screw because it is adjusted at the time of shipment.

● **Foot Mounting Type**

Mounting bracket is common to that of pressure compensator model.  
Refer to page 131 for the dimensions of mounting bracket.

**Flange Mtg. : A3H56-FR09-\*\*\*K**

**DIMENSIONS IN MILLIMETRES**



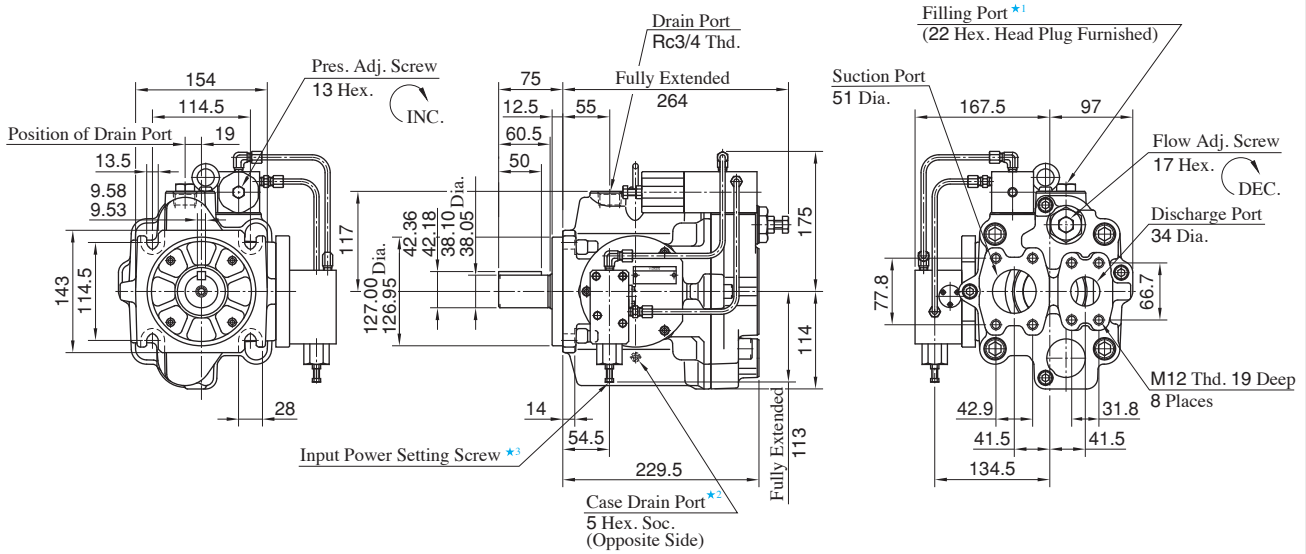
- ★1. Install the pump so that the "Filling Port" is at the top.
- ★2. Do not touch the screw because it is adjusted at the time of shipment.

● **Foot Mounting Type**

Mounting bracket is common to that of pressure compensator model.  
Refer to page 132 for the dimensions of mounting bracket.

Flange Mtg. : A3H71-FR09-\*\*\*K

DIMENSIONS IN MILLIMETRES



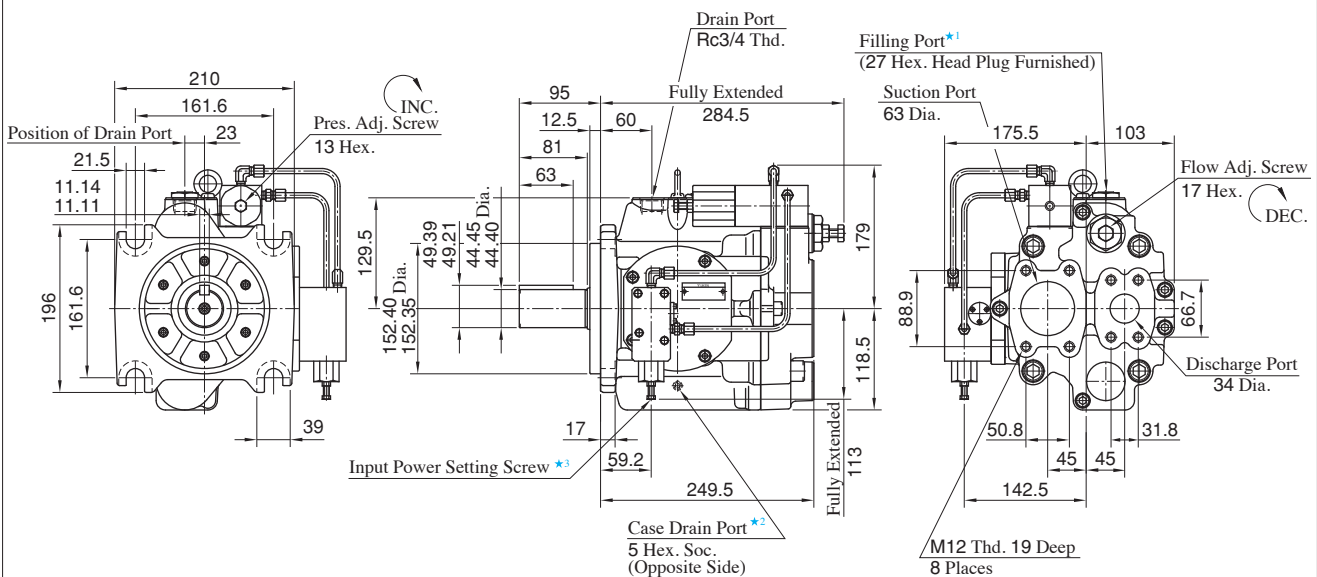
- ★1. Install the pump so that the "Filling Port" is at the top.
- ★2. Please use case drain port in case of discharge the hydraulic oil in the pump casing.
- ★3. Do not touch the screw because it is adjusted at the time of shipment.

