F

PUMPS

SOLTECH

F

【INSTALLATION】

ROTARY DIRECTION.
Clockwise rotation viewed from shaft end is standard.

FLUIDS PERMISSIBLE.
When working pressure lower than 70kg/cm2,hydraulic oil with a viscosity ranging from 30-50 cSt. When working pressure higher than 71kg/cm2,hydraulic oil with a viscosity ranging from 50-70 cSt (ISO VG68) at 40˚C is recommended. (ISO VG32) at 40˚C is recommended.

DRAIN PORT PIPING.
Drain connection must be piped directly to tank and below the oil level with a back pressure not exceed 0.3kg/cm2.

OIL TEMPERATURE RANGE.
Oil temperature range should be between 15˚C-60˚C for continuous operation and should be higher than 7˚C at starting.

ALIGNMENT AND INSTALLATION OF PUMP.
The shaft alignment for pump and electric motor shall be limited to 0.05mm TIR. and 1 degree angular error.

INLET PORT PRESSURE.
Inlet port pressure should be -0.3kg/cm2 to +0.3kg/cm2.

FLOW ADJUSTMENT.
The flow will be reduced when the flow adjusting screw is turned clockwise and increased when anti-clockwise.

PRESSURE ADJUSTMENT.
The pressure will be increased when the pressure adjusting screw is turned clockwise and reduced when anti-clockwise.

P-Q CHARACTERISTICS (EX-WORK SET)
Flow setting: The max. flow as catalogue shown. Pressure setting: The min. operating pressure range.

SLIDE SCREW.
The slide screw has been properly set at factory. (See P.09 schematic crosssection-13 for details.) Don't adjust it.

CAUTIONS FOR STARTING.
Start up the pump under No-Load condition and repeat to start and stop the motor several times to extract the air from inside of the pump and piping. Then keep a 10 minutes continuous running for a better de-airing.

PEAK-PRESSURE.
The peak pressure is 140kg/cm2 for code *2 & *3, and 210kg/cm2 for A4 & A5.

【VP5F,VP5FD】

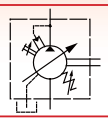
※SPECIFICATION

MODEL	MAX. PRES. MPa(PSI)	MAX. FLOW ℓ/min(GPM)	WEIGHT (Kg)	
			VP5F	VP5FD
VP5F(D)-A	14 (2030)	30(6.6)	9.5	27
VP5F(D)-B		40(8.8)		

★VP5F(D)-**B (40 L/min) maximum pressure 70bar.**

※GRAPHIC SYMBOL

VP5F



※MODEL NUMBER DESIGNATION(SINGLE PUMP)

VP5F	A	5	50	S
FRAME SIZE FLANGE MOUNTING	OUTLET FLOW (AT 3.5 Bar, 1800 r/min) A: 30 **(ℓ/min)** ★B: 40 **(ℓ/min)**	OPR. PRES. RANGE ★2: 15 bar - 35 bar 3: 20 bar - 70 bar 4: 50 bar - 105 bar 5: 70 bar - 140 bar	DESIGN	SHAFTS CODE OMIT: WOODRUFF KEY S: SPLINED SHAFTS

"★" FACTORY DEFAULT SETTING

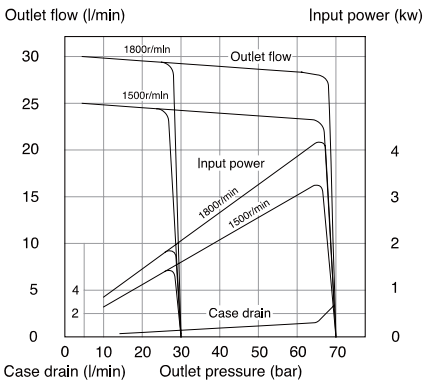
※MODEL NUMBER DESIGNATION(DOUBLE PUMP)

VP5FD	A	5	A	5	50
	SHAFT END PUMP		COVER END PUMP		
FRAME SIZE FLANGE MOUNTING	OUTLET FLOW (AT 3.5 Bar, 1800 R/MIN) A: 30 **(ℓ/min)** ★B: 40 **(ℓ/min)**	OPR. PRES. RANGE ★2: 15 bar - 35 bar 3: 20 bar - 70 bar 4: 50 bar - 105 bar 5: 70 bar - 140 bar	OUTLET FLOW (AT 3.5 Bar, 1800 R/MIN) A: 30 **(ℓ/min)** ★B: 40 **(ℓ/min)**	OPR. PRES. RANGE ★2: 15 bar - 35 bar 3: 20 bar - 70 bar 4: 50 bar - 105 bar 5: 70 bar - 140 bar	DESIGN

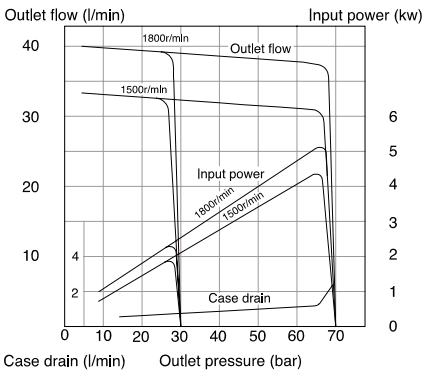
"★" FACTORY DEFAULT SETTING

※PERFORMANCE CURVE

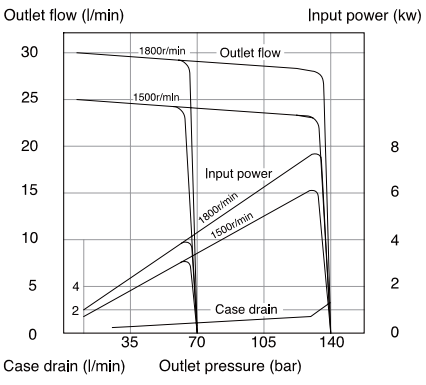
VP5F-A3-50



VP5F-A5-50



VP5F-B3-50



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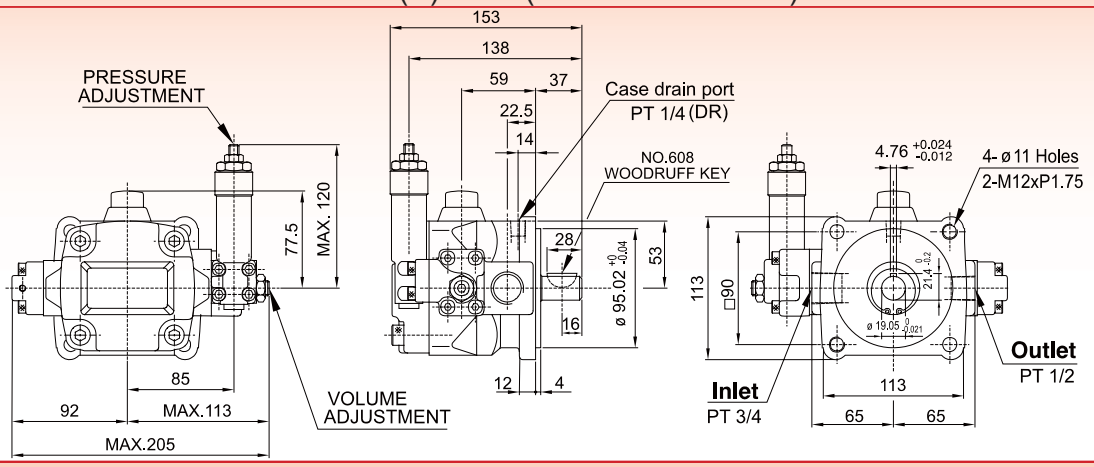
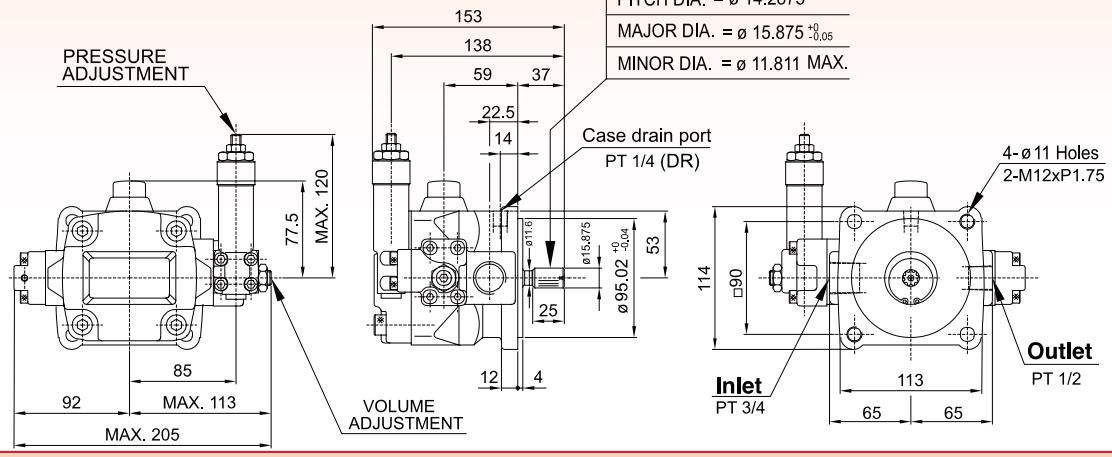
VP5F-A(B)※-50 (WOODRUFF KEY)



