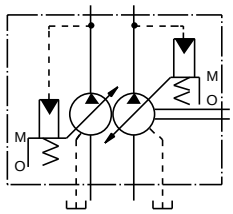
YUKEN

"A" Series Piston Pumps
Variable Displacement-Double Pumps
Pressure Compensator Type

Specifications

PISTON PUMPS

Graphic Symbol



Specifications

Model Numbers		Geometric Displacement cm^3/rev (cu.in./rev)	Min. Adj. Flow cm^3/rev (cu.in./rev)	Operating Pressure MPa (PSI)		Shaft Speed Range r/min		Approx. Mass kg (lbs.)	
				Rated ★2	Intermittent ★1	Max.	Min.	Flange Mtg.	Foot Mtg.
A1616-∗R01∗01∗∗K-32∗	Outboard Pump	15.8(.964)	4(.244)	16(2320)	21(3050)	1800	600	35.5 (98.3)	37.7 (83.1)
	Inboard Pump	15.8(.964)	4(.244)	16(2320)	21(3050)				
A1622-∗R01∗01∗∗K-32∗	Outboard Pump	15.8(.964)	4(.244)	16(2320)	21(3050)	1800	600	35.5 (98.3)	37.7 (83.1)
	Inboard Pump	22.2(1.355)	6(.366)	16(2320)	16(2320)				
A2222-∗R01∗01∗∗K-32∗	Outboard Pump	22.2(1.355)	6(.366)	16(2320)	16(2320)	1800	600	35.5 (98.3)	37.7 (83.1)
	Inboard Pump	22.2(1.355)	6(.366)	16(2320)	16(2320)				
A1637-∗R01∗01∗∗K-32∗	Outboard Pump	15.8(.964)	4(.244)	16(2320)	21(3050)	1800	600	50 (110)	54.3 (120)
	Inboard Pump	36.9(2.25)	10(.610)	16(2320)	21(3050)				
A2237-∗R01∗01∗∗K-32∗	Outboard Pump	22,2(1.355)	6(.366)	16(2320)	16(2320)	1800	600	50 (110)	54.3 (120)
	Inboard Pump	36.9(2.25)	10(.610)	16(2320)	21(3050)				
A1656-∗R01∗01∗∗K-32∗	Outboard Pump	15.8(.964)	4(.244)	16(2320)	21(3050)	1800	600	54.5 (120)	58.8 (130)
	Inboard Pump	56.2(3.43)	12(.732)	16(2320)	21(3050)				
A2256-∗R01∗01∗∗K-32∗	Outboard Pump	22.2(1.355)	6(.366)	16(2320)	16(2320)	1800	600	54.5 (120)	58.8 (130)
	Inboard Pump	56.2(3.43)	12(.732)	16(2320)	21(3050)				
A1670-∗R01∗01∗∗-60∗	Outboard Pump	15.8(.964)	4(.244)	16(2320)	21(3050)	1800	600	77.5 (171)	89.5 (197)
	Inboard Pump	70.0(4.27)	30(1.831)	25(3630)	28(4060)				
A2270-∗R01∗01∗∗-60∗	Outboard Pump	22.2(1.355)	6(.366)	16(2320)	16(2320)	1800	600	77.5 (171)	89.5 (197)
	Inboard Pump	70.0(4.27)	30(1.831)	25(3630)	28(4060)				
A3770-∗R01∗01∗∗-60∗ ★3	Outboard Pump	36.9(2.25)	10(.610)	16(2320)	21(3050)	1800	600	86.5 (191)	98.5 (217)
	Inboard Pump	70.0(4.27)	30(1.831)	25(3630)	28(4060)				
A1690-∗R01∗01∗∗-60∗	Outboard Pump	15.8(.964)	4(.244)	16(2320)	21(3050)	1800	600	88 (194)	108.5 (239)
	Inboard Pump	91.0(5.55)	56(3.42)	25(3630)	28(4060)				
A2290-∗R01∗01∗∗-60∗	Outboard Pump	22.2(1.355)	6(.366)	16(2320)	16(2320)	1800	600	88 (194)	108.5 (239)
	Inboard Pump	91.0(5.55)	56(3.42)	25(3630)	28(4060)				
A3790-∗R01∗01∗∗-60∗	Outboard Pump	36.9(2.25)	10(.610)	16(2320)	21(3050)	1800	600	100.5 (222)	121 (267)
	Inboard Pump	91.0(5.55)	56(3.42)	25(3630)	28(4060)				
A5690-∗R01∗01∗∗-60∗	Outboard Pump	56.2(3.43)	12(.732)	16(2320)	21(3050)	1800	600	107.5 (237)	128 (282)
	Inboard Pump	91.0(5.55)	56(3.42)	25(3630)	28(4060)				
A16145-∗R01∗01∗∗-60∗	Outboard Pump	15.8(.964)	4(.244)	16(2320)	21(3050)	1800	600	109 (240)	134 (295)
	Inboard Pump	145(8.85)	83(5.06)	25(3630)	28(4060)				
A22145-∗R01∗01∗∗-60∗	Outboard Pump	22.2(1.355)	6(.366)	16(2320)	16(2320)	1800	600	109 (240)	134 (295)
	Inboard Pump	145(8.85)	83(5.06)	25(3630)	28(4060)				
A37145-∗R01∗01∗∗-60∗	Outboard Pump	36.9(2.25)	10(.610)	16(2320)	21(3050)	1800	600	121.5 (268)	146.5 (323)
	Inboard Pump	145(8.85)	83(5.06)	25(3630)	28(4060)				
A56145-∗R01∗01∗∗-60∗	Outboard Pump	56.2(3.43)	12(.732)	16(2320)	21(3050)	1800	600	128.5 (283)	153.5 (338)
	Inboard Pump	145 (8.85)	83(5.06)	25 (3630)	28 (4060)				

★1. Whenever setting pressure, make sure the full cut-off pressure never exceeds the maximum intermittent pressure.

★2. When operating the pump exceeding the rated pressure, operating conditions are restricted.
Refer to the page 70 for the details.

★3. The maximum input power of these pumps must be restricted, because of the shaft strength.
Refer to the page 70 for the details.

Model Number Designation

A1637	-F	R	Outboard Pump		Inboard Pump (Driven End)		S	K	-32	*
			01	C	01	C				
Series Number	Mounting	Direction of Rotation	Control Type	Pres. Adj. Range MPa(PSI)	Control Type	Pres. Adj. Range MPa(PSI)	Port Position of Outboard Pump	Shaft Extension	Design Number	Design Std.
A1616 (15.8/15.8 cm^3/rev)	**F:** Flange Mtg.	(Viewed from Shaft End)	**01:** Pressure Compensator Type	**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320) **H:** 1.2-21 (170-3050)	**01:** Pressure Compensator Type	**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320) **H:** 1.2-21 (170-3050)	**S:** Side Port	**K:** Keyed Shaft	**32**	Refer to ★3
A1622 (15.8/22.2 cm^3/rev)						**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320)			**32**	
A2222 (22.2/22.2 cm^3/rev)				**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320)					**32**	
A1637 (15.8/36.9 cm^3/rev)				**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320) **H:** 1.2-21 (170-3050)					**32**	
A2237 (22.2/36.9 cm^3/rev)				**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320)		**B:** 1.2- 7 (170-1020) **C:** 1.5-16 (220-2320) **H:** 1.8-21 (260-3050)			**32**	
A1656 (15.8/56.2 cm^3/rev)				**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320) **H:** 1.2-21 (170-3050)					**32**	
A2256 (22.2/56.2 cm^3/rev)				**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320)					**32**	
A1670 (15.8/70.0 cm^3/rev)				**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320) **H:** 1.2-21 (170-3050)					**60**	
A2270 (22.2/70.0 cm^3/rev)		**R:** ★1 Clockwise (Normal)		**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320)					**60**	
A3770 (36.9/70.0 cm^3/rev)	**L:** Foot Mtg.			**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320) **H:** 1.2-21 (170-3050)			**None:** ★2 Axial Port		**60**	
A1690 (15.8/91.0 cm^3/rev)									**60**	
A2290 (22.2/91.0 cm^3/rev)				**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320)					**60**	
A3790 (36.9/91.0 cm^3/rev)						**B:** 1.2- 7 (220-1020) **C:** 1.5-16 (220-2320) **H:** 1.8-21 (260-3050) **K:** 2.0-28 (290-4060)		**None:** Keyed Shaft	**60**	
A5690 (56.2/91.0 cm^3/rev)				**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320) **H:** 1.2-21 (170-3050)					**60**	
A16145 (15.8/145 cm^3/rev)									**60**	
A22145 (22.2/145 cm^3/rev)				**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320)					**60**	
A37145 (36.9/145 cm^3/rev)									**60**	
A56145 (56.2/145 cm^3/rev)				**B:** 1.2- 7 (170-1020) **C:** 1.2-16 (170-2320) **H:** 1.2-21 (170-3050)					**60**	

