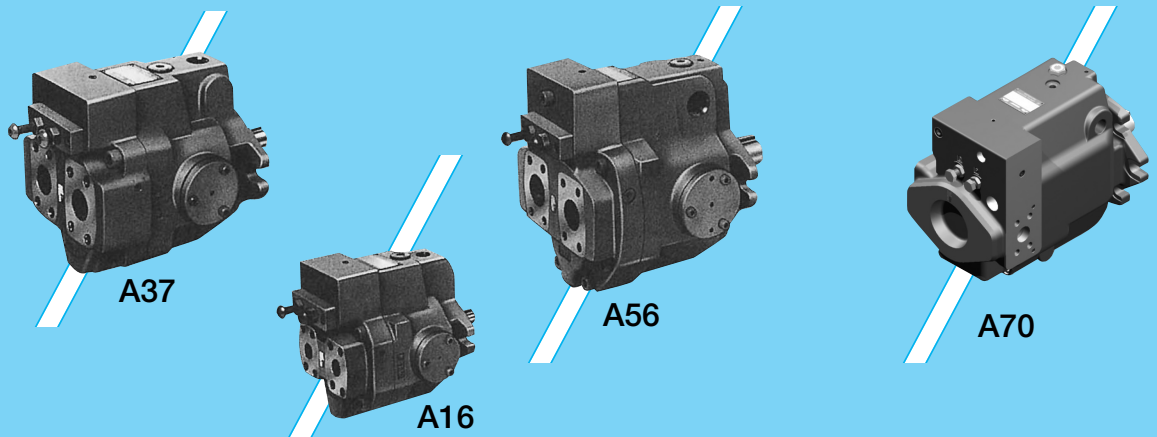



A Series Variable Displacement Piston Pumps



■ A Series Variable Displacement Piston Pumps

Pump Type	KS Graphic Symbol	Geometric Displacement cm ³ /rev										Maximum Operation Pressure MPa {kgf/cm ² }	Page
		1	2	5	10	20	50	100	200	300			
A Series Variable Displace- ment Piston Pumps	Single Pumps 				A16						21 {214}	A-20	
						A37	A56		A70		28 {286}		

Hydraulic Fluids for A series Variable Displacement Piston Pump

1. 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 mm²/s (98 to 1800 SSU) and temperature range is from 0 to 60 (32 to 140) both of which have to be satisfied for the use of the above hydraulic oils.

2. Control of Contamination

Due caution must be paid to maintaining control contamination of the operating oil which can otherwise 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 μ m mesh) reservoir type filter and the return line must have a filter of under 10 μ m.

Please take notice that when use the A series Variable Displacement Piston Pump

1. Mounting

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

2. 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°

3. Suction Pressure

Permissible suction pressure at inlet port of the pump is between -16 and +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.

4. 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.

5. 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.

6. 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. In case A16 and A37 pump, a screw-in torque of fitting is 40 to 50 Nm. Do not apply bending and thrust torque to the fitting.

[Recommended Drain Piping Size]

Model	Fitting Size	Inside Dia of Pipe
A16	3/8 (Inside Dia. 8.5mm more)	More Dia 10
A37	1/2 (Inside Dia. 12mm more)	More Dia 12
A56, A70	3/4 (Inside Dia. 16mm more)	More Dia 19

7. Bleeding Air

It may be necessary to bleed air from pump case and outlet line to remove causes of vibration. An air bleed valve (Model No. ST1004-※-10※) is recommended for this purpose.

8. 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 ³
A16	600
A37, A56	1200
A70	2100

9. 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

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

Model Numbers	Adjustable Pressure with each full turn of the adjustment screw MPa {kgf/cm ² }
A16/A37/A56-※-R-01-B	3.5 {35.7}
A16/A37/A56-※-R-01-C	6.5 {66.3}
A16/A37/A56-※-R-01-H	7.9 {80.6}
A70-※-R-01-B	2.3 {23.4}
A70-※-R-01-C	3.2 {32.6}
A70-※-R-01-H	4.0 {40.8}
A70-※-R-01-K	4.7 {47.9}

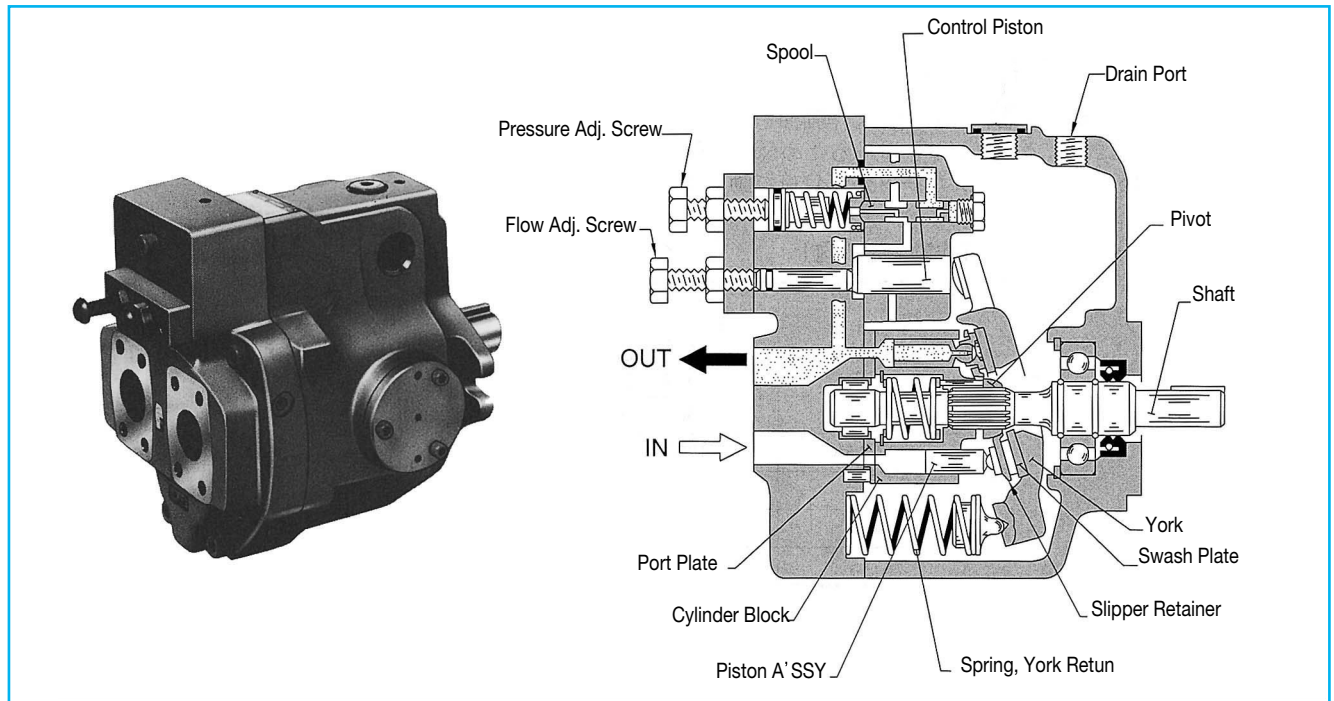
[Adjustment of Delivery]

Turning the delivery adjustment screw clockwise, decreases delivery. The minimum adjustable flow and adjustable volume of each full turn of the delivery adjustment screw.

[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 cm ³ /rev	Minimum adjustable flow cm ³ /rev
A16	1.4	4
A37	2.9	10
A56	3.9	12
A70	4.4	30

A Series Variable Displacement Piston Pumps



■ Features

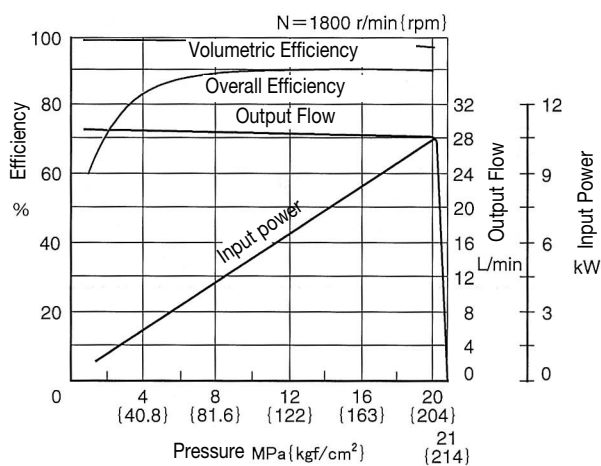
● High efficiency

Under the conditions of pressure 16MPa(2320 PSI) and speed 1800 r/min, the volumetric efficiency is over 98% and the overall efficiency is over 90%

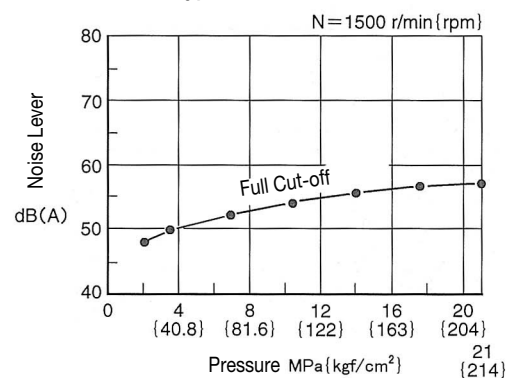
● Low noise level

In the A16 pump, the noise level is as low as 57.3dB(A) [at the full cut-off pressure 21 MPa(3050 PSI) with speed 1500 r/min one metre(3.3ft.) horizontally away from pump head cover]

A16 type performance characteristics



A16 type noise level characteristics



● Accomplishment of energy-saving

Because the overall efficiency is high and the cut characteristics is sharp, thus the input power may saved.