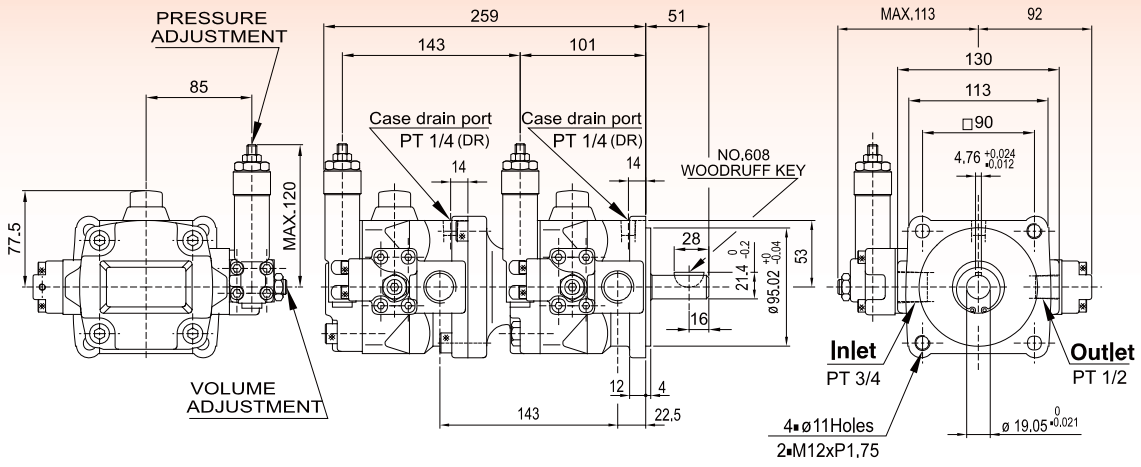
VP5F-A(B)※-50S (SPLINED SHAFTS)

ANSI B92.1

MODULE = D.P.16 / 32
PRESSURE ANGLE = 30°
NO.OF TEETH = 9
PITCH DIA. = ø 14.2875
MAJOR DIA. = ø 15.875 +0 -0.05
MINOR DIA. = ø 11.811 MAX.



VP5FD-A(B)※-A(B)※-50 (WOODRUFF KEY)



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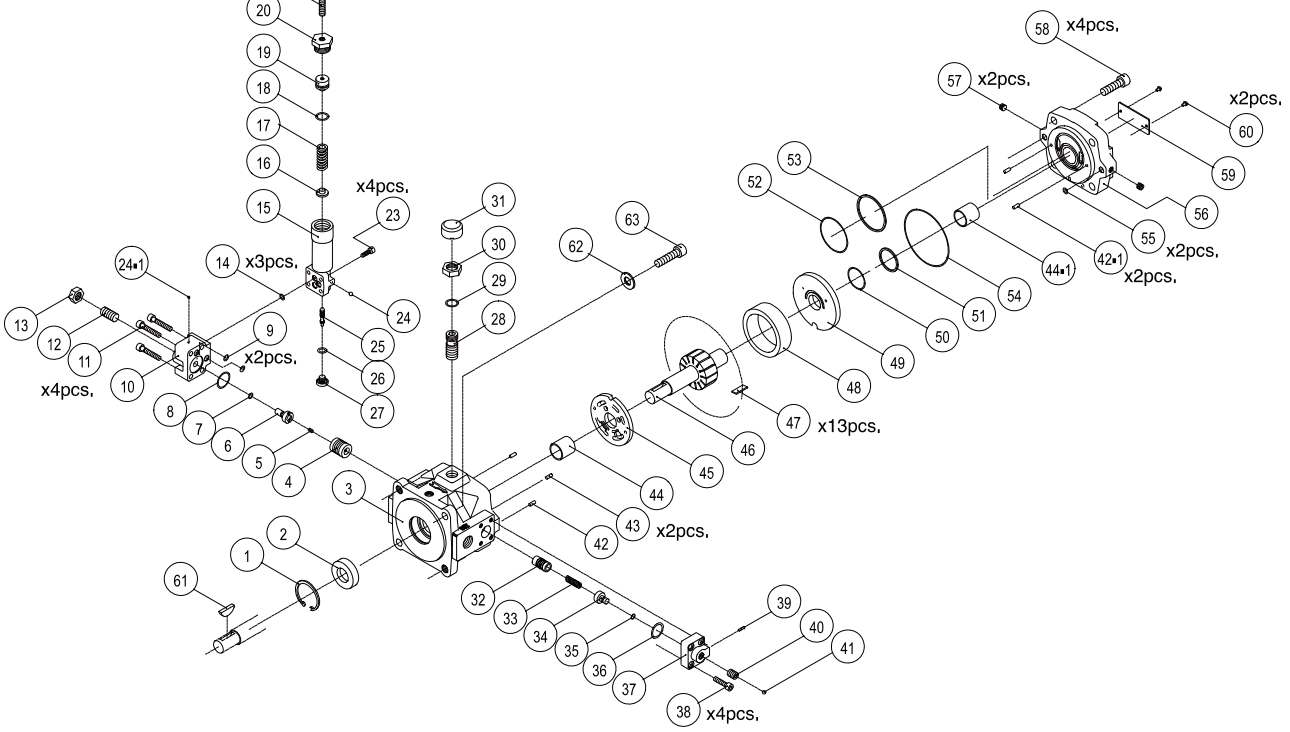
【ASSEMBLY & PARTS LIST】