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

★2. "Axial Port Type" is not available for N. American Design Standard of A3770, A3790, A37145, A5690 and A56145 types.

★3. Design Standards: None..... Japanese Standard "JIS"
80..... European Design Standard
90..... N. American Design Standard

Pipe Flange Kits

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

Pump Model Numners	Name of Port	Pipe Flange Kit Numbers						
		Threaded Connection			Socket Welding★		Butt Welding	
		Japanese Std. "JIS"	European Design Std.	N. Ameraican Design Std.	Japanese Std. "JIS" & European Design Std.	N. Ameraican Design Std.	Japanese Std. "JIS" & European Design Std.	N. Ameraican Design Std.
A1616 A1622 A2222	Suction & Discharge, Outboard Pump Suction & Discharge, Inboard Pump	F5-06-A-10	F5-06-A-1080	F5-06-A-1090	F5-06-B-10	F5-06-B-1090	F5-06-C-10	F5-06-C-1090
A1637 A2237	Suction & Discharge, Outboard Pump	F5-06-A-10	F5-06-A-1080	F5-06-A-1090	F5-06-B-10	F5-06-B-1090	F5-06-C-10	F5-06-C-1090
	Suction & Discharge, Inboard Pump	F5-10-A-10	F5-10-A-1080	F5-10-A-1090	F5-10-B-10	F5-10-B-1090	F5-10-C-10	F5-10-C-1090
A1656 A2256	Suction & Discharge, Outboard Pump	F5-06-A-10	F5-06-A-1080	F5-06-A-1090	F5-06-B-10	F5-06-B-1090	F5-06-C-10	F5-06-C-1090
	Suction & Discharge, Inboard Pump	F5-10-A-10	F5-10-A-1080	F5-10-A-1090	F5-10-B-10	F5-10-B-1090	F5-10-C-10	F5-10-C-1090
A1670 A2270	Suction & Discharge, Outboard Pump	F5-06-A-10	F5-06-A-1080	F5-06-A-1090	F5-06-B-10	F5-06-B-1090	F5-06-C-10	F5-06-C-1090
	Suction, Inboard Pump	F5-12-A-10	F5-12-A-1080	F5-12-A-1090	F5-12-B-10	F5-12-B-1090	F5-12-C-10	F5-12-C-1090
	Discharge, Inboard Pump	F5-08-A-10	F5-08-A-1080	F5-08-A-1090	F5-08-B-10	F5-08-B-1090	F5-08-C-10	F5-08-C-1090
A3770	Suction & Discharge, Outboard Pump	F5-10-A-10	F5-10-A-1080	F5-10-A-1090	F5-10-B-10	F5-10-B-1090	F5-10-C-10	F5-10-C-1090
	Suction, Inboard Pump	F5-12-A-10	F5-12-A-1080	F5-12-A-1090	F5-12-B-10	F5-12-B-1090	F5-12-C-10	F5-12-C-1090
	Discharge, Inboard Pump	F5-08-A-10	F5-08-A-1080	F5-08-A-1090	F5-08-B-10	F5-08-B-1090	F5-08-C-10	F5-08-C-1090
A1690 A2290	Suction & Discharge, Outboard Pump	F5-06-A-10	F5-06-A-1080	F5-06-A-1090	F5-06-B-10	F5-06-B-1090	F5-06-C-10	F5-06-C-1090
	Suction, Inboard Pump	F5-16-A-10	F5-16-A-1080	F5-16-A-1090	F5-16-B-10	F5-16-B-1090	F5-16-C-10	F5-16-C-1090
	Discharge, Inboard Pump	F5-10-A-10	F5-10-A-1080	F5-10-A-1090	F5-10-B-10	F5-10-B-1090	F5-10-C-10	F5-10-C-1090
A3790 A5690	Suction & Discharge, Outboard Pump	F5-10-A-10	F5-10-A-1080	F5-10-A-1090	F5-10-B-10	F5-10-B-1090	F5-10-C-10	F5-10-C-1090
	Suction, Inboard Pump	F5-16-A-10	F5-16-A-1080	F5-16-A-1090	F5-16-B-10	F5-16-B-1090	F5-16-C-10	F5-16-C-1090
	Discharge, Inboard Pump	F5-10-A-10	F5-10-A-1080	F5-10-A-1090	F5-10-B-10	F5-10-B-1090	F5-10-C-10	F5-10-C-1090
A16145 A22145	Suction & Discharge, Outboard Pump	F5-06-A-10	F5-06-A-1080	F5-06-A-1090	F5-06-B-10	F5-06-B-1090	F5-06-C-10	F5-06-C-1090
	Suction, Inboard Pump	F5-16-A-10	F5-16-A-1080	F5-16-A-1090	F5-16-B-10	F5-16-B-1090	F5-16-C-10	F5-16-C-1090
	Discharge, Inboard Pump	F5-10-A-10	F5-10-A-1080	F5-10-A-1090	F5-10-B-10	F5-10-B-1090	F5-10-C-10	F5-10-C-1090
A37145 A56145	Suction & Discharge, Outboard Pump	F5-10-A-10	F5-10-A-1080	F5-10-A-1090	F5-10-B-10	F5-10-B-1090	F5-10-C-10	F5-10-C-1090
	Suction, Inboard Pump	F5-16-A-10	F5-16-A-1080	F5-16-A-1090	F5-16-B-10	F5-16-B-1090	F5-16-C-10	F5-16-C-1090
	Discharge, Inboard Pump	F5-10-A-10	F5-10-A-1080	F5-10-A-1090	F5-10-B-10	F5-10-B-1090	F5-10-C-10	F5-10-C-1090

★ 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.

• Details of the pipe flange kits are given in the Catalogue No. Pub. EC-3001.

Instructions

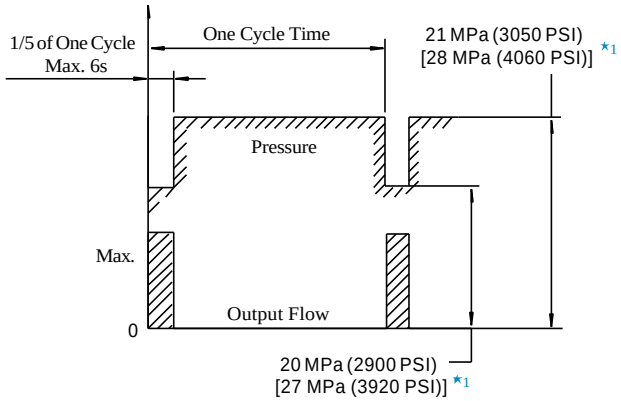
When using at a higher pressure than the rated pressure

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 Yuken sales representative for further information.

Allowable Input Power

With the pumps listed in the table below, there is a limit to the sum of the input power of the inboard and outboard pumps because of shaft strength.

