

## “A3HG” Series High Pressure Variable Displacement Piston Pumps

“A3HG” series pumps are high pressure variable displacement piston pumps based on YUKEN’s highly reputable “A3H” series pumps and meeting international standards (ISO and SAE). They have a rated pressure of 315 Kgf/cm<sup>2</sup> and a maximum operating pressure of 350 Kgf/cm<sup>2</sup>.

While inheriting the high performance of the conventional A3H series, A3HG series pumps feature higher rated pressure design (280 Kgf/cm<sup>2</sup> → 315 Kgf/cm<sup>2</sup>). These pumps meet JIS standards as well as ISO standards common in Europe and SAE standards in North America to ensure interchangeability with pumps available on the global market. In addition to wide displacement range like the A3H series, they are equipped with a through drive to allow for multiple pump installations with a pump on the drive side and another pump with up to the same capacity as the other pump on the non-drive side.

Thus, A3HG series pumps provide an extended maximum flow range and support a variety of control types. As a hydraulic pressure source for all types of equipment, they can be used in a wide range of applications.



### Features

- **Wide assortment of models to ensure interchangeability with pumps available on the global market.**

European models: Compatible with ISO 3019-2, North American models: Compatible with SAE J744.

Standard models are available with keyed or splined shaft end.

- **Wide displacement range and high volumetric efficiency**

While inheriting the high performance of A3H series pumps, A3HG series pumps feature higher rated pressure design 315 Kgf/cm<sup>2</sup>. They can be used as pumps capable of handling moderate to high loads in a wide range of applications.

- **Through drive supplied as standard**

The through drive allows for multiple pump installation with a pump on the drive side and another pump with up to the same capacity as the other pump on the non-drive side. All pumps meeting international standards can be used on the non-drive side.

- **Control types**

Pressure compensator type (01), pressure compensator type with external pilot (07), and load sensing type (14) are available.

### Specifications

ModelNumbers		A3HG16	A3HG37	A3HG56	A3HG71	A3HG100	A3HG145	A3HG180
Items								
Geometric Displacement	cm <sup>3</sup> /rev.	16.3	37.1	56.3	70.7	100.5	145.2	180.7
Minimum Adj. Flow	cm <sup>3</sup> /rev.	8.0	16.0	35.0	45.0	63.0	95.0	125.0
Rated Pressure	Kgf/cm <sup>2</sup>	315						
Max. Oper. Pressure	Kgf/cm <sup>2</sup>	350						
Shaft Speed Range r/min.	Max	3600	2700	2500	2300	2100	1800	1800
	Min.	600						
Suction Pressure		-0.167~0.5 Kgf/cm <sup>2</sup> at 600-1800 r/min. 0~0.5 Kgf/cm <sup>2</sup> at speed above 1800 r/min. (Gauge Pressure)						
Hydraulic Fluid		Petroleum Base Oils (Equivalent to ISO VG 32 or 46)						
Viscosity	mm <sup>2</sup> /sec.	20 - 400						
Oil Temperature	°C	0-60 (Within Specified Viscosity Range)						
Seal Material		FKM (Fluoro Rubber)						
Mass*	Kg	17	26.5	32.5	45	56.5	68.5	88

\* Mass of A3HG※-FR01KK-E※-10


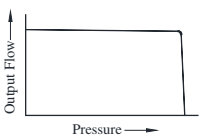
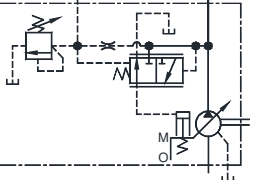
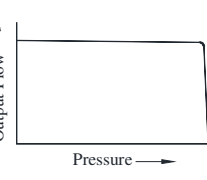
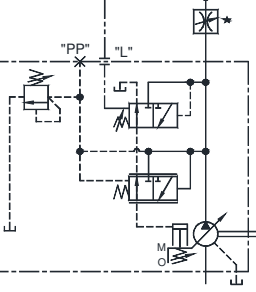
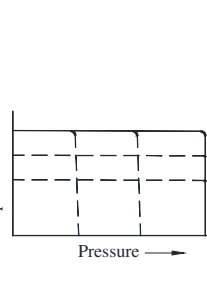
## Model Number Designation

A3HG16	-F	R	01	K	K	-E1			D	-10													
Series Number	Mounting	Direction of Rotation	Control Type	Pressure Adj. Range Kgf/cm <sup>2</sup>	Shaft Extension	Port/Flange Type			Number of Pump Mtg. Bolts	Design Number													
A3HG16 (16.3cm <sup>3</sup> /rev.)	F : Flange Mounting	(Viewed from Shaft end)  R : Clockwise (Normal)	01 : Pressure Compensator Type	K: 50~350	K: Keyed Shaft	<table><tr><td>Code</td><td>Flange</td><td>Port/Flange Thread</td></tr><tr><td>E1</td><td>ISO</td><td>Metric</td></tr><tr><td>U1</td><td rowspan="3">SAE</td><td>Unified</td></tr><tr><td>U2</td><td>BSPF/Metric</td></tr><tr><td>J1</td><td>Rc/Metric</td></tr></table>			Code	Flange	Port/Flange Thread	E1	ISO	Metric	U1	SAE	Unified	U2	BSPF/Metric	J1	Rc/Metric	C: 2  D: 4	10
Code			Flange	Port/Flange Thread																			
E1			ISO	Metric																			
U1			SAE	Unified																			
U2				BSPF/Metric																			
J1				Rc/Metric																			
A3HG37 (37.1cm <sup>3</sup> /rev.)																							
A3HG56 (56.3cm <sup>3</sup> /rev.)																							
A3HG71 (70.7 cm <sup>3</sup> /rev.)																							
A3HG100 (100.5cm <sup>3</sup> /rev.)																							
A3HG145 (145.2cm <sup>3</sup> /rev.)																							
A3HG180 (180.7cm <sup>3</sup> /rev.)			14 : Load Sensing Control Type	N/A for the control types 07 & 14	SP: Splined Shaft																		

## Application

Press machines, pipe bending machines, pipe end forming machines, steel mill machines, rolling mill machines, concrete making machines, compactors, tube forming machines, other general industrial machinery/equipment, and general industrial vehicles.

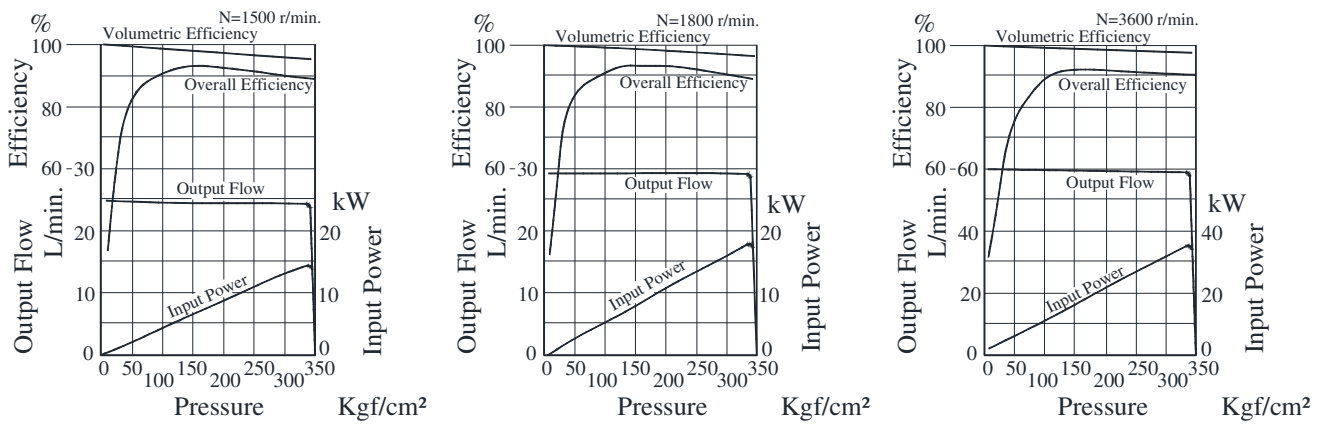
## Control Type

Control Type	Graphic Symbols	Performance Characteristics	Description
“01” Pressure compensator type			<ul style="list-style-type: none"> <li>When the system pressure increases and approaches the preset full cut-off pressure, the pump flow decreases automatically while maintaining the set pressure as it is.</li> <li>The output flow and full cut-off pressure can be manually adjusted.</li> </ul>
“07” Pilot Pressure Control Type Pressure Compensator			<ul style="list-style-type: none"> <li>The pump is used in combination with a remote control relief valve or multistage pressure control valve.</li> <li>By controlling the pilot pressure, the full cut-off pressure can be remote-controlled according to user requirements.</li> </ul>
“14” Load Sensing Control Type			<ul style="list-style-type: none"> <li>This is an energy-saving type control which regulates the pump flow and load pressure to be 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 can actualize the remote control of the full cut-off pressure by connecting a remote control relief valve to the pilot port “PP”.</li> </ul>

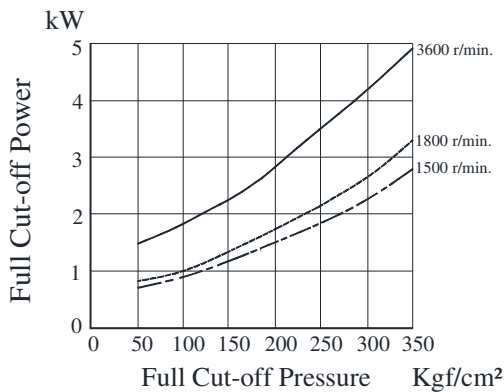
Note : Consult YUKEN for further details.