VP5F-A(B)※-50
WOODRUFF KEY



PARTS LIST											
NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1	23	Socket Set Screw	M5×P0.8×25L	4	44	Engine Bush	DIADO(JAPAN)DD2225	1
2	Shaft Seal	TCV 224211	1	24	Plug	ø3.2	1	44-1	Engine Bush	DIADO(JAPAN)DD2225	1
3	Pump Body		1	25	Spool		1	45	Port Plate		1
4	Piston		1	26	O-Ring	1A-P10	1	46	Rotorshaft		1
5	Socket Set Screw	M4×P0.7×5L	1	27	Plug		1	47	Vanes		13
6	Piston		1	28	Slide Screw		1	48	Cam Ring		1
7	O-Ring	1A-P5	1	29	O-Ring	1A-P14	1	49	Thrust Plate		1
8	O-Ring	1A-P20	1	30	Hexagon Nut	M16×P1.0	1	50	O-Ring	AS568-026	1
9	O-Ring	1A-P6	2	31	Cap		1	51	Endless Back-up Ri		1
10	Cover		1	32	Piston		1	52	O-Ring	AS568-034	1
11	Skt. HD. Cap Scr.	M6×P1.0×35L	4	33	Spring		1	53	Endless Back-up Ri		1
12	Socket Set Screw	M12×P1.75×25L	1	34	Piston		1	54	O-Ring	1A-S85	1
13	Hexagon Nut	M12×P1.75	1	35	O-Ring	1A-P5	1	55	O-Ring	1A-P6	2
14	O-Ring	1A-P6	3	36	O-Ring	1A-P22	1	56	Cover		1
15	Body		1	37	Cover		1	57	Plug	1/16"	2
16	Hold		1	38	Skt. HD. cap Scr	M6×P1.0×25L	4	58	Skt. HD. Cap Scr	M10×P1.5×35L	4
17	Spring		1	39	Socket Set Screw	M5×P0.8×10L	1	59	Name Plate		1
18	O-Ring	1A-P14	1	40	Socket Set Screw	M10×P1.5×12L	1	60	Fixing Screw		2
19	Spring Retainer		1	41	Plug		1	61	Woodruff Key	NO.608	1
20	Screw		1	42	Spring Pin	ø4 10	1	62	Spring Washer	M10	4
21	Socket Set Screw	M8×P1.25×35L	1	42-1	Spring Pin	ø4 10	2	63	Skt. HD. Cap Scr.	M10×P1.5×30L	4
22	Hexagon Nut	M8×P1.25	1	43	Spring Pin	ø4 10	2	►62 63 are Accessories.			

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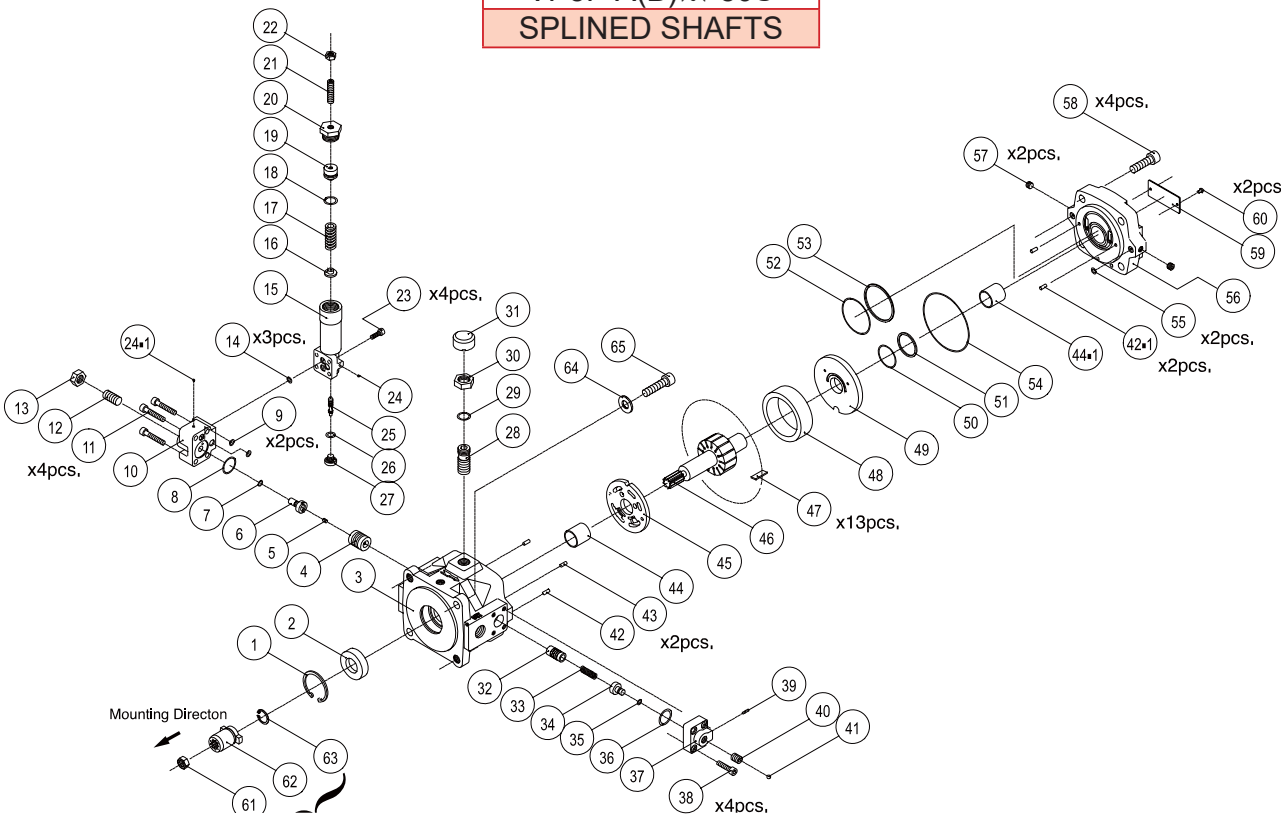
【ASSEMBLY & PARTS LIST】

VP5F-A(B)※-50S
SPLINED SHAFTS



PARTS LIST											
NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1	24	Plug	ø3.2	1	45	Port Plate		1
2	Shaft Seal	TCV 224211	1	25	Spool		1	46	Rotorshaft		1
3	Pump Body		1	26	O-Ring	1A-P10	1	47	Vanes		13
4	Piston		1	27	Plug		1	48	Cam Ring		1
5	Socket Set Screw	M4×P0.7×5L	1	28	Slide Screw		1	49	Thrust Plate		1
6	Piston		1	29	O-Ring	1A-P14	1	50	O-Ring	AS568-026	1
7	O-Ring	1A-P5	1	30	Hexagon Nut	M16×P1.0	1	51	Endless Back-up Ri		1
8	O-Ring	1A-P20	1	31	Cap		1	52	O-Ring	AS568-034	1
9	O-Ring	1A-P6	2	32	Piston		1	53	Endless Back-up Ri		1
10	Cover		1	33	Spring		1	54	O-Ring	1A-S85	1
11	Skt. HD. Cap Scr.	M6×P1.0×35L	4	34	Piston		1	55	O-Ring	1A-P6	2
12	Socket Set Screw	M12×P1.75×25L	1	35	O-Ring	1A-P5	1	56	Cover		1
13	Hexagon Nut	M12×P1.75	1	36	O-Ring	1A-P22	1	57	Plug	1/16"	2
14	O-Ring	1A-P6	3	37	Cover		1	58	Skt. HD. Cap Scr	M10×P1.5×35L	4
15	Body		1	38	Skt. HD. cap Scr	M6×P1.0×25L	4	59	Name Plate		1
16	Hold		1	39	Socket Set Screw	M5×P0.8×10L	1	60	Fixing Screw		2
17	Spring		1	40	Socket Set Screw	M10×P1.5×12L	1	61	Woodruff Key	NO.608	1
18	O-Ring	1A-P14	1	41	Plug		1	62	Coupling		1
19	Spring Retainer		1	42	Spring Pin	ø4 10	1	63	Retainer Ring	IRTW24	1
20	Screw		1	42-1	Spring Pin	ø4 10	2	64	Spring Washer	M10	4
21	Socket Set Screw	M8×P1.25×35L	1	43	Spring Pin	ø4 10	2	65	Skt. HD. Cap Scr.	M10×P1.5×30L	4
22	Hexagon Nut	M8×P1.25	1	44	Engine Bush	DIADO(JAPAN)DD2225	1				
23	Socket Set Screw	M5×P0.8×25L	4	44-1	Engine Bush	DIADO(JAPAN)DD2225	1	►61~65 are Accessories.			