If both pumps are used for boosting at once, referring to the calculation formulas below, check that the displacements and discharge pressures of both pumps are within the allowable ranges.



★1. Applicable only for the inboard pump of "A∗70", "A∗90" and "A∗145".

$$Q1 \cdot P1 + Q2 \cdot P2 \leqq L_M$$

Q1 : Displacement (cm^3/rev) } Outboard Pump
P1 : Discharge Pressure (MPa) }
Q2 : Displacement (cm^3/rev) } Inboard Pump
P2 : Discharge Pressure (PSI) }
L_M : See the table below

$$Q1 \cdot P1 + Q2 \quad P2 \leqq L_P$$

Q1 : Displacement (cu.in./rev) } Outboard Pump
P1 : Discharge Pressure (PSI) }
Q2 : Displacement (cu.in./rev) } Inboard Pump
P2 : Discharge Pressure (PSI) }
L_P : See the table below

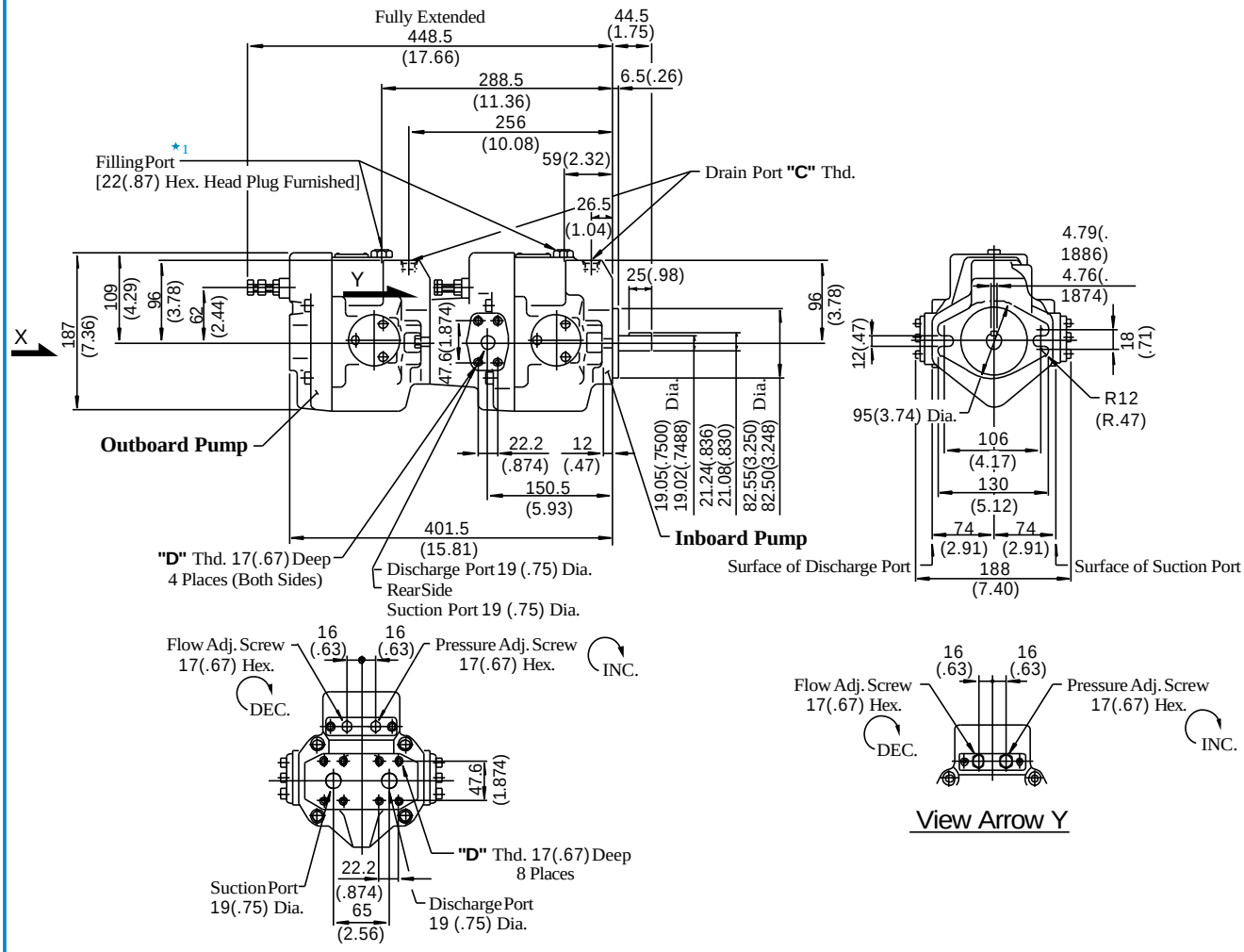
Model Numbers	L_M	L_P
A1616/A1622/A2222	523	4627
A1637/A2237	900	7963
A3770	2408	21305
A37145/A56145	4739	41930

Performance Characteristics

Refer to relevant the page for performance characteristics of single pumps excluding noise level characteristics.

Model Numbers	Outboard Pump		Inboard Pump	
	Performance Characteristics	Reference Page	Performance Characteristics	Reference Page
A1616-∗R01∗01∗∗K-32	Same as Single Pump "A16"	10	Same as Single Pump "A16"	10
∗	Same as Single Pump "A16"	10	Same as Single Pump "A22"	11
A1622-∗R01∗01∗∗K-32	Same as Single Pump "A22"	11		
∗	Same as Single Pump "A16"	10	Same as Single Pump "A37"	12
A2222-∗R01∗01∗∗K-32	Same as Single Pump "A22"	11		
∗	Same as Single Pump "A16"	10	Same as Single Pump "A56"	13
A1637-∗R01∗01∗∗K-32	Same as Single Pump "A22"	11		
∗	Same as Single Pump "A16"	10	Same as Single Pump "A70"	14
A2237-∗R01∗01∗∗K-32	Same as Single Pump "A22"	11		
∗	Same as Single Pump "A37"	12		
A1656-∗R01∗01∗∗K-32	Same as Single Pump "A16"	10	Same as Single Pump "A90"	15
∗	Same as Single Pump "A22"	11		
A2256-∗R01∗01∗∗K-32	Same as Single Pump "A37"	12		
∗	Same as Single Pump "A56"	13		
A1670-∗R01∗01∗∗-60∗	Same as Single Pump "A16"	10	Same as Single Pump "A145"	16
A2270-∗R01∗01∗∗-60∗	Same as Single Pump "A22"	11		
A3770-∗R01∗01∗∗-60∗	Same as Single Pump "A37"	12		
A1690-∗R01∗01∗∗-60∗	Same as Single Pump "A56"	13		

Flange Mtg. : A1616-FR01∗01∗K-32/3280/3290
A1622-FR01∗01∗K-32/3280/3290
A2222-FR01∗01∗K-32/3280/3290



View Arrow X

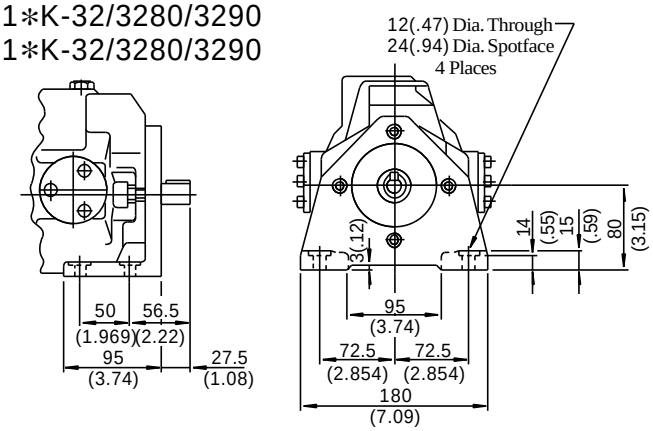
View Arrow Y

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

Model Numbers	"C" Thd.	"D" Thd.
A1616/A1622/A2222-FR01∗01∗K-32	Rc3/8	M10
A1616/A1622/A2222-FR01∗01∗K-	3/8 BSP. F	
3280	3/8 NPT	3/8-16 UNC

