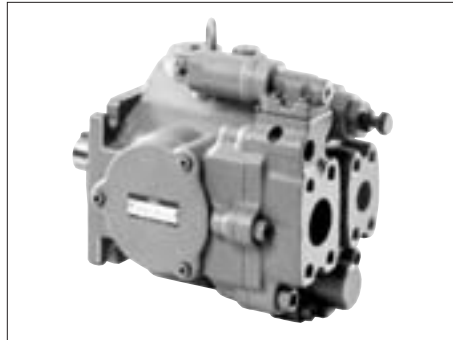
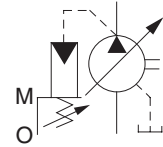


"A3H" Series Variable Displacement Piston Pumps-Single Pump, Pressure Compensator Type



Graphic Symbol



Specifications

Model Numbers	Geometric Displacement cm ³ /rev (cu.in./rev)	Minimum Adj. Flow cm ³ /rev (cu.in./rev)	Operating Pressure MPa (PSI)		Shaft Speed Range r/min		Approx. Mass kg (lbs.)	
			Rated ^{*1}	Intermittent	Max. ^{*2}	Min.	Flange Mtg.	Foot Mtg.
A3H 16-*R01KK-10*	16.3 (.995)	8.0 (.488)	28 (4060)	35 (5080)	3600	600	14.5 (32.0)	23.4 (51.6)
A3H 37-*R01KK-10*	37.1 (2.26)	16.0 (.976)			2700	600	19.5 (43.0)	27.0 (59.5)
A3H 56-*R01KK-10*	56.3 (3.44)	35.0 (2.14)			2500	600	25.7 (56.7)	33.2 (73.2)
A3H 71-*R01KK-10*	70.7 (4.31)	45.0 (2.75)			2300	600	35.0 (77.2)	42.5 (93.7)
A3H100-*R01KK-10*	100.5 (6.13)	63.0 (3.84)			2100	600	44.6 (98.3)	72.6 (160)
A3H145-*R01KK-10*	145.2 (8.86)	95.0 (5.80)			1800	600	60.0 (132)	88.0 (194)
A3H180-*R01KK-10*	180.7 (11.03)	125.0 (7.63)			1800	600	70.4 (155)	98.4 (217)

- ★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 (0 PSIG).
- ★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 (PSI)		Allowable Maximum Shaft Speed r/min		Temperature Range °C (°F)	Viscosity Range mm ² /s (SSU)	Design Numbers for Special Fluid (Occasion of Japanese Std. "JIS") ^{*2}
	Rated	Intermittent	Rated	Max.			
Water-Glycols	21 (3050)	21 (3050)	1200	(1800) ^{*1}	0 - 50 (32 - 104)	20 - 200 (98 - 927)	1030
Phosphate Ester Type	21 (3050)	21 (3050)	1200	(1800) ^{*1}	0 - 60 (32 - 140)		1006
Polyol Ester Type	21 (3050)	25 (3630)	1200	1800	0 - 60 (32 - 140)	20 - 200 (98 - 927)	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.
- ★2. For the design numbers of pumps for European Design and North American Design Standards, please contact us.



Model Number Designation

A3H16	-F	R	01	K	K	-10	*
Series Number	Mounting	Direction of Rotation	Control Type	Pres. Adj. Range MPa (PSI)	Shaft Extension *2	Design Number	Design Std.
A3H16 (16.3 cm ³ /rev)	F: Flange Mtg.	(Viewed from Shaft End) R: Clockwise *1 (Normal)	01: Pressure Compensator Type	K: 5 - 35 (725 - 5080)	K : Keyed Shaft	10	Refer to ★3
A3H37 (37.1 cm ³ /rev)						10	
A3H56 (56.3 cm ³ /rev)						10	
A3H71 (70.7 cm ³ /rev)	L: Foot Mtg.	10					
A3H100 (100.5 cm ³ /rev)	F: Flange Mtg.	10					
A3H145 (145.2 cm ³ /rev)	L: Foot Mtg. *4	K : Keyed Shaft 44.45mm (1.75 IN.) Dia. K1: Keyed Shaft *5 50.8mm (2.0 IN.) Dia.	10				
A3H180 (180.7 cm ³ /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.
- ★3. Design Standards: None Japanese Standard "JIS"
80 European Design Standard
950 N. American Design Standard (Applicable only for A3H16/37/56/71)
954 N. American Design Standard (Applicable only for A3H100/145/180)
- ★4. Mounting type "L" is not available for N. American Design Standard.
- ★5. Shaft extension "K1" is applicable only for N. American Design Standard.

Pipe Flange Kits

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

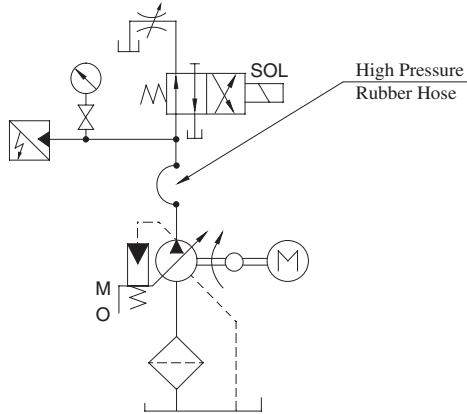
Pump Model Numbers	Name of Port	Threaded Connection			Socket Welding		Butt Welding	
		Japanese Std. "JIS"	European Design Std.	N. American Design Standard	Japanese Std. "JIS" & European Design Std.	N. American Design Standard	Japanese Std. "JIS" & European Design Std.	N. American Design Standard
A3H16-★R01	Suction	F5-08-A-10	F5-08-A-1080	—	F5-08-B-10	F5-08-B-1090	F5-08-C-10	F5-08-C-1090
	Discharge	F6-06-A-M-10 *1	F6-06-A-M-1080	—	F6-06-B-M-10	F6-06-B-U-1090	—	—
A3H37-★R01	Suction	F5-10-A-10	F5-10-A-1080	—	F5-10-B-10	F5-10-B-1090	F5-10-C-10	F5-10-C-1090
	Discharge	F6-08-A-M-10 *1	F6-08-A-M-1080	—	F6-08-B-M-10	F6-08-B-U-1090	—	—
A3H56-★R01	Suction	F5-12-A-10	F5-12-A-1080	—	F5-12-B-10	F5-12-B-1090	F5-12-C-10	F5-12-C-1090
	Discharge	F6-08-A-M-10 *1	F6-08-A-M-1080	—	F6-08-B-M-10	F6-08-B-U-1090	—	—
A3H71-★R01	Suction	F5-16-A-10	F5-16-A-1080	—	F5-16-B-10	F5-16-B-1090	F5-16-C-10	F5-16-C-1090
	Discharge	F6-10-A-M-10 *1	F6-10-A-M-1080	—	F6-10-B-M-10	F6-10-B-U-1090	—	—
A3H100-★R01 A3H145-★R01	Suction	F5-20-A-10	F5-20-A-1080	—	F5-20-B-10	F5-20-B-1090	F5-20-C-10	F5-20-C-1090
	Discharge	F6-10-A-M-10 *1	F6-10-A-M-1080	—	F6-10-B-M-10	F6-10-B-U-1090	—	—
A3H180-★R01	Suction	F5-24-A-10	F5-24-A-1080	—	F5-24-B-10	F5-24-B-1090	—	—
	Discharge	F6-12-A-M-10 *1	F6-12-A-M-1080	—	F6-12-B-M-10	F6-12-B-U-1090	—	—

- ★1. These flanges are with tapered threaded port, maximum pressure is restricted at 31 MPa (4500 PSI).
- ★2. As dimensions of the surface of pipe flanges are conformed to the SAE standards mentioned below, the pipe flanges conforming to the SAE standards can be used.
 - Suction Port: SAE 4 Bolt Split Flange (Standard Pressure Series)
 - Discharge Port: SAE 4 Bolt Split Flange (High Pressure Series)
- Details of pipe flange kits are shown on page 824 & 829.

Response Characteristics Change in Accordance with Circuits and Operating Conditions.

● **Test Circuit and Conditions**

● **Circuit**



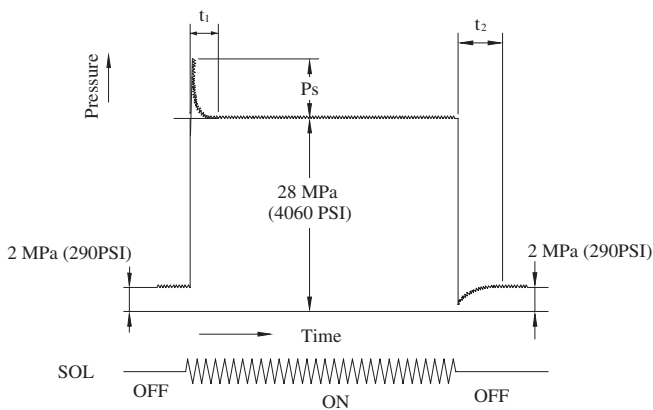
● **Conditions**

Drive Speed: 1500 r/min
 Hydraulic Fluid: ISO VG32 Oil
 Oil Temperature: 40 °C (104 °F) [Viscosity 32 mm²/s (150 SSU)]

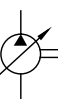
● **Size of High Pressure Rubber House**

Model	High Pressure Rubber Housea
A3H16	3/4B × 1500 mm (4.9 ft.)
A3H37/56/71	3/4B × 2000 mm (6.6 ft.)
A3H100/145	1-1/4B × 2000 mm (6.6 ft.)
A3H180	1-1/4B × 2500 mm (8.2 ft.)

● **Result of Measurement**

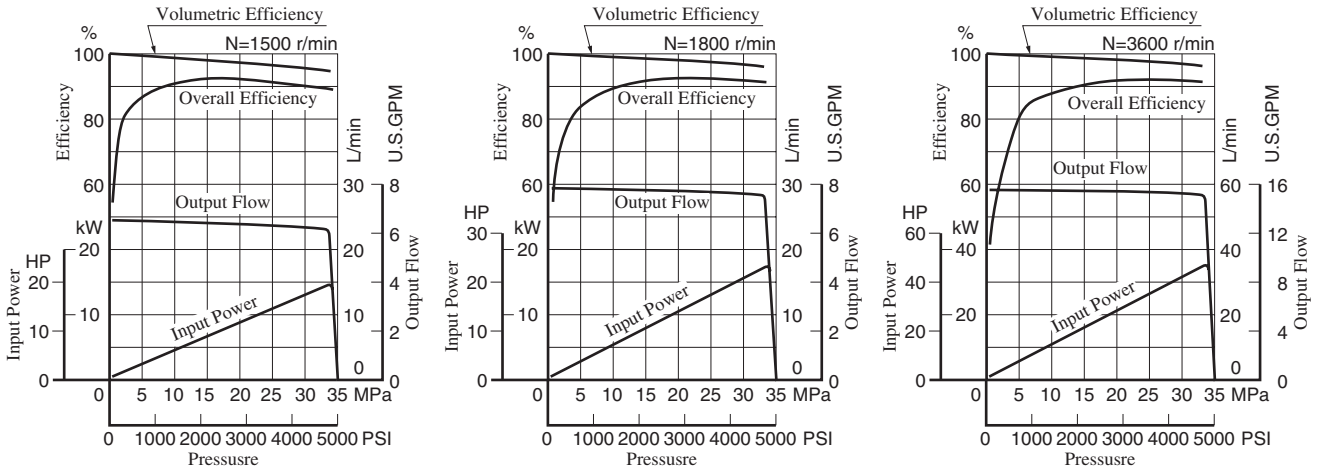


Model	Response Time ms		Ps Overshoot Pres. MPa (PSI)
	t ₁	t ₂	
A3H 16	30	140	2.5 (363)
A3H 37	40	80	3.5 (508)
A3H 56	50	90	7.5 (1088)
A3H 71	50	140	10.0 (1450)
A3H100	70	170	11.0 (1595)
A3H145	70	180	12.5 (1813)
A3H180	70	220	12.0 (1740)