● Foot Mounting Type

Mounting bracket is common to that of pressure compensator model.  
Refer to page 133 for the dimensions of mounting bracket.

Flange Mtg. : A3H100-FR09-\*\*\*K

DIMENSIONS IN MILLIMETRES



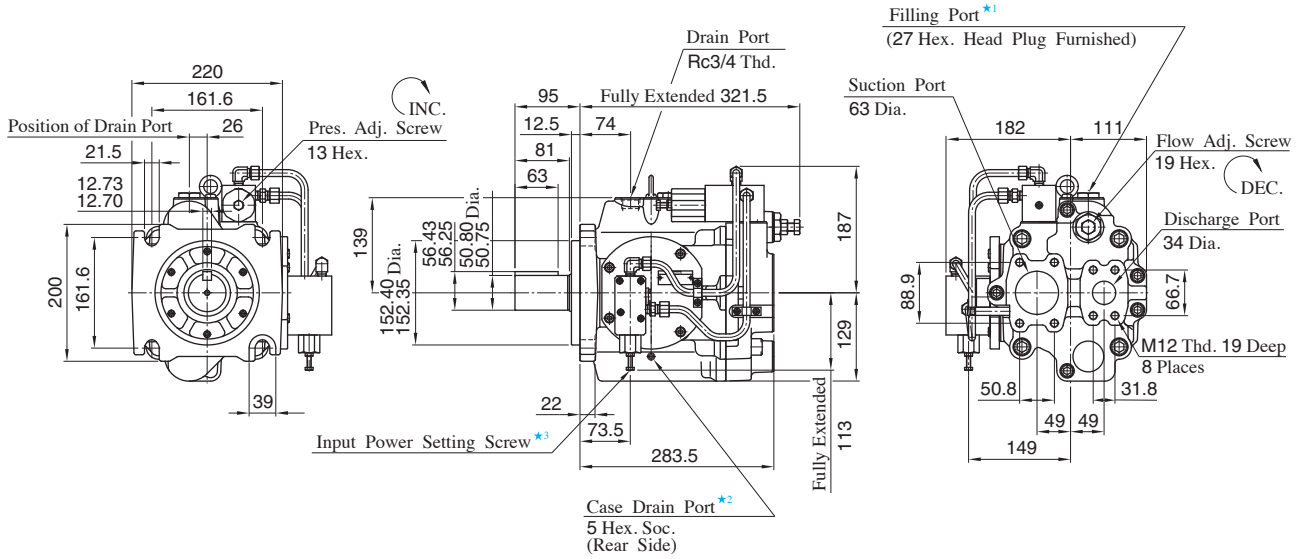
- ★1. Install the pump so that the "Filling Port" is at the top.
- ★2. Please use case drain port in case of discharge the hydraulic oil in the pump casing.
- ★3. Do not touch the screw because it is adjusted at the time of shipment.

● Foot Mounting Type

Mounting bracket is common to that of pressure compensator model.  
Refer to page 134 for the dimensions of mounting bracket.

**Flange Mtg. : A3H145-FR09-\*\*\*K**

**DIMENSIONS IN MILLIMETRES**



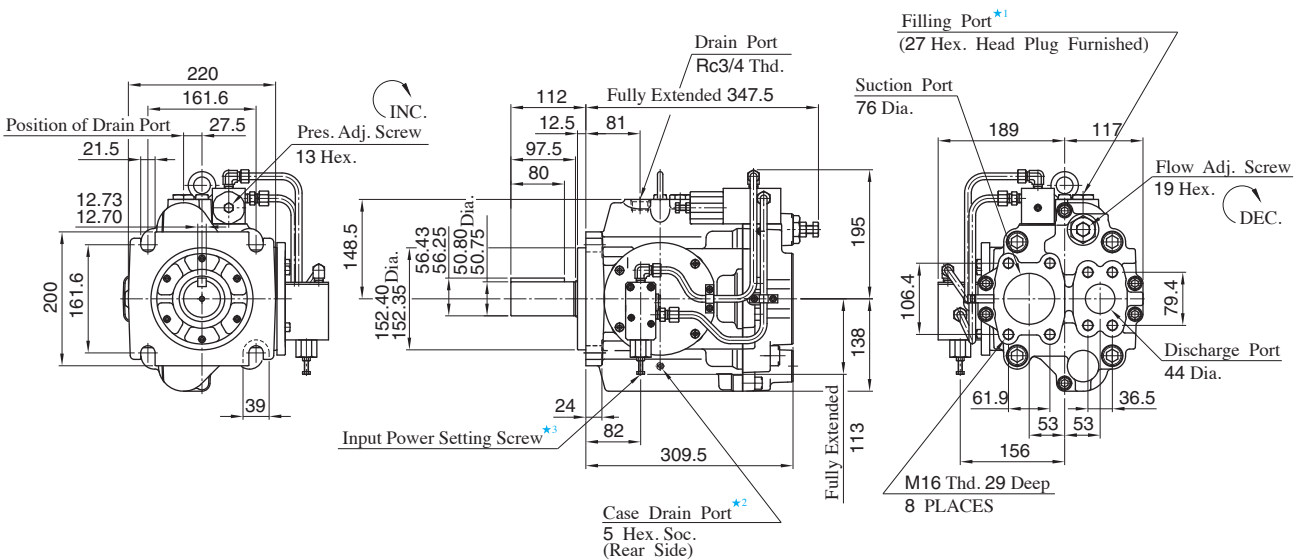
- ★1. Install the pump so that the "Filling Port" is at the top.
- ★2. Please use case drain port in case of discharge the hydraulic oil in the pump casing.
- ★3. Do not touch the screw because it is adjusted at the time of shipment.