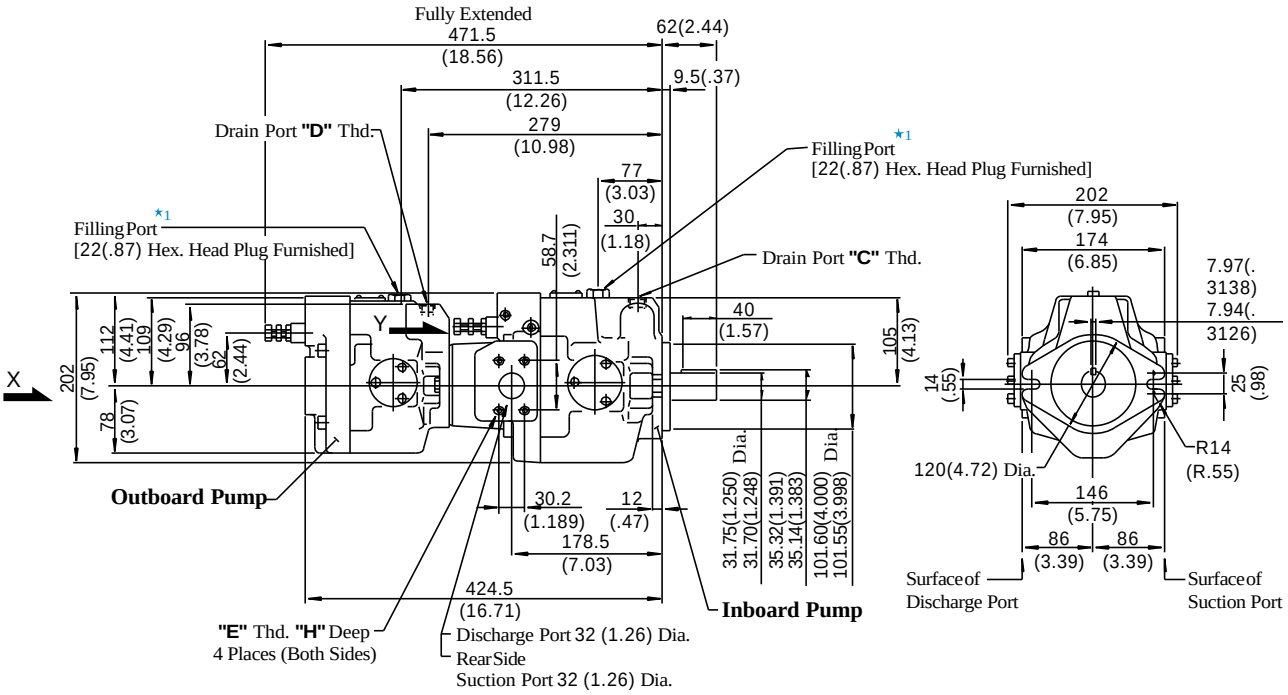
DIMENSIONS IN MILLIMETRES (INCHES)

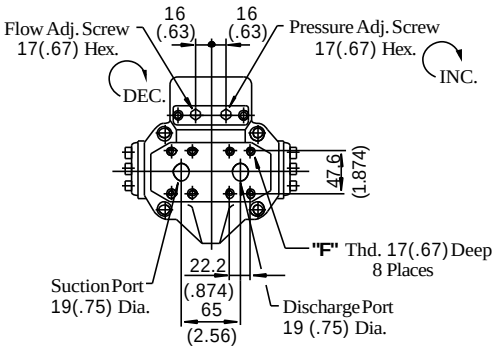
Foot Mtg. : A1616-LR01∗01∗K-32/3280/3290
A1622-LR01∗01∗K-32/3280/3290
A2222-LR01∗01∗K-32/3280/3290



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

Flange Mtg. : A1637-FR01*01*K-32/3280/3290
A2237-FR01*01*K-32/3280/3290





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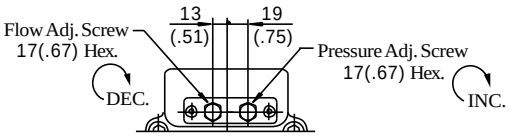


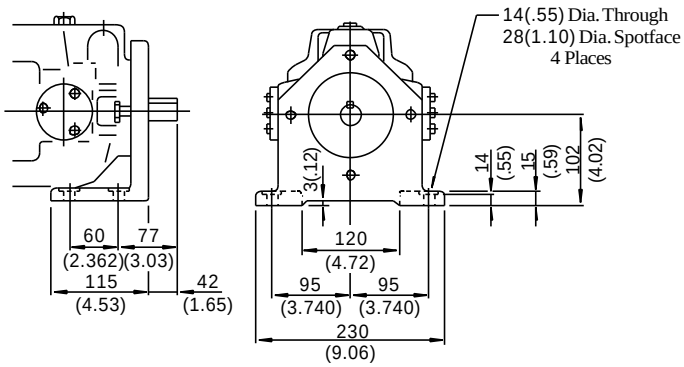
View Arrow Y

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

Model Numbers	"C" Thd.	"D" Thd.	"E" Thd.	"F" Thd.	"H" mm (IN.)
A1637/A2237-FR01*01*K-32	Rc1/2	Rc3/8	M10	M10	19 (.75)
A1637/A2237-FR01*01*K-	1/2BSP.F	3/8BSP.F			
3280	1/2 NPT	3/8 NPT	7/16-14 UNC	3/8-16 UNC	20 (.79)

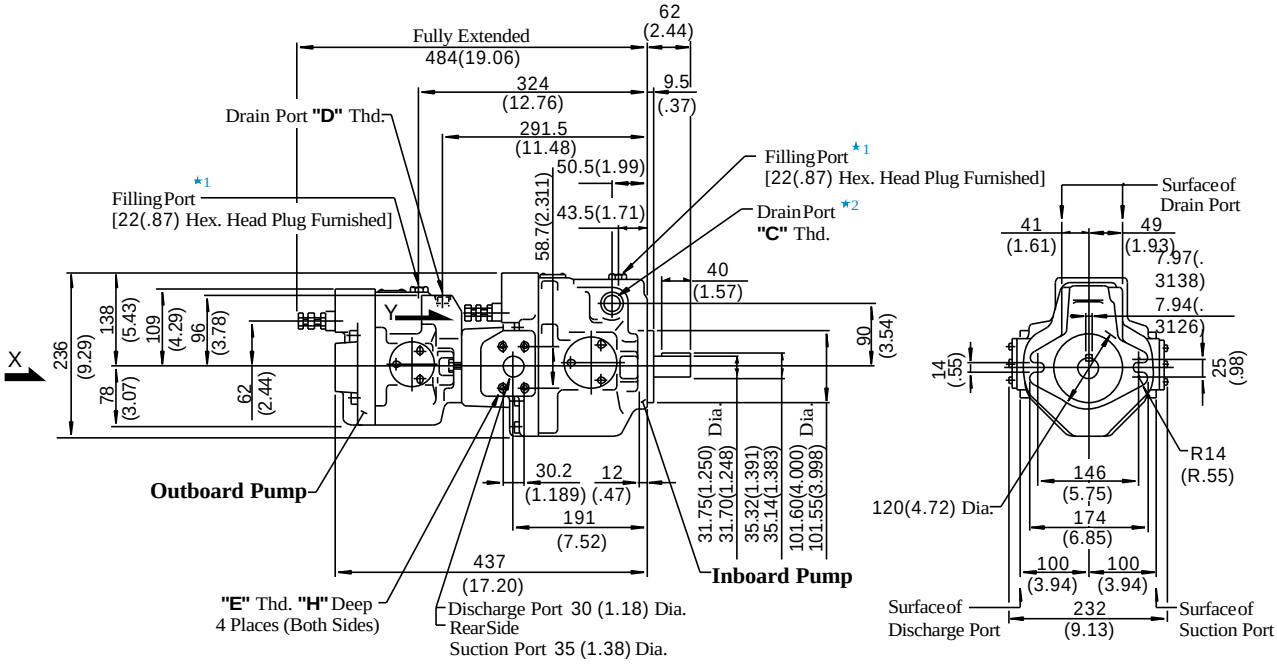
DIMENSIONS IN MILLIMETRES (INCHES)