Typical Performance Characteristics of “A3HG16-01K※” Oil Viscosity 32 cSt [ISO VG 32, 40°C]

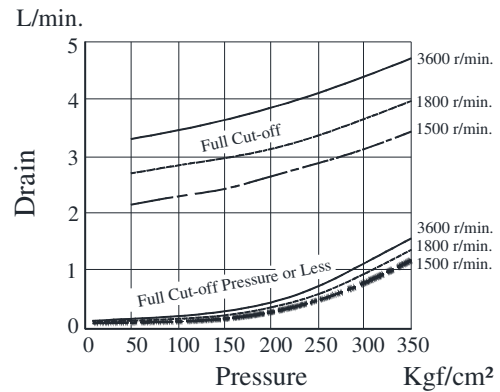
### Performance Characteristic Curve



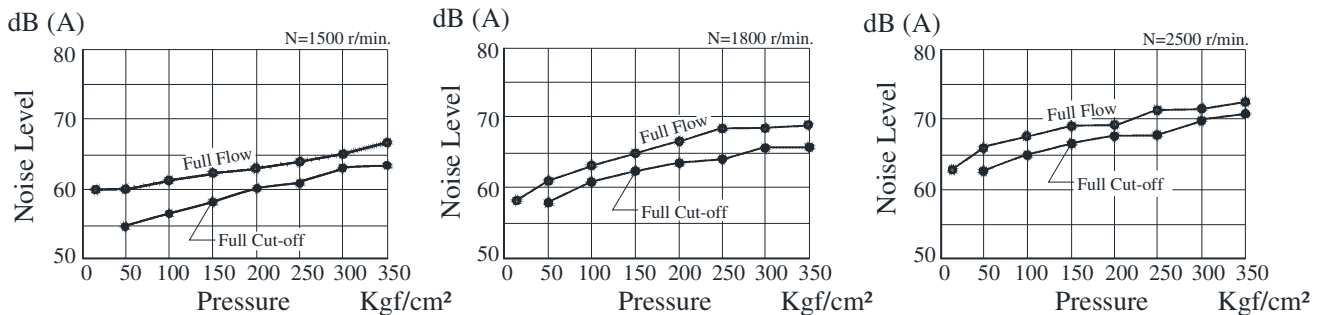
### Full Cut-off Power



### Drain

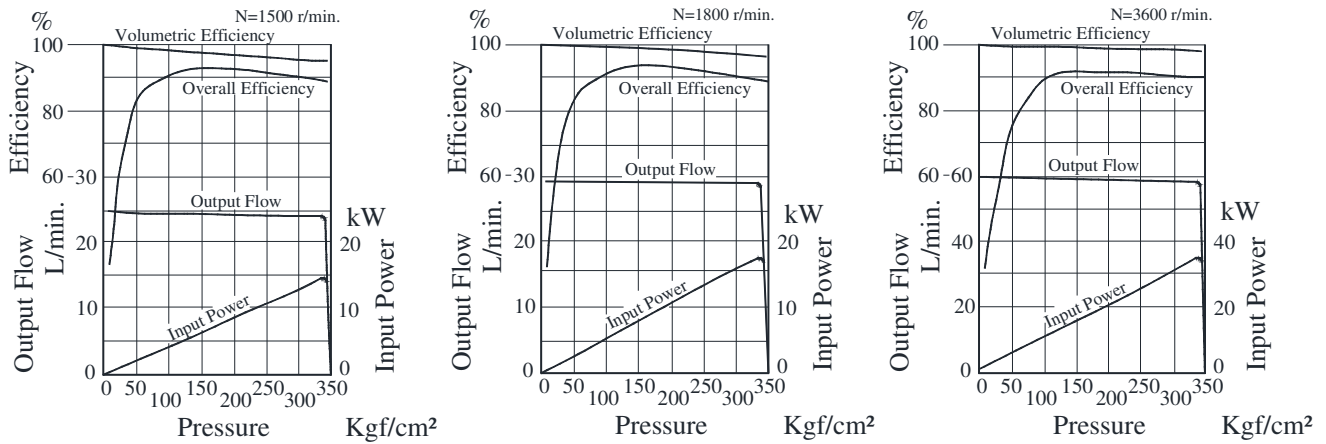


### Noise Level (dB): [One meter(3.3 ft.) away from the back of the pump]

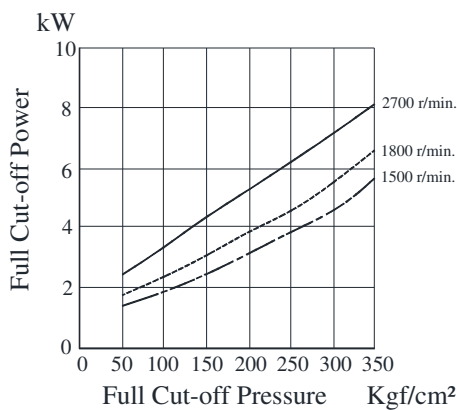


Typical Performance Characteristics of “A3HG37-01K※” Oil Viscosity 32 cSt [ISO VG 32, 40°C]

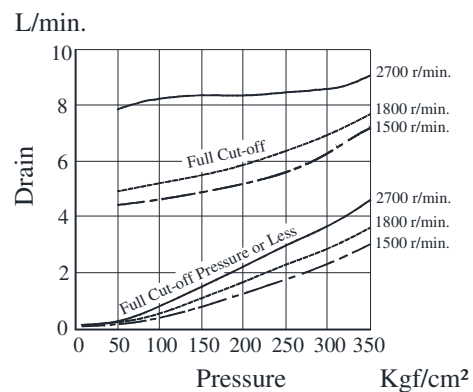
Performance Characteristic Curve



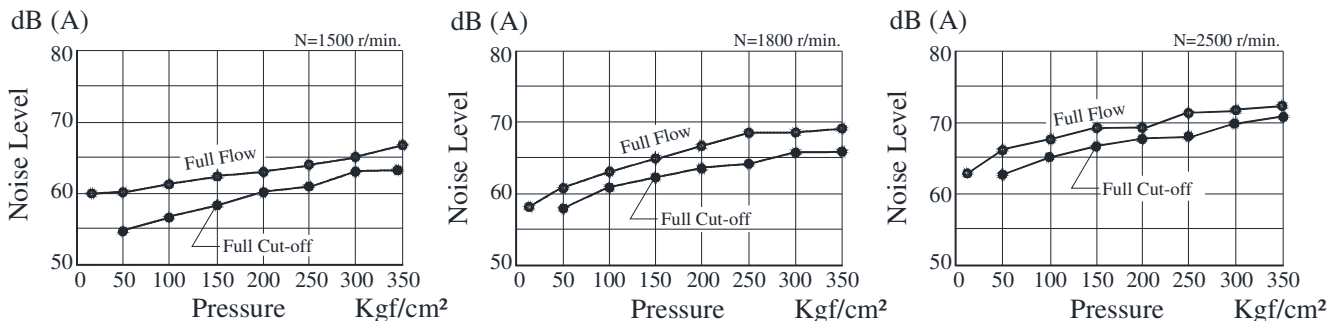
Full Cut-off Power



Drain

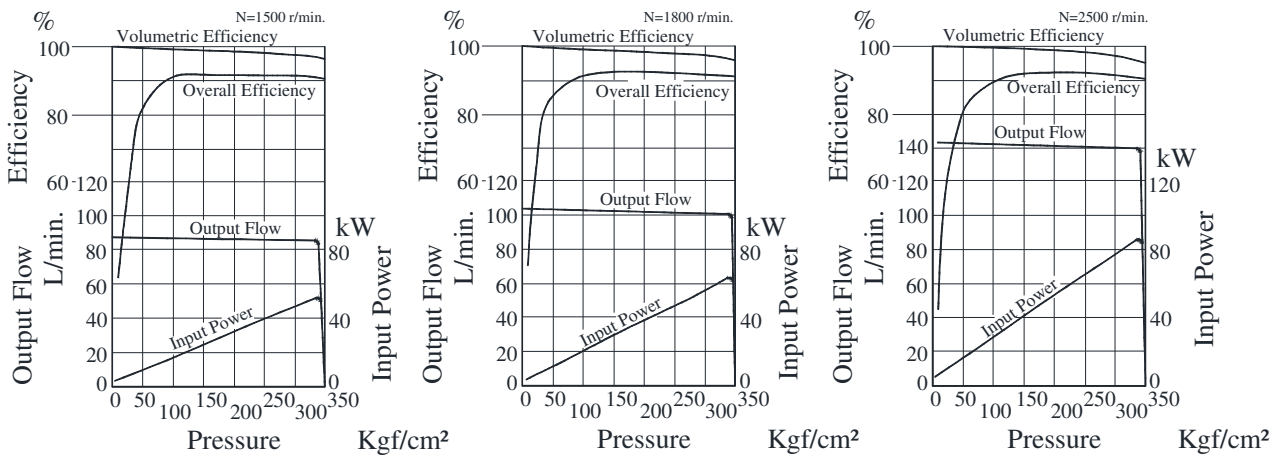


Noise Level (dB): [One meter(3.3 ft.) away from the back of the pump]

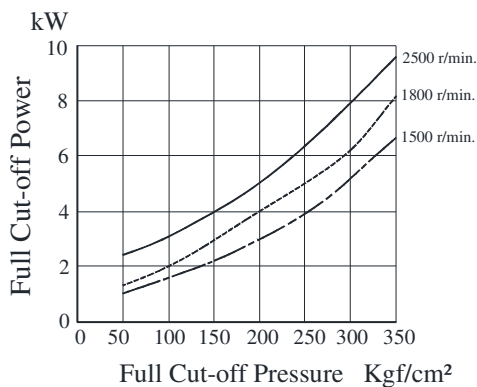


Typical Performance Characteristics of “A3HG56-01K※” Oil Viscosity 32 cSt [ISO VG 32, 40°C]