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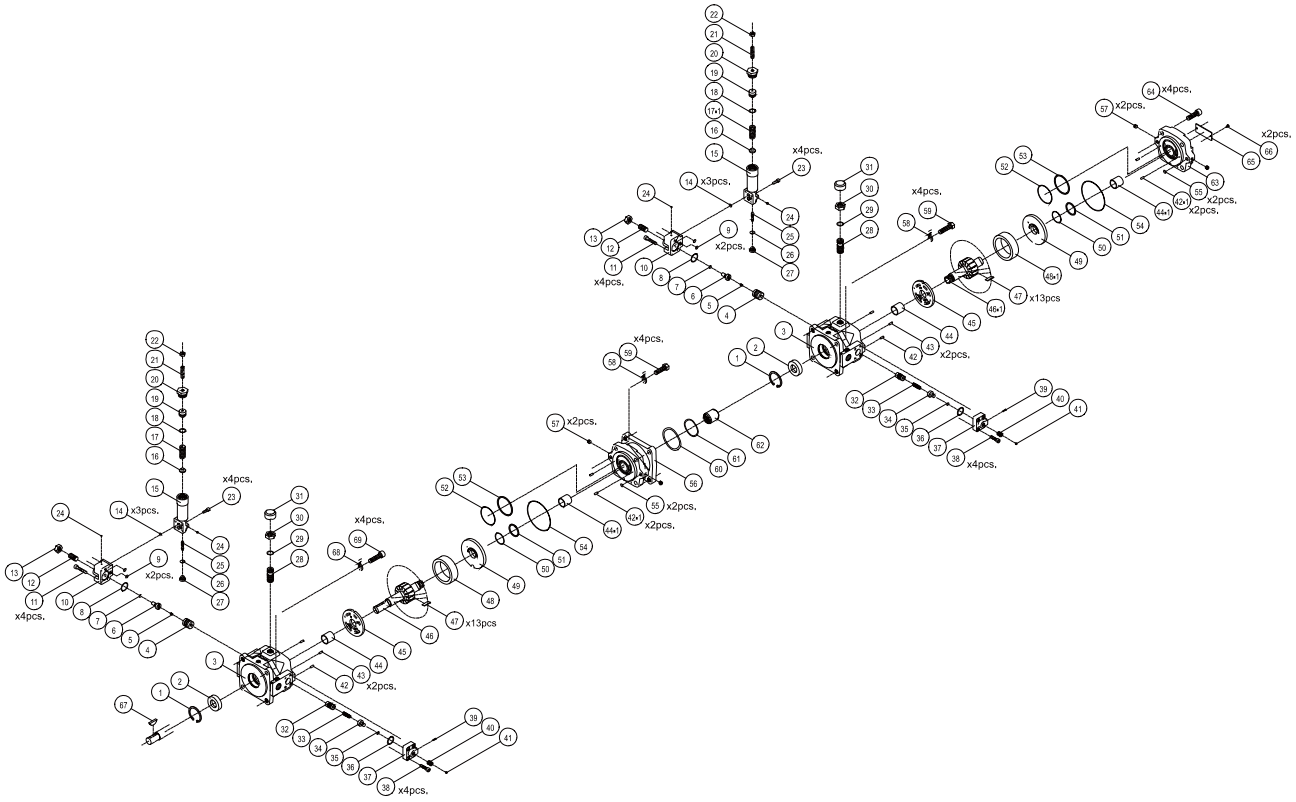
【ASSEMBLY & PARTS LIST】

VP5FD-A(B)※-A(B)※-50
WOODRUFF KEY



PARTS LIST											
NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1+1	26	O-Ring	1A-P10	1+1	48-1	Cam Ring		1
2	Shaft Seal	TCV 224211	1+1	27	Plug		1+1	49	Thrust Plate		1+1
3	Pump Body		1+1	28	Slide Screw		1+1	50	O-Ring		1+1
4	Piston		1+1	29	O-Ring	1A-P14	1+1	51	Endless Back-up Ri		1+1
5	Socket Set Screw	M4×P0.7×5L	1+1	30	Hexagon Nut	M16×P1.0	1+1	52	O-Ring		1+1
6	Piston		1+1	31	Cap		1+1	53	Endless Back-up Ri	AS568-026	1+1
7	O-Ring	1A-P5	1+1	32	Piston		1+1	54	O-Ring		1+1
8	O-Ring	1A-P20	1+1	33	Spring		1+1	55	O-Ring	AS568-034	2+2
9	O-Ring	1A-P6	2+2	34	Piston		1+1	56	Cover		1
10	Cover		1+1	35	O-Ring	1A-P5	1+1	57	Plug	1A-S85	2+2
11	Skt. HD. Cap Scr.	M6×P1.0×35L	4+4	36	O-Ring	1A-P22	1+1	58	Skt. HD. Cap Scr	1A-P6	4+4
12	Socket Set Screw	M12×P1.75×25L	1+1	37	Cover		1+1	59	Hexagon Head Screw		4+4
13	Hexagon Nut	M12×P1.75	1+1	38	Skt. HD. cap Scr	M6×P1.0×25L	4+4	60	O-Ring	1/16"	1
14	O-Ring	1A-P6	3+3	39	Socket Set Screw	M5×P0.8×10L	1+1	61	O-Ring	M10×P1.5×35L	1
15	Body		1+1	40	Socket Set Screw	M10×P1.5×12L	1+1	62	Coupling		1
16	Hold		1+1	41	Plug			Parts numbers 1-59 on the double pump are same as those on previous pump. Quantity are calculated togther. (but parts number 17-1, 46-1, and 48-1 are not included)			
17	Spring		1	42	Spring Pin	ø4 10					
17-1	Spring		1	42-1	Spring Pin	ø4 10	2+2	63	Cover		1
18	O-Ring	1A-P14	1+1	43	Spring Pin	ø4 10	2+2	64	Skt. HD. Cap Scr.	IRTW24	4
19	Spring Retainer		1+1	44	Engine Bush	DIADO(JAPAN)DD2225	1+1	65	Name Plate	M10	1
20	Screw		1+1	44-1	Engine Bush	DIADO(JAPAN)DD2225	1+1	66	Fixing Screw	M10×P1.5×30L	2
21	Socket Set Screw	M8×P1.25×35L	1+1	45	Port Plate		1+1	67	Woodruff Key	NO.608	1
22	Hexagon Nut	M8×P1.25	1+1	46	Rotorshaft(B)		1	68	Spring Washer	M10	4
23	Socket Set Screw	M5×P0.8×25L	4+4	46-1	Rotorshaft(B)		1	69	Skt. HD. Cap Scr.	M10×P1.5×30L	4
24	Plug	ø3.2	2+2	47	Vanes		13+13	►68~69 are Accessories.			
25	Spool		1+1	48	Cam Ring		1				

【PVF,PVDF, VD】

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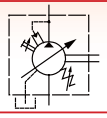
※SPECIFICATION

MODEL	MAX. PRES. MPa(PSI)	MAX. FLOW ℓ/min(GPM) at 1800 RPM	WEIGHT (Kg)
PVF-8	7 (1015)	8(1.8)	4.8
PVF-12		12(2.6)	4.8
PVF-15		15(3.3)	5.2
PVF-20		20(4.4)	5.2
PVF-23		23(5.1)	9.0
PVF-26		26(5.7)	9.0
PVF-30		30(6.6)	9.0
PVF-40		40(8.8)	9.0
PVDF-12-*-12-*		12(2.6)	9.5
PVDF-15-*-15		15(3.3)	9.5
PVDF-20-*-20		20(4.4)	9.5
PVDF-23-*-23		23(5.1)	16.0
PVDF-26-*-26		26(5.7)	16.0
PVDF-30-30		30(6.6)	16.0
PVDF-40-40		40(8.8)	16.0

SPEED LIMIT：Min. 800 r/min, Max. 1800 r/min.