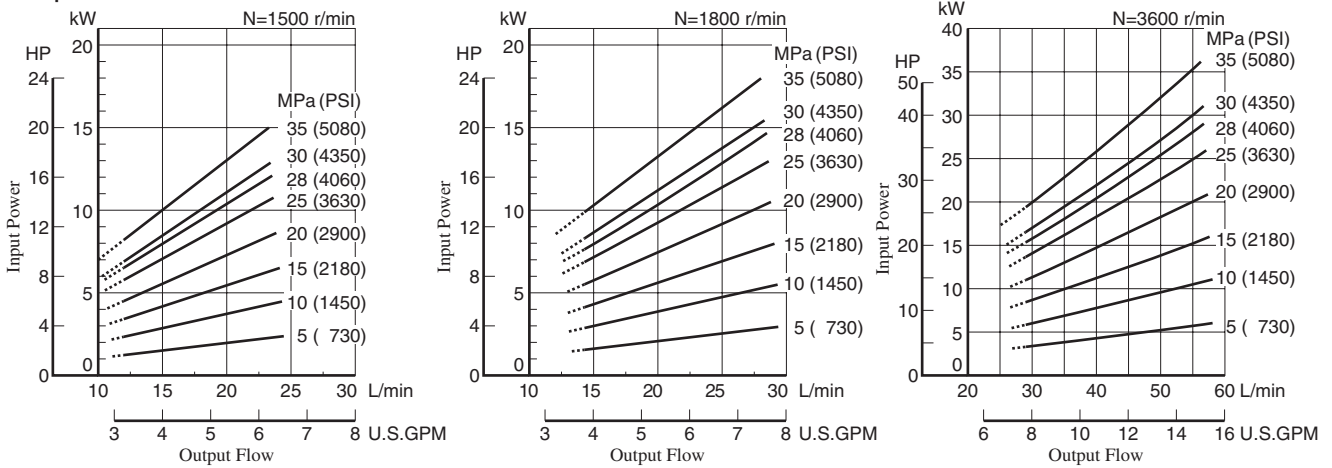


Typical Performance Characteristics of Type "A3H16" at Viscosity 32 mm²/s (150 SSU) [ISO VG32 oils, 40°C (104°F)]

Performance Characteristic Curve

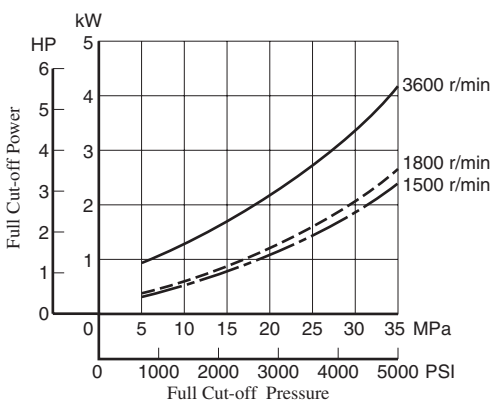


Input Power

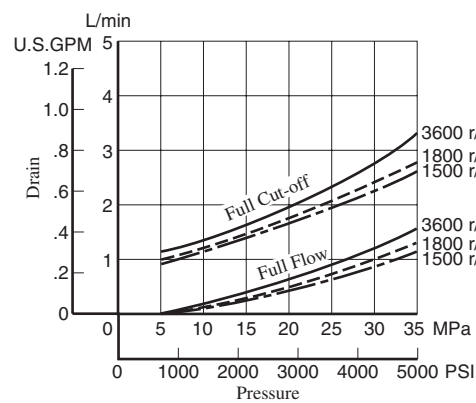


Note) The dotted line in the graph indicates less than minimum adjustable flow.

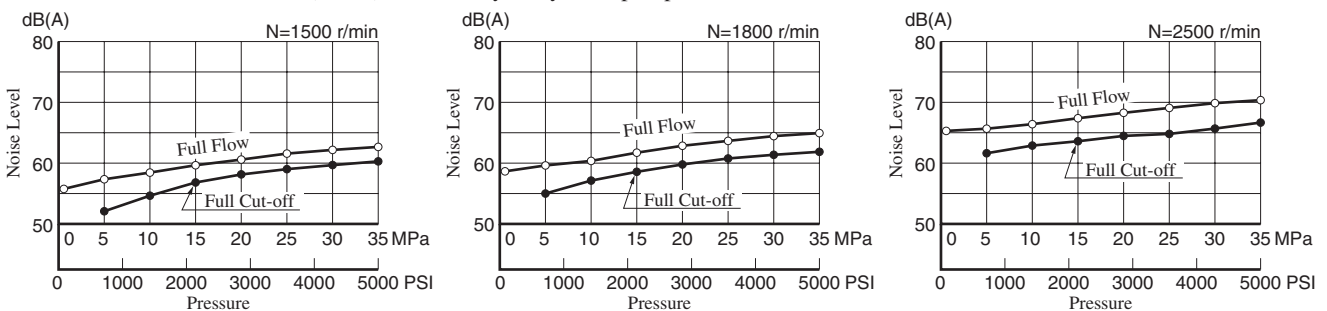
Full Cut-off Power



Drain

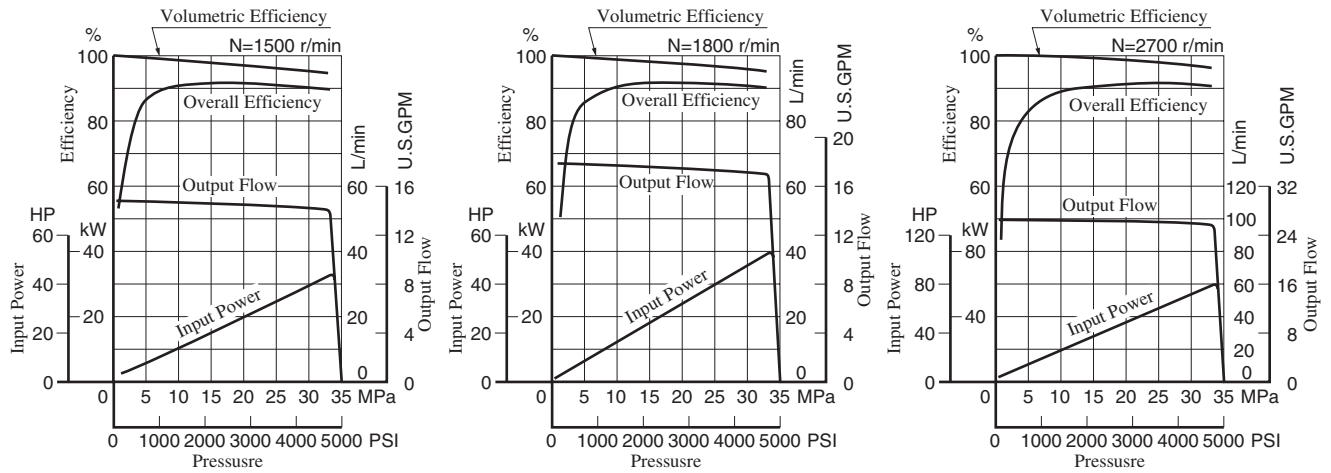


Noise Level [One metre (3.3 ft.) horizontally away from pump head cover]

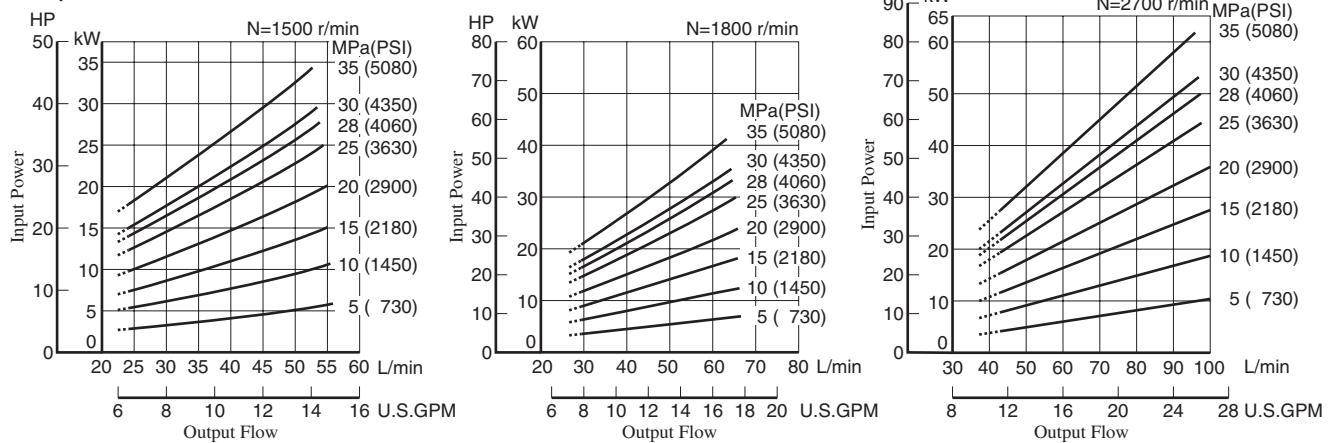


Typical Performance Characteristics of Type "A3H37" at Viscosity 32 mm²/s (150 SSU) [ISO VG32 oils, 40°C (104°F)]

Performance Characteristic Curve

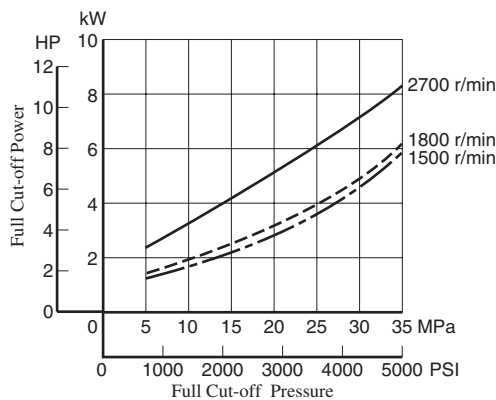


Input Power

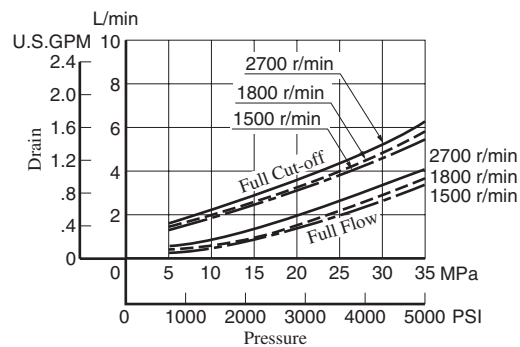


Note) The dotted line in the graph indicates less than minimum adjustable flow.

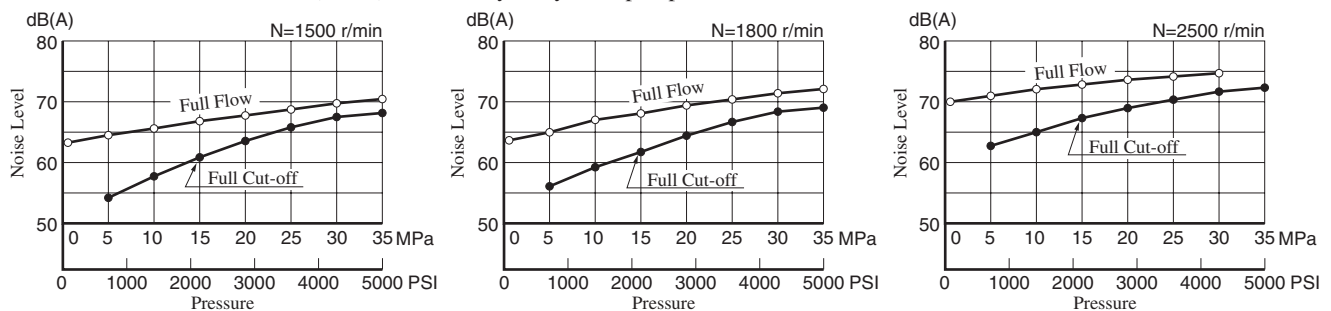
Full Cut-off Power

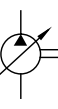


Drain



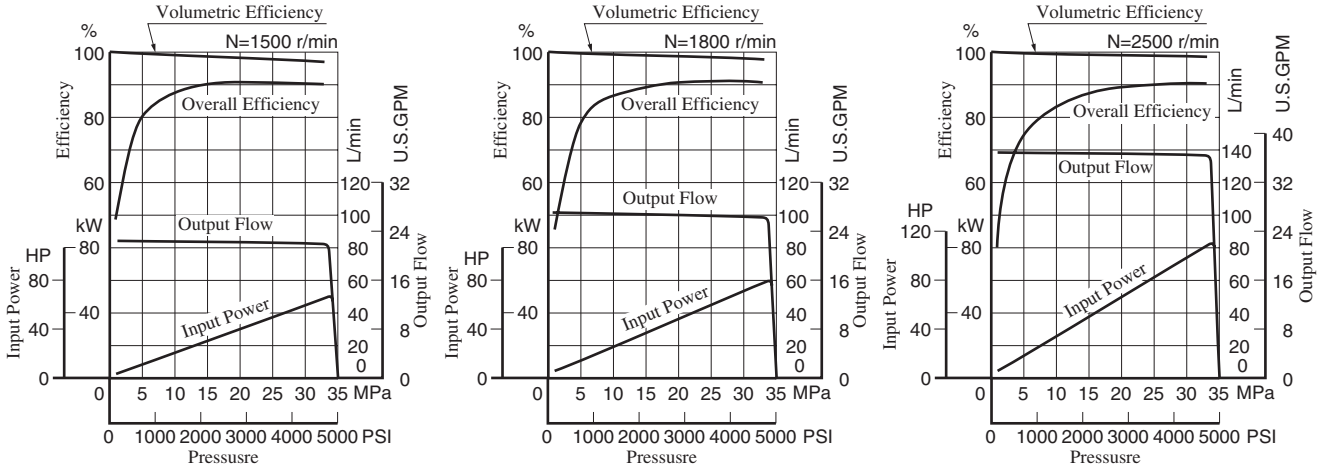
Noise Level [One metre (3.3 ft.) horizontally away from pump head cover]