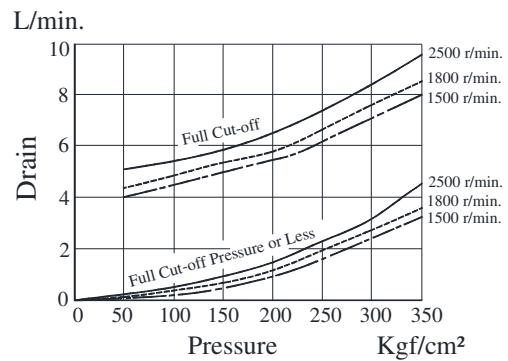
Performance Characteristic Curve



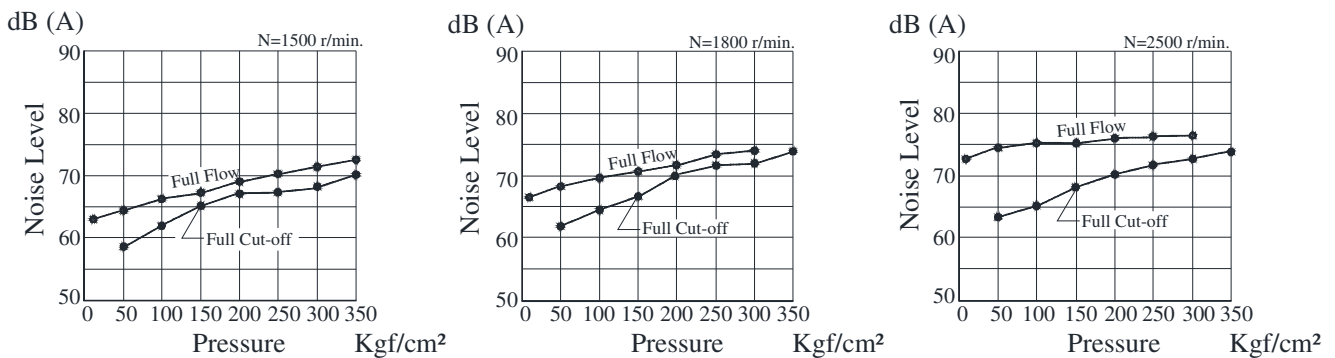
Full Cut-off Power



Drain

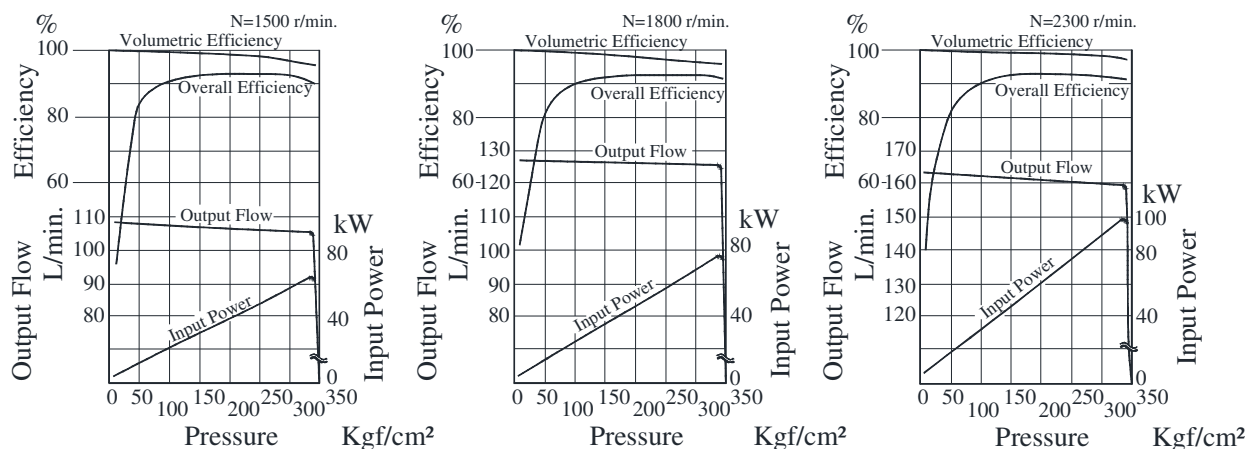


Noise Level (dB): [One meter(3.3 ft.) away from the back of the pump]

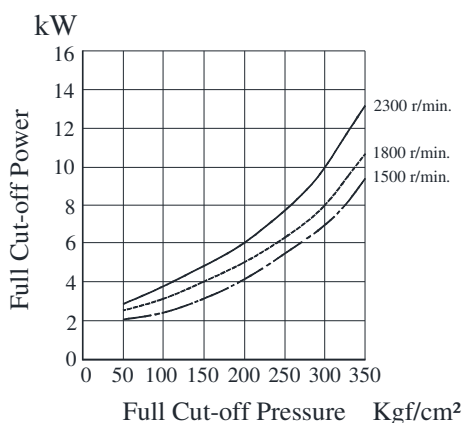


Typical Performance Characteristics of “A3HG71-01K※” Oil Viscosity 32 cSt [ISO VG 32, 40°C]

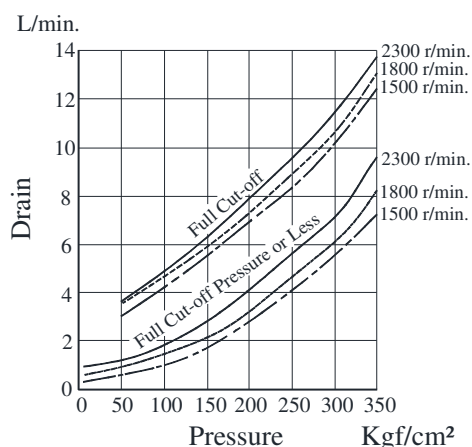
**Performance Characteristic Curve**



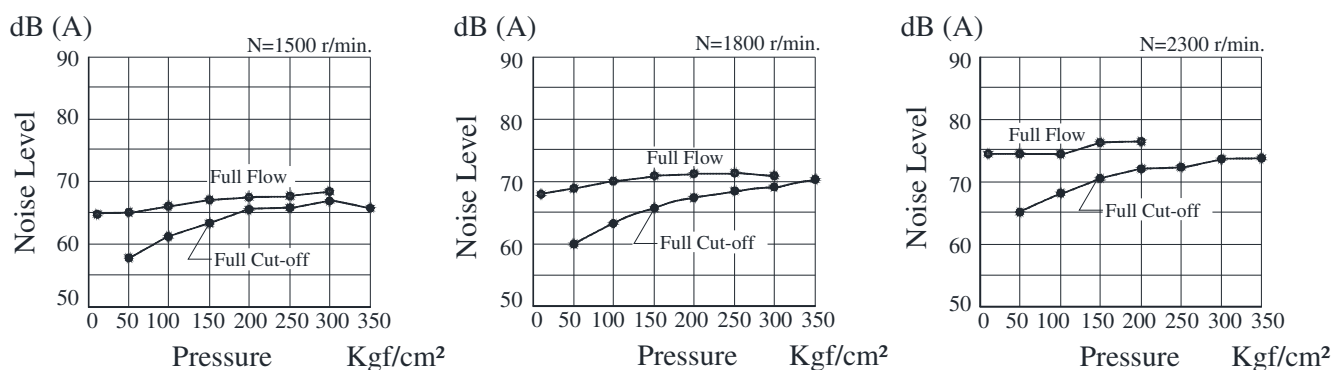
**Full Cut-off Power**



**Drain**

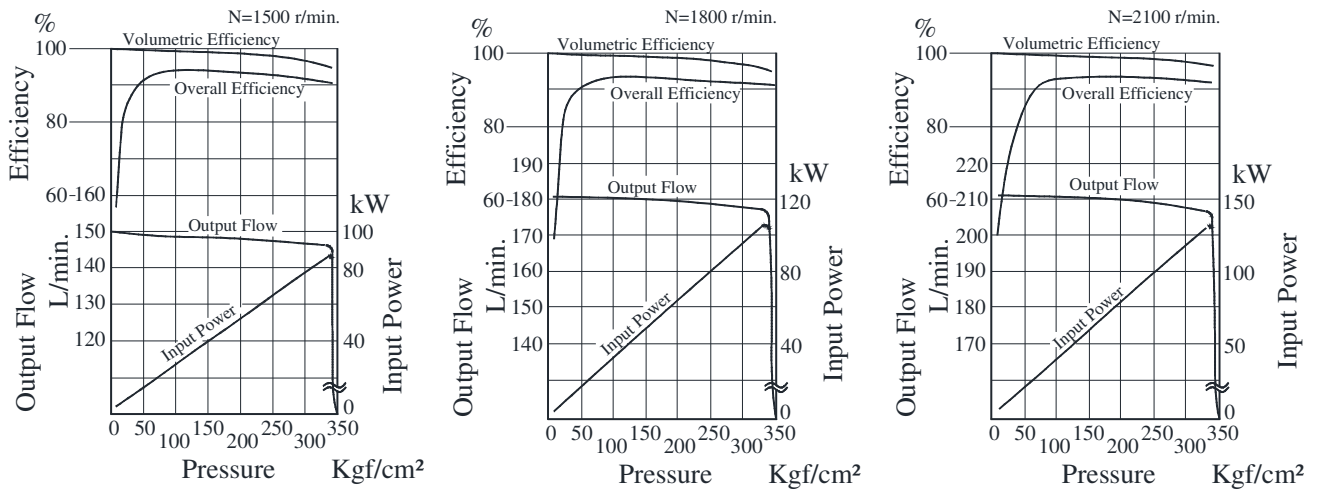


**Noise Level (dB): [One meter(3.3 ft.) away from the back of the pump]**

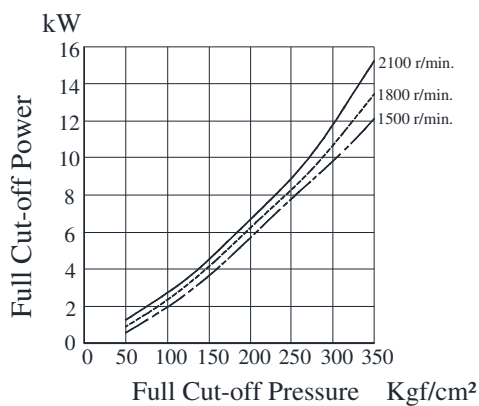


Typical Performance Characteristics of “A3HG100-01K※” Oil Viscosity 32 cSt [ISO VG 32, 40°C]

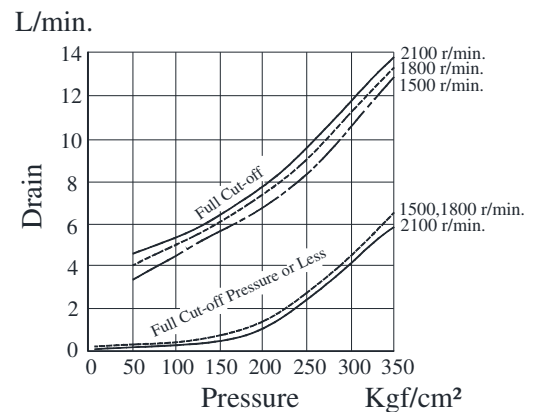
## Performance Characteristic Curve



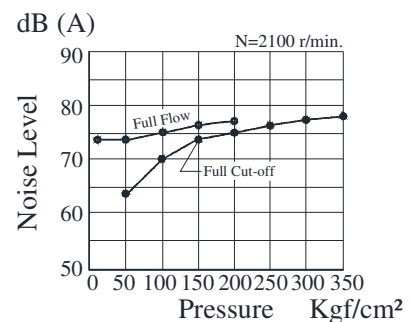
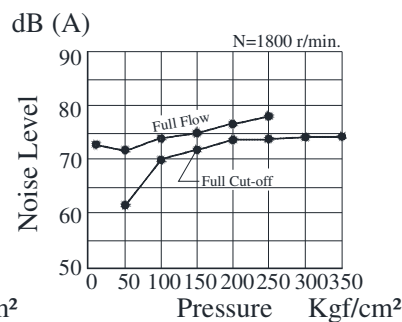
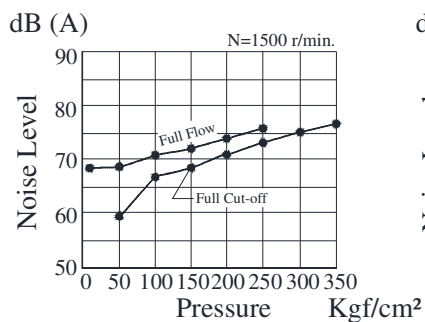
## Full Cut-off Power