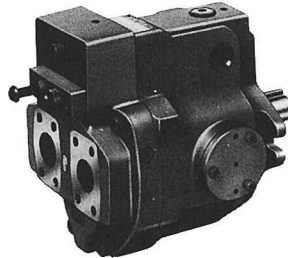
● Low heat generation

Because of small power loss, it is possible to reduce the rise in oil temperature. Accordingly, capacity of a reservoir can be reduced.

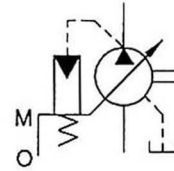


A Series Variable Displacement Piston Pumps

Single Pump, Pressure Compensator Type



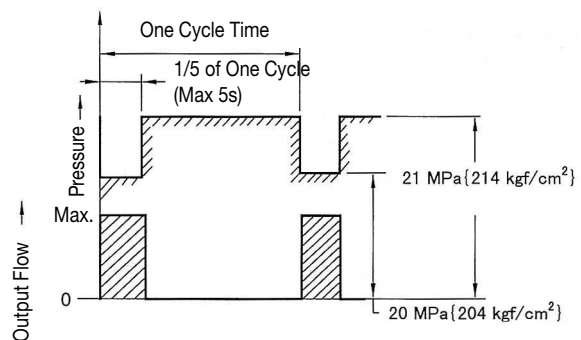
KS Graphic Symbols



Ratings

Model Numbers	Geometric Displacement cm ³ /rev	Minimum Adj. Flow cm ³ /rev	Operating Pres. MPa {kgf/cm ² }		Shaft Speed Range r/min {rpm}		Mass kg	
			Rated ^{*2}	Inter-mittent ^{*1}	Max.	Min.	Flange Mtg.	Foot Mtg.
A16-※-R-01-※-※-K-32	15.8	4	16{163}	21{214}	1800	600	16.5	18.7
A37-※-R-01-※-※-K-32	36.9	10	16{163}	21{214}	1800	600	28.0	32.3
A56-※-R-01-※-※-K-32	56.2	12	16{163}	21{214}	1800	600	35.0	39.3
A70-※-R-01-※-S-60	70.0	30	25{255}	28{286}	1800	600	58.5	70.5

- ★1. Whenever setting pressure, make sure the full cut-off pressure never exceeds the maximum intermittent pressure.
- ★2. Care should be taken in cases of used at a higher pressure than the rated pressure, because operating terms may be restricted. For example, if used as per maximum illustrated operating conditions, intermittent time at maximum flow is restricted to under 1/5 of one cycle time and under 6 seconds simultaneously. Conditions may vary according to the actual working pressure and delivery (inclination angle of the swash plate). Consult factory or SEWON sales representative for further information.



■ Model Number Designation

● A16~A70 Type

A16	-F	-R	-01	-B	-S	-K	-32
Series Number	Mounting	Direction of Rotation	Control Type	Pressure. Adj. Range MPa {kgf/cm ² }	Port Position	Shaft Extension	Design Number
A16 (15.8cm ³ /rev)	F: Flange Mtg.	(Viewd from Shaft End)	01: Pressure Compensator Type	B: 1.2~7 {12.2~71.4} C: 1.2~16 {12.2~163} H: 1.2~21 {12.2~214}	None: Axial Port	K: Keyed Shaft	32
A37 (36.9cm ³ /rev)							32
A56 (56.2cm ³ /rev)							32
A70 (70.0cm ³ /rev)	L: Foot Mtg.	R: Clockwise (Normal)		B: 1.2~7 {12.2~71.4} C: 1.2~16 {12.2~163} H: 1.2~21 {12.2~214}	S: Side Port		60

■ Pipe Flange Kits

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

Pump Model Numbers	Name of Port	Pipe Flange Kit Numbers		
		Threaded Connection	Socket Welding	Butt Welding
A16-※-R-01	Suction	F5-06-A-10	F5-06-B-10	F5-06-C-10
	Discharge	F5-06-A-10	F5-06-B-10	F5-06-C-10
A37-※-R-01 A56-※-R-01	Suction	F5-10-A-10	F5-10-B-10	F5-10-C-10
	Discharge	F5-10-A-10	F5-10-B-10	F5-10-C-10
A70-※-R-01	Suction	F5-12-A-10	F5-12-B-10	F5-12-C-10
	Discharge	F5-08-A-10	F5-08-B-10	F5-08-C-10

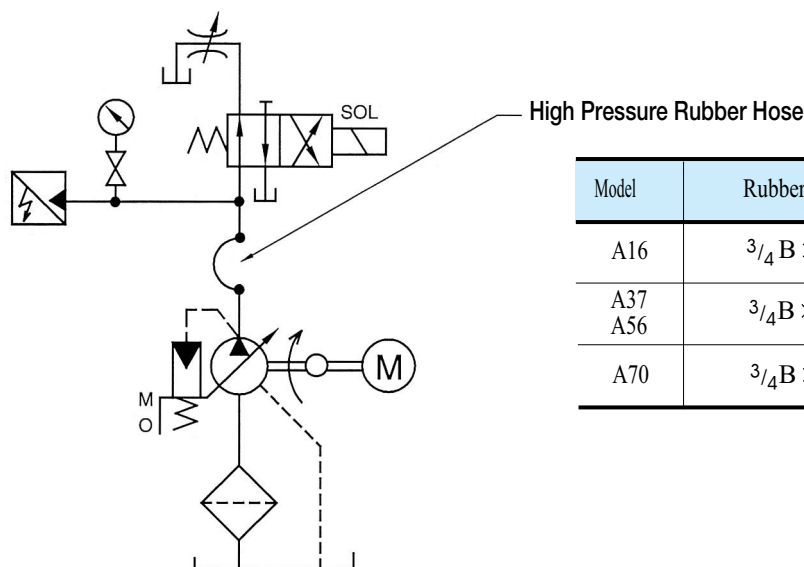
★ In case of using socket welding flanges, there is a case where the operating pressure should be set lower than the normal because of strength of the flanges. Therefore, please pay cautious attention to the operating pressure when the socket welding flanges are used.

Response Characteristics

Response characteristics Change in Accordance with Circuits and Operating Conditions.

Test Circuit and Conditions

● Circuit



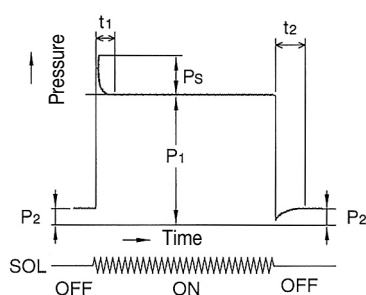
Model	Rubber Hose Size
A16	$\frac{3}{4}$ B × 700mm
A37 A56	$\frac{3}{4}$ B × 2000mm
A70	$\frac{3}{4}$ B × 3500mm

● Conditions

Drive Speed: 1500 r/min {rpm}
Hydraulic Fluid : ISO VG 32 oil

Model	Temperature
A16~A56	50℃(20mm ² /s {cSt})
A70	40℃(32mm ² /s {cSt})