● **Foot Mounting Type**

Mounting bracket is common to that of pressure compensator model.  
Refer to page 135 for the dimensions of mounting bracket.

**Flange Mtg. : A3H180-FR09-\*\*\*K**

**DIMENSIONS IN MILLIMETRES**

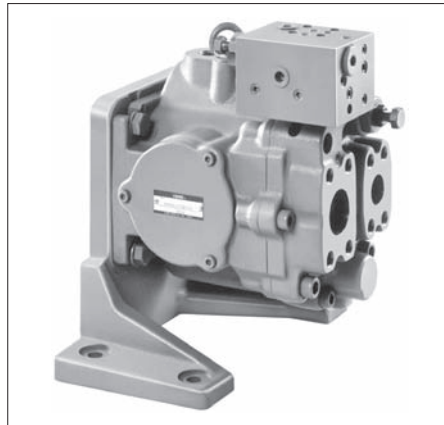


- ★1. Install the pump so that the "Filling Port" is at the top.
- ★2. Please use case drain port in case of discharge the hydraulic oil in the pump casing.
- ★3. Do not touch the screw because it is adjusted at the time of shipment.

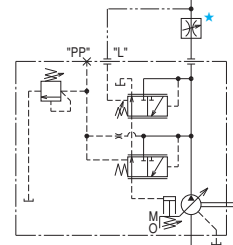
● **Foot Mounting Type**

Mounting bracket is common to that of pressure compensator model.  
Refer to page 136 for the dimensions of mounting bracket.

**A3H Series High Pressure Variable Displacement Piston Pumps, Load Sensing Type**



**Graphic Symbol**



★ A flow control valve is not included with the pump. Install the valve separately.

**Specifications**

Model Numbers	Geometric Displacement cm <sup>3</sup> /rev	Operating Pressure★ <sup>1</sup> MPa		Load Sensing Pres. Difference $\Delta P$ MPa	Shaft Speed Range r/min		Approx. Mass kg	
		Rated	Intermittent		Max.★ <sup>3</sup>	Min.	Flange Mtg.	Foot Mtg.
A3H 16- *R14K-10	16.3	28	35	1.5 (At the time) (of shipment)★ <sup>2</sup>	3600	600	17.5	26.4
A3H 37- *R14K-10	37.1				2700	600	22.5	30.0
A3H 56- *R14K-10	56.3				2500	600	28.7	36.2
A3H 71- *R14K-10	70.7				2300	600	38.0	45.5
A3H100- *R14K-10	100.5				2100	600	47.9	75.9
A3H145- *R14K-10	145.2				1800	600	63.0	91.0
A3H180- *R14K-10	180.7				1800	600	73.4	101.4

- ★1. The operating pressure means pump discharge pressure.
- ★2. Load pressure difference  $\Delta P$  is adjustable in range of 1.0 - 3.0 MPa.
- ★3. The maximum shaft speeds shown in the above table are at suction pressure 0 kPa.

**Model Number Designation**

A3H37	-F	R	14	K	-10
Series Number	Mounting	Direction of Rotation	Control Type	Shaft Extension★ <sup>2</sup>	Design Number
A3H16 (16.3 cm <sup>3</sup> /rev)	F: Flange Mtg. L: Foot Mtg.	(Viewed from) Shaft End R: Clockwise★ <sup>1</sup> (Normal)	14: Load Sensing Type	K: Keyed Shaft	10
A3H37 (37.1 cm <sup>3</sup> /rev)					10
A3H56 (56.3 cm <sup>3</sup> /rev)					10
A3H71 (70.7 cm <sup>3</sup> /rev)					10
A3H100 (100.5 cm <sup>3</sup> /rev)					10
A3H145 (145.2 cm <sup>3</sup> /rev)					10
A3H180 (180.7 cm <sup>3</sup> /rev)					10

- ★1. Available to supply pump with anti-clockwise rotation. Consult Yuken for details.
- ★2. We can also supply spline-type shaft extension. Consult Yuken for details.