## Drain

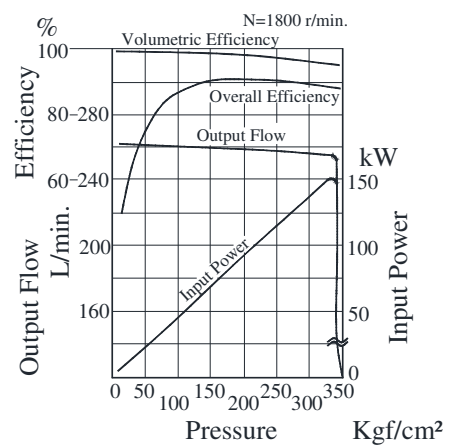
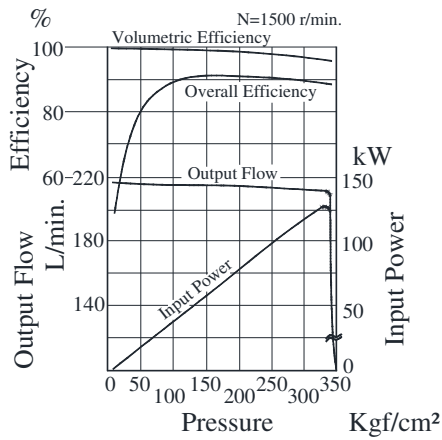


## Noise Level (dB): [One meter(3.3 ft.) away from the back of the pump]

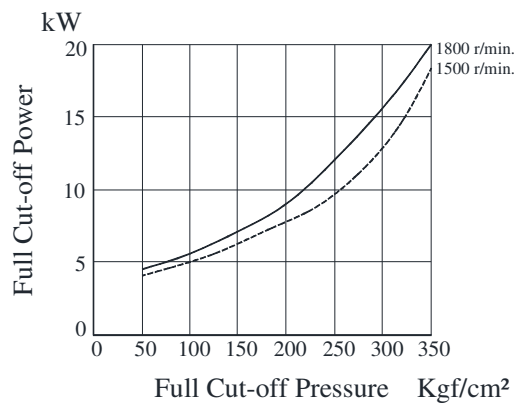


Typical Performance Characteristics of “A3HG145-01K※” Oil Viscosity 32 cSt [ISO VG 32, 40°C]

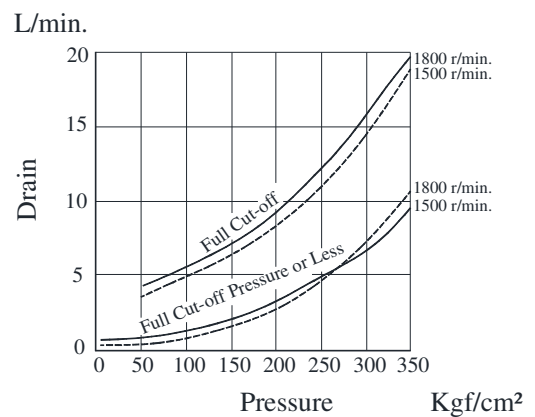
**Performance Characteristic Curve**



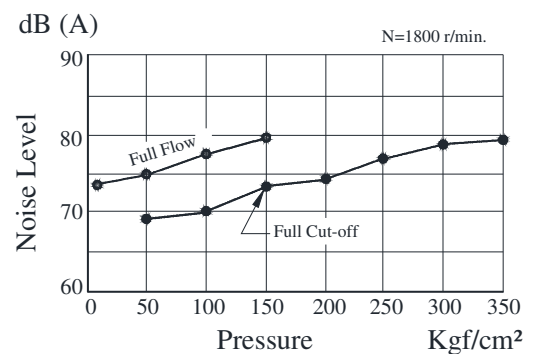
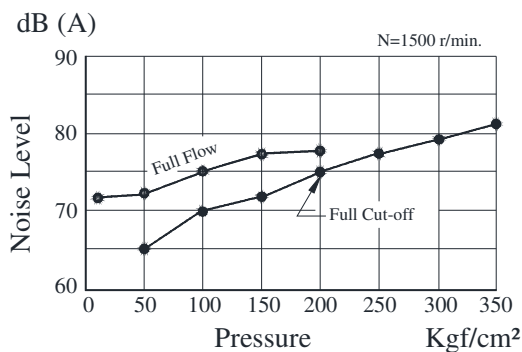
**Full Cut-off Power**



**Drain**



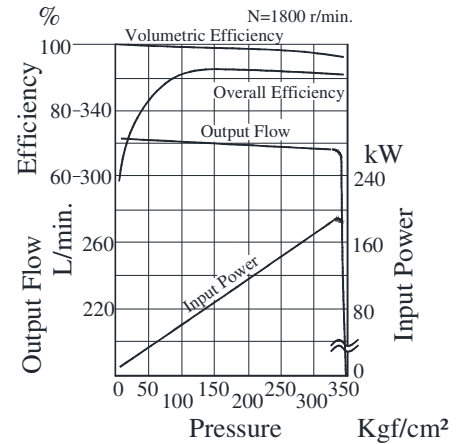
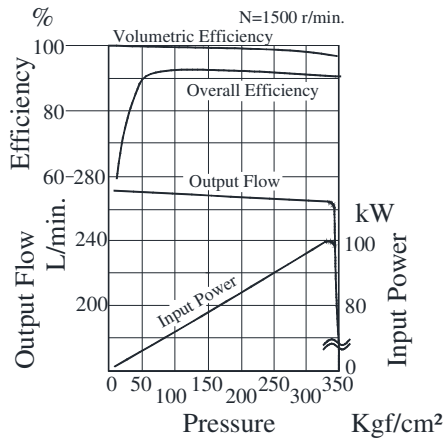
**Noise Level (dB): [One meter(3.3 ft.) away from the back of the pump]**



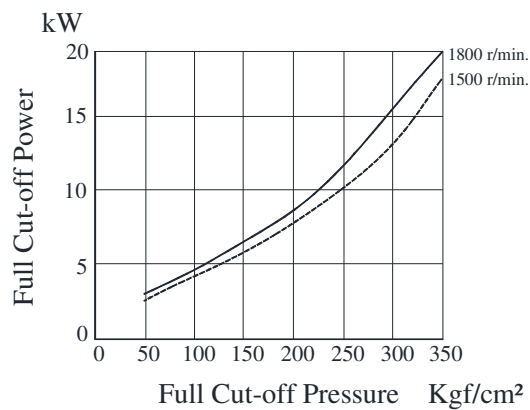


Typical Performance Characteristics of “A3HG180-01K※” Oil Viscosity 32 cSt [ISO VG 32, 40°C]

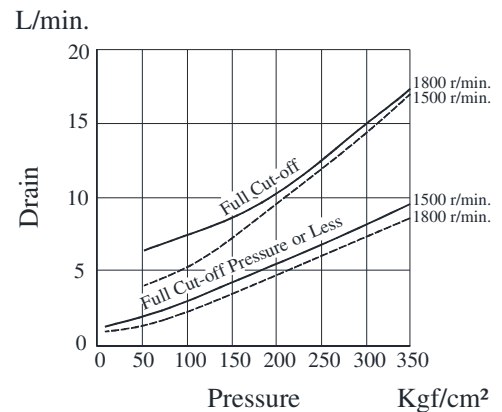
### Performance Characteristic Curve



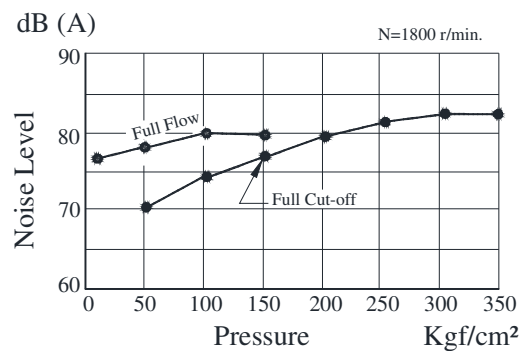
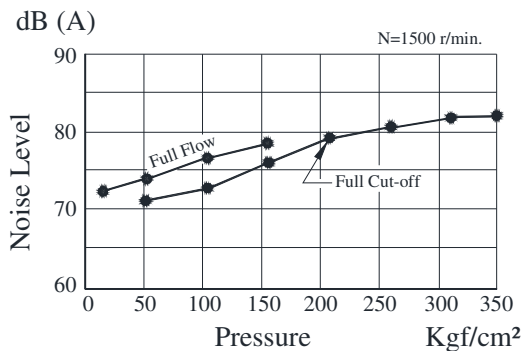
### Full Cut-off Power



### Drain

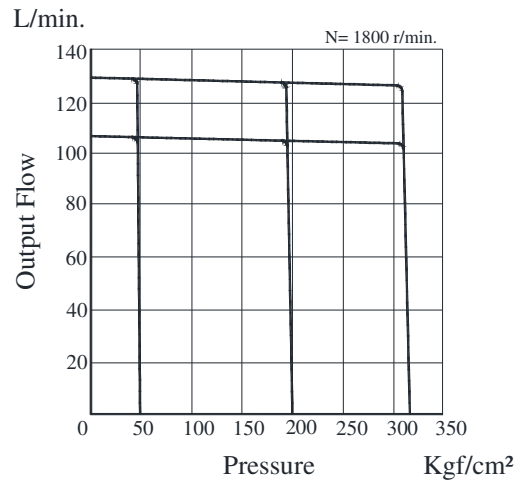


### Noise Level (dB): [One metre away from the back of the pump]



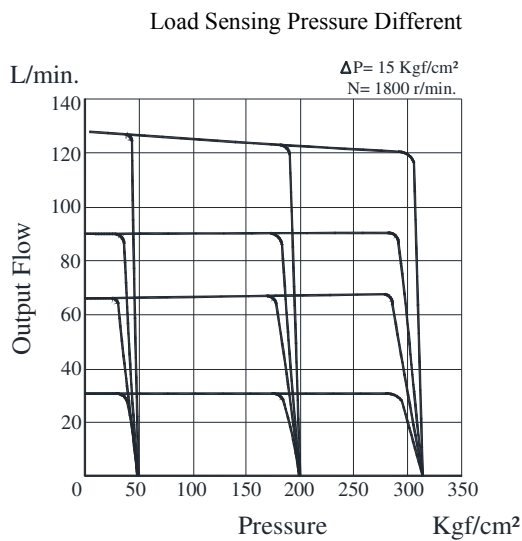
Typical Performance Characteristics of “A3HG71-FR07※” Oil Viscosity 32 cSt [ISO VG 32, 40°C]

**Performance Vs. Output Flow**

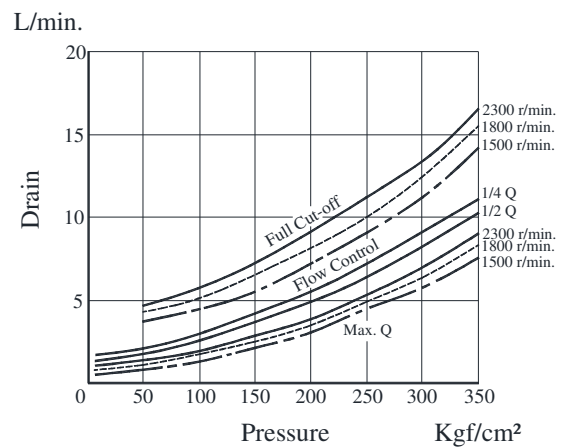


Typical Performance Characteristics of “A3HG71-FR14※” Oil Viscosity 32 cSt [ISO VG 32, 40°C]