※GRAPHIC SYMBOL

PVF



※MODEL NUMBER DESIGNATION(SINGLE PUMP)

PVF-	12-	70-	10-	S
FRAME SIZE FLANGE MOUNTING	OUTLET FLOW (AT 3.5 Bar, 1800 r/min) 8: 8 **(ℓ/min)** 12: 12 **(ℓ/min)** 15: 15 **(ℓ/min)** 20: 20 **(ℓ/min)** 23: 23 **(ℓ/min)** 26: 26 **(ℓ/min)** 30: 30 **(ℓ/min)** 40: 40 **(ℓ/min)**	OPR. PRES. RANGE 20: 8 bar - 20 bar 35: 15 bar - 35 bar 55: 30 bar - 55 bar 70: 50 bar - 70 bar	DESIGN	SHAFTS CODE K1: KEY NO.1 K2: KEY NO.2 (Refer to Dimenison) S: SPLINED SHAFTS

※MODEL NUMBER DESIGNATION(DOUBLE PUMP)

PVDF	12	70	12	70	10	S
	SHAFT END PUMP		COVER END PUMP			
FRAME SIZE FLANGE MOUNTING	OUTLET FLOW (AT 3.5 Bar, 1800 r/min) 12: 12 **(ℓ/min)** 15: 15 **(ℓ/min)** 20: 20 **(ℓ/min)** 23: 23 **(ℓ/min)** 26: 26 **(ℓ/min)** 30: 30 **(ℓ/min)** 40: 40 **(ℓ/min)**	OPR. PRES. RANGE 20: 8 bar - 20 bar 35: 15 bar - 35 bar 55: 30 bar - 55 bar 70: 50 bar - 70 bar	OUTLET FLOW (AT 3.5 Bar, 1800 r/min) 12: 12 **(ℓ/min)** 15: 15 **(ℓ/min)** 20: 20 **(ℓ/min)** 23: 23 **(ℓ/min)** 26: 26 **(ℓ/min)** 30: 30 **(ℓ/min)** 40: 40 **(ℓ/min)**	OPR. PRES. RANGE 20: 8 bar - 20 bar 35: 15 bar - 35 bar 55: 30 bar - 55 bar 70: 50 bar - 70 bar	DESIGN	SHAFTS CODE 01: KEY NO.1 02: KEY NO.2 (Refer to Dimenison) S: SPLINED SHAFTS

※MODEL NUMBER DESIGNATION(SINGLE PUMP)

VD	12	B	10	S
SERIES NO	OUTLET FLOW 08: 8 (cm^3/rev) 12: 12 (cm^3/rev) 16: 16 (cm^3/rev)	OPR. PRES. RANGE A: 8 bar - 20 bar(8) B: 15 bar - 35 bar(15) C: 30 bar - 55 bar(30) D: 50 bar - 70 bar(50)	DESIGN	SHAFTS CODE OMIT: WOODRUFF KEY S: SPLINED SHAFTS

STABLE FLOW

Due to use new design "PRESSURE BALANCE MECHANISM" the output flow pressure control systems ,the output flow is very stable even in the high pressure ranges.

ENERGY SAVING TYPE

Power loss has been reduced further by application of our highly advanced precision machining technology to assure the same high efficiency performance. As the "VP5" series with many new mechanisms of our improvement designs. And the power loss at the "dead head" has been reduced by a large degree.

NO VIBRATION AND QUIET

The cam ring is specifically designed to have a special curve so the noise level [dB] is very low , even in the high pressure operations.

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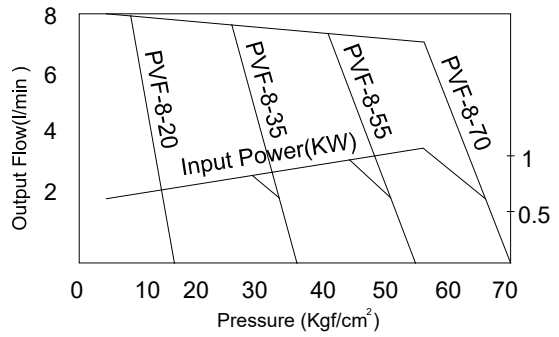
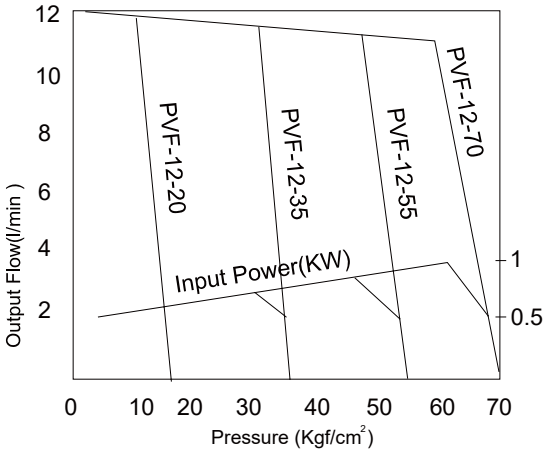
【SPECIFICATION CURVE】