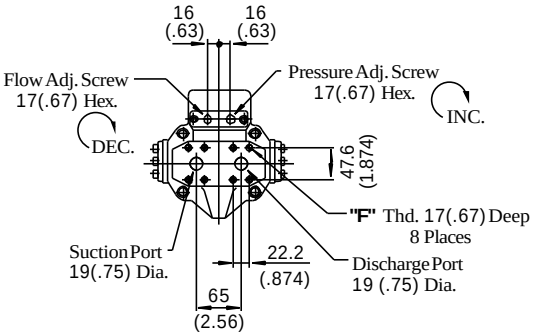
Foot Mtg. : A1637-LR01*01*K-32/3280/3290
A2237-LR01*01*K-32/3280/3290



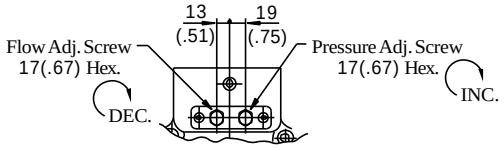
● For other dimensions, refer to "Flange Mtg.".

Flange Mtg. : A1656-FR01∗01∗K-32/3280/3290
A2256-FR01∗01∗K-32/3280/3290





View Arrow X



View Arrow Y

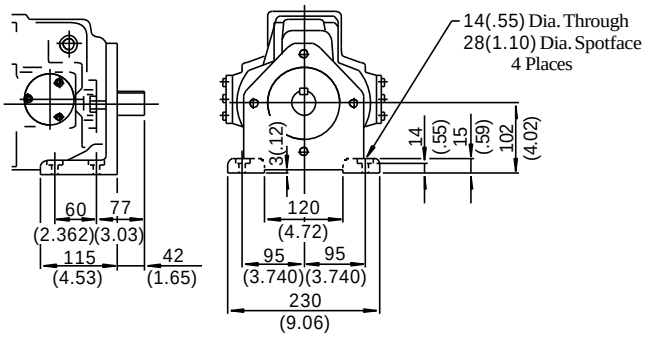
★ 1. Install the pump so that the "Filling Port" is at the top.

★ 2. Use either port of two drain ports of inboard pump at your option. Keep the remaining port plugged.
Note that on the European design standard (3280 Design), only the left side, as viewed from the shaft end, of the drain port is machined.

Model Numbers	"C" Thd.	"D" Thd.	"E" Thd.	"F" Thd.	"H" mm (IN.)
A1656/A2256-FR01∗01∗K-32	Rc3/4	Rc3/8	M10	M10	19 (.75)
A1656/A2256-FR01∗01∗K-	3/4BSP.F	3/8BSP.F			
3280	3/4 NPT	3/8 NPT	7/16-14 UNC	3/8-16 UNC	20 (.79)

DIMENSIONS IN MILLIMETRES (INCHES)

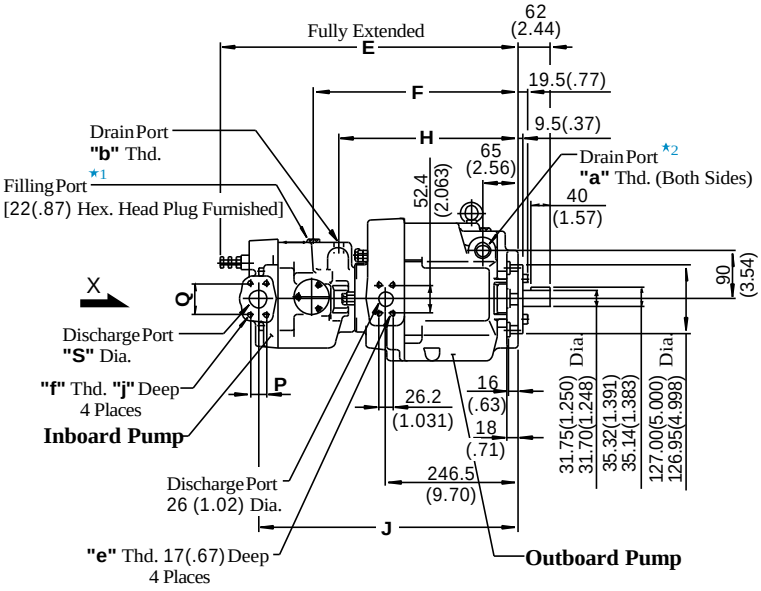
Foot Mtg. : A1656-LR01∗01∗K-32/3280/3290
A2256-LR01∗01∗K-32/3280/3290

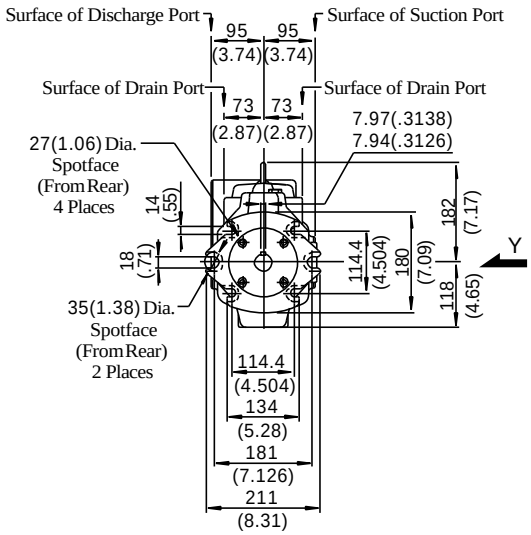


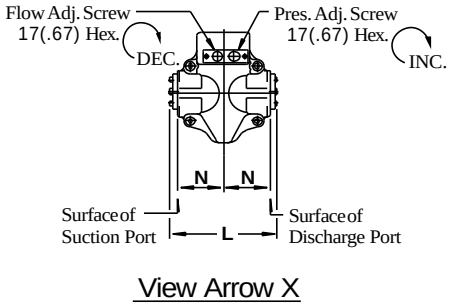
• For other dimensions, refer to "Flange Mtg.".

Flange Mtg. : A1670-FR01*01*S-60/6080/6090
A2270-FR01*01*S-60/6080/6090
A3770-FR01*01*S-60/6080/6090

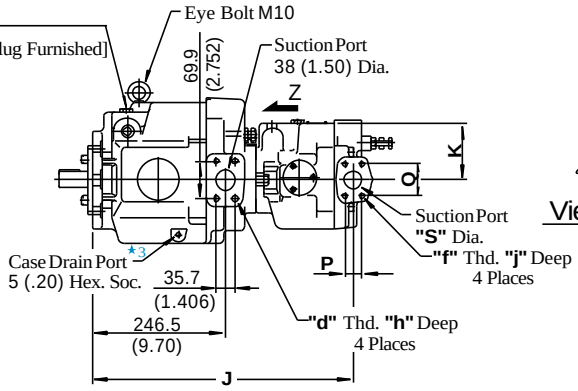
DIMENSIONS IN MILLIMETRES (INCHES)



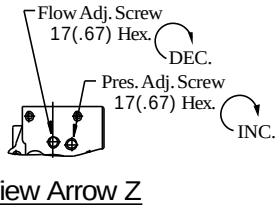




View Arrow X



View Arrow Y



View Arrow Z

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

★2. Use either port of two drain ports of inboard pump at your option. Keep the remaining port plugged. Note that on the European design standard (6080 Design), only the left side, as viewed from the shaft end, of the drain port of inboard pump is machined.