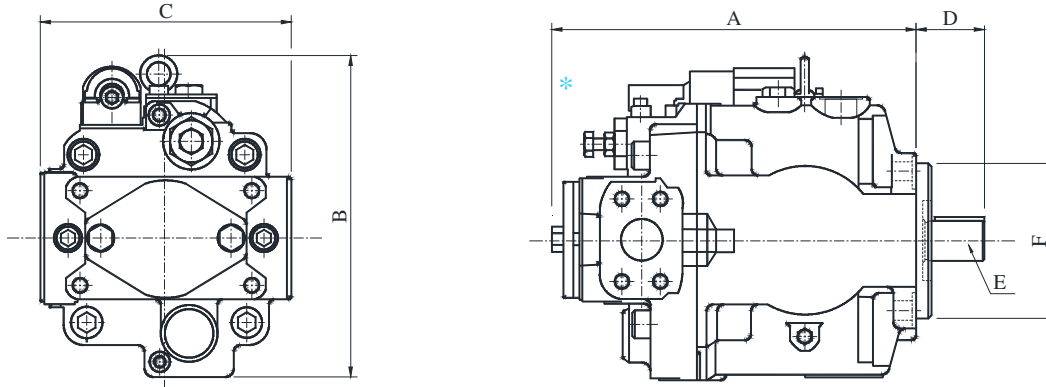
**Pressure Vs. Output Flow**



**Drain**



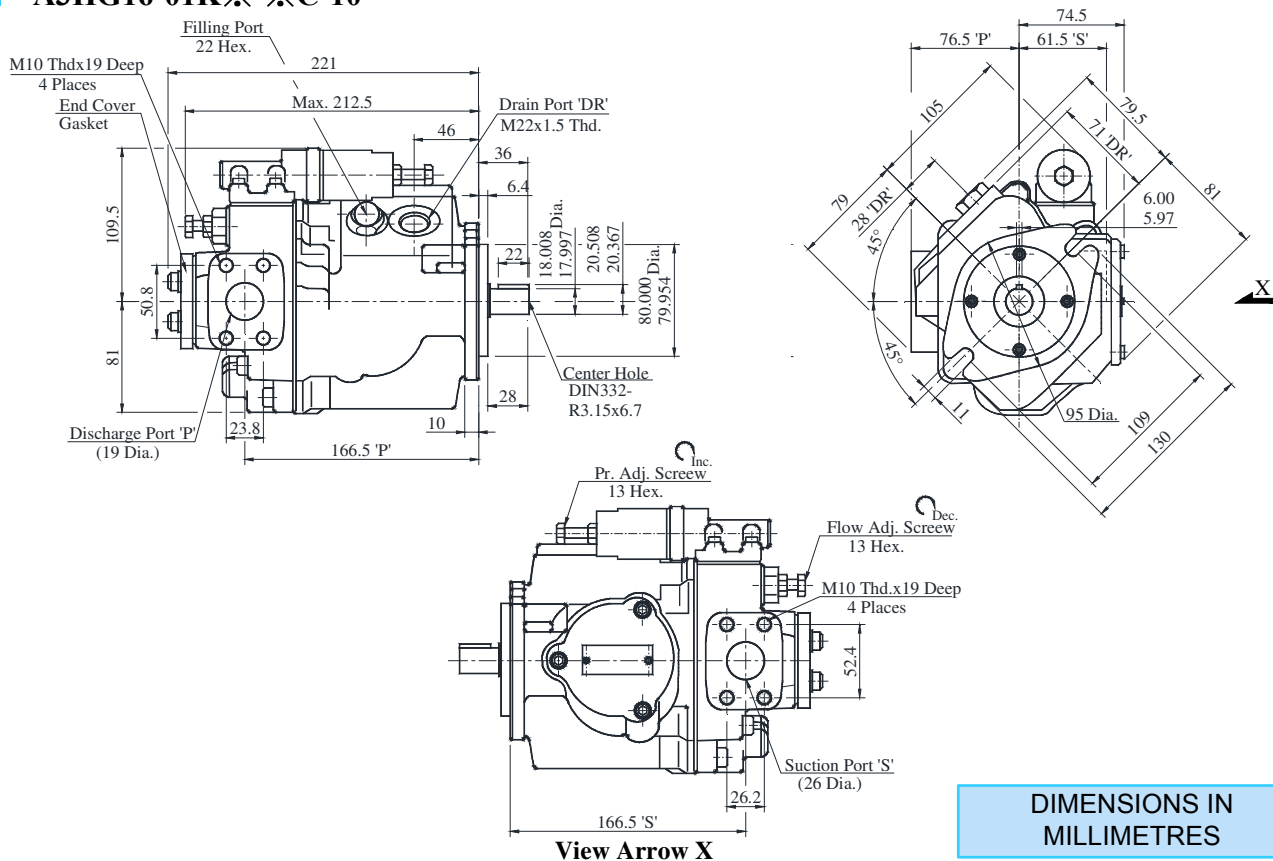
**Installation Drawing/Mounting Dimensions (Control Type 01)**



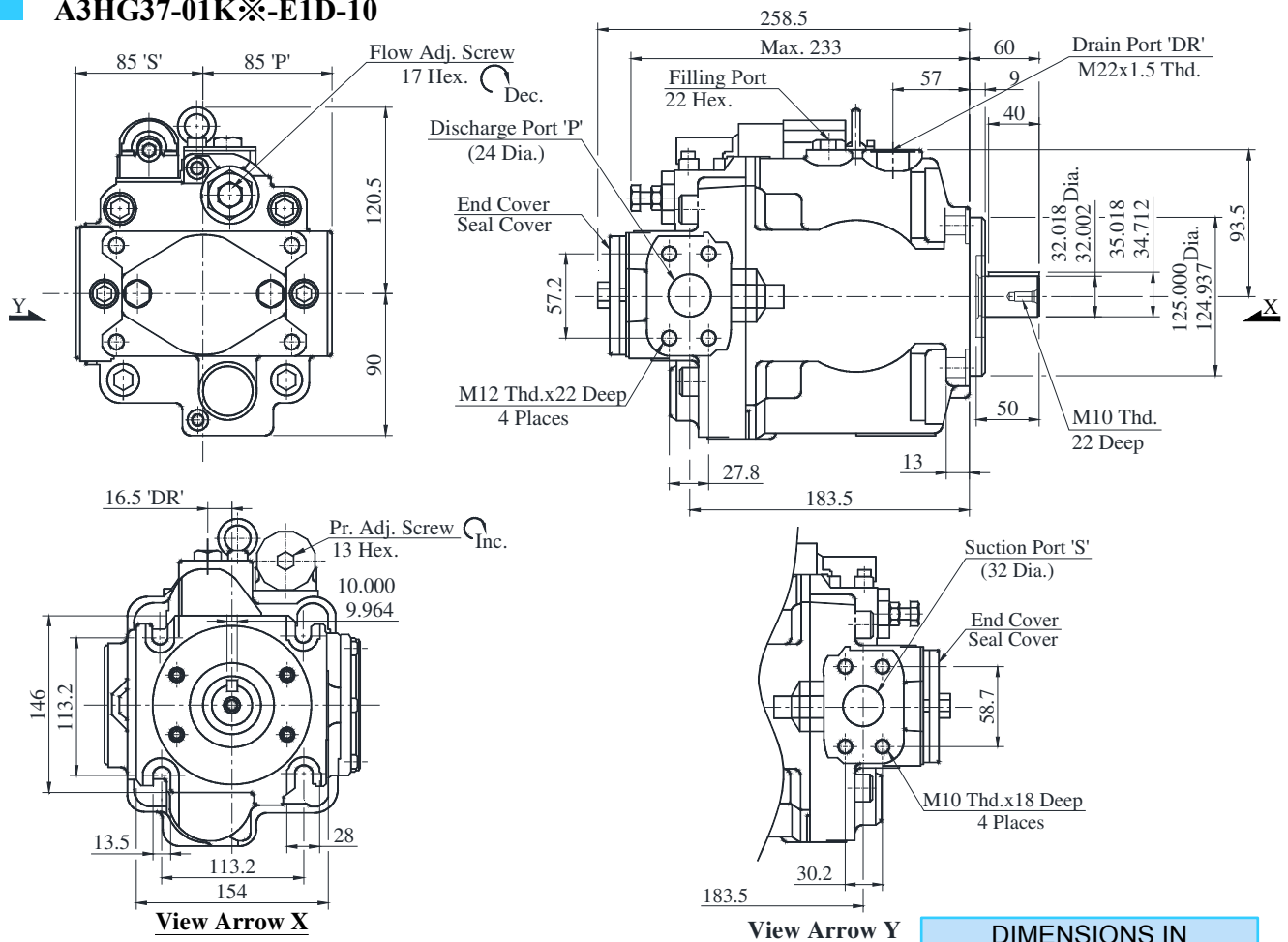
Model Numbers	No. of Mtg. Bolts.	A	B	C	Shaft Extension					
					ISO Ver.			SAE Ver.		
					D : Key/Sp	E : Key/Sp	F	D : Key/Sp	E : Key/Sp	F
A3HG16	2 Bolts	221	160.5	184	36/38	φ18/11T-16/32	φ80	41/38	φ19.05/11T16/32 11T-16/32	φ82.55
A3HG37	2 Bolts	273	210.5	174	52/46	φ25/15T-16/32	φ100	46/46	φ25.4/15T-16/32	φ101.6
	4 Bolts	258.5	210.5	170	60/56	φ32/14T-12/24	φ125	56/56	φ31.75/14T-12/24	φ127
A3HG56	2 Bolts	300	242.5	176	52/46	φ25/15T-16/32	φ100	46/46	φ25.4/15T-16/32	φ101.6
	4 Bolts	275	242.5	176	60/56	φ32/14T-12/24	φ125	56/56	φ31.75/14T-12/24	φ127
A3HG71	4 Bolts	296.5	264.5	204	60/56	φ32/14T-12/24	φ160	56/56	φ31.75/14T-12/24	φ127
A3HG100	4 Bolts	322	281.5	225	80/62	φ40/17T-12/24	φ180	62/62	φ38.1/17T-12/24	φ152.4
A3HG145	4 Bolts	345.5	301.5	246	92/75	φ45/13T-8/16	φ180	75/75	φ44.45/13T-8/16	φ152.4
A3HG180	4 Bolts	384.5	328	258	92/75	φ45/13T-8/16	φ180	75/75	φ44.45/13T-8/16	φ152.4

• An adapter flange may be required for pump connection on the non-drive side. Consult YUKEN for Details.