Result of Measurement



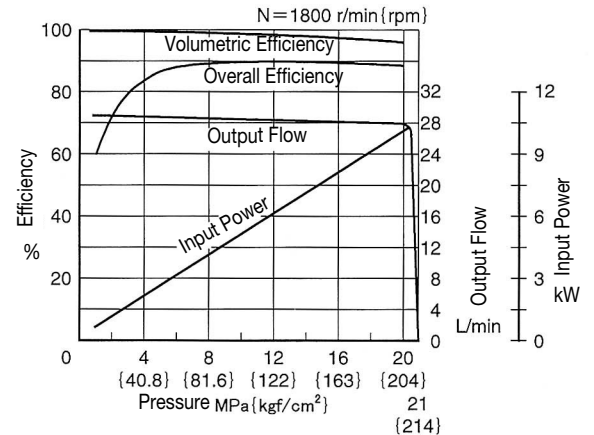
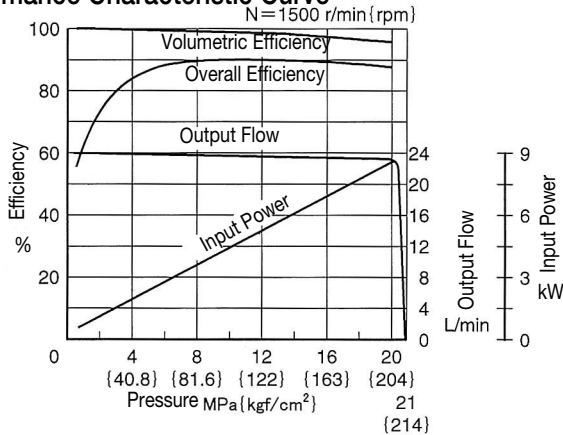
Model	Full Cut-off Pressure MPa {kgf/cm ² }	Pressure in Max. MPa {kgf/cm ² }	Response Time ms		Overshoot Pressure PS MPa {kgf/cm ² }
			t ₁	t ₂	
A16	16 {163}	2 {20.4}	38*	59*	3.6 {37}
A37	16 {163}	2 {20.4}	40*	78*	7.8 {80}
A56	16 {163}	2 {20.4}	38*	88*	7.6 {78}
A70	25 {255}	2 {20.4}	80	100	7.8 {80}

★Response time of A16, A37, A56, A70 is measured Yoke travel.

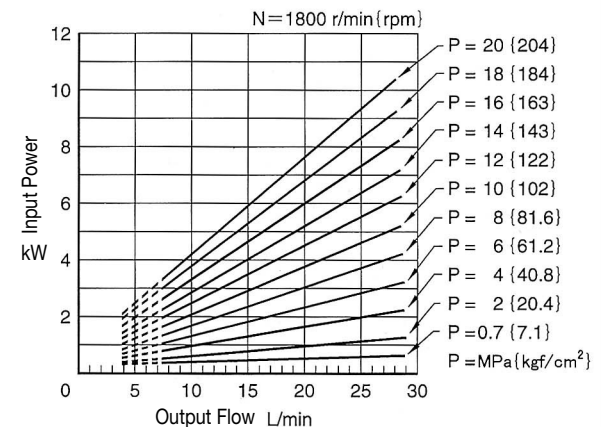
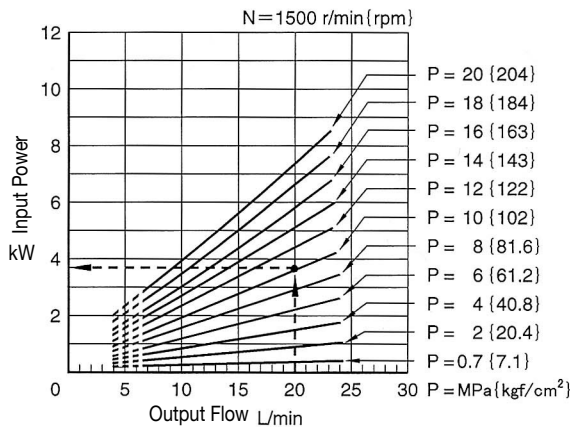
A16 Characteristics

Typical performance characteristics at viscosity 32mm²/s(ISO VG 32 Oil, 50°C)

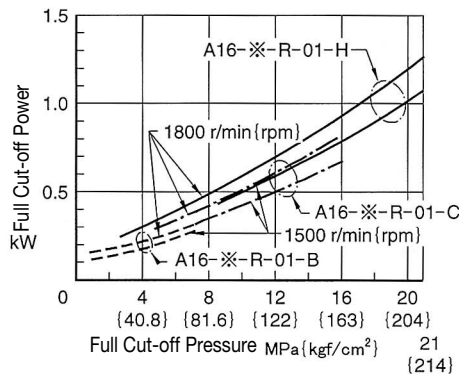
Performance Characteristic Curve



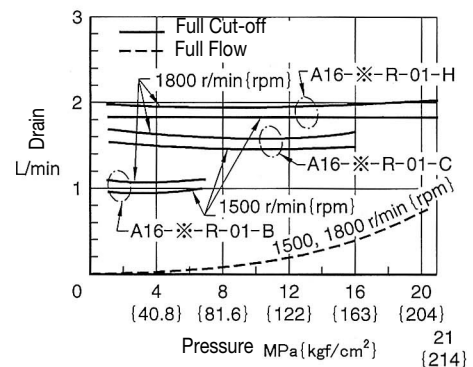
Input Power Example: At a pressure of under 10MPa, a flow 20L/min, and rotation 1500r/min, the axial input becomes about 3.7kW(5HP) as shown the dotted line in the graph.



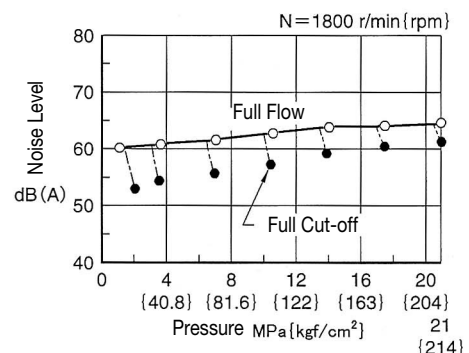
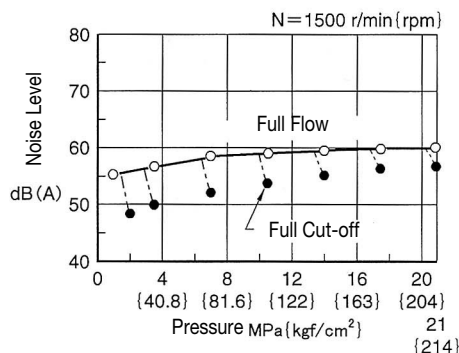
Full Cut-off Power



Drain



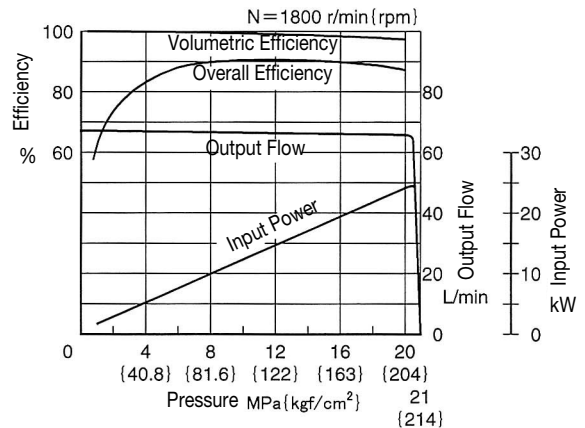
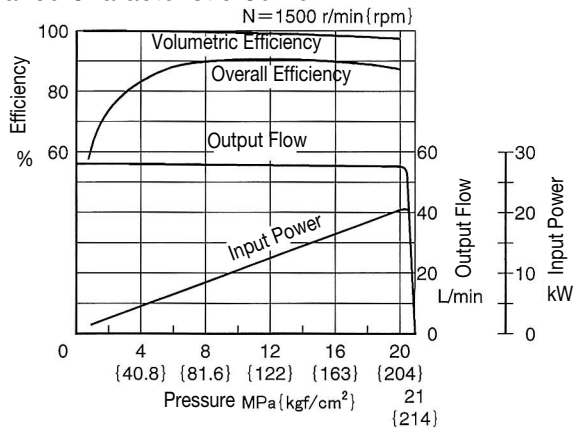
Noise Level [One meter horizontally away from pump head cover]