## ■ Pipe Flange Kits

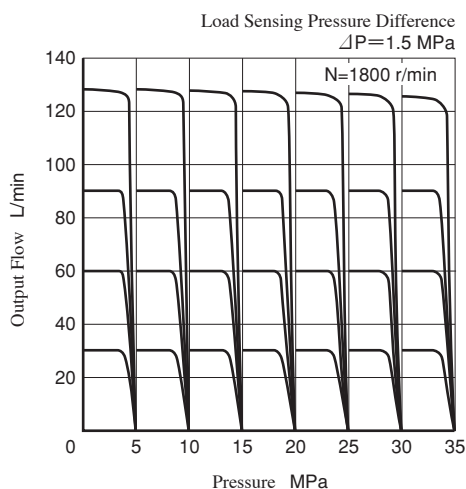
Pipe flange kits are available. When ordering, specify the kit number from the table below.

Pump Model Numbers	Name of Port	Pipe Flange Kits Number		
		Threaded Connection*	Socket Welding	Butt Welding
A3H 16- *R14K	Suction	F5-08-A-10	F5-08-B-10	F5-08-C-10
	Discharge	F6-06-A-M-10	F6-06-B-M-10	—
A3H 37- *R14K	Suction	F5-10-A-10	F5-10-B-10	F5-10-C-10
	Discharge	F6-08-A-M-10	F6-08-B-M-10	—
A3H 56- *R14K	Suction	F5-12-A-10	F5-12-B-10	F5-12-C-10
	Discharge	F6-08-A-M-10	F6-08-B-M-10	—
A3H 71- *R14K	Suction	F5-16-A-10	F5-16-B-10	F5-16-C-10
	Discharge	F6-10-A-M-10	F6-10-B-M-10	—
A3H100- *R14K A3H145- *R14K	Suction	F5-20-A-10	F5-20-B-10	F5-20-C-10
	Discharge	F6-10-A-M-10	F6-10-B-M-10	—
A3H180- *R14K	Suction	F5-24-A-10	F5-24-B-10	—
	Discharge	F6-12-A-M-10	F6-12-B-M-10	—

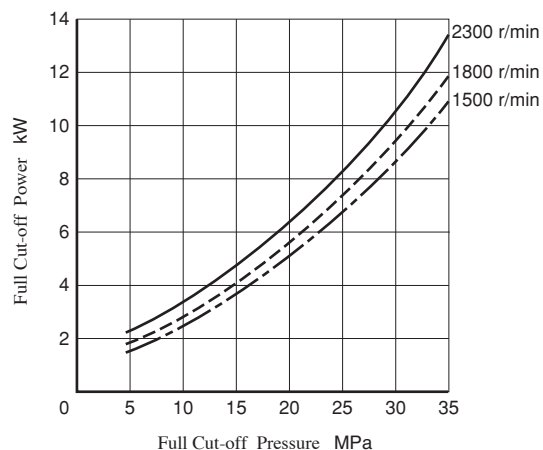
★ These flanges are with tapered threaded port, maximum pressure is restricted at 31 MPa.