**A3HG16-01K※-※C-10**

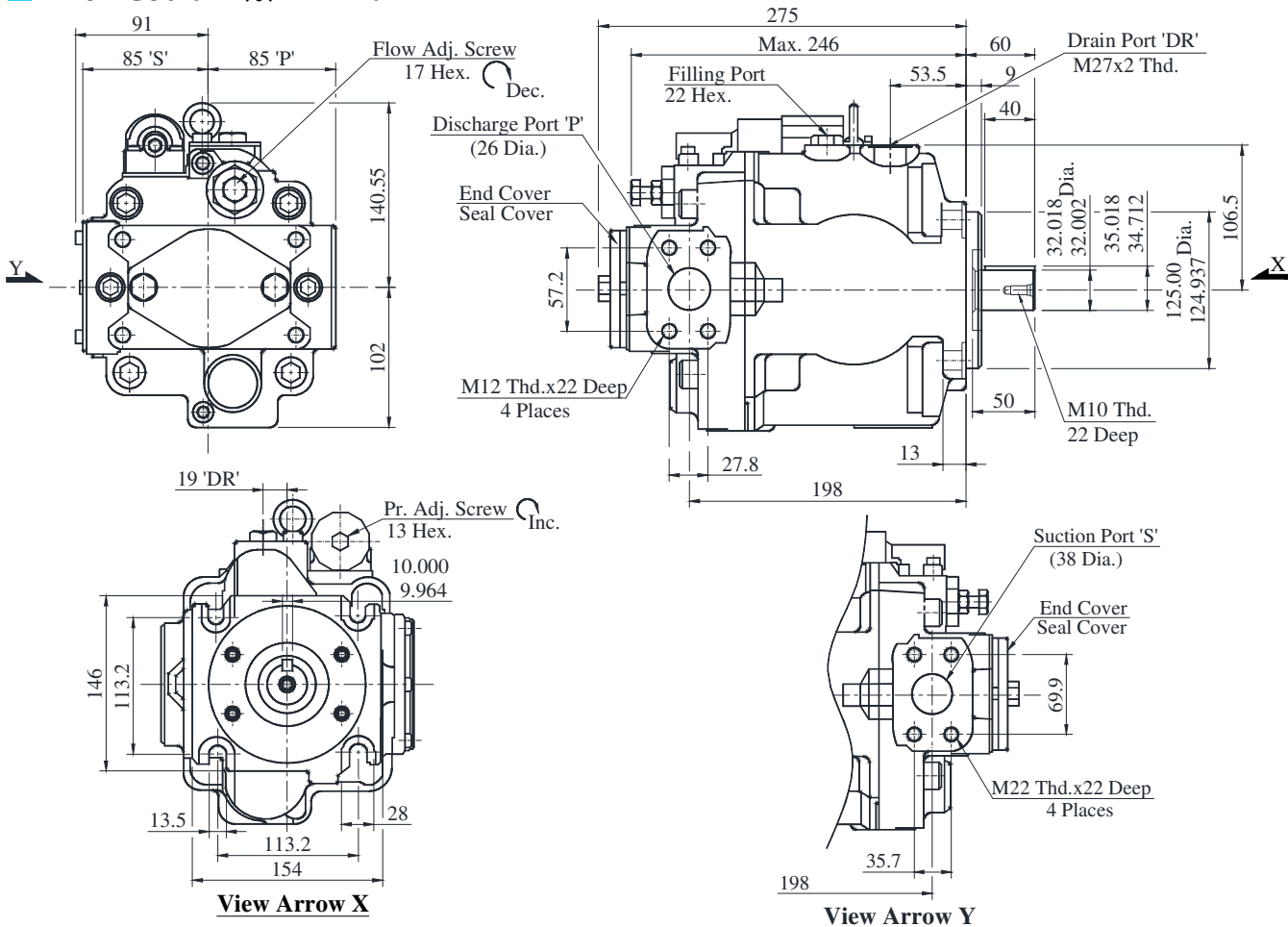


**A3HG37-01K※-E1D-10**

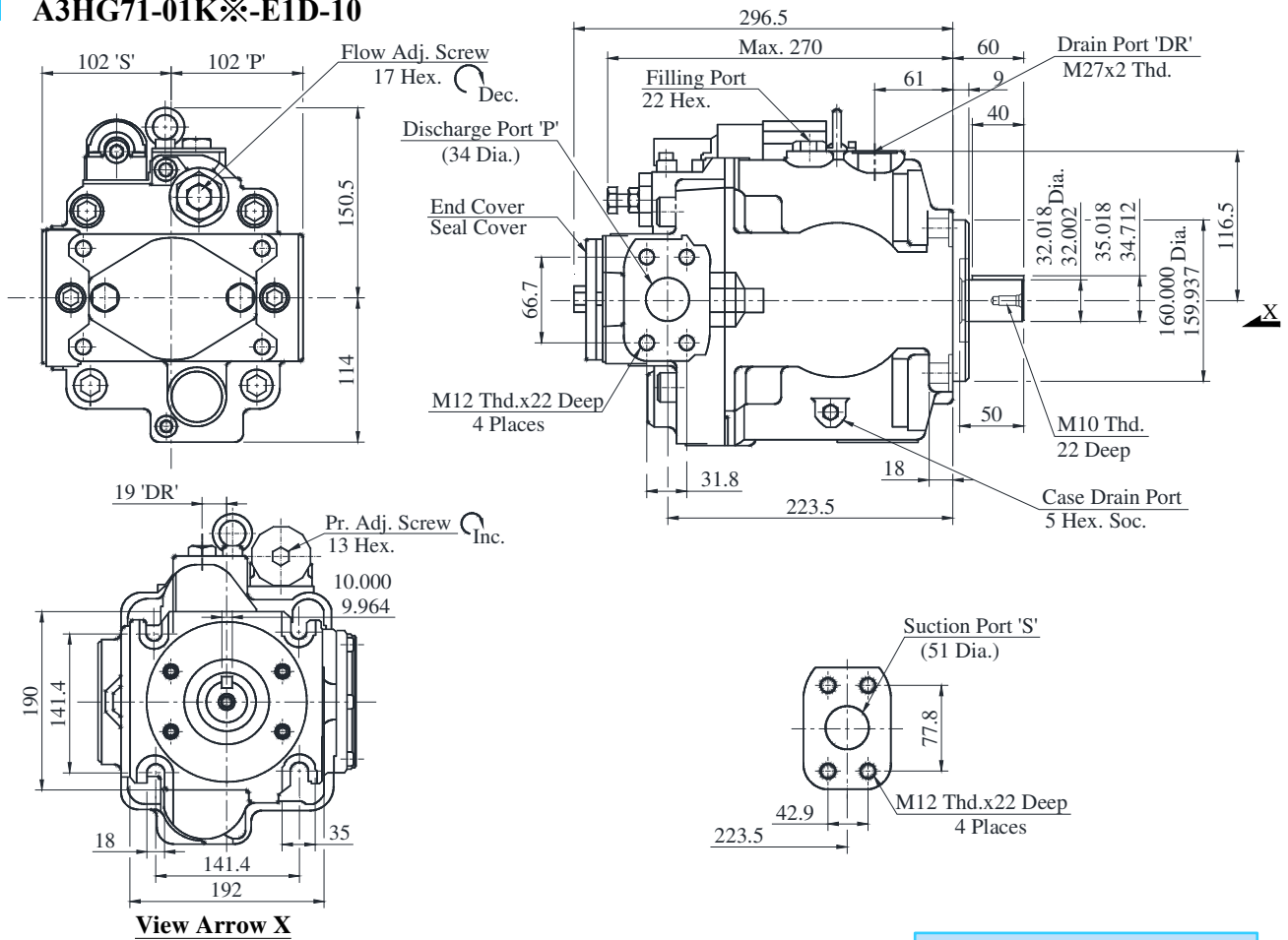


**DIMENSIONS IN  
MILLIMETRES**

**A3HG56-01K※-E1D-10**

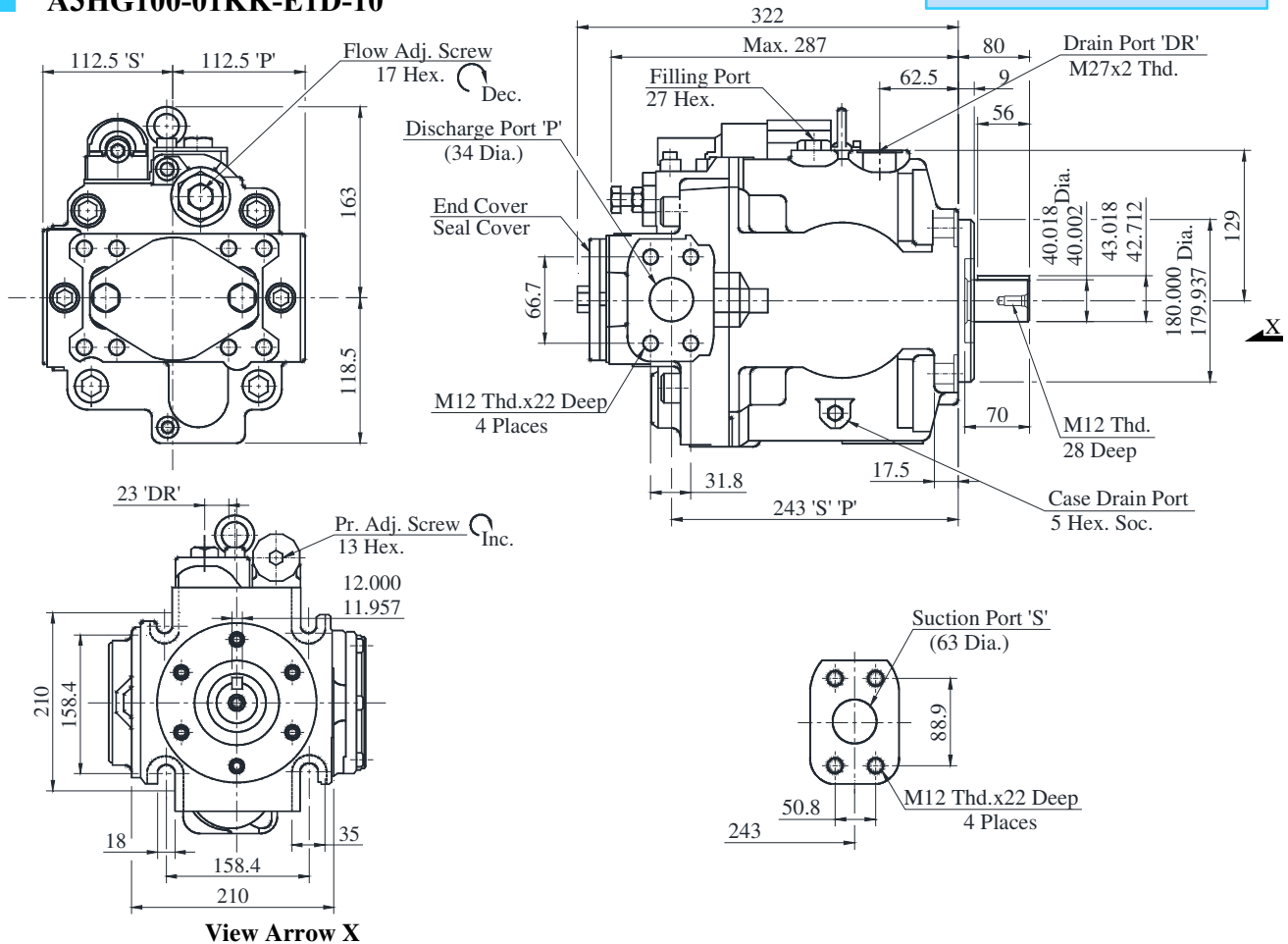


**A3HG71-01K※-E1D-10**



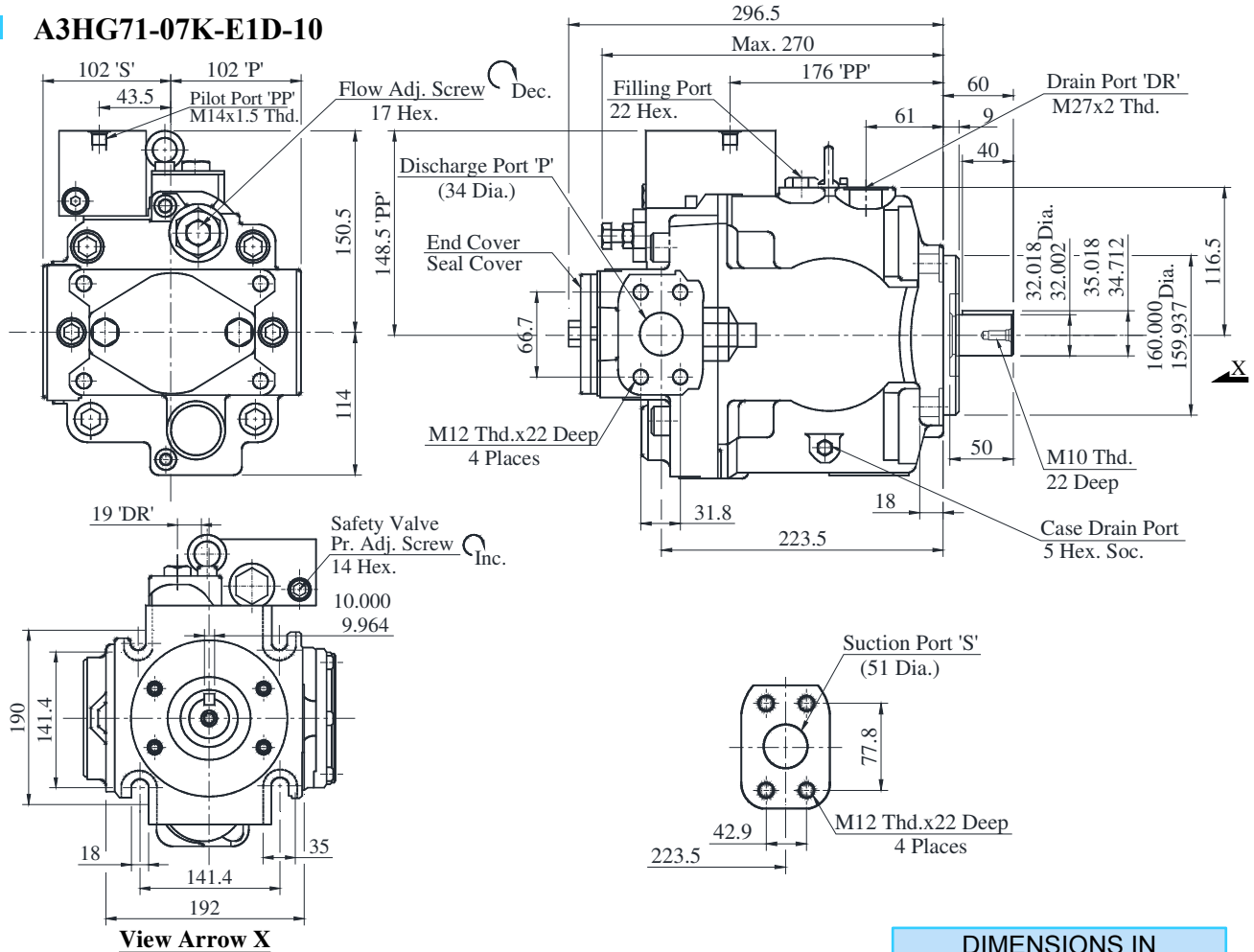
**DIMENSIONS IN  
MILLIMETRES**

**A3HG100-01KK-E1D-10**



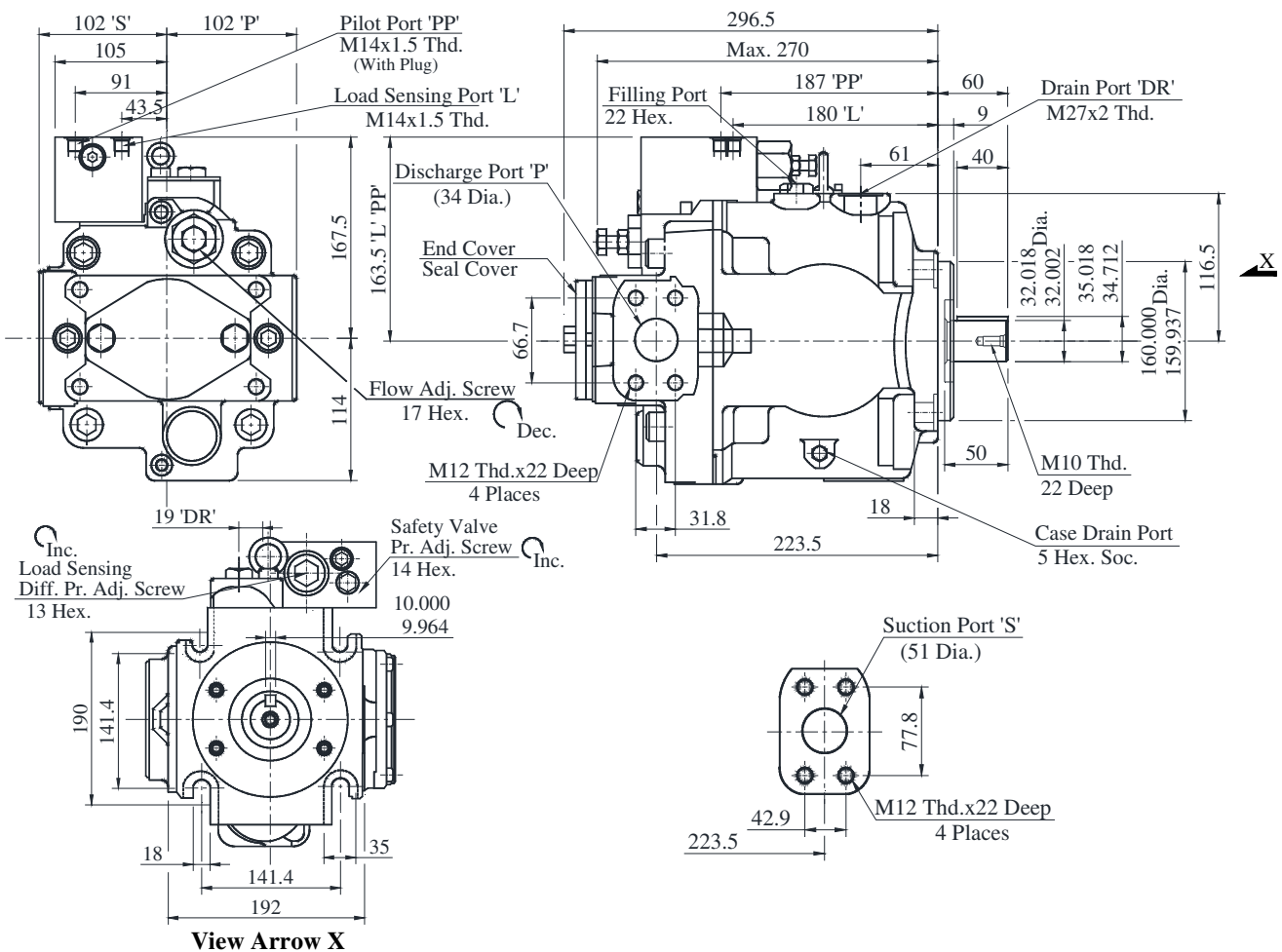


**A3HG71-07K-E1D-10**



**DIMENSIONS IN  
MILLIMETRES**

**A3HG71-14K-E1D-10**



**"A3HG" Series Variable Displacement Piston Pumps**

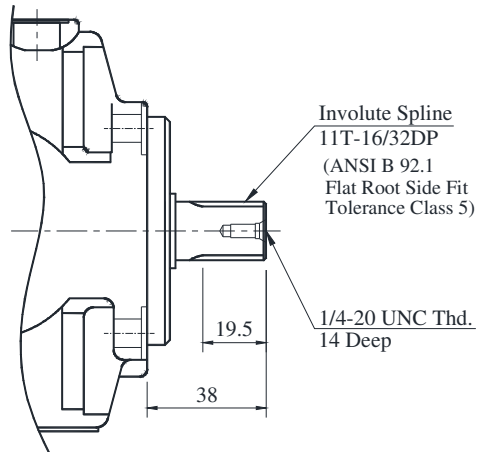


**Detailed View of Splined Shaft End**

**Model Number: A3HG※-※SP-※※-10**

**DIMENSIONS IN  
MILLIMETRES**

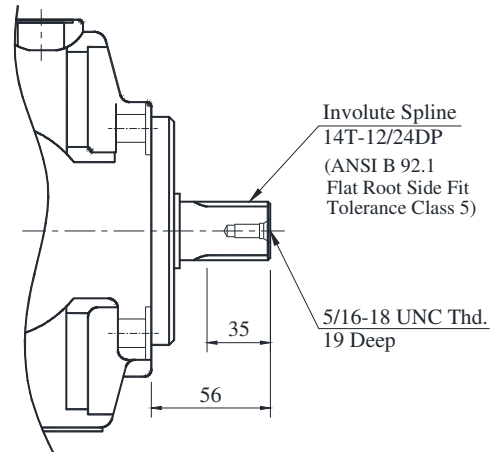
**A3HG16-FR※※SP-10**



**A3HG37-FR※※SP-10**

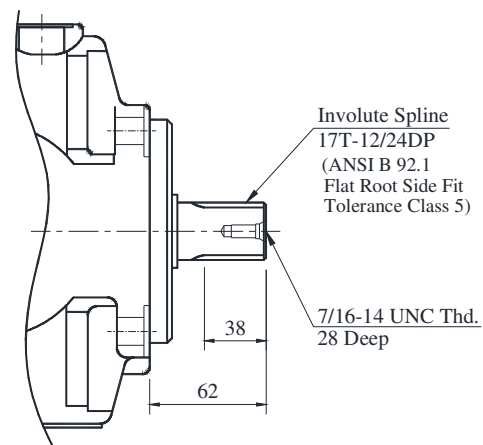
**A3HG56-FR※※SP-10**

**A3HG71-FR※※SP-10**

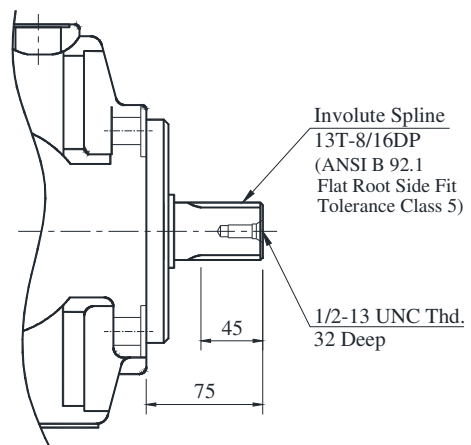


**A3HG100-FR※※SP-10**

**A3HG145-FR※※SP-10**



**A3HG180-FR※※SP-10**

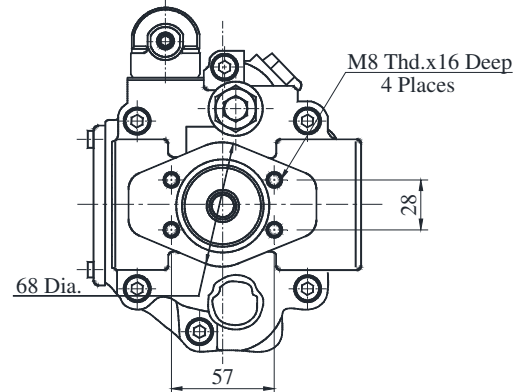
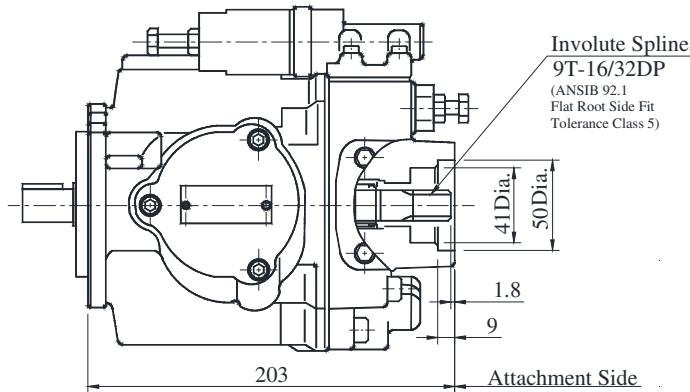




**■ Non-Drive Side Pump Connection**

● **A3HG16-FR\*\*\*-\*\*-10**

**DIMENSIONS IN  
MILLIMETRES**

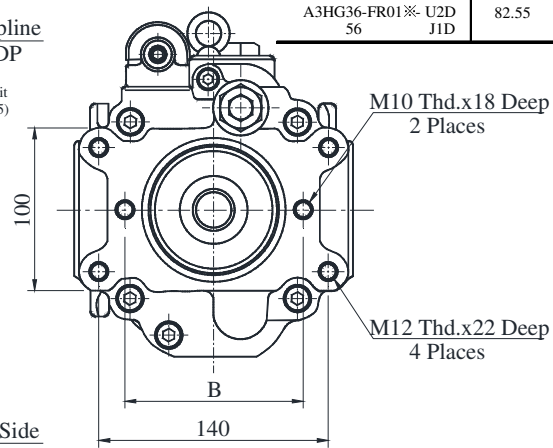