A37 Characteristics

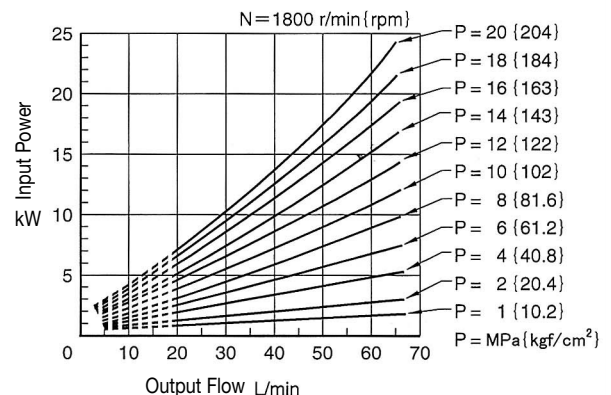
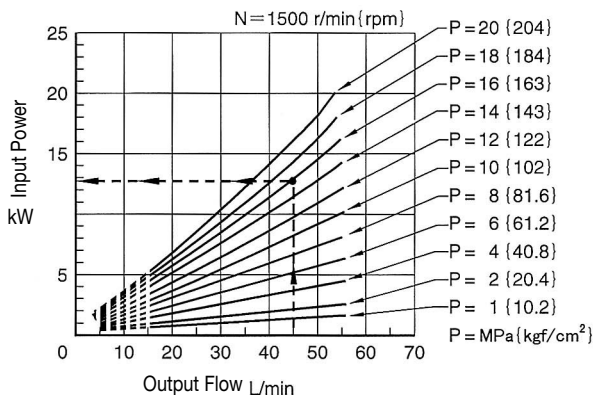
Typical performance characteristics at viscosity 32mm²/s(ISO VG 32 Oil, 50°C)

Performance Characteristic Curve

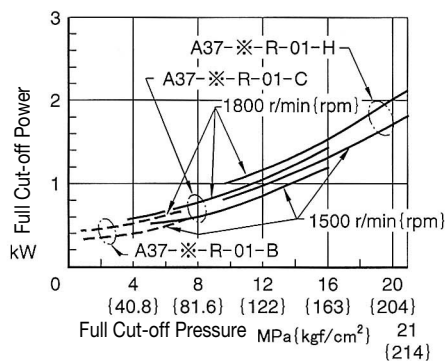


Input Power

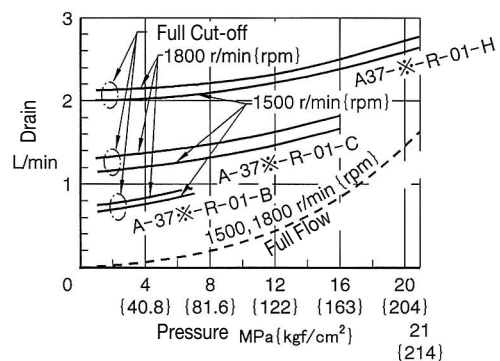
Example: At a pressure of under 16MPa, a flow 45L/min, and rotation 1500r/min, the axial input becomes about 12.6kW(16.9HP) as shown the dotted line in the graph.



Full Cut-off Power

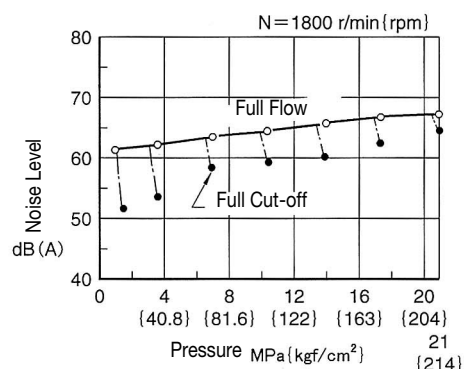
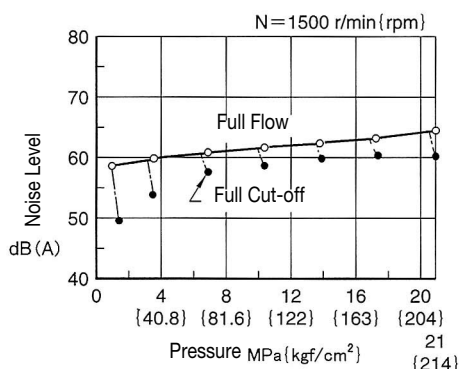


Drain



Noise Level

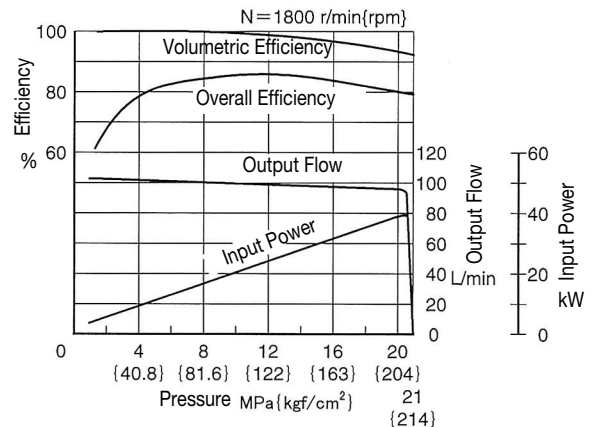
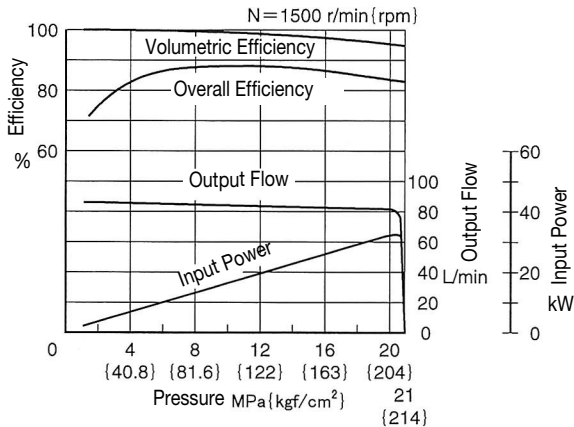
[One meter horizontally away from pump head cover]



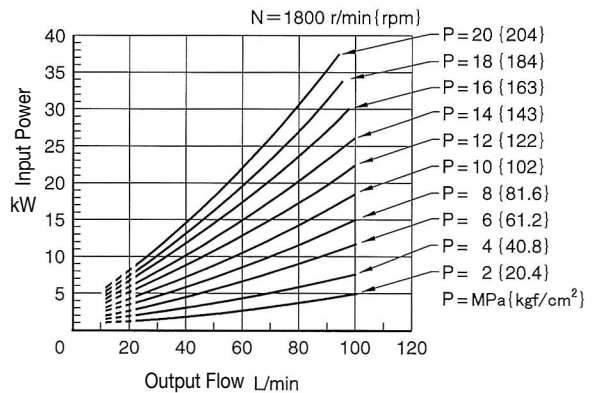
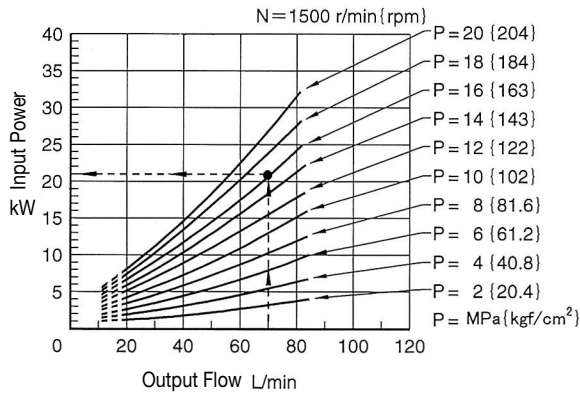
A56 Characteristics

Typical performance characteristics at viscosity 32mm²/s(ISO VG 32 Oil, 50°C)

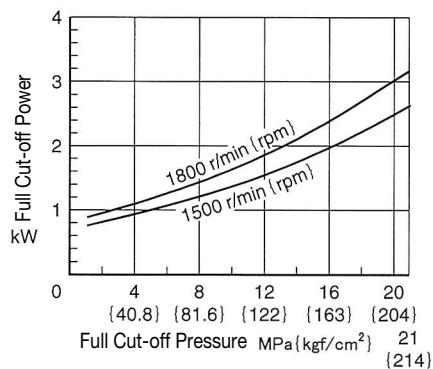
Performance Characteristic Curve



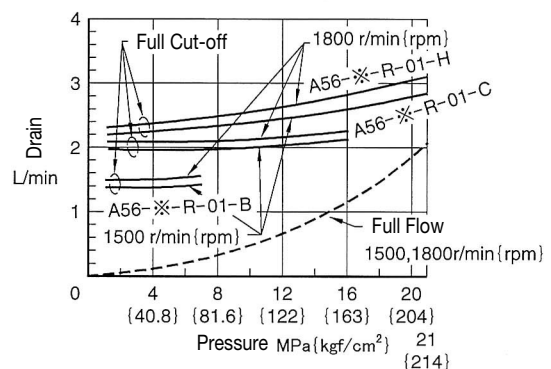
Input Power Example: At a pressure of under 16MPa, a flow 70L/min, and rotation 1500r/min, the axial input becomes about 20.8kW(27.9HP) as shown the dotted line in the graph.