### Typical Performance Characteristics of Control Type **A3H71** at Viscosity 32 mm<sup>2</sup>/s [ISO VG32 oils, 40°C]

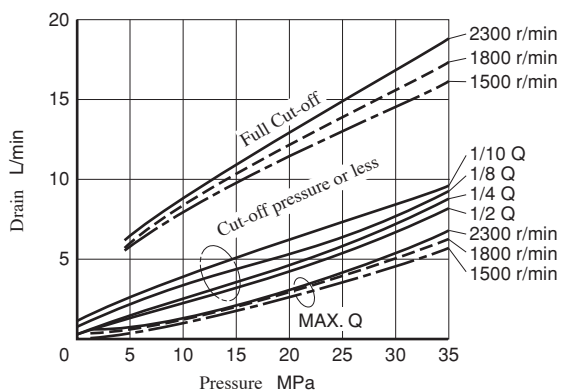
#### ■ Pressure vs. Output Flow



#### ■ Full Cut-off Input Power



#### ■ Drain

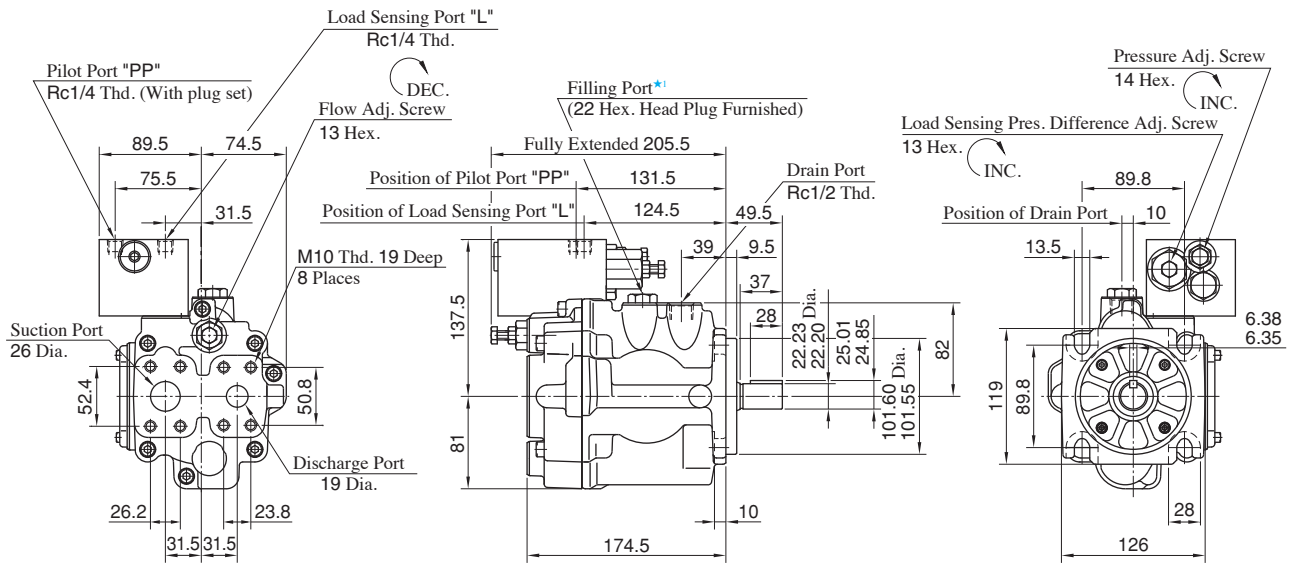


★ Ask Yuken for Performance characteristics of other series than A3H71.



Flange Mtg. : A3H16-FR14K

DIMENSIONS IN MILLIMETRES



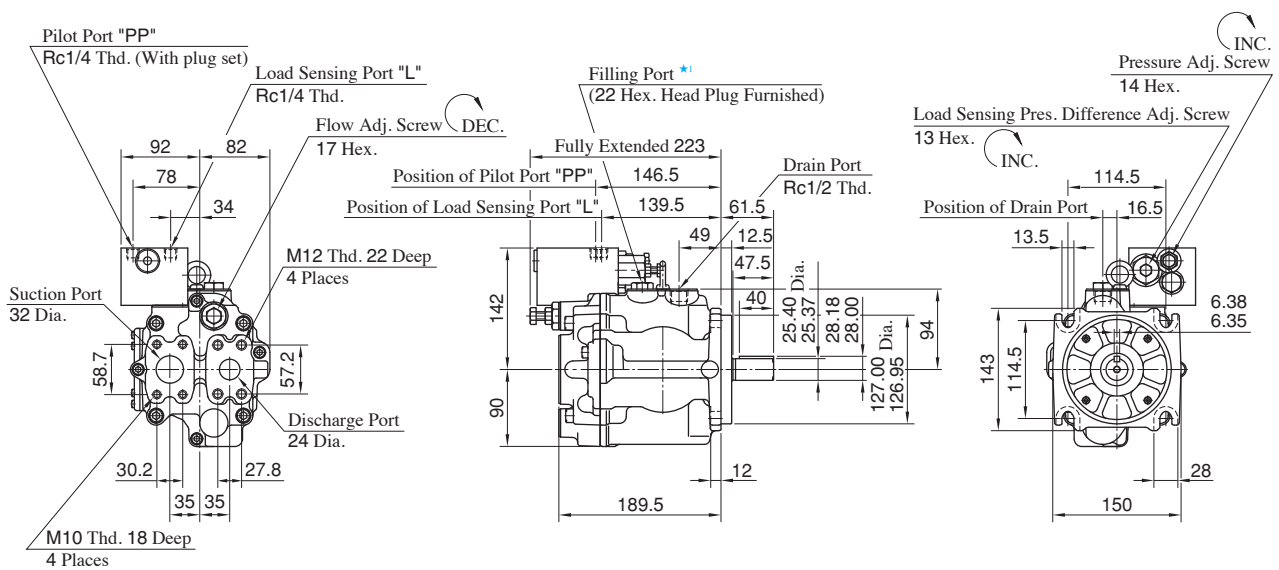
★1. Install the pump so that the "Filling Port" is at the top.

● Foot Mounting Type

Mounting bracket is common to that of pressure compensator model. Refer to page 130 for the dimensions of mounting bracket.

Flange Mtg. : A3H37-FR14K

DIMENSIONS IN MILLIMETRES



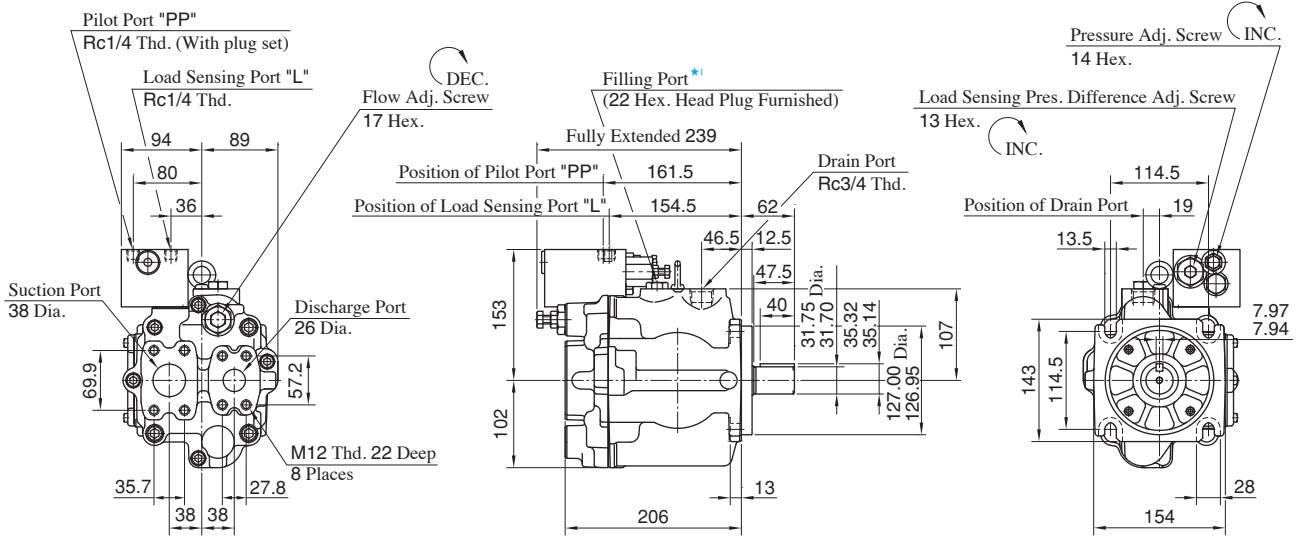
★1. Install the pump so that the "Filling Port" is at the top.