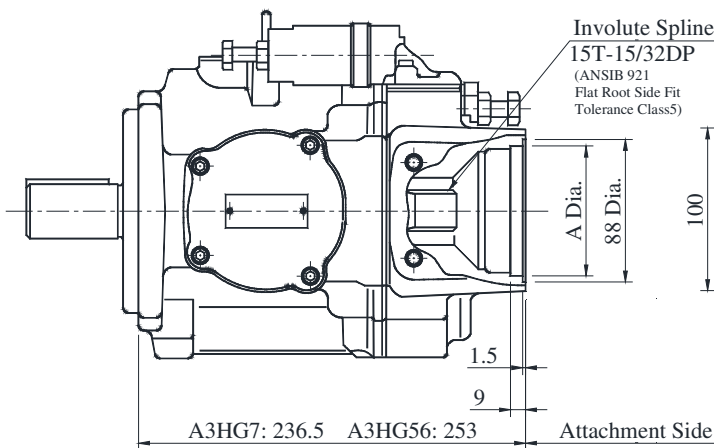


- ★1 Remove the end cover and gasket from the drive side pump and attach the non-drive side pump. Carefully handle the removed gasket, since it is required to attach the non-drive side pump.
- ★2 An adapter coupling (supplied separately) is necessary for non-drive side pump connection. Consult YUKEN for details.

● **A3HG37-FR\*\*\*-\*\*-10**

● **A3HG56-FR\*\*\*-\*\*-10**

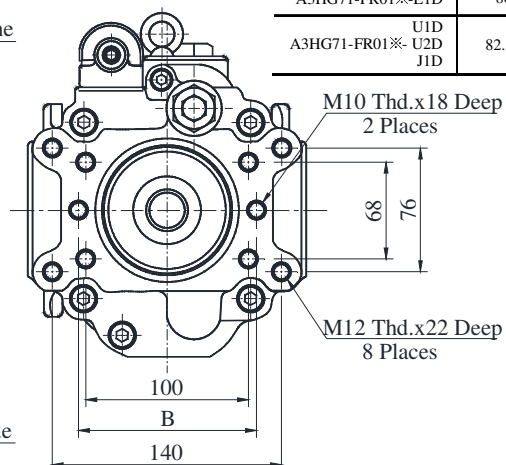
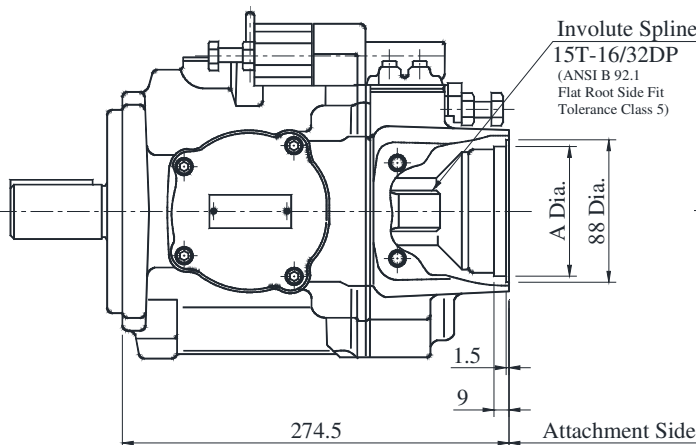
Model Numbers	A	B
A3HG36-FR01**-E1D 56	80	109
U1D A3HG36-FR01**-U2D 56 J1D	82.55	106



- ★1 Remove the end cover and gasket from the drive side pump and attach the non-drive side pump. Carefully handle the O-Ring on the seal cover, since it is required to attach the non drive side pump.
- ★2 A Pump with the port flange type EI 9ISO80, 2-Bolt) or U1/U2/J1 (SAE Code A. 2-Bolt) can be directly mounted on the non-drive side.
- ★3 For other port flange types, an adapter coupling (supplied separately) is necessary for non-drive side pump connection. Consult YUKEN for details.

● **A3HG71-FR\*\*\*-\*\*-10**

Model Numbers	A	B
A3HG71-FR01**-E1D	80	109
U1D A3HG71-FR01**-U2D J1D	82.55	106

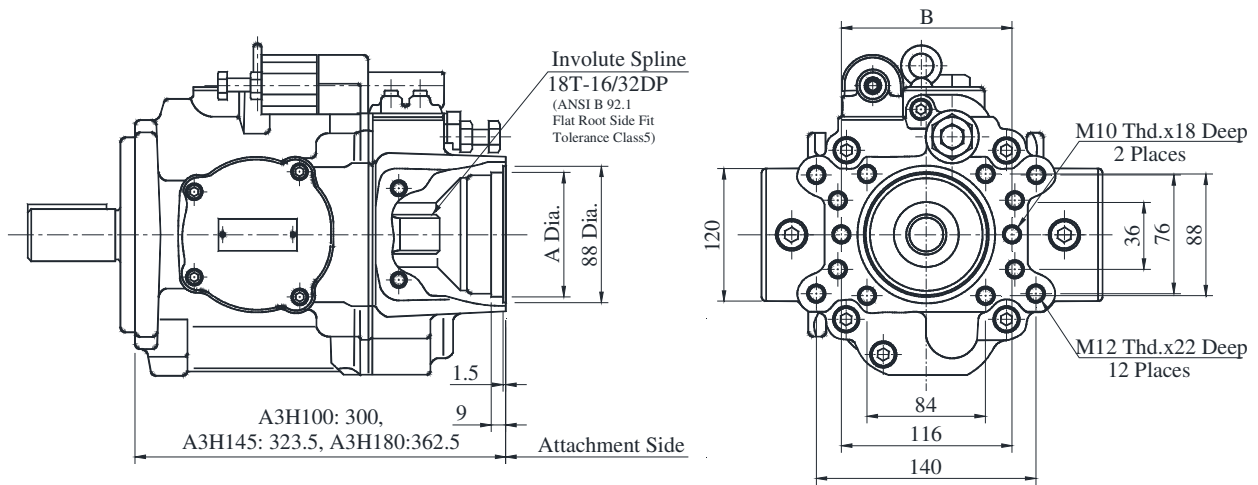