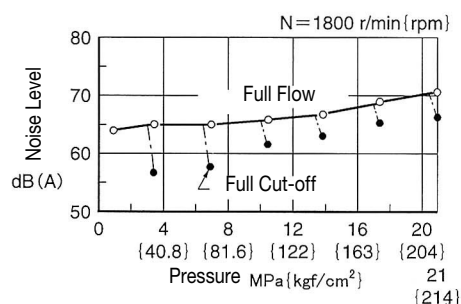
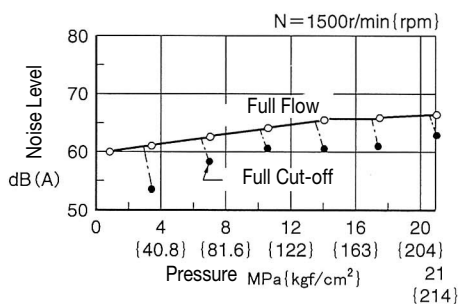
Full Cut-off Power



Drain



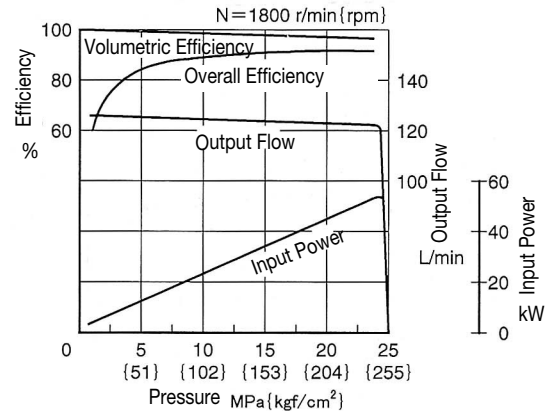
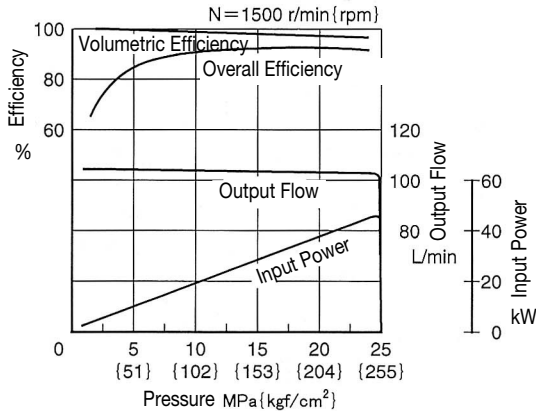
Noise Level [One metre horizontally away from pump head cover]



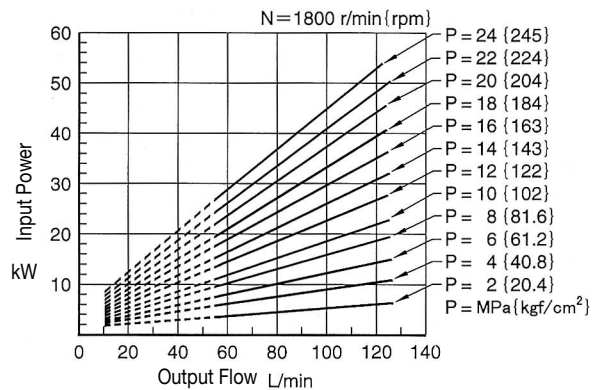
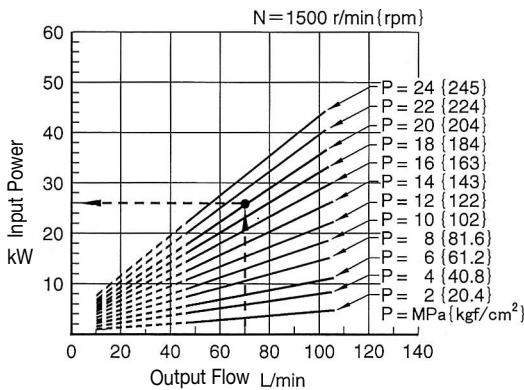
A70 Characteristics

Typical performance characteristics at viscosity 32mm²/s(ISO VG 32 Oil, 50°C)

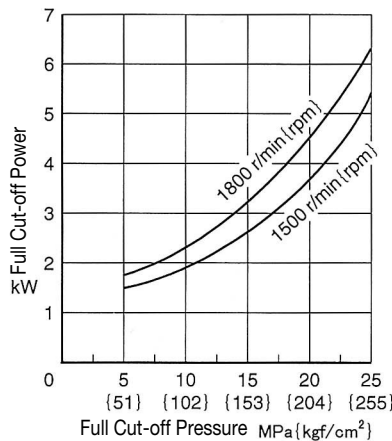
Performance Characteristic Curve



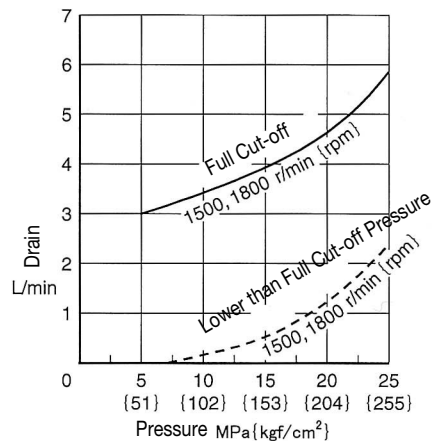
Input Power Example: At a pressure of under 16MPa, a flow 70L/min, and rotation 1500r/min, the axial input becomes about 20.8kW(27.9HP) as shown the dotted line in the graph.



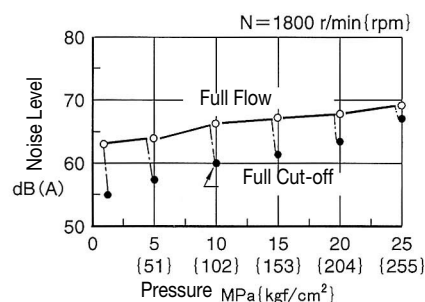
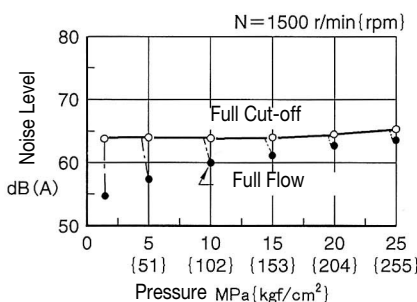
Full Cut-off Power



Drain

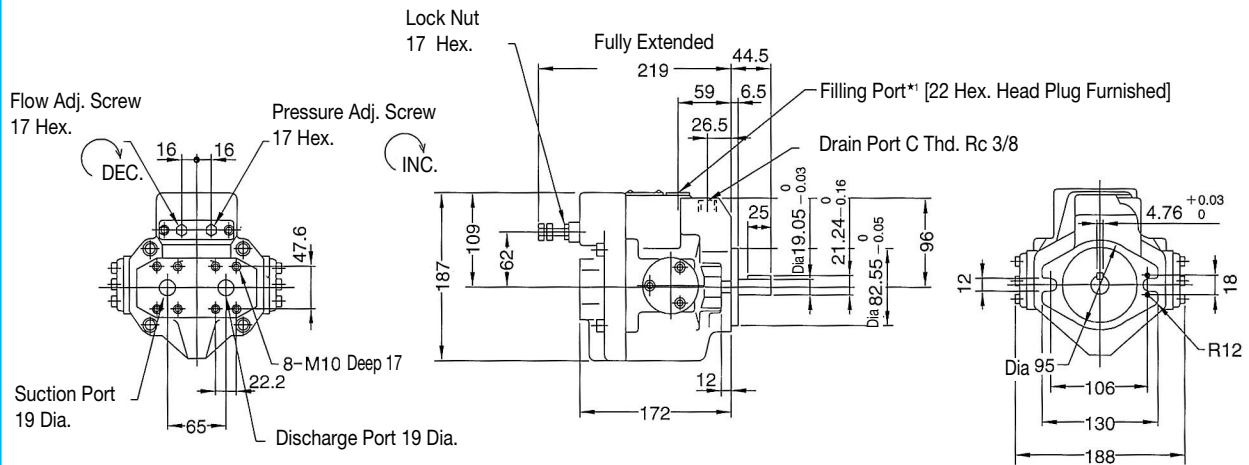


Noise Level [One metre horizontally away from pump head cover]



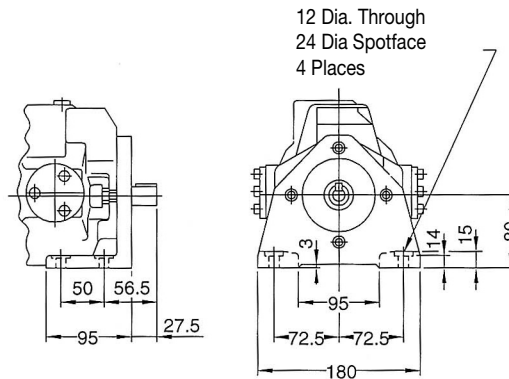
Axial Port Type

A16-F-R-01-※-K (Flange Mtg.)