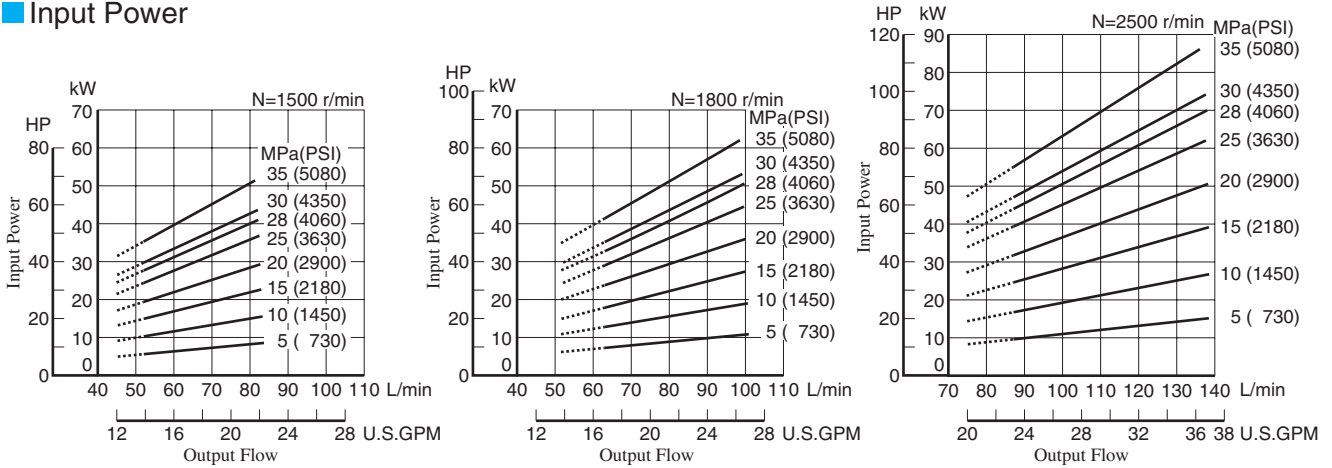


Typical Performance Characteristics of Type "A3H56" at Viscosity 32 mm²/s (150 SSU) [ISO VG32 oils, 40°C (104°F)]

Performance Characteristic Curve

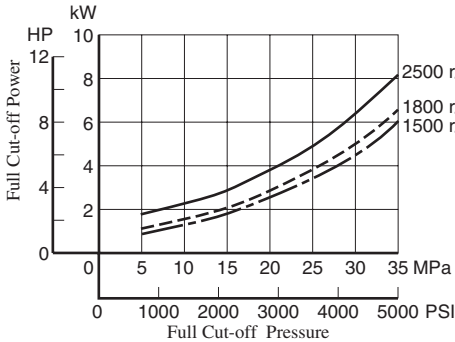


Input Power

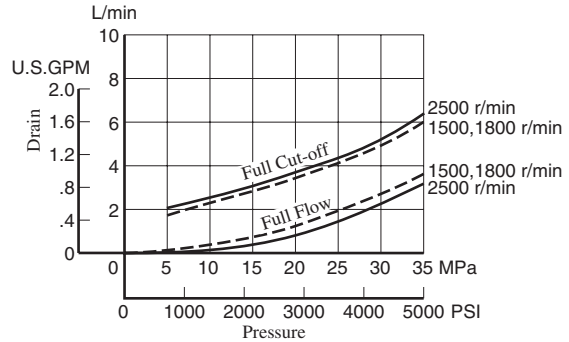


Note) The dotted line in the graph indicates less than minimum adjustable flow.

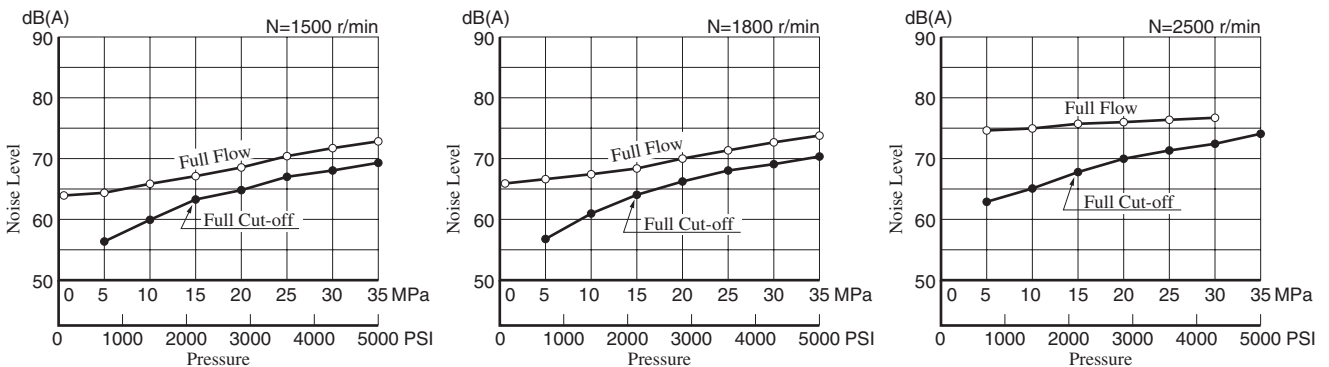
Full Cut-off Power



Drain

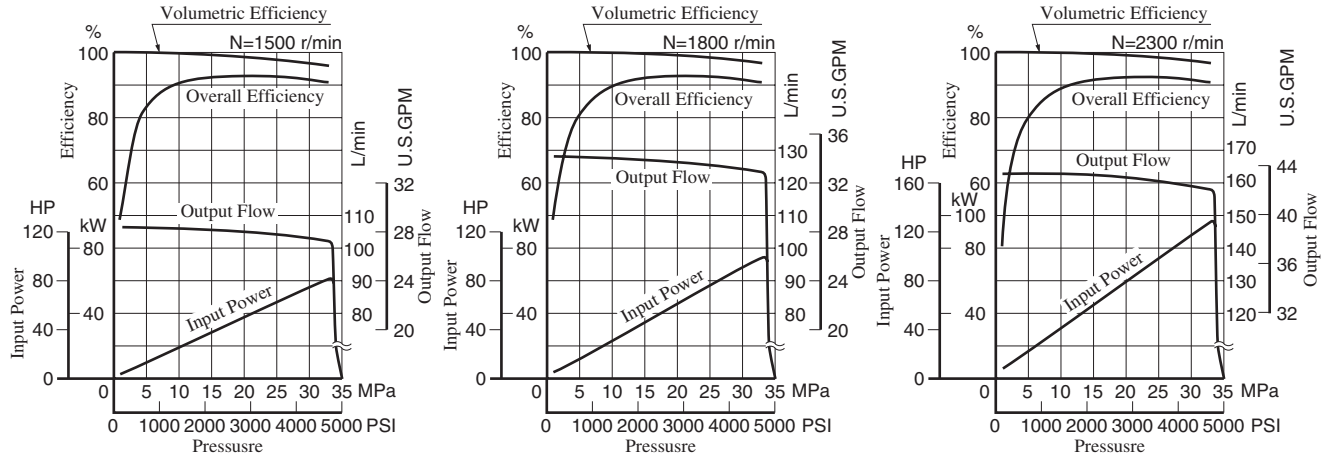


Noise Level [One metre (3.3 ft.) horizontally away from pump head cover]

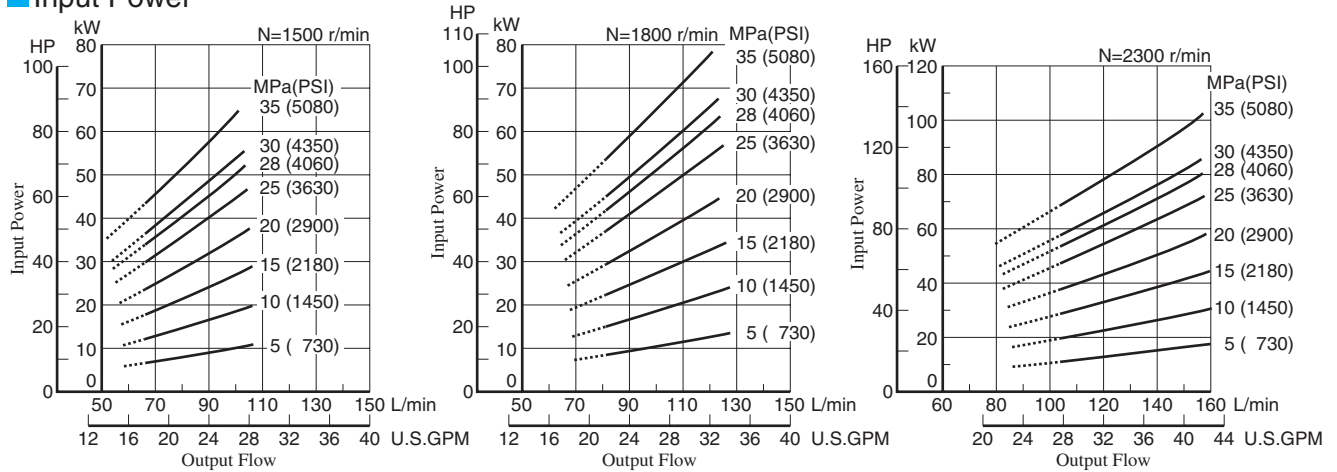


Typical Performance Characteristics of Type "A3H71" at Viscosity 32 mm²/s (150 SSU) [ISO VG32 oils, 40°C (104°F)]

Performance Characteristic Curve

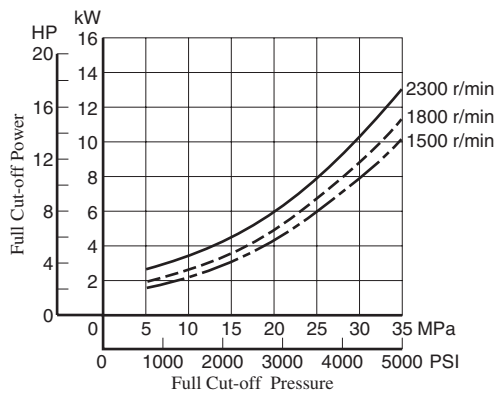


Input Power

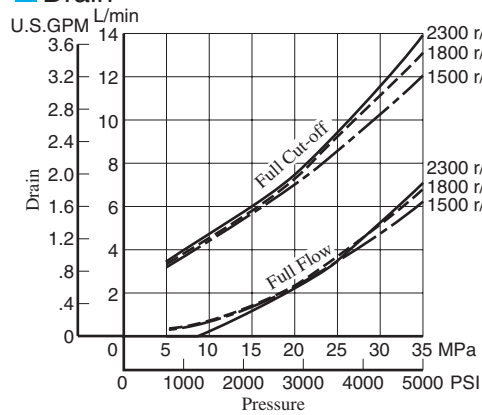


Note) The dotted line in the graph indicates less than minimum adjustable flow.