● Foot Mounting Type

Mounting bracket is common to that of pressure compensator model. Refer to page 131 for the dimensions of mounting bracket.

**Flange Mtg. : A3H56-FR14K**

**DIMENSIONS IN MILLIMETRES**



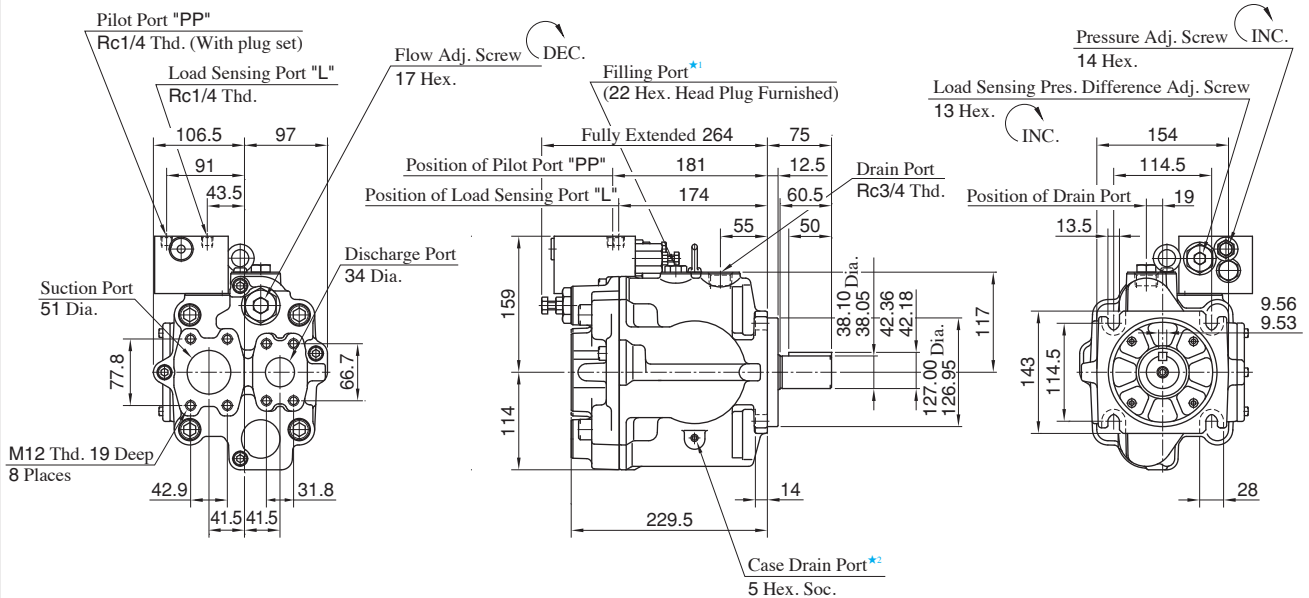
★1. Install the pump so that the "Filling Port" is at the top.

● **Foot Mounting Type**

Mounting bracket is common to that of pressure compensator model.  
Refer to page 132 for the dimensions of mounting bracket.

**Flange Mtg. : A3H71-FR14K**

**DIMENSIONS IN MILLIMETRES**



★1. Install the pump so that the "Filling Port" is at the top.