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

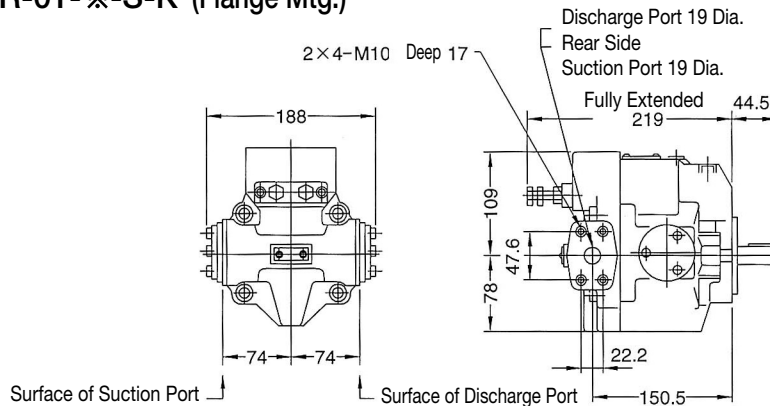
A16-L-R-01-※-K (Foot Mtg.)



● For other dimensions, refer to Flange Mtg..

Side Port Type

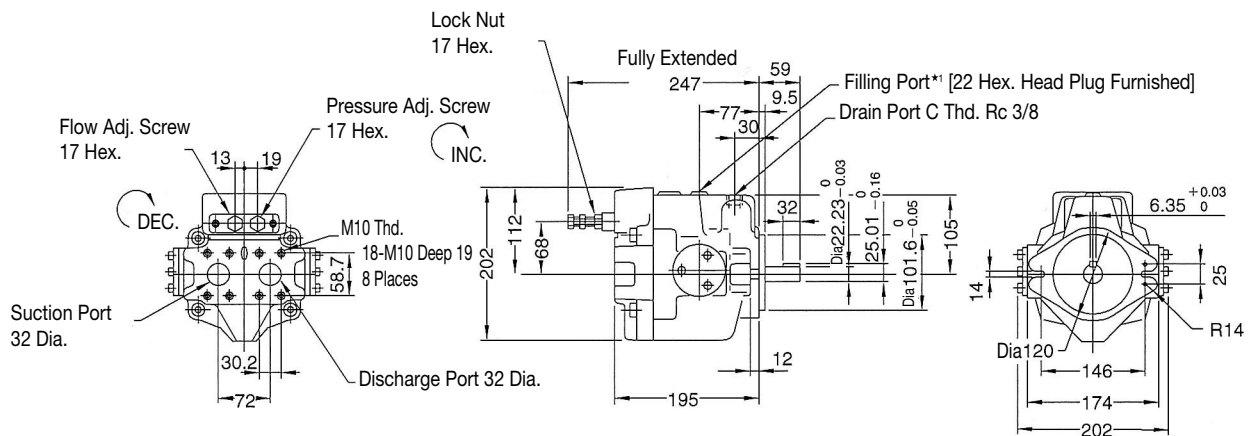
A16-F-R-01-※-S-K (Flange Mtg.)



● For other dimensions, refer to Axial Port Type.

Axial Port Type

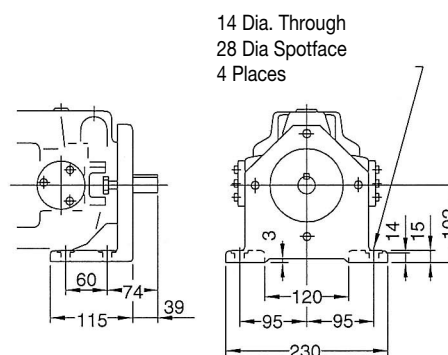
A37-F-R-01-※-K (Flange Mtg.)



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

Note : Axial Port Type is not available for N.American design Standard.

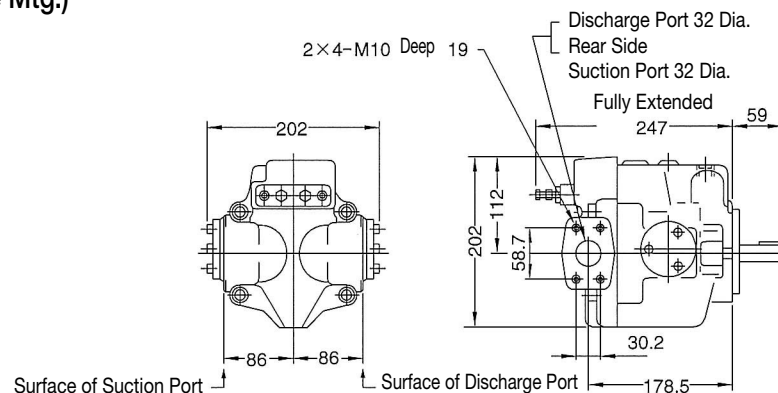
A37-L-R-01-※-K (Foot Mtg.)



● For other dimensions, refer to Flange Mtg..

Side Port Type

A37-F-R-01-✖-S-K (Flange Mtg.)

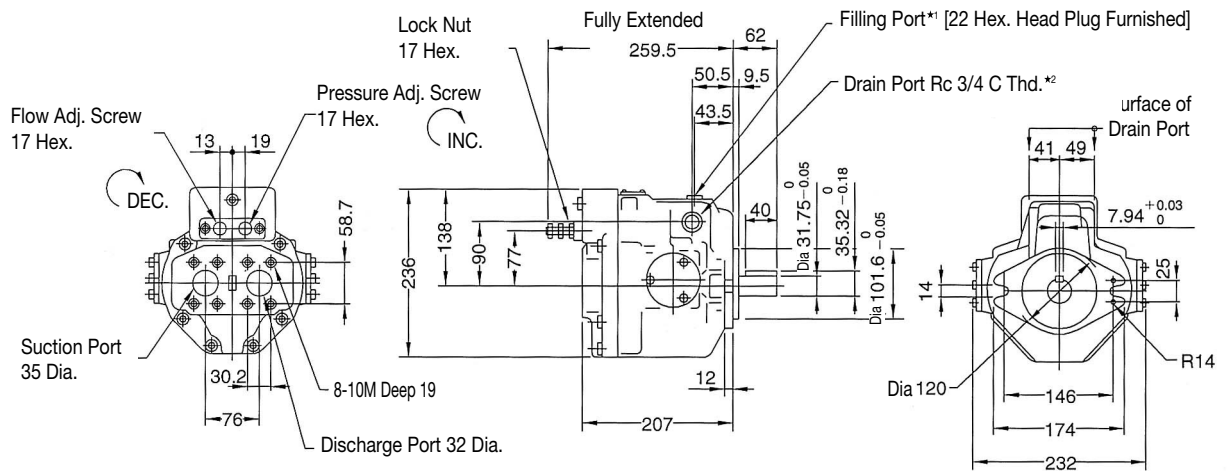


● For other dimensions, refer to Axial Port Type.

● **Foot Mtg. Type:** Mounting bracket is common to that of Axial Port Type.

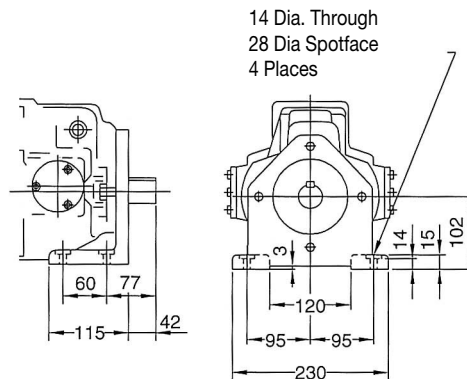
Axial Port Type

A56-F-R-01-※-K (Flange Mtg.)



- ★1. Install the pump so that the Filling Port is at the top.
- ★2. Use either port of the two drain ports at your option. Keep the remaining port plugged.