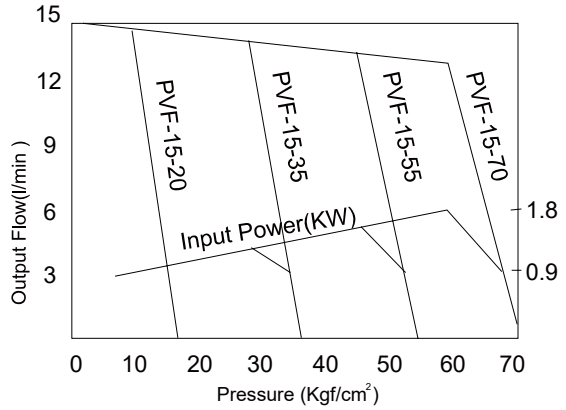
PVF-8



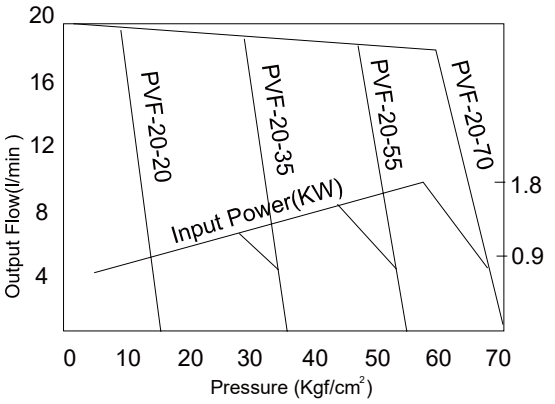
PVF-12



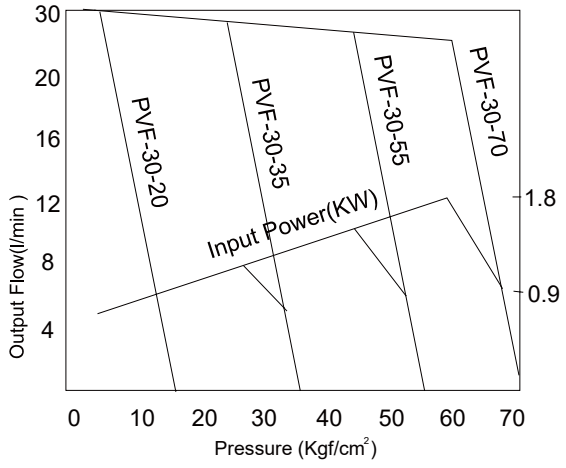
PVF-15



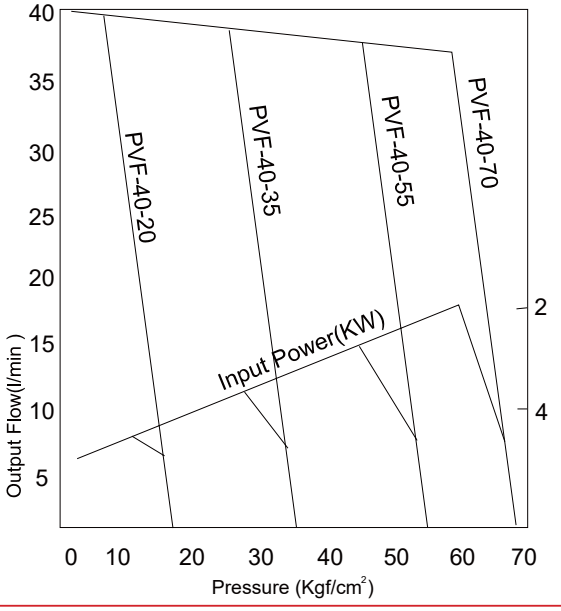
PVF-20



PVF-30



PVF-40



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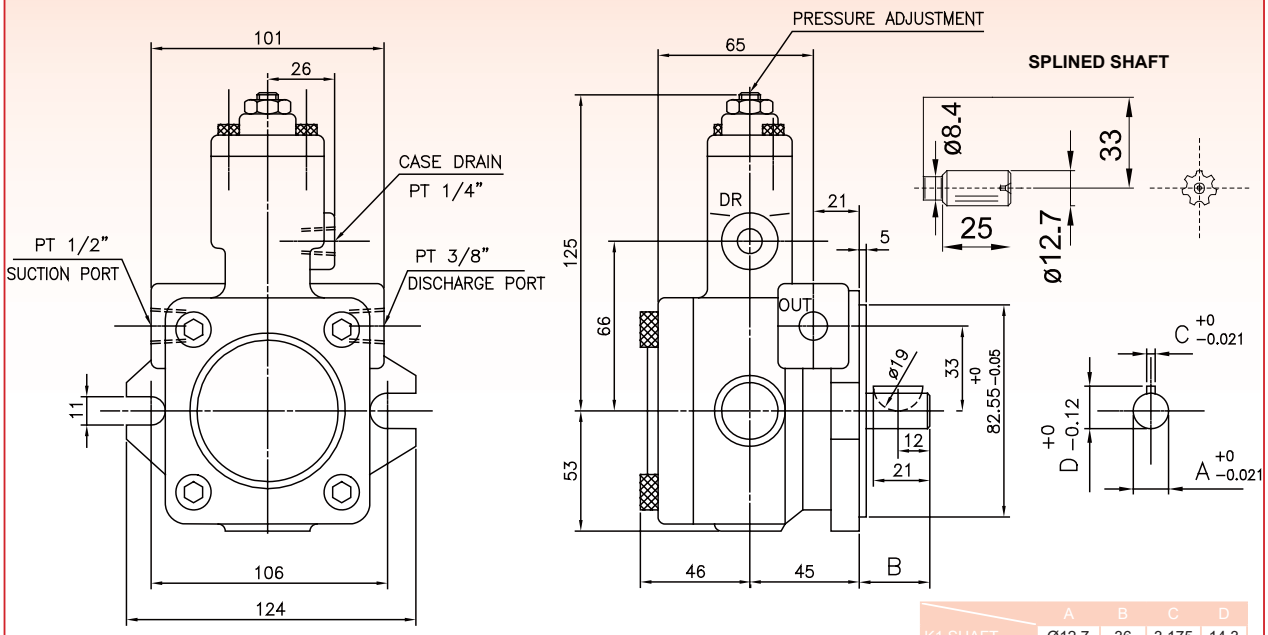
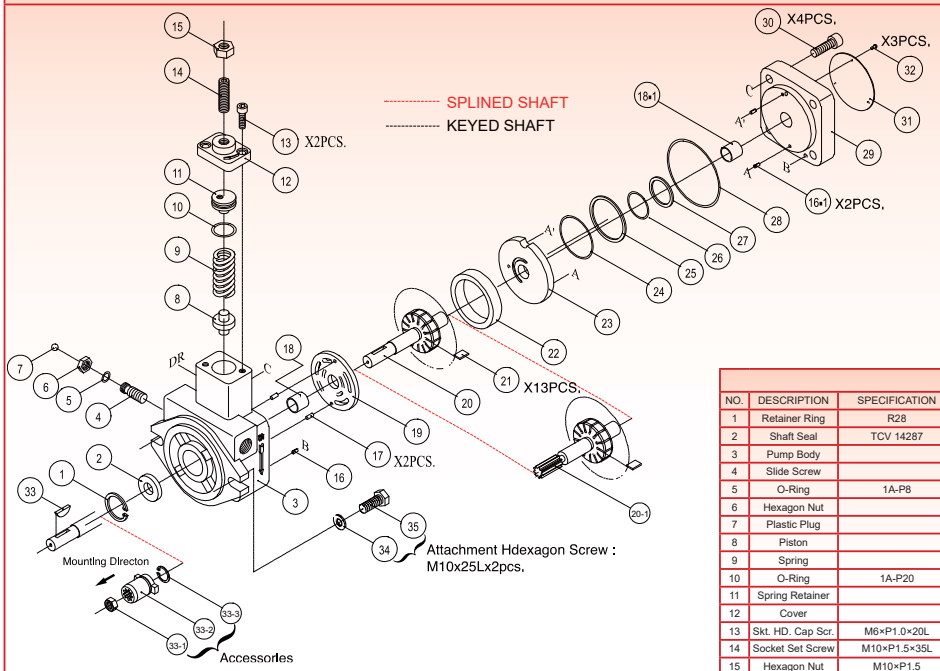
[DIMENSIONS]