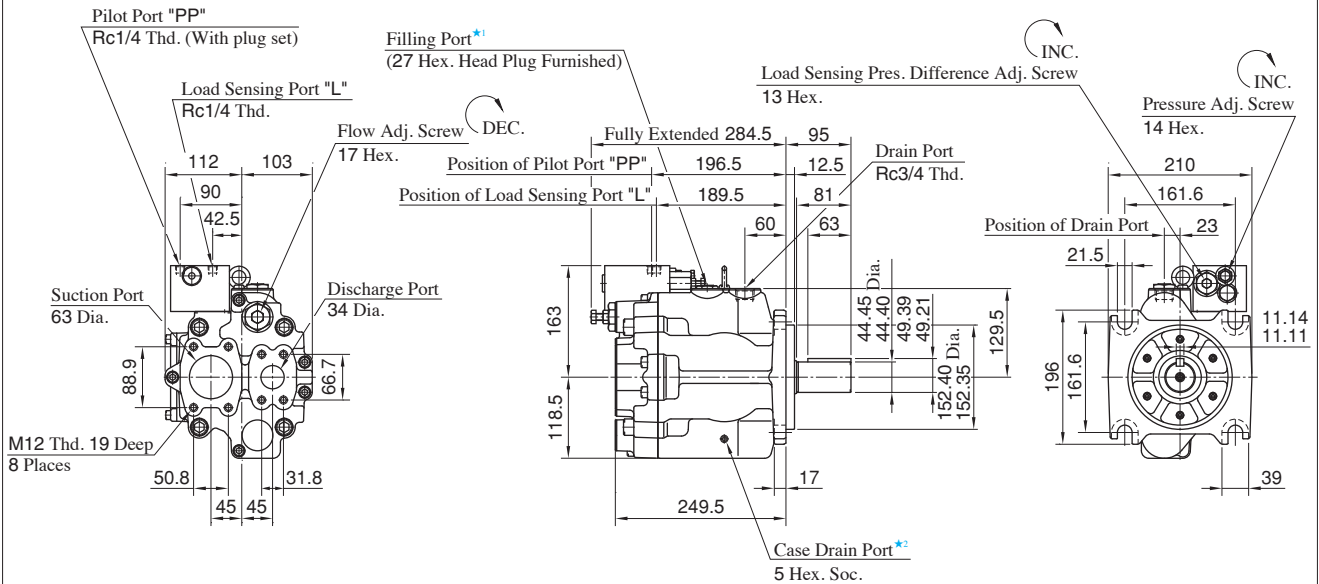
★2. Please use case drain port in case of discharge the hydraulic oil in the pump casing.

● **Foot Mounting Type**

Mounting bracket is common to that of pressure compensator model.  
Refer to page 133 for the dimensions of mounting bracket.

Flange Mtg. : A3H100-FR14K

DIMENSIONS IN MILLIMETRES



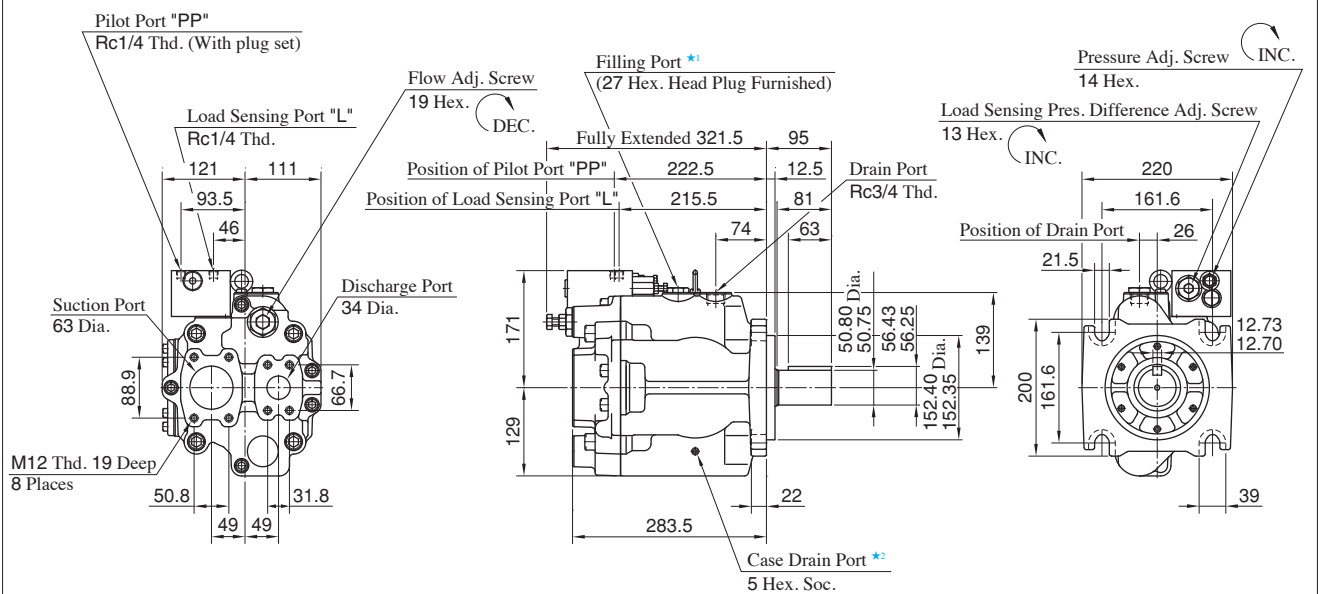
- ★1. Install the pump so that the "Filling Port" is at the top.
- ★2. Please use case drain port in case of discharge the hydraulic oil in the pump casing.

● Foot Mounting Type

Mounting bracket is common to that of pressure compensator model.  
Refer to page 134 for the dimensions of mounting bracket.