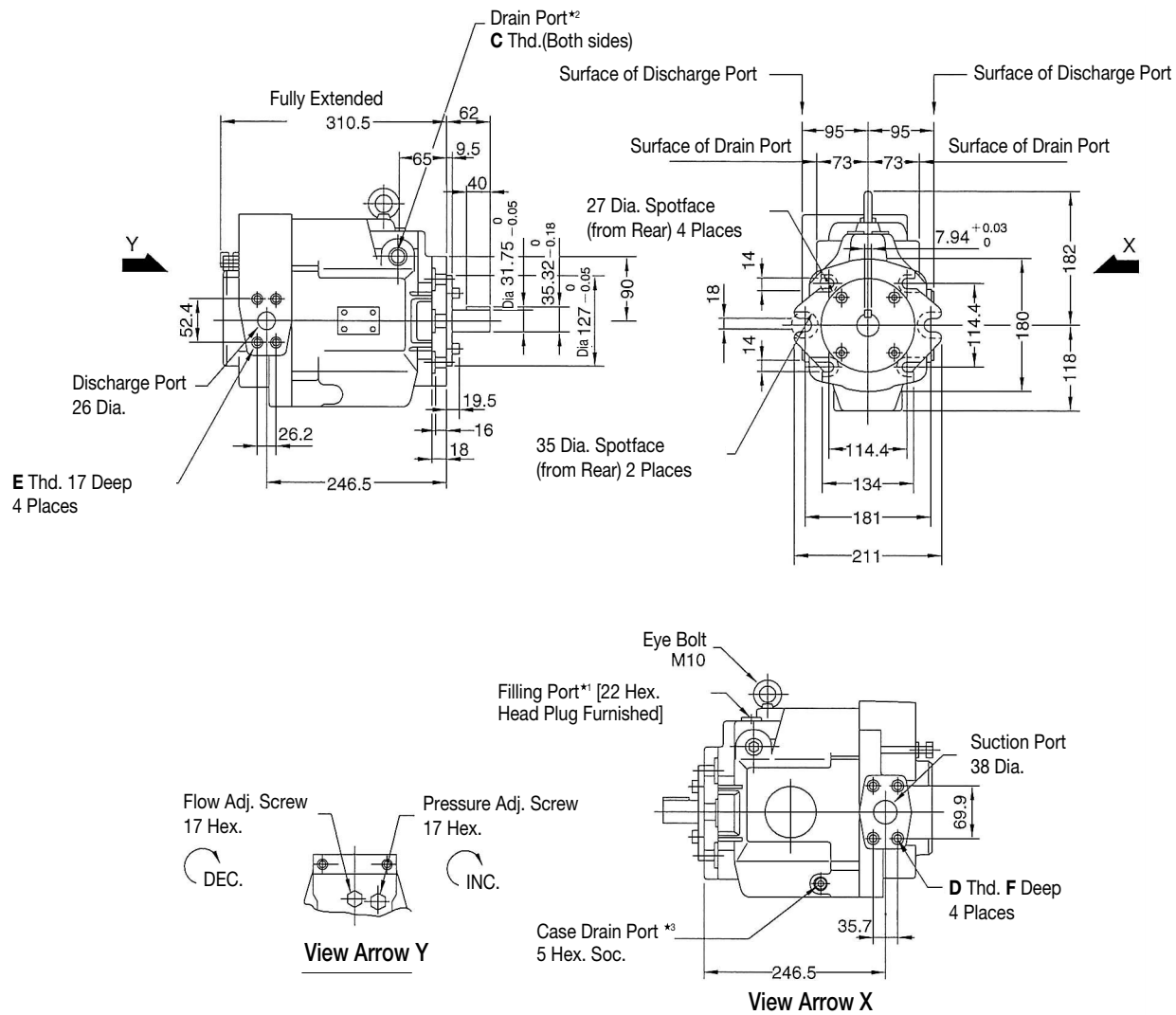
A56-L-R-01-※-K (Foot Mtg.)



- For other dimensions, refer to Flange Mtg..

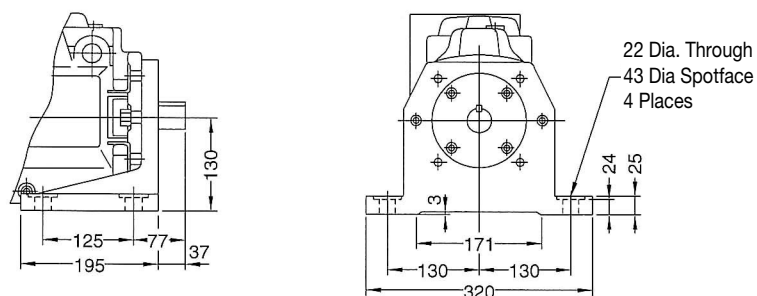
Axial Port Type

A70-FR01-※S (Flange Mtg.)



- ★ 1. Install the pump so that the Filling Port is at the top.
- ★ 2. Use either port of the two drain ports at your option.
Keep the remaining port plugged.
- ★ 3. Case drain port is available for use when draining hydraulic fluid from pump casing.

A70-LR01 ※S (Flange Mtg.)



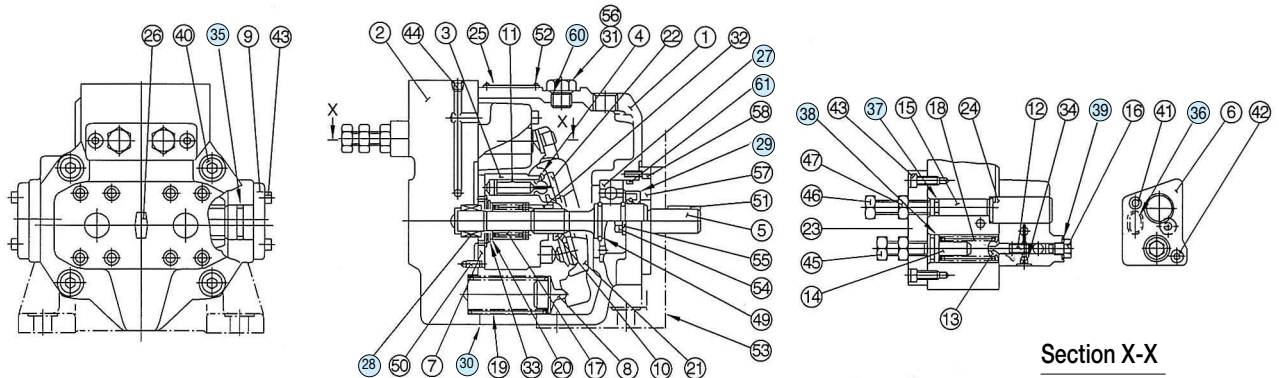
●For other dimensions, refer to Axial Port Type.

CAUTION

When making replacement of seals or bearing, please do it carefully after reading through the relevant instructions in the Operator's Manual.

List of Seals and Bearing

A16/A37/A56-※R-01



Item	Name of Parts	Part Numbers			Qty.
		A16-※-R-01	A37-※-R-01	A56-※-R-01	
27	Bearing	6305	6307	NUP 207E	1
28	Bearing	HMK 1715	HMK 2025V2	HMK 2530V2	1
29	Oil Seal	TCN 254511	TCN 355511	TCN 355511	1
30	Gasket	1303-PK211969-1	1316-PK211970-9	1307-PK211971-7	1
35	O-Ring	JIS B 2401-1A-G25	JIS B 2401-1A-G30	JIS B 2401-1A-P36	2
36	O-Ring	JIS B 2401-1B-P12	JIS B 2401-1B-P10A		1
37	O-Ring	JIS B 2401-1B-P9			1
38	O-Ring	AS568-017(NBR, Hs 90)			1
39	Seal Washer	W8			1
60	O-Ring	JIS B 2401-1B-P14			1
61	O-Ring	JIS B 2401-1A-G55	JIS B 2401-1A-G75		1