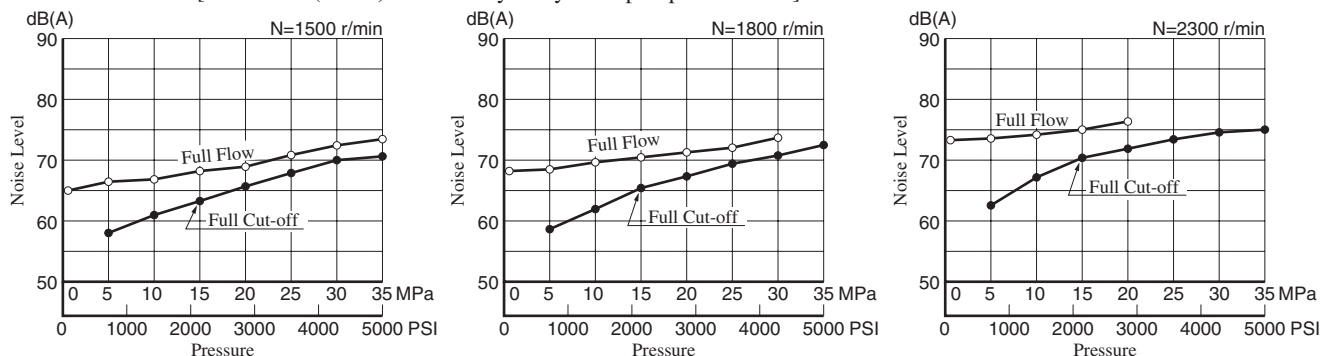
Full Cut-off Power



Drain

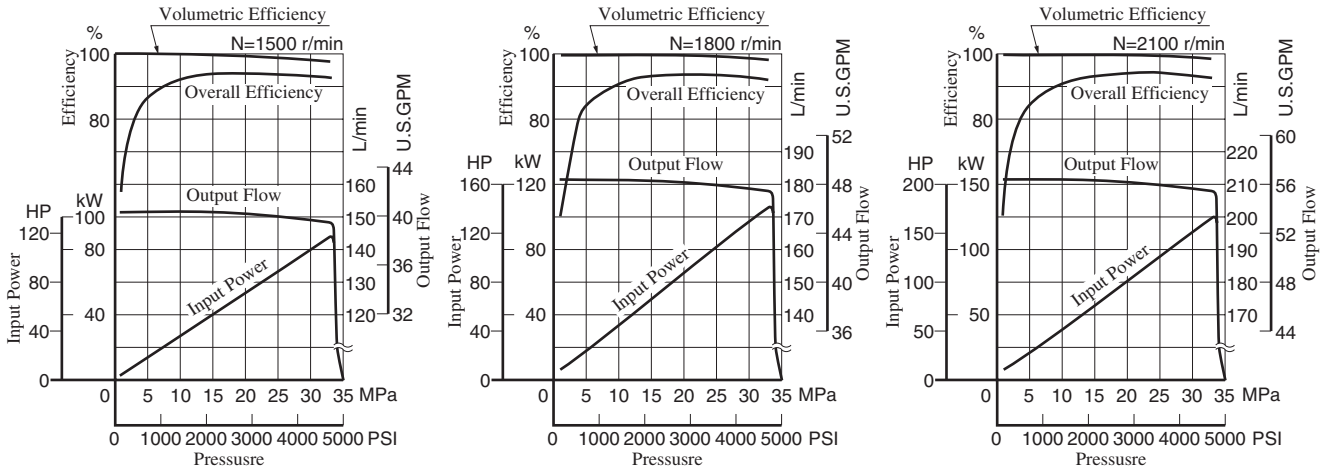


Noise Level [One metre (3.3 ft.) horizontally away from pump head cover]

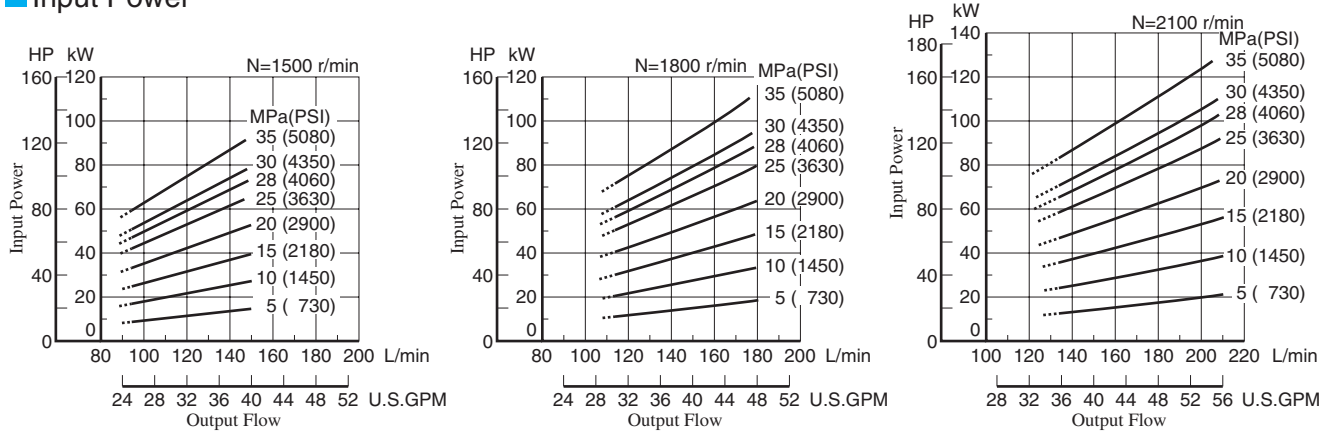


Typical Performance Characteristics of Type "A3H100" at Viscosity 32 mm²/s (150 SSU) [ISO VG32 oils, 40°C (104°F)]

Performance Characteristic Curve

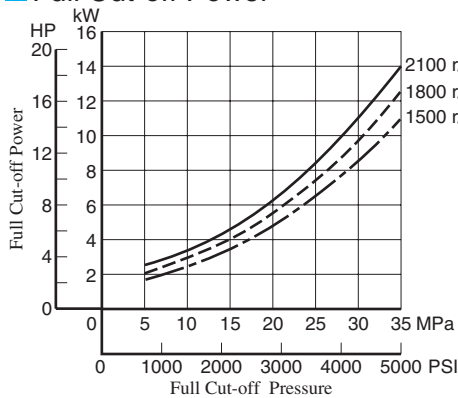


Input Power

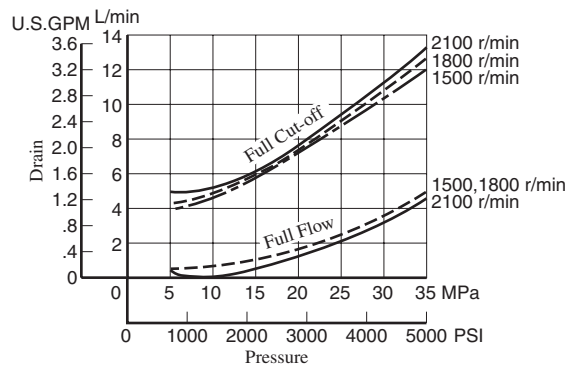


Note) The dotted line in the graph indicates less than minimum adjustable flow.

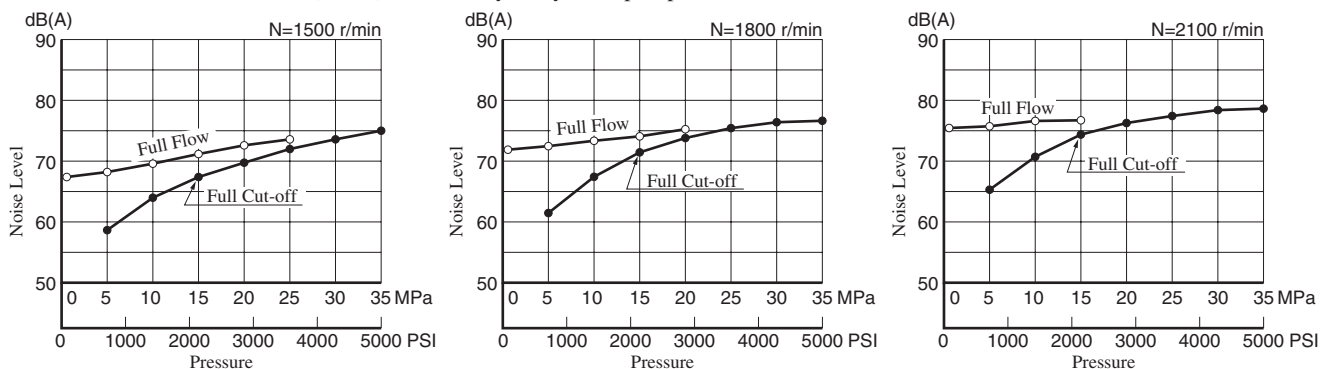
Full Cut-off Power



Drain

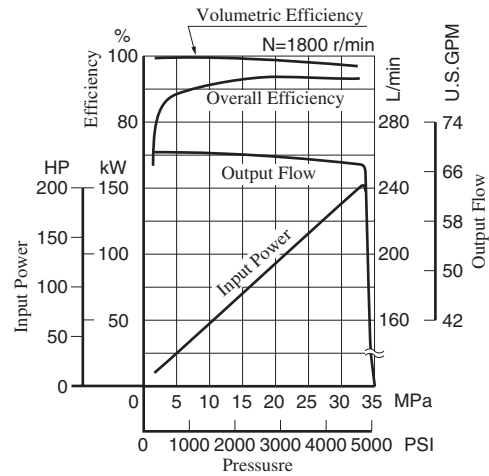
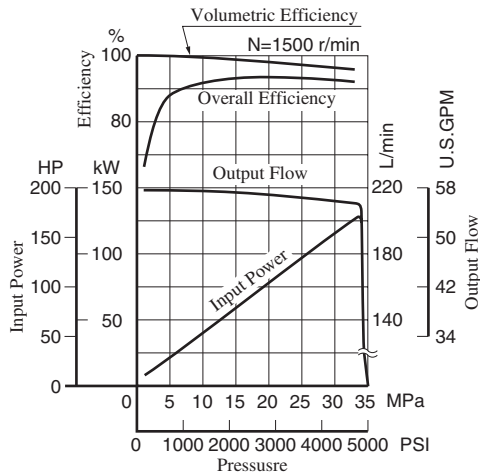


Noise Level [One metre (3.3 ft.) horizontally away from pump head cover]

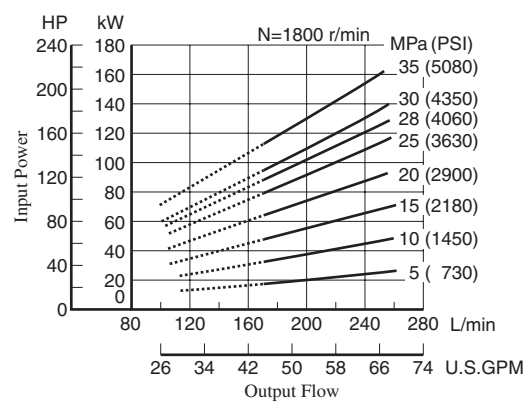
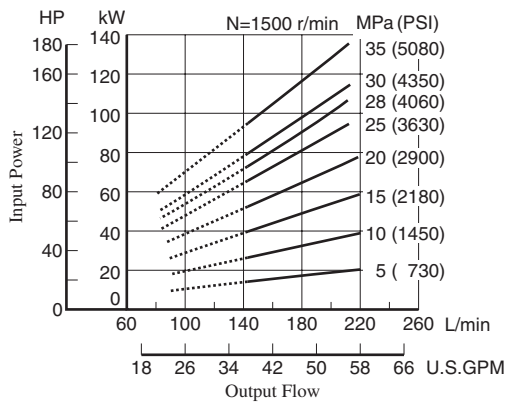