★3. Case drain port is available for use when draining hydraulic fluid from pump casing.

Model Numbers	Dimensions mm (Inches)									
	E	F	H	J	K	L	N	P	Q	S
A1670-*R01*01*S-60 *	524.5 (20.65)	364.5 (14.35)	332 (13.07)	456 (17.95)	96 (3.78)	188 (7.40)	74 (2.91)	22.2 (.874)	47.6 (1.874)	19 (.75)
A3770-*R01*01*S-60 *	552.5 (20.65)	382.5 (15.06)	335.5 (13.21)	484 (19.06)	105 (4.13)	202 (7.95)	86 (3.39)	30.2 (1.189)	58.7 (1.311)	32 (1.26)

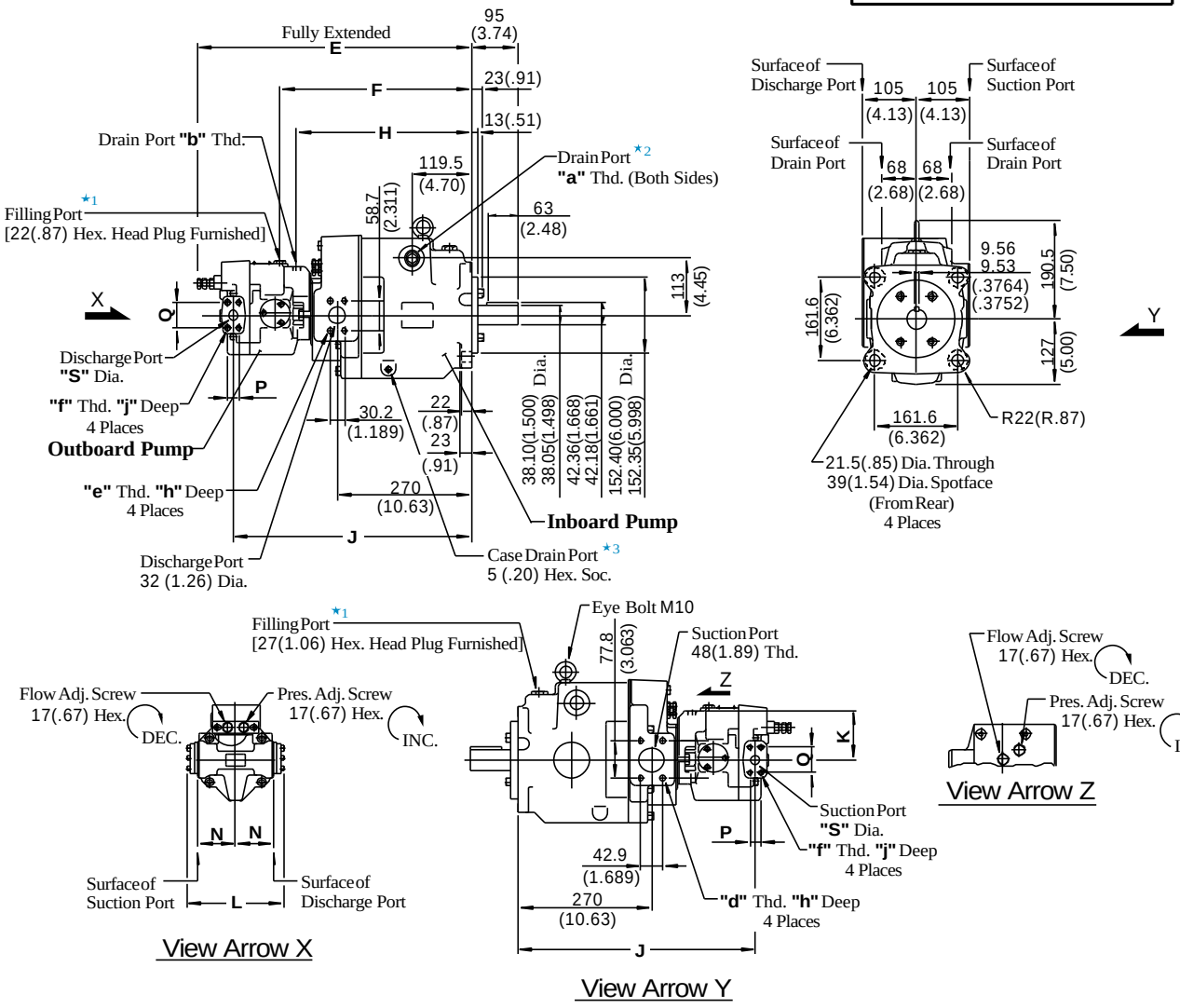
Model Numbers	Thread Size					mm (Inches)	
	a	b	d	e	f	h	j
A1670/A2270-*R01*01*S-60	Rc3/4	Rc3/8	M12	M10	M10	19 (.75)	17 (.67)
A1670/A2270-*R01*01*S-	3/4BSP.F	3/8BSP.F					
6080	3/4NPT	3/8NPT	1/2-13 UNC	3/8-16 UNC	3/8-16 UNC	21 (.83)	
A1670/A2270-*R01*01*S-	Rc3/4	Rc1/2	M12	M10	M10	19 (.75)	19 (.75)
6090	3/4BSP.F	1/2BSP.F					
A3770-*R01*01*S-60	3/4 NPT	1/2 NPT	1/2-13 UNC	3/8-16 UNC	7/16-14 UNC	21 (.83)	20 (.79)

● Foot Mounting Type

The mounting bracket is common that of single pump A70. Refer to page 21 for the dimensions of mounting bracket.

Flange Mtg. : A1690-FR01∗01∗S-60/6080/6090
A2290-FR01∗01∗S-60/6080/6090
A3790-FR01∗01∗S-60/6080/6090

DIMENSIONS IN MILLIMETRES (INCHES)



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

★2. Use either port of two drain ports of inboard pump at your option. Keep the remaining port plugged. Note that on the European design standard (6080 Design), only the left side, as viewed from the shaft end, of the drain port of inboard pump is machined.

★3. Case drain port is available for use when draining hydraulic fluid from pump casing.

Model Numbers	Dimensions mm (Inches)									
	E	F	H	J	K	L	N	P	Q	S
A1690-∗R01∗01∗S-60 ∗	543 (21.38)	383 (15.08)	350.5 (13.80)	474.5 (18.68)	96 (3.78)	188 (7.40)	74 (2.91)	22.2 (.874)	47.6 (1.874)	19 (.75)
A3790-∗R01∗01∗S-60 ∗	571 (22.48)	401 (15.79)	354 (13.94)	502.5 (19.78)	105 (4.13)	202 (7.95)	86 (3.39)	30.2 (1.189)	58.7 (1.311)	32 (1.26)