PVF-8, 12, 15, 20



	A	B	C	D
K1 SHAFT	Ø12.7	36	3.175	14.3
K2 SHAFT (PVF-20 ONLY)	Ø15.88	32	4	17.6

ASSEMBLY & PARTS LIST

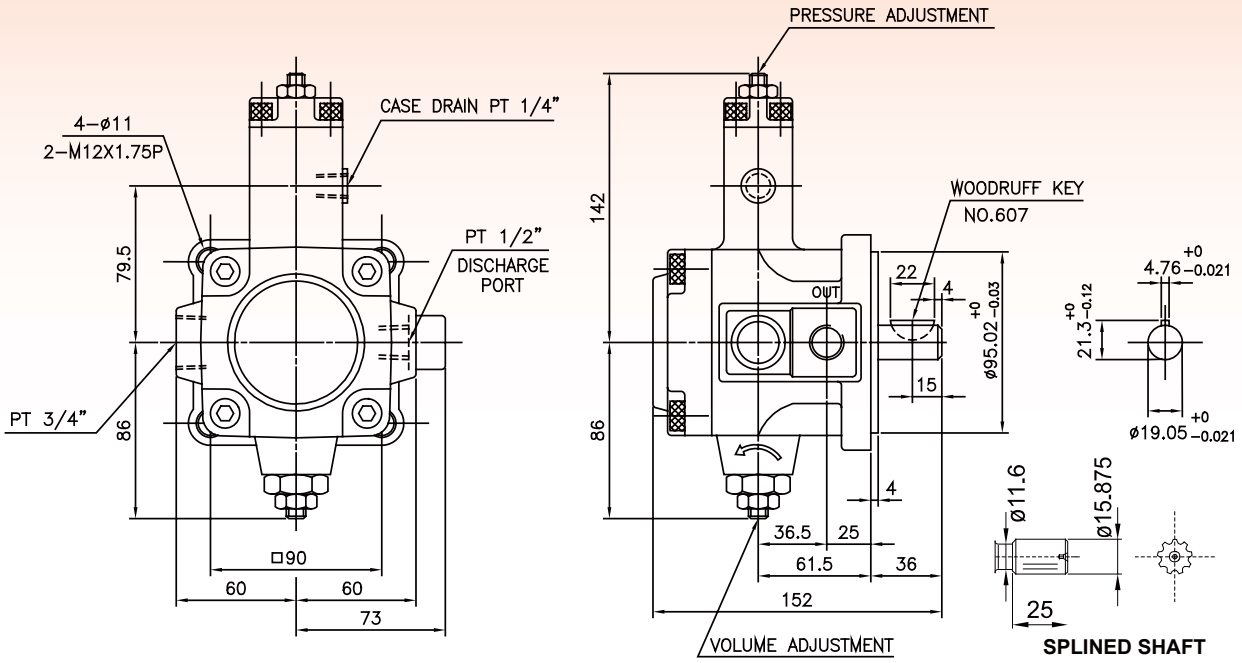


PARTS LIST

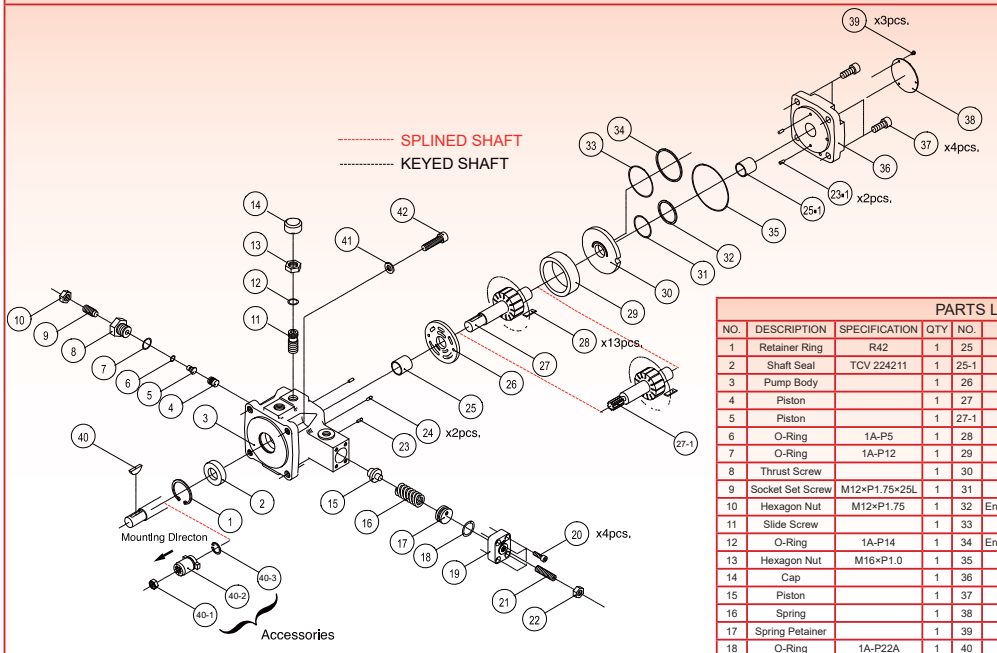
NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R28	1	20	Rotorshaft		1
2	Shaft Seal	TCV 14287	1	21	Vanes		13
3	Pump Body		1	22	Cam Ring		1
4	Slide Screw		1	23	Thrust Plate		1
5	O-Ring	1A-P8	1	24	O-Ring	AS568-031	1
6	Hexagon Nut		1	25	Endless Back-up Ring		1
7	Plastic Plug		1	26	O-Ring	AS568-023	1
8	Piston		1	27	Endless Back-up Ring	Keyed Shaft	1
9	Spring		1	27-1	Endless Back-up Ring	Spined Shaft	1
10	O-Ring	1A-P20	1	28	O-Ring	1A-S71	1
11	Spring Retainer		1	29	Cover		1
12	Cover		1	30	-Skt. HD. cap Scr.	M8×P1.25×30L	4
13	Skt. HD. Cap Scr.	M6×P1.0×20L	2	31	Name Plate		1
14	Socket Set Screw	M10×P1.5×35L	1	32	Fixing Screw		3
15	Hexagon Nut	M10×P1.5	1	33	Woodruff Key	NO.406	1
16	Spring Pin	ø3 8	1	33-1	Hexagon Nut	M10 X P1.2	1
16-1	Spring Pin	ø3 8	2	33-2	Coupling		1
17	Straight Pin	ø3 8	2	33-3	Retainer Ring		1
18	Engine Bush	DIADO(JAPAN)DD1415	1	34	Washer	M10	2
18-1	Engine Bush	DIADO(JAPAN)DD1415	1	35	Hexagon Screw	M10×P1.5×25L	2
19	Port Plate		1	※33-1~35 are Accessories.			

[DIMENSIONS]

PVF-23, 26, 30, 40



ASSEMBLY & PARTS LIST



PARTS LIST

NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1	25	Engine Bush	DIADO(JAPAN)DD2225	1
2	Shaft Seal	TCV 224211	1	25-1	Engine Bush	DIADO(JAPAN)DD2225	1
3	Pump Body		1	26	Port Plate		1
4	Piston		1	27	Rotorshaft	Keyed Shaft	1
5	Piston		1	27-1	Port Plate	Splined Shaft	1
6	O-Ring	1A-P5	1	28	Vanes		13
7	O-Ring	1A-P12	1	29	Cam Ring		1
8	Thrust Screw		1	30	Thrust Plate		1
9	Socket Set Screw	M12×P1.75×25L	1	31	O-Ring	AS568-030	1
10	Hexagon Nut	M12×P1.75	1	32	Endless Back-up Ring		1
11	Slide Screw		1	33	O-Ring	AS568-035	1
12	O-Ring	1A-P14	1	34	Endless Back-up Ring		1
13	Hexagon Nut	M16×P1.0	1	35	O-Ring	1A-S85	1
14	Cap		1	36	Cover		1
15	Piston		1	37	Skt. HD. cap Scr.	M10×P1.5×25L	4
16	Spring		1	38	Name Plate		1
17	Spring Petainer		1	39	Fixing Screw		3
18	O-Ring	1A-P22A	1	40	Woodruff Key	NO.608	1
19	Cover		1	40-1	Hexagon Nut	M10 X P1.5	
20	Skt. HD. Cap Scr.	M6×P1.0×20L	4	40-2	Coupling		
21	Socket Set Screw	M10×P1.5×35L	1	40-3	Retainer Ring	R24	4
22	Hexagon Nut	M10×P1.5	1	41	Spring Washer	M10	4
23	Spring Pin	ø4×10	1	42	Skt. HD. cap Scr.	M10×P1.5×30L	4
23-1	Spring Pin	ø4×10	2				
24	Spring Pin	ø4×10	2	※40-1~42 are Accessories.			