- ★1 Remove the end cover and gasket from the drive side pump and attach the non-drive side pump. Carefully handle the O-Ring on the seal cover, since it is required to attach the non drive side pump.
- ★2 A Pump with the port flange type EI 9ISO80, 2-Bolt) or U1/U2/J1 (SAE Code A. 2-Bolt) can be directly mounted on the non-drive side.
- ★3 For other port flange types, an adapter coupling (supplied separately) is necessary for non-drive side pump connection. Consult YUKEN for details.

- **A3HG100-FR\*\*\*-\*\*-10**
- **A3HG145-FR\*\*\*-\*\*-10**
- **A3HG180-FR\*\*\*-\*\*-10**

**DIMENSIONS IN  
MILLIMETRES**

Model Numbers	A	B
A3HG145-FR01**-E1D	80	109
U1D A3HG145-FR01**-U2D J1D	82.55	106



- ★1 Remove the end cover and gasket from the drive side pump and attach the non-drive side pump. Carefully handle the O-Ring on the seal cover, since it is required to attach the non drive side pump.
- ★2 A Pump with the port flange type EI 9ISO80, 2-Bolt) or U1/U2/J1 (SAE Code A, 2-Bolt) can be directly mounted on the non-drive side.
- ★3 For other port flange types, an adapter coupling (supplied separately) is necessary for non-drive side pump connection. Consult YUKEN for details.