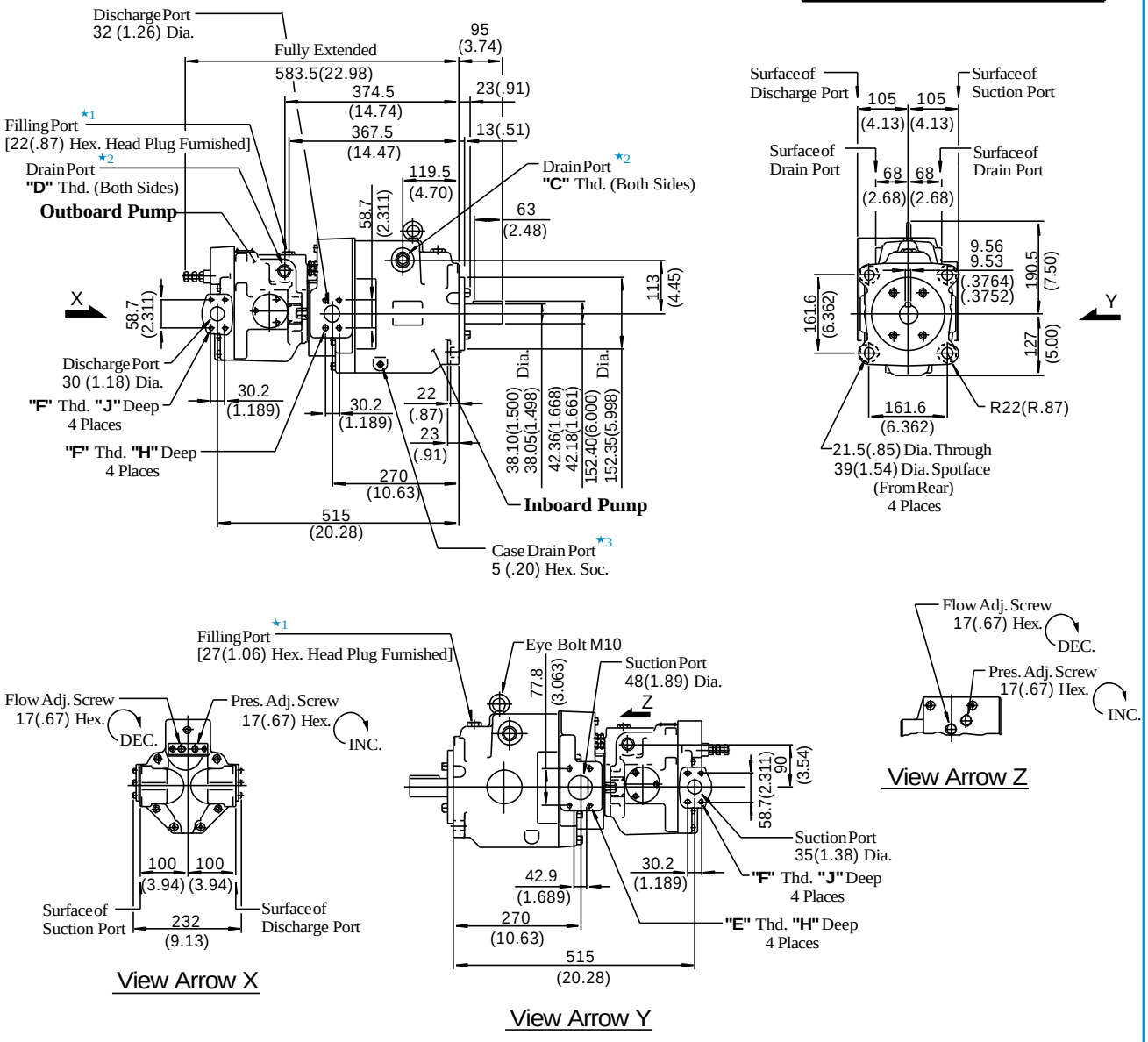
Model Numbers	Thread Size					mm (Inches)	
	a	b	d	e	f	h	j
A1690/A2290-∗R01∗01∗S-60	Rc3/4	Rc3/8	M12	M10	M10	19 (.75)	17 (.67)
A1690/A2290-∗R01∗01∗S-	3/4BSP.F	3/8BSP.F					
6080	3/4NPT	3/8NPT	1/2-13 UNC	7/16-14 UNC	3/8-16 UNC	21 (.83)	
A1690/A2290-∗R01∗01∗S-	Rc3/4	Rc1/2	M12	M10	M10	19 (.75)	19 (.75)
6090	3/4BSP.F	1/2BSP.F					
A3790-∗R01∗01∗S-60	3/4 NPT	1/2 NPT	1/2-13 UNC	7/16-14 UNC	7/16-14 UNC	21 (.83)	20 (.79)

● Foot Mounting Type

The mounting bracket is common that of single pump A90. Refer to page 22 for the dimensions of mounting bracket.

Flange Mtg. : A5690-FR01*01*S-60/6080/6090

DIMENSIONS IN MILLIMETRES (INCHES)



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

★2. Use either port of two drain ports of inboard and outboard pump at your option. Keep the remaining ports plugged. Note that on the European design standard (6080 Design), only the left side, as viewed from the shaft end, of the drain port of inboard and outboard pump is machined.

★3. Case drain port is available for use when draining hydraulic fluid from pump casing.

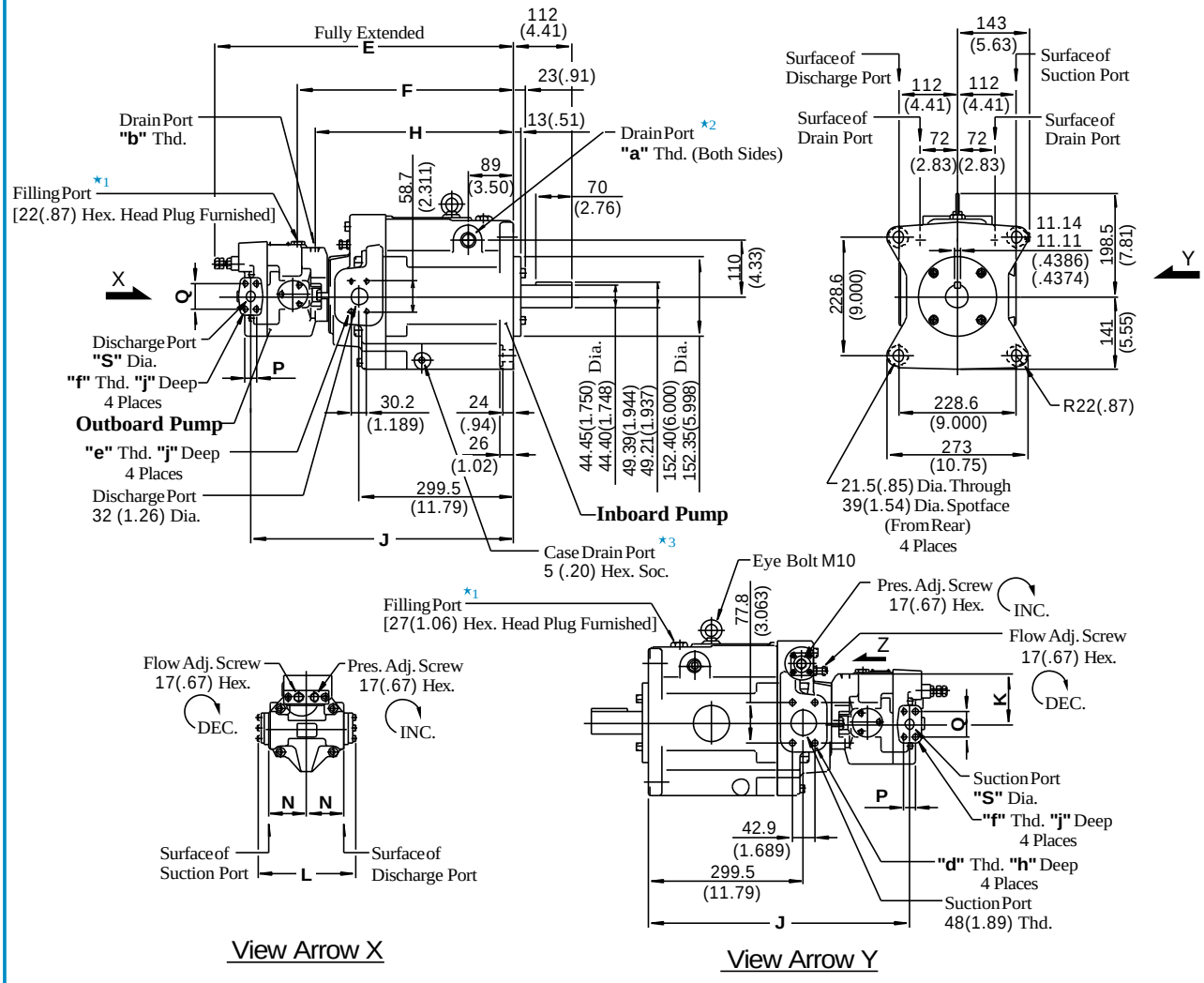
Model Numbers	Thread Size				mm (Inches)	
	C	D	E	F	H	J
A5690-*R01*01*S-60	Rc3/4	Rc1/2	M12	M10	19 (.75)	19 (.75)
A5690-*R01*01*S-	3/4BSP.F	1/2BSP.F				
6080	3/4NPT	1/2NPT	1/2-13 UNC	7/16-14 UNC	21 (.83)	20 (.79)

● Foot Mounting Type

The mounting bracket is common that of single pump A90. Refer to page 22 for the dimensions of mounting bracket.