Typical Performance Characteristics of Type "A3H145" at Viscosity 32 mm²/s (150 SSU) [ISO VG32 oils, 40°C (104°F)]

Performance Characteristic Curve

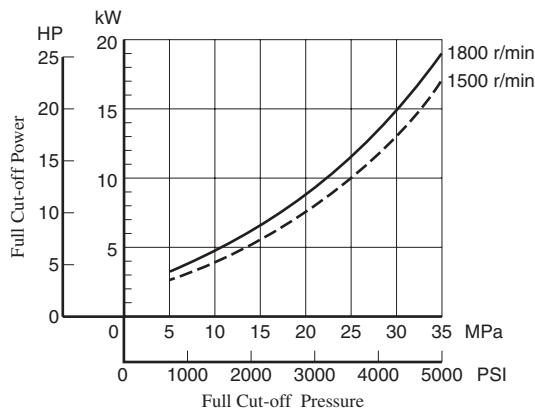


Input Power

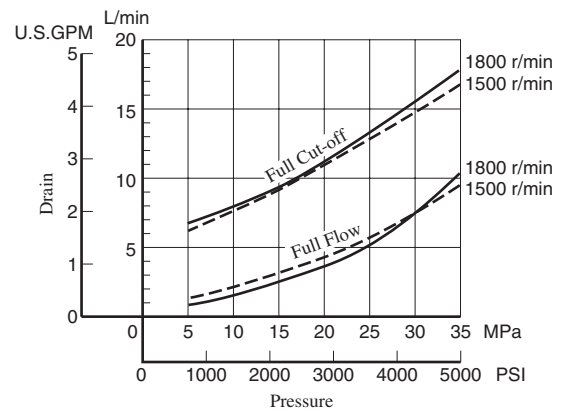


Note) The dotted line in the graph indicates less than minimum adjustable flow.

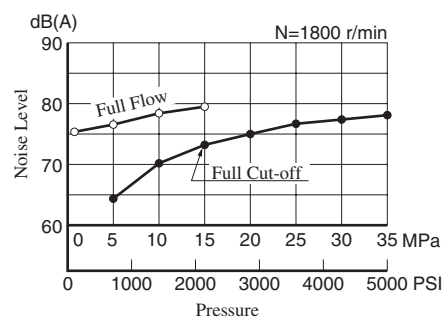
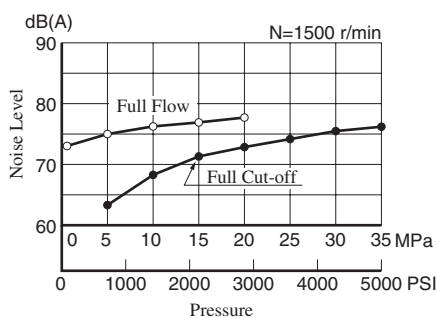
Full Cut-off Power



Drain

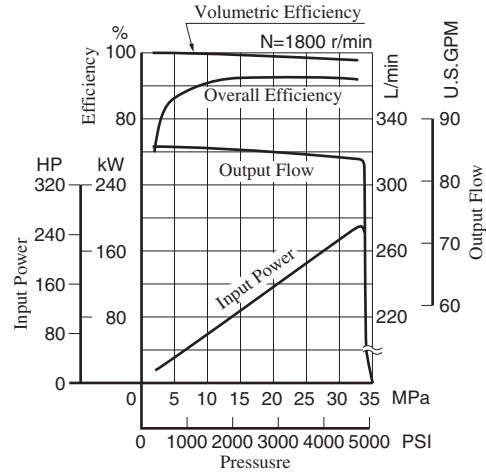
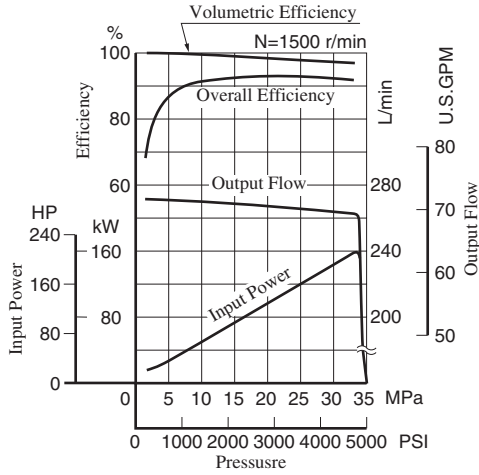


Noise Level [One metre (3.3 ft.) horizontally away from pump head cover]

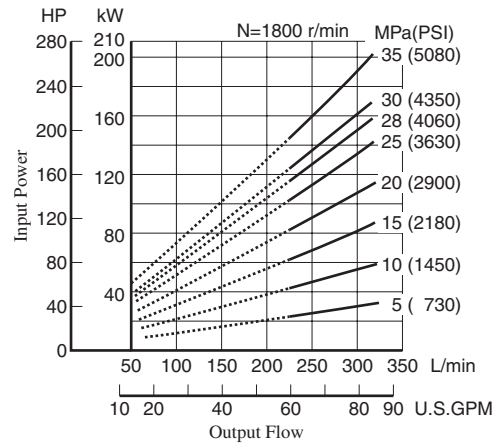
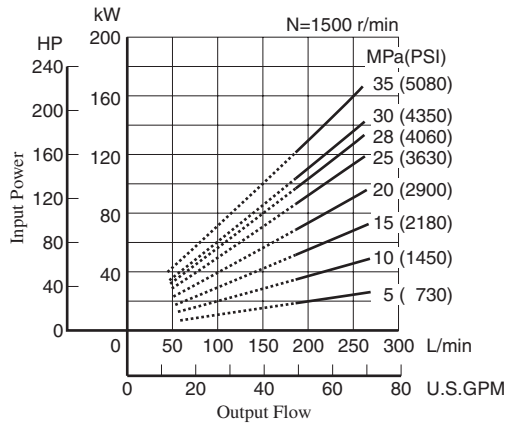


Typical Performance Characteristics of Type "A3H180" at Viscosity 32 mm²/s (150 SSU) [ISO VG32 oils, 40°C (104°F)]

Performance Characteristic Curve

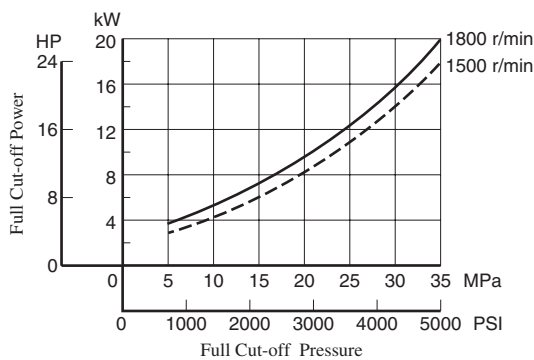


Input Power

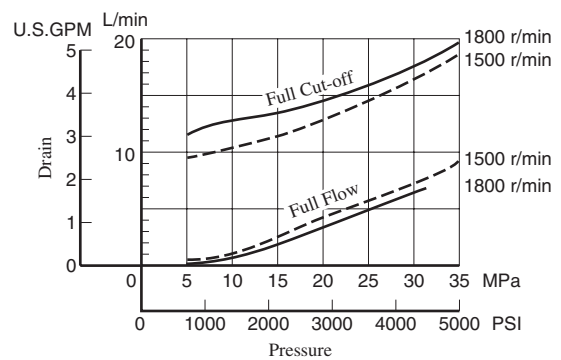


Note) The dotted line in the graph indicates less than minimum adjustable flow.

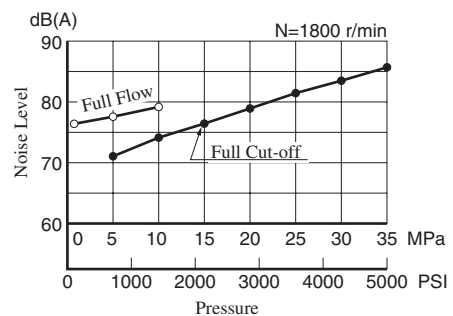
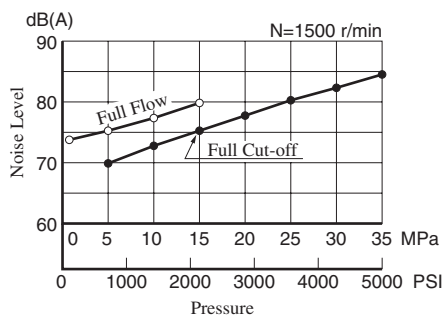
Full Cut-off Power



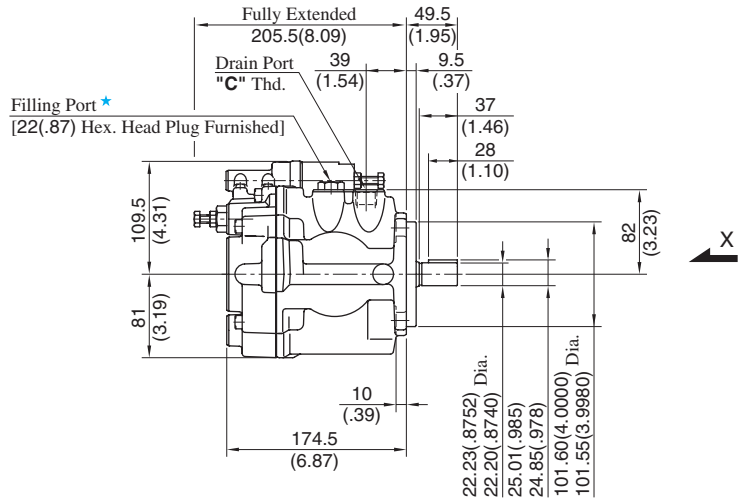
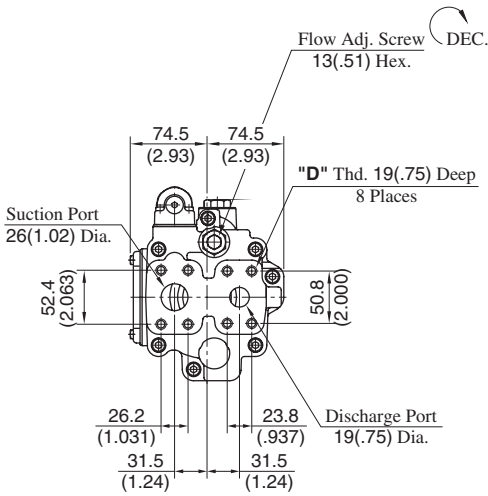
Drain



Noise Level [One metre (3.3 ft.) horizontally away from pump head cover]

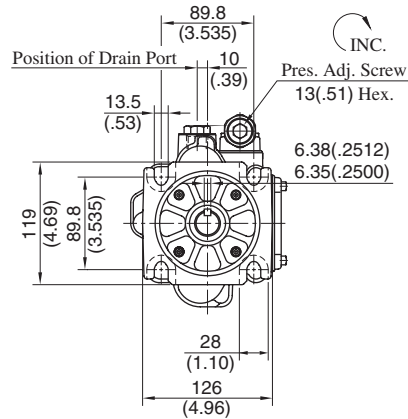


Flange Mtg.: A3H16-FR01KK-10/1080/10950



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

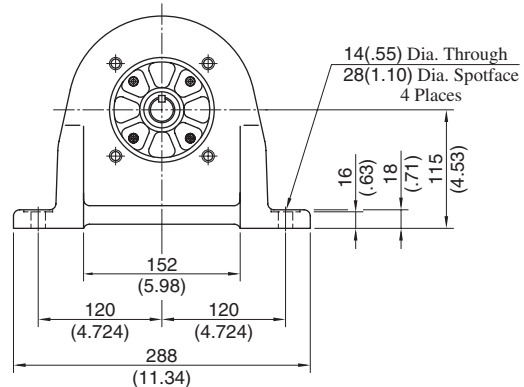
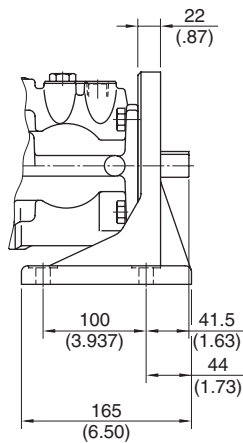
Model Numbers	"C" Thd.	"D" Thd.
A3H16-FR01KK-10	Rc 1/2	M10
A3H16-FR01KK-1080	1/2 BSP.F	
A3H16-FR01KK-10950	SAE #10	3/8-16 UNC