Flange Mtg. : A3H145-FR14K

DIMENSIONS IN MILLIMETRES



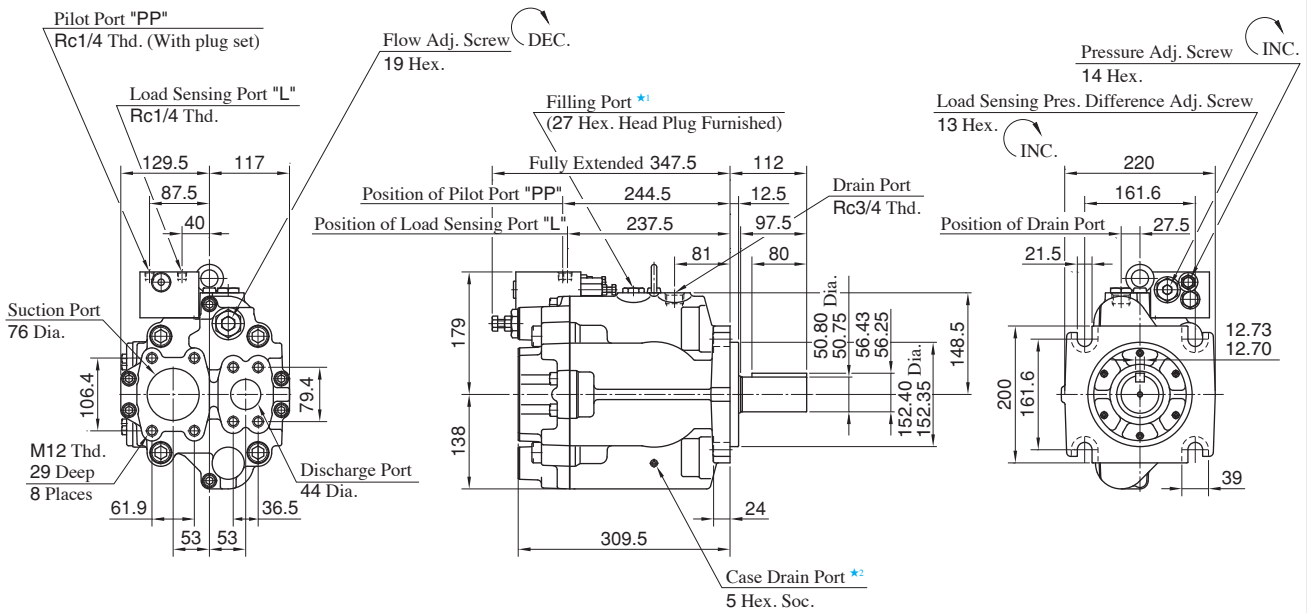
- ★1. Install the pump so that the "Filling Port" is at the top.
- ★2. Please use case drain port in case of discharge the hydraulic oil in the pump casing.

● Foot Mounting Type

Mounting bracket is common to that of pressure compensator model.  
Refer to page 135 for the dimensions of mounting bracket.

**Flange Mtg. : A3H180-FR14K**

**DIMENSIONS IN MILLIMETRES**



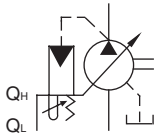
- ★1. Install the pump so that the "Filling Port" is at the top.
- ★2. Please use case drain port in case of discharge the hydraulic oil in the pump casing.

● **Foot Mounting Type**

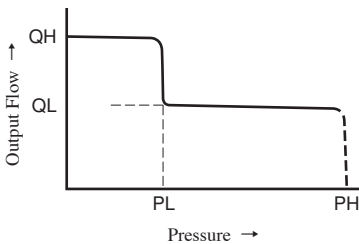
Mounting bracket is common to that of pressure compensator model.  
 Refer to page 136 for the dimensions of mounting bracket.

**A3H Series High Pressure Variable Displacement Piston Pumps, Simple Two-Pressure Two-Flow Control Type**

Graphic Symbol



Performance Characteristics



**Specifications**

Model Numbers	Geometric Displacement cm <sup>3</sup> /rev	Delivery Volume Adj. Range cm <sup>3</sup> /rev		Operating Pressure MPa		Shaft Speed Range r/min
		Large Displacement (QH)	Small Displacement (QL)	Rated	Intermittent	
A3H16- *R55-KK-10	16.3	8 - 16.3	★ - 8	25	25	600 - 3600
A3H37- *R55-KK-10	37.1	16 - 37.1	★ - 19			600 - 2700
A3H56- *R55-KK-10	56.3	35 - 56.3	★ - 30			600 - 2500
A3H71- *R55-KK-10	70.7	45 - 70.7	★ - 35			600 - 2300
A3H100- *R55-KK-10	100.5	63 - 100.5	★ - 48			600 - 2100
A3H145- *R55-KK-10	145.2	95 - 145.2	★ - 60			600 - 1800
A3H180- *R55-KK-10	180.7	125 - 180.7	★ - 90			600 - 1800

Note) ★ Pressure, PH, is the minimum required flow of the external relief valve.

**Instruction**

Please install the external relief valve since there is no full cut-off performance on this pump.

**Model Number Designation**

A3H37	-F	R	55	K	K	-10
Series Number	Mounting	Direction of Rotation	Control Type	Pres. Adj. Range	Shaft Extension	Design Number
A3H16 (16.3 cm <sup>3</sup> /rev)	F: Flange Mtg. L: Foot Mtg.	(Viewed from) Shaft End)  R: Clockwise (Normal)	55: Simple Two- Pressure Two- Flow Control Type	K: 5 - 25	K: Keyed Shaft	10
A3H37 (37.1 cm <sup>3</sup> /rev)						10
A3H56 (56.3 cm <sup>3</sup> /rev)						10
A3H71 (70.7 cm <sup>3</sup> /rev)						10
A3H100 (100.5 cm <sup>3</sup> /rev)						10
A3H145 (145.2 cm <sup>3</sup> /rev)						10
A3H180 (180.7 cm <sup>3</sup> /rev)						10

Consult Yuken when detailed such as dimensions figures is required.