Flange Mtg. : A16145-FR01*01*S-60/6080/6090
A22145-FR01*01*S-60/6080/6090
A37145-FR01*01*S-60/6080/6090

DIMENSIONS IN MILLIMETRES (INCHES)



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

★2. Use either port of two drain ports of inboard pump at your option. Keep the remaining port plugged. Note that on the European design standard (6080 Design), only the left side, as viewed from the shaft end, of the drain port of inboard pump is machined.

★3. Case drain port is available for use when draining hydraulic fluid from pump casing.

Model Numbers	Dimensions mm (Inches)									
	E	F	H	J	K	L	N	P	Q	S
A16145-*R01*01*S-60* A22145-*R01*01*S-60*	576.5 (22.70)	416.5 (16.40)	384 (15.12)	508 (20.00)	96 (3.78)	188 (7.40)	74 (2.91)	22.2 (.874)	47.6 (1.874)	19 (.75)
A37145-*R01*01*S-60*	604.5 (23.80)	434.5 (17.11)	387.5 (15.26)	536 (21.10)	105 (4.13)	202 (7.95)	86 (3.39)	30.2 (1.189)	58.7 (1.311)	32 (1.26)

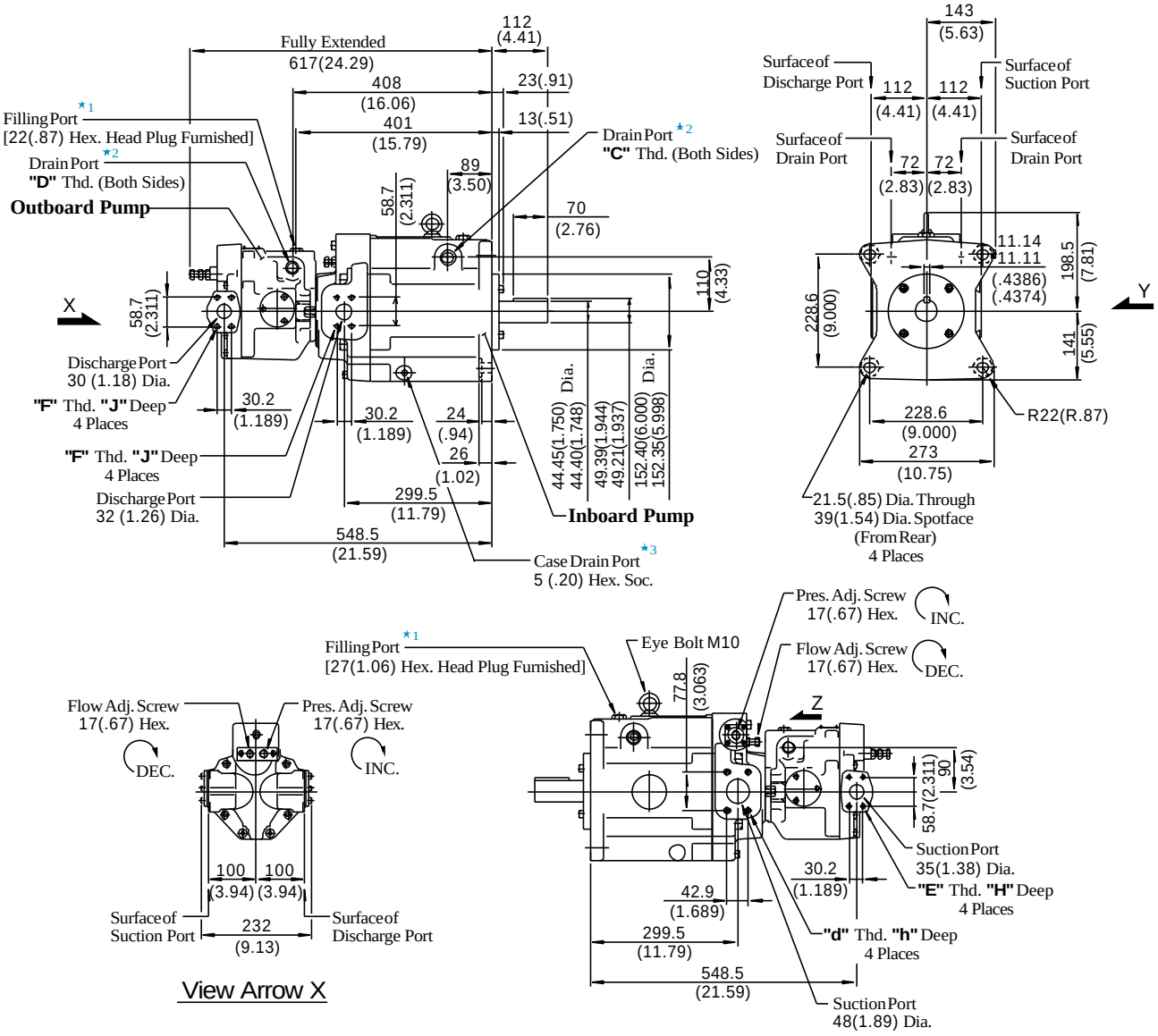
Model Numbers	Thread Size					mm (Inches)		
	a	b	d	e	f	h	j	n
A16145/A22145-*R01*01*S-60	Rc3/4	Rc3/8	M12	M10	M10	19 (.75)	19 (.75)	17 (.67)
A16145/A22145-*R01*01*S-	3/4BSP.F	3/8BSP.F						
6080	3/4NPT	3/8NPT	1/2-13 UNC	7/16-14 UNC	3/8-16 UNC	21 (.83)	20 (.79)	
A16145/A22145-*R01*01*S-	Rc3/4	Rc1/2	M12	M10	M10	19 (.75)	19 (.75)	19 (.75)
6090	3/4BSP.F	1/2BSP.F						
A37145-*R01*01*S-60	3/4 NPT	1/2 NPT	1/2-13 UNC	7/16-14 UNC	7/16-14 UNC	21 (.83)	20 (.79)	20 (.79)

● Foot Mounting Type

The mounting bracket is common that of single pump A145. Refer to page 23 for the dimensions of mounting bracket.

Flange Mtg. : A56145-FR01*01*S-60/6080/6090

DIMENSIONS IN MILLIMETRES (INCHES)



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

★2. Use either port of two drain ports of inboard and outboard pump at your option. Keep the remaining ports plugged. Note that on the European design standard (6080 Design), only the left side, as viewed from the shaft end, of the drain port of inboard and outboard pump is machined.

★3. Case drain port is available for use when draining hydraulic fluid from pump casing.

Model Numbers	Thread Size				mm (Inches)	
	C	D	E	F	H	J
A56145-*R01*01*S-60	Rc3/4	Rc1/2	M12	M10	19 (.75)	19 (.75)
A56145-*R01*01*S-	3/4BSP.F	1/2BSP.F				
6080	3/4NPT	1/2NPT	1/2-13 UNC	7/16-14 UNC	21 (.83)	20 (.79)

● Foot Mounting Type

The mounting bracket is common that of single pump A145. Refer to page 23 for the dimensions of mounting bracket.