View Arrow X

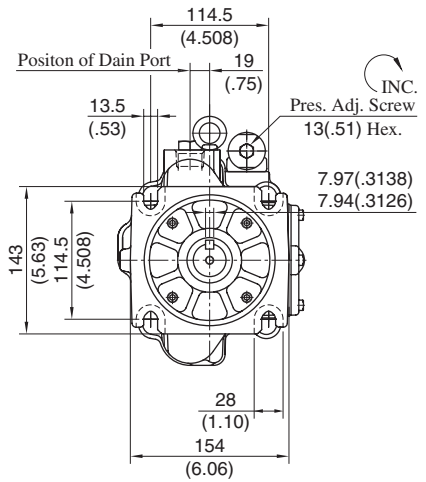
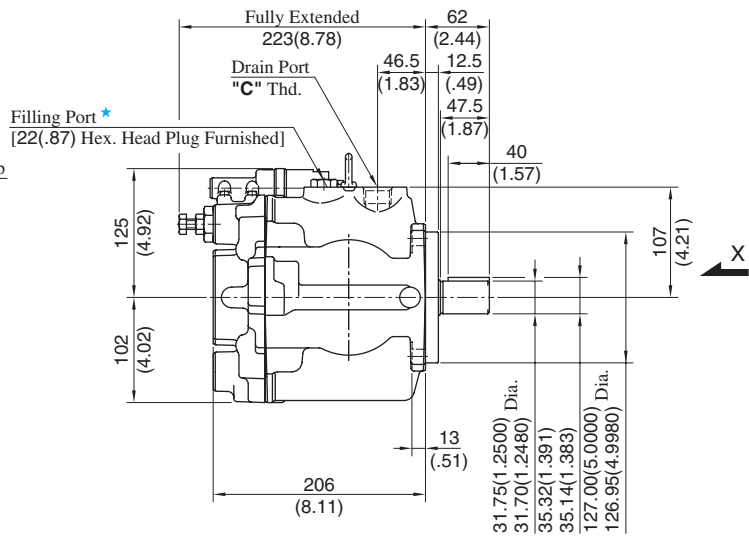
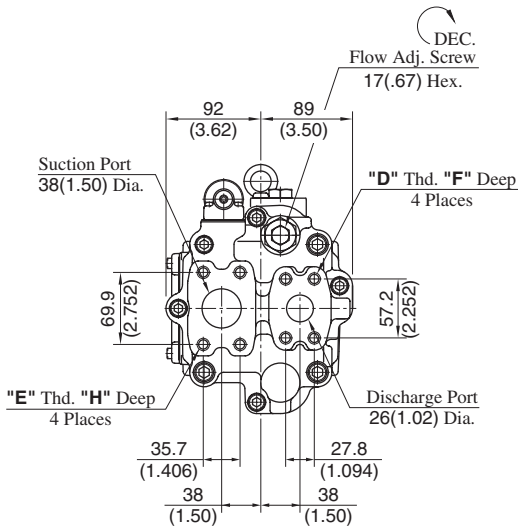
DIMENSIONS IN MILLIMETRES (INCHES)

Foot Mtg.: A3H16-LR01KK-10/1080/10950



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

Flange Mtg.: A3H56-FR01KK-10/1080/10950

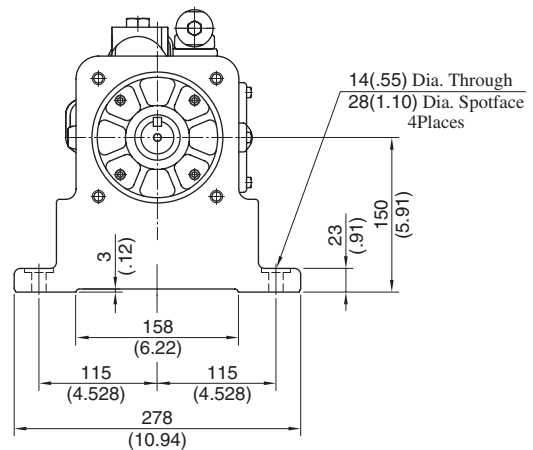
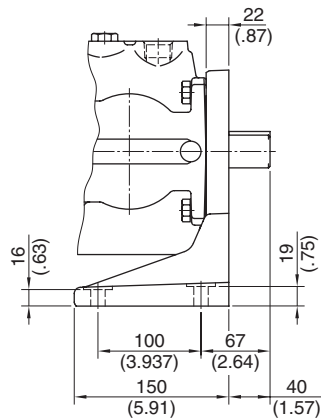


★ Install the pump so that the "Filling port" is at the top.

Model Numbers	"C" Thd.	"D" Thd.	"E" Thd.	F mm(IN.)	H mm(IN.)
A3H56-FR01KK-10	Rc 3/4	M12	M12	22 (.87)	22 (.87)
A3H56-FR01KK-1080	3/4 BSP.F				
A3H56-FR01KK-10950	SAE #12	1/2-13 UNC	7/16-14 UNC	21 (.83)	20 (.79)

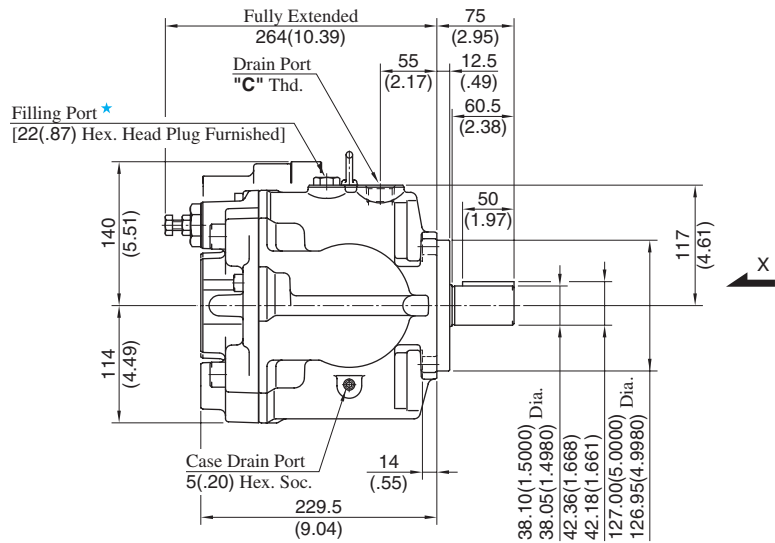
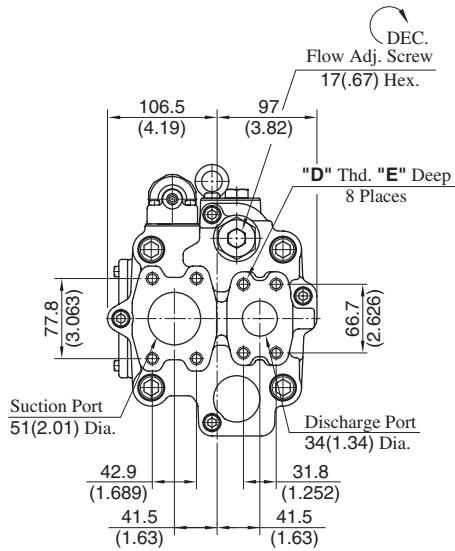
DIMENSIONS IN MILLIMETRES (INCHES)

Foot Mtg.: A3H56-LR01KK-10/1080/10950



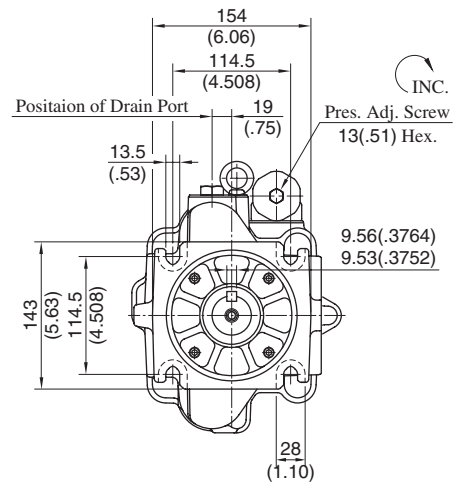
● For other dimensions, refer to "Flange Mtg.".

Flange Mtg.: A3H71-FR01KK-10/1080/10950



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

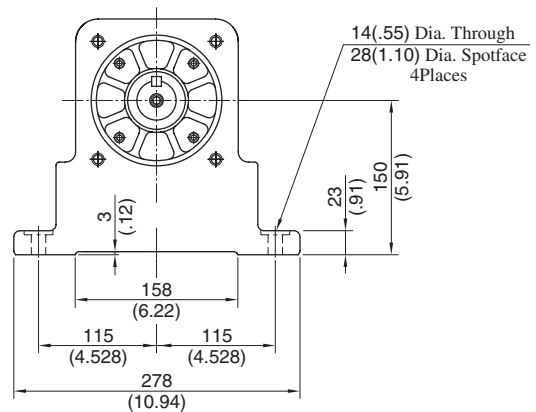
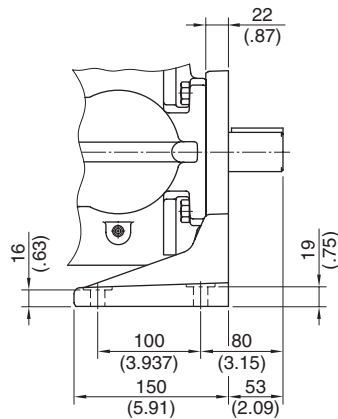
Model Numbers	"C" Thd.	"D" Thd.	E mm (IN.)
A3H71-FR01KK-10	Rc 3/4	M12	19 (.75)
A3H71-FR01KK-1080	3/4 BSP.F		
A3H71-FR01KK-10950	SAE #12	1/2-13 UNC	21 (.83)



View Arrow X

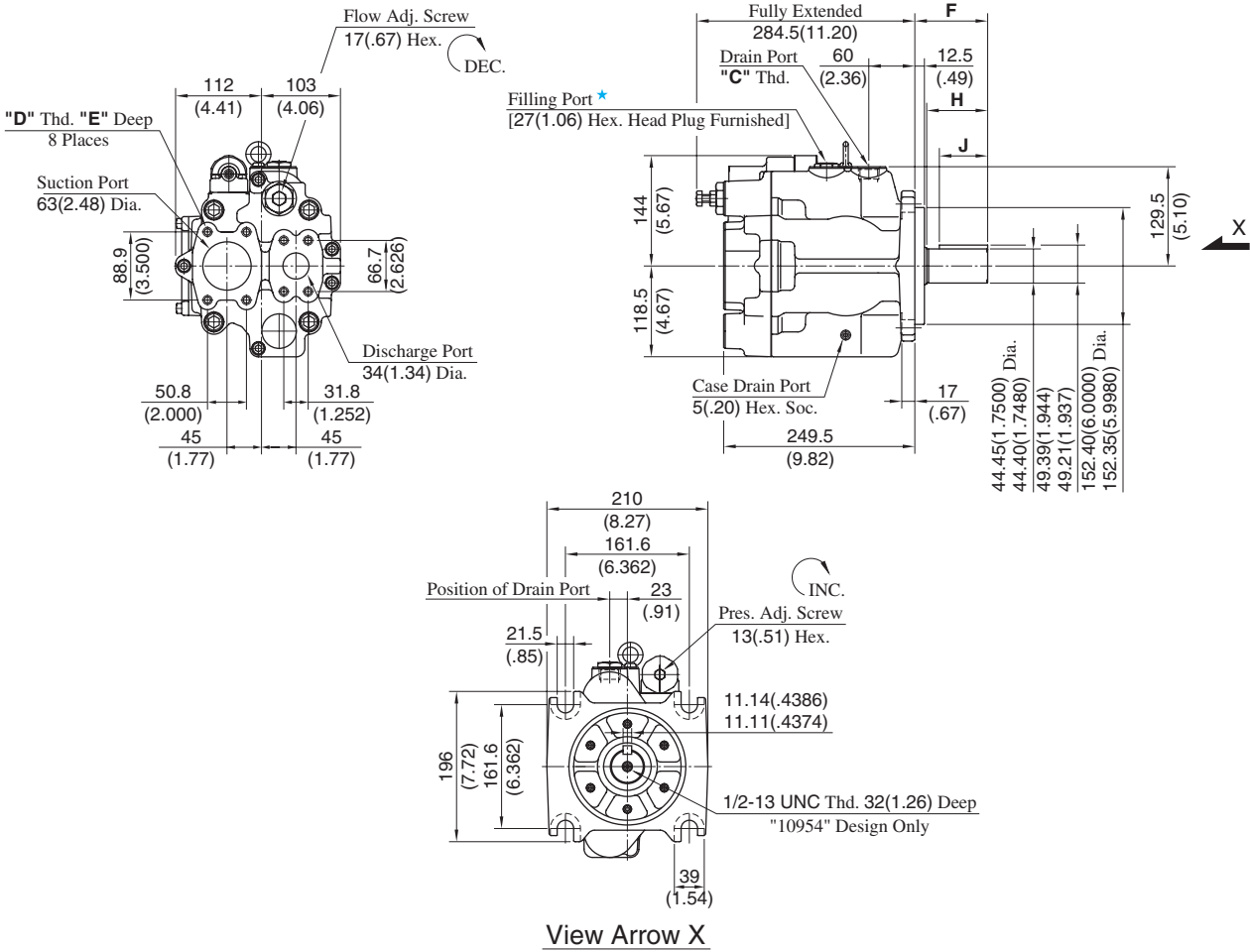
DIMENSIONS IN MILLIMETRES (INCHES)