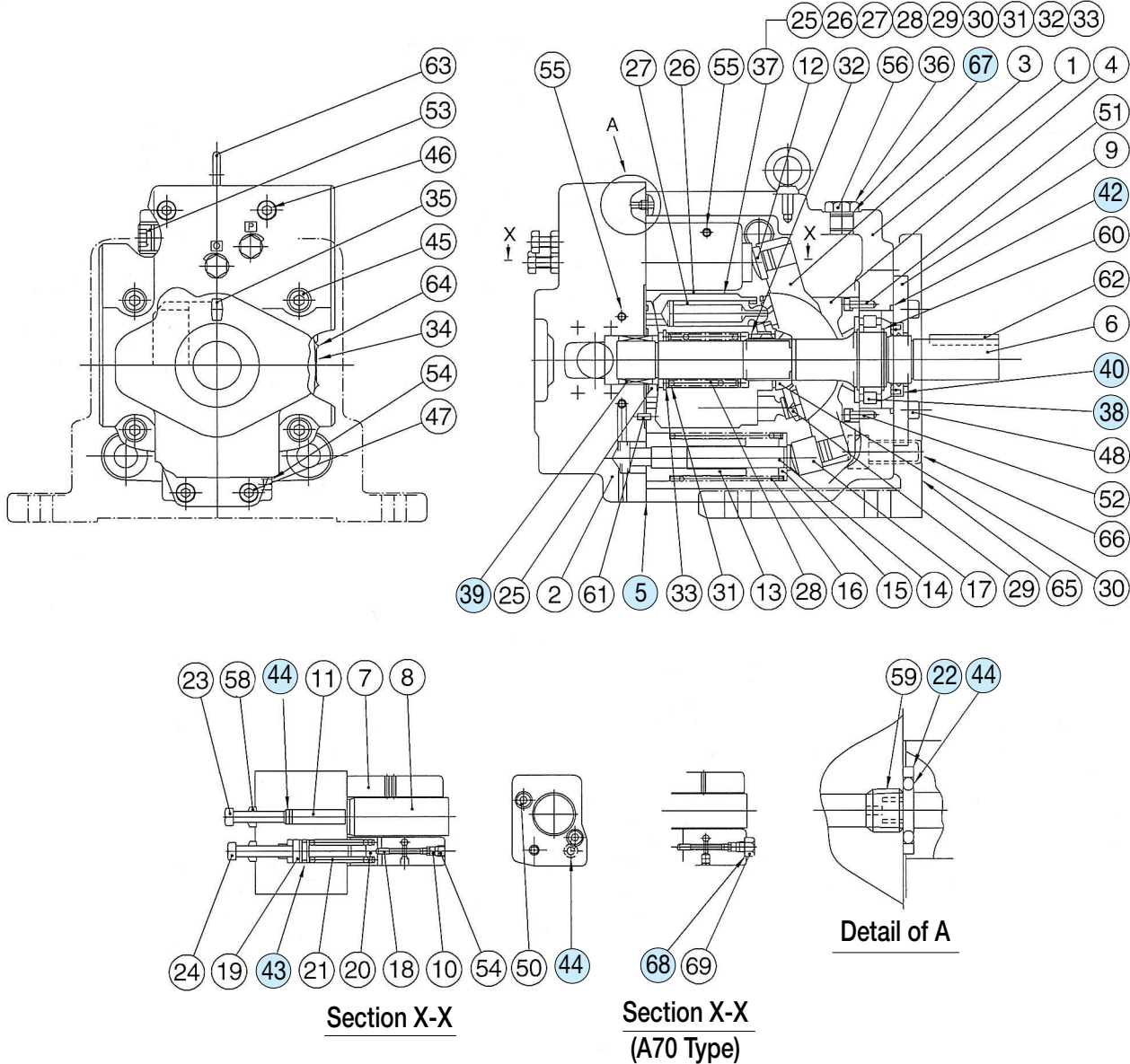


List of Seals and Bearing

CAUTION

When making replacement of seals or bearing, please do it carefully after reading through the relevant instructions in the Operator's Manual.

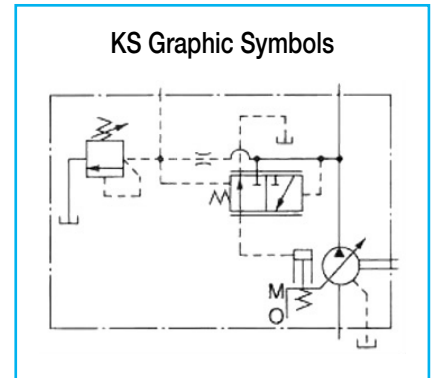
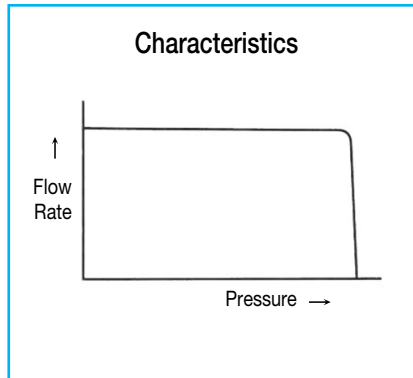
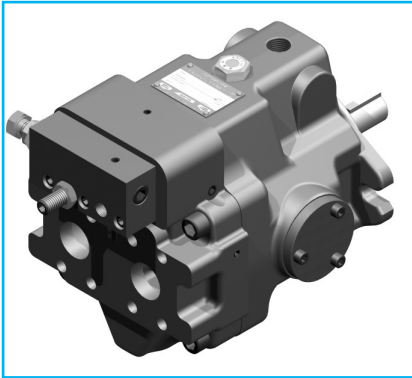
A70-※R01※S



Item	Name of Parts	Part Numbers		Qty.
		A70-※R01※S	A90-※R01※S	
5	Gasket	1314E-PK211972-5	1310E-PK211973-3	1
22	Backup-Ring	1310E-PK412440-0	1310E-PK412440-0	1
38	Bearing	NUP 208EX50	NUP 210E	1
39	Bearing	HMK 3030V2	HMK 3530BV2	1
40	Oil Seal	TCN 355511	TCN 456812	1
42	O-Ring	JIS B 2401-4D-G85	JIS B 2401-4D-G95	1
43	O-Ring	JIS B 2401-1A-P18	JIS B 2401-1A-P18	1
44	O-Ring	JIS B 2401-1B-P9	JIS B 2401-1B-P9	3
67	O-Ring	JIS B 2401-1B-P14	JIS B 2401-1B-P18	1
68	Seal Washer	W10	—	1

A Series Variable Displacement Piston Pumps

- Single Pump, Pilot Pressure Control Type Pressure Compensator



Feature

- High efficiency, Low Noise & Low Heat
- It can be used in combination with pilot relief valve or a dedicated multi-stage pressure control valve
- It can freely control Full Cut-Off pressure by controlling pilot pressure

Model Number Designation

Model Numbers	Mounting	Direction of Rotation	Control Type	Direction of Piping	Shaft Extension	Design Number
A37 (36.9cm ³ /rev)	F: Flange Mtg. L: Foot Mtg.	(Viewd from Shaft End) R: Clockwise (Normal)	07: Pilot Control Pressure Compensator	None: Axial Port	K: Keyed Shaft	32

Ratings

Model Numbers	Geometric Displacement cm ³ /rev	Minimum Adj. Flow cm ³ /rev	Operating Pres. MPa		Minimum Adj. Pres.	Shaft Speed Rate r/min	
			Rated	Intermittent		Max.	Min.
A37-※-R-07-K-32	36.9	10	61	21	1.2	1800	600

★ 1. When you use beyond the rated pressure is limited to the terms of use. For more details, please contact SEWON.

Feature

- As features refer to Pressure Compensator Type.

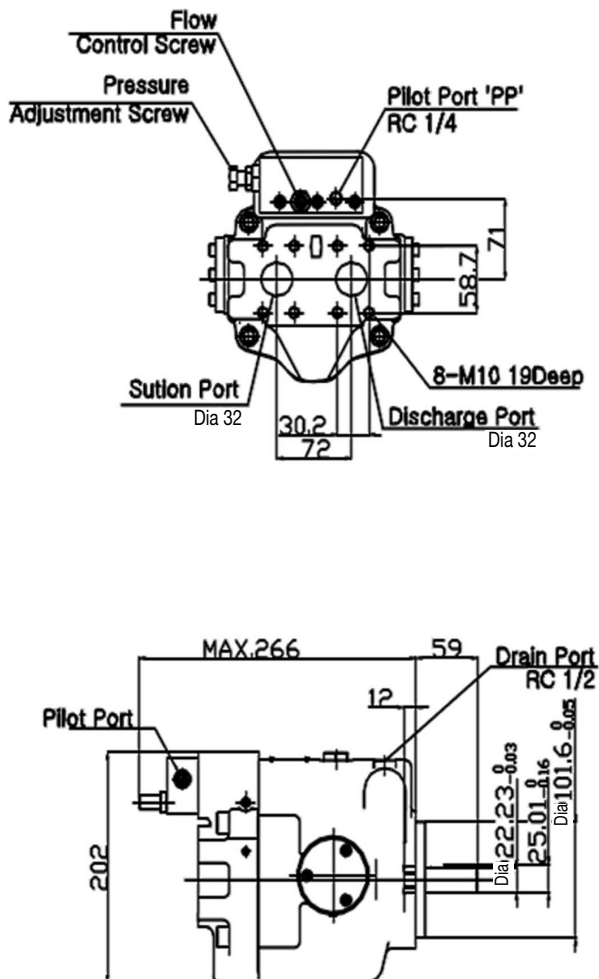
Pipe Flange Kits

- This pump does not include the port flange.



Axial Port Type

A37-F-R-07-K (Flange Mtg.)



- ★ 1. Install the pump so that the “Filling Port” is at the top.
- ★ 2. Use either port of the top drain ports at your opinion. Keep the remaining port plugged.

■ Foot Mtg.

- Mounting bracket is common to that of “Axial Port Type”