Foot Mtg.: A3H71-LR01KK-10/1080/10950



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

Flange Mtg.: A3H100-FR01KK-10/1080/10954

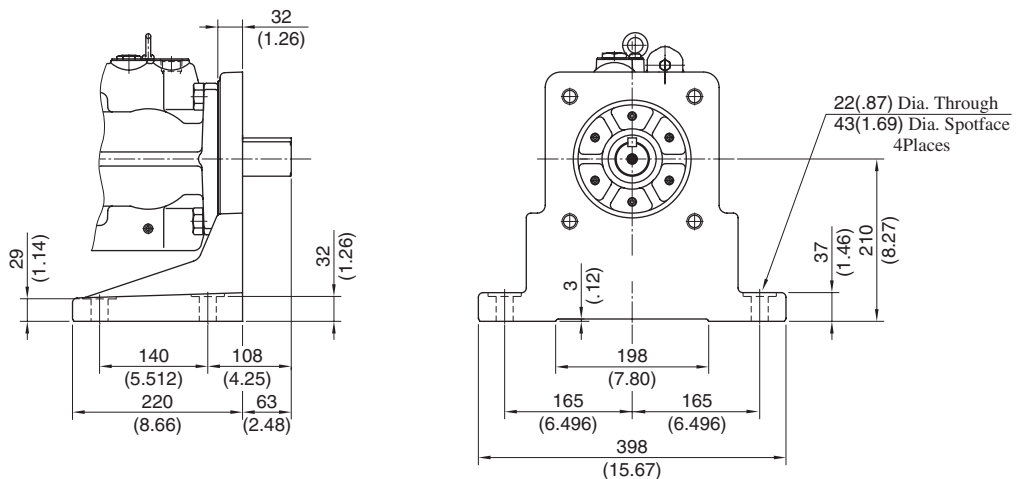


★ Install the pump so that the "Filling port" is at the top.

Model Numbers	Thread Size		Dimensions mm (Inches)			
	C	D	E	F	H	J
A3H100-FR01KK-10	Rc 3/4	M12	19 (.75)	95 (3.74)	81 (3.19)	63 (2.48)
A3H100-FR01KK-1080	3/4 BSP.F					
A3H100-FR01KK-10954	SAE #12	1/2-13 UNC	21 (.83)	74.6 (2.94)	60.6 (2.39)	50 (1.97)

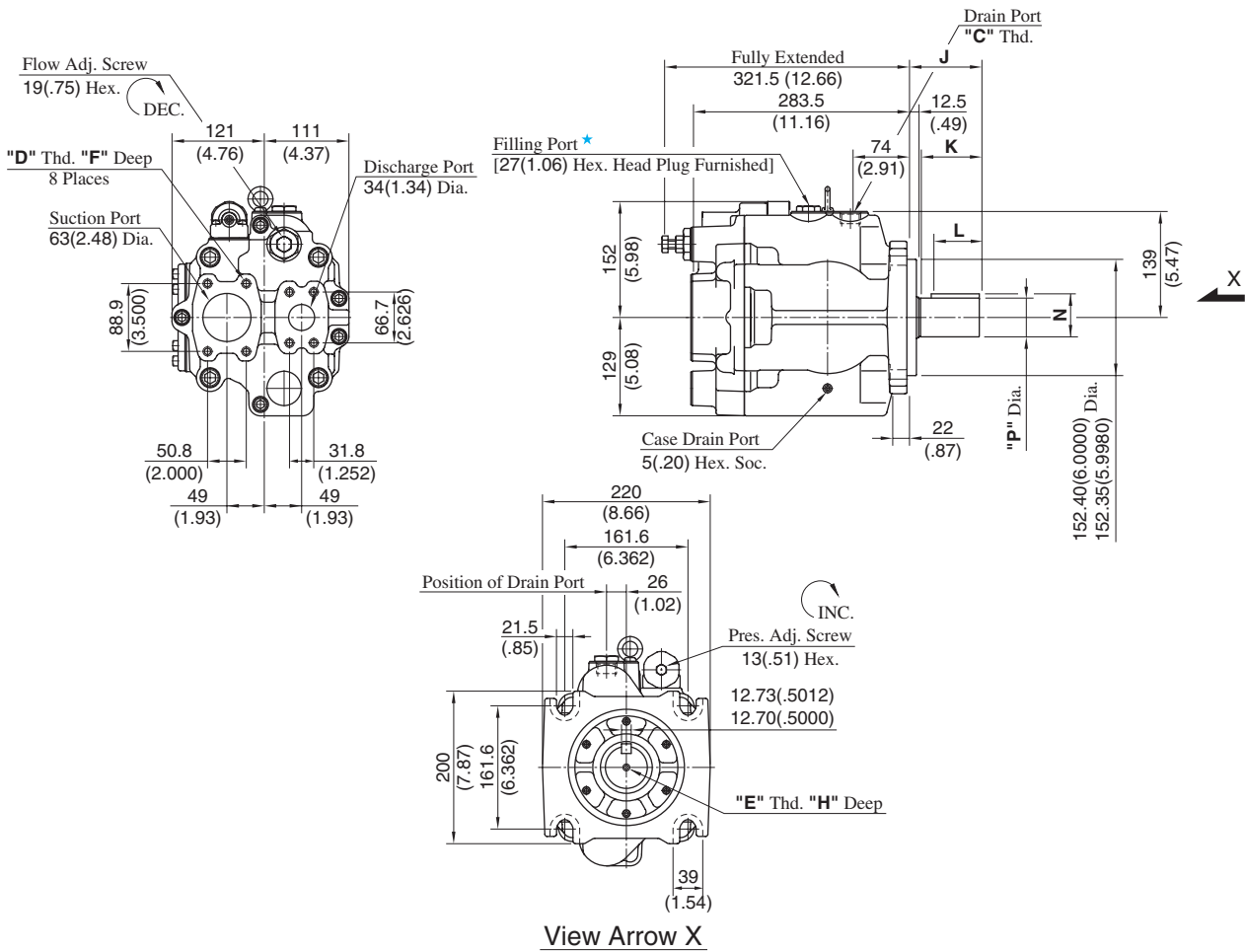
DIMENSIONS IN MILLIMETRES (INCHES)

Foot Mtg.: A3H100-LR01KK-10/1080



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

Flange Mtg.: A3H145-FR01KK*-10/1080/10954

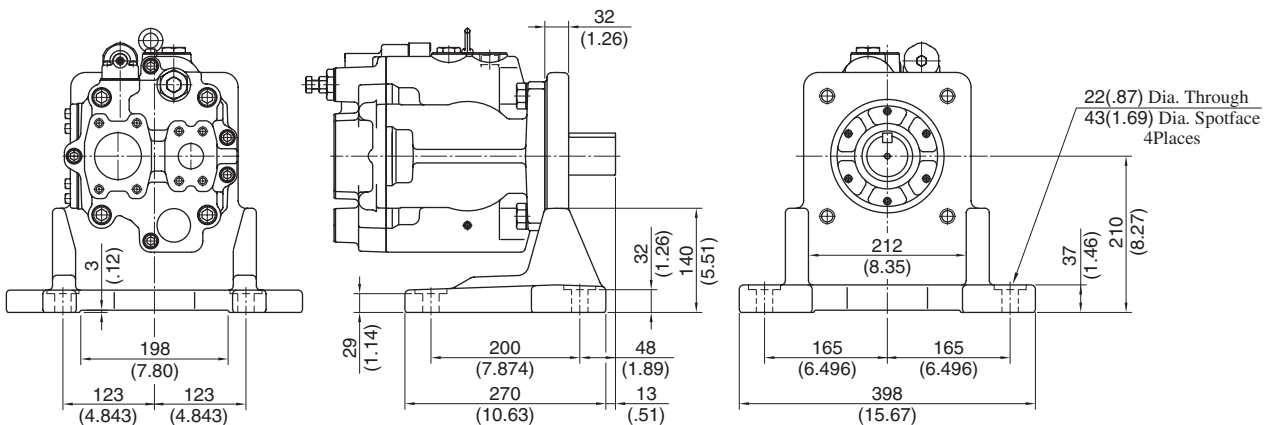


★ Install the pump so that the "Filling port" is at the top.

Model Numbers	Thread Size			Dimensions mm (Inches)						
	C	D	E	F	H	J	K	L	N	P
A3H145-FR01KK-10	Rc 3/4	M12	—	22 (.87)	—	95 (3.74)	81 (3.19)	63 (2.48)	49.39 (1.944)	44.45 (1.7500)
A3H145-FR01KK-1080	3/4 BSP.F								49.21 (1.937)	44.40 (1.7480)
A3H145-FR01KK-10954	SAE #12	1/2-13 UNC	1/2-13 UNC	21 (.83)	32 (1.26)	74.6 (2.94)	60.6 (2.39)	50 (1.97)	49.39 (1.944)	44.45 (1.7500)
A3H145-FR01KK1-10954			5/8-11 UNC						36 (1.42)	56.43 (2.222)
									56.25 (2.215)	50.75 (1.9980)

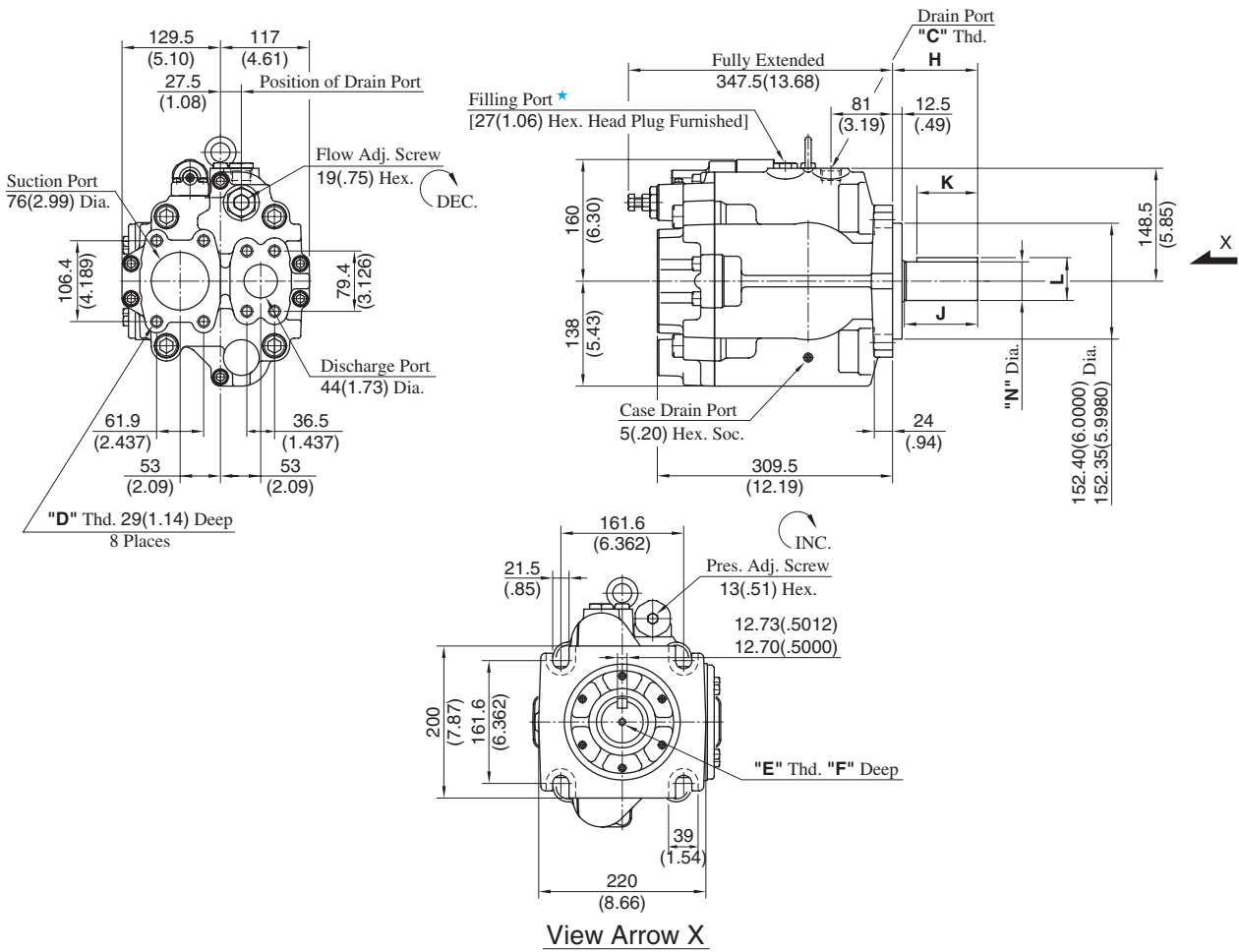
DIMENSIONS IN MILLIMETRES (INCHES)

Foot Mtg.: A3H145-LR01KK-10/1080



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

Flange Mtg.: A3H180-FR01KK*-10/1080/10954

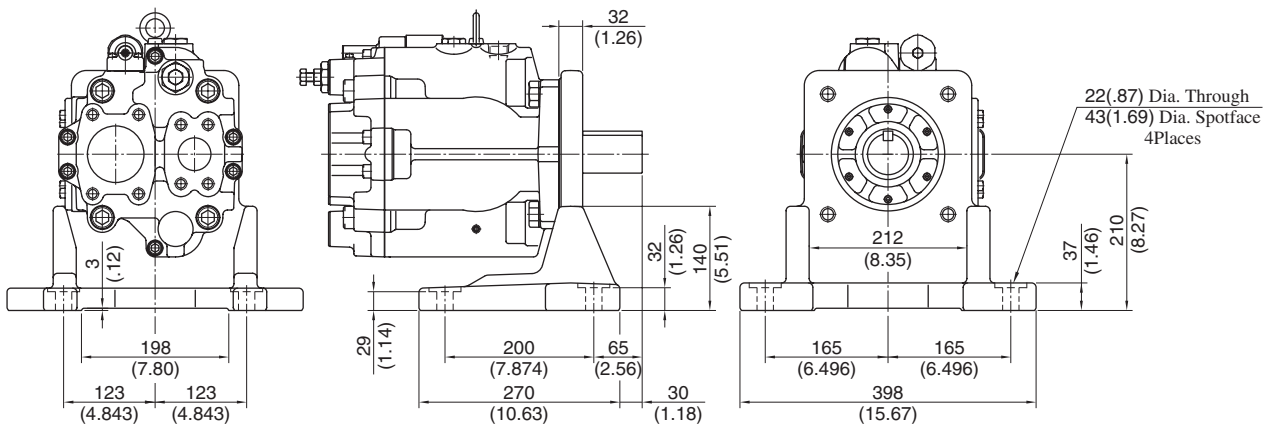


★ Install the pump so that the "Filling port" is at the top.

Model Numbers	Thread Size			Dimensions mm (Inches)						
	C	D	E	F	H	J	K	L	N	
A3H180-FR01KK-10	Rc 3/4	M12	—	—	112 (4.41)	97.5 (3.84)	80 (3.15)	56.43 (2.222)	50.80 (2.0000)	
A3H180-FR01KK-1080	3/4 BSP.F							56.25 (2.215)	50.75 (1.9980)	
A3H180-FR01KK-10954	SAE #12	5/8-11 UNC	1/2-13 UNC	32 (1.26)	74.6 (2.94)	60.6 (2.39)	50 (1.97)	49.39 (1.944)	44.45 (1.7500)	
A3H180-FR01KK1-10954			5/8-11 UNC	36 (1.42)				56.43 (2.222)	50.80 (2.0000)	
								56.25 (2.215)	50.75 (1.9980)	

DIMENSIONS IN MILLIMETRES (INCHES)

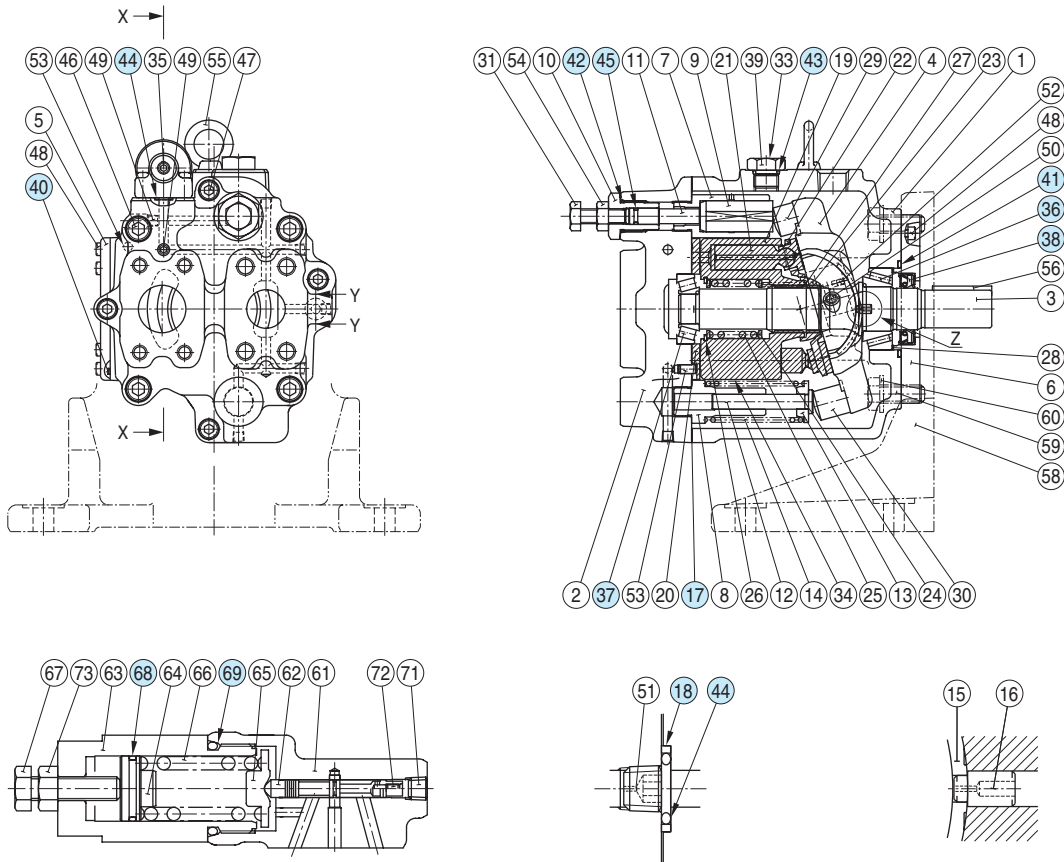
Foot Mtg.: A3H180-LR01KK-10/1080



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

Spear Parts List

A3H16/A3H37/A3H56-*R01KK-10/1080/10950



Detail of Section X – X

Detail of Section Y – Y

Detail of "Z"

List of Seals and Bearings

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

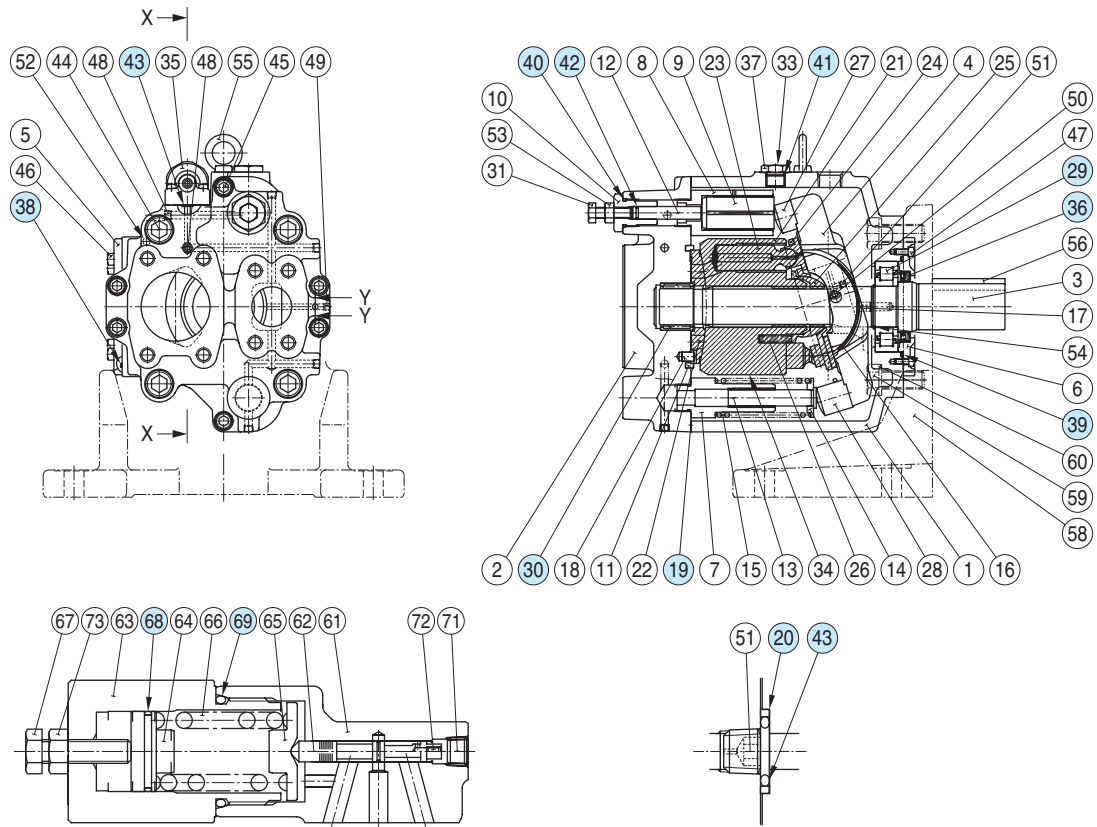
* When ordering seals, please specify the kit number from the table below.

List of Seals kit

Pump Model Numbers	Seal Kit Numbers
A3H16-*R01KK-10/1080/10950	A3H16-01-10
A3H37-*R01KK-10/1080/10950	A3H37-01-10
A3H56-*R01KK-10/1080/10950	A3H56-01-10

Spear Parts List

A3H71-*R01KK-10/1080/10950
 A3H100/A3H145/A3H180-*R01KK*-10/1080/10954



Detail of Section X – X

Detail of Section Y – Y

List of Seals and Bearings

Item	Name of Parts	Part Numbers				Q'ty.
		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

★ When ordering seals, please specify the kit number from the table below.

List of Seals kit

Pump Model Numbers	Seal Kit Numbers
A3H71-*R01KK-10/1080/10950	A3H71-01-10
A3H100-*R01KK-10/1080/10954	A3H100-01-10
A3H145-*R01KK-10/1080/10954	A3H145-01-10
A3H180-*R01KK-10/1080/10954	A3H180-01-10