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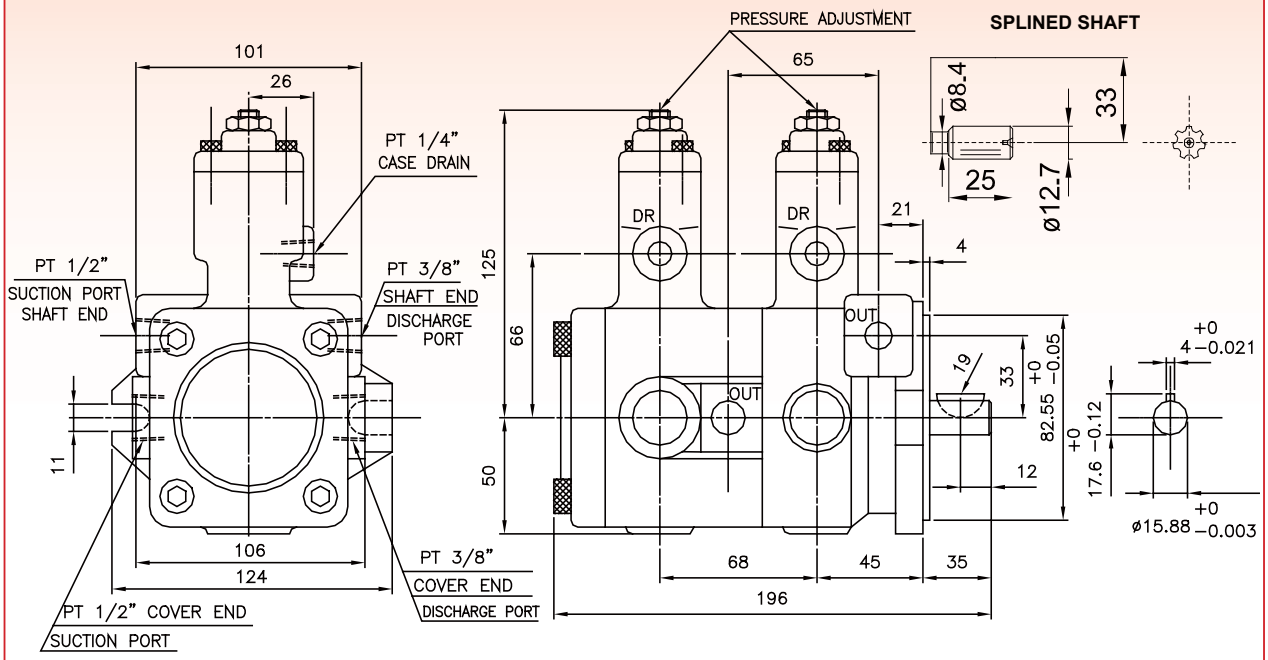
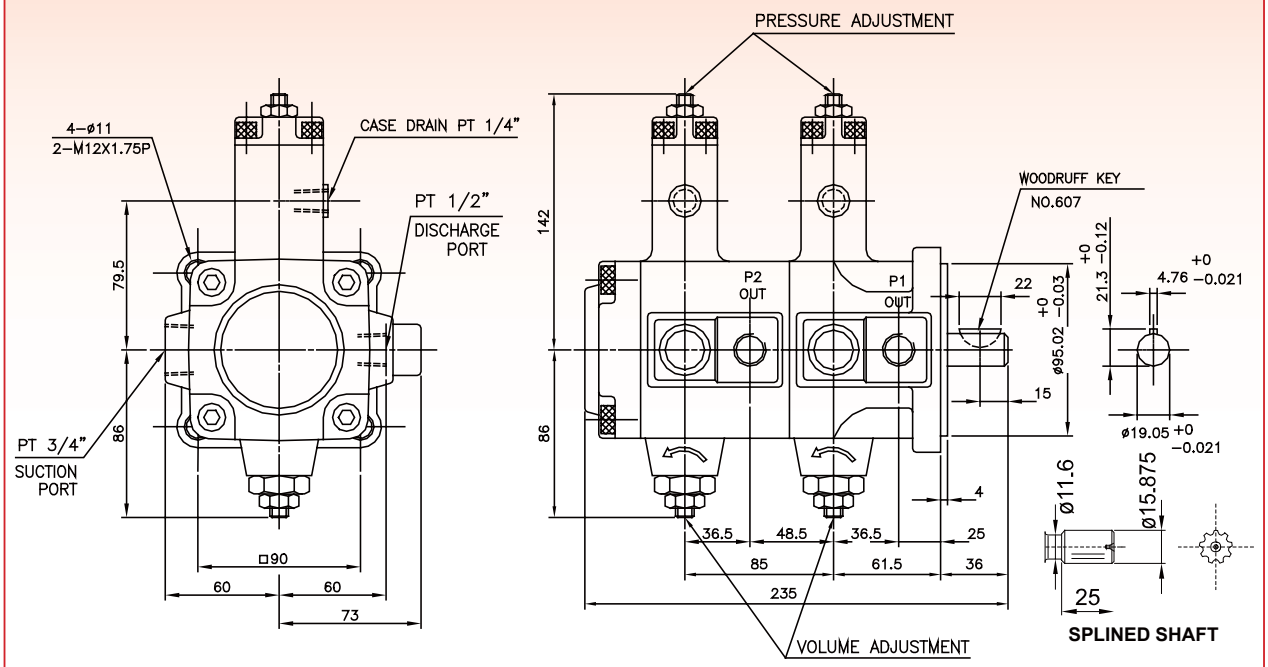
[DIMENSIONS]

PVDF-12-*-12-*, 15-*-15-*, 20-*-20-*



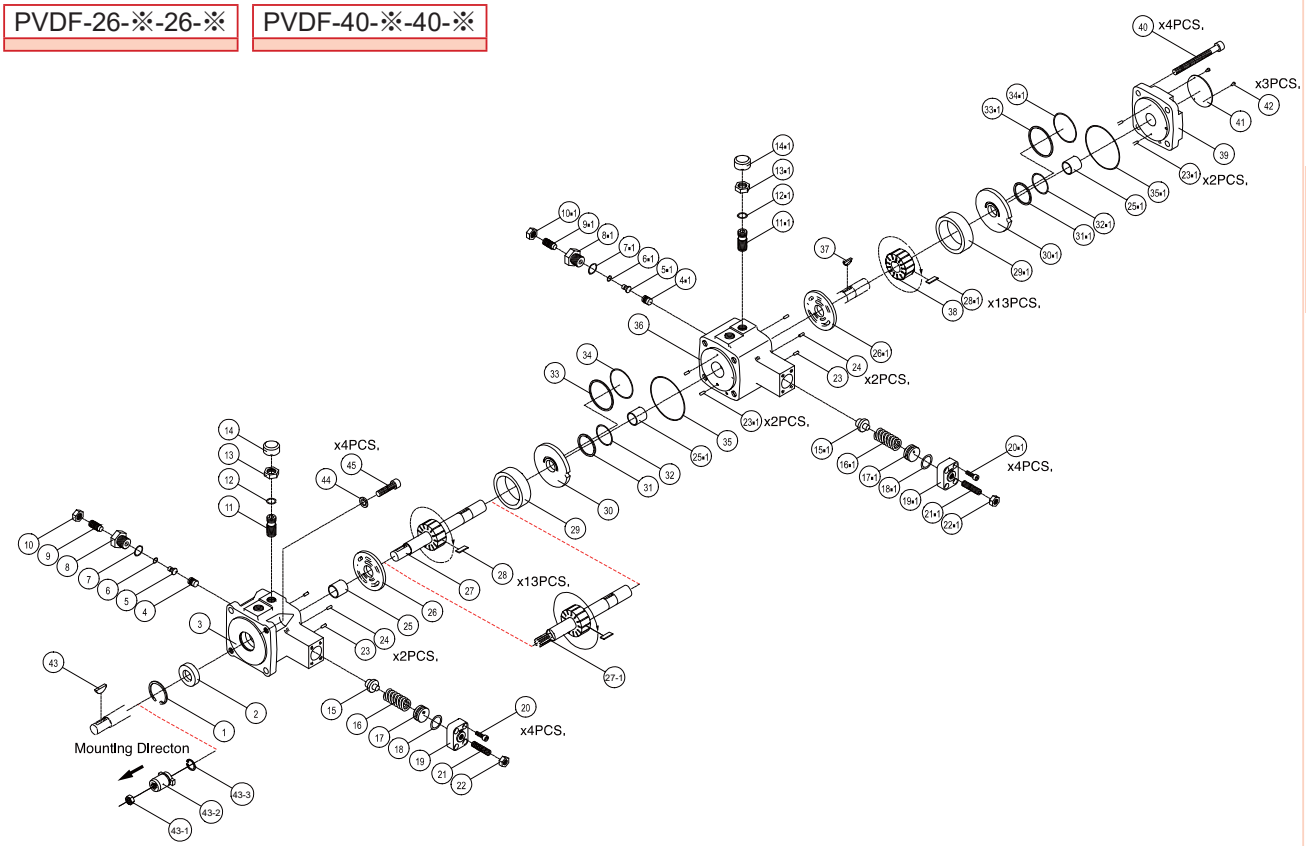
PVDF-23-*-23-*, 26-*-26-*, 30-*-30-*, 40-*-40-*



【ASSEMBLY & PARTS LIST】

PVDF-23-※-23-※ | PVDF-30-※-30-※

PVDF-26-※-26-※ | PVDF-40-※-40-※



PARTS LIST							
NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1	26	Port Plate		2
2	Shaft Seal	TCV-224211	1	27	Rotorshaft	Keyed Shaft	1
3	Pump Body		1	27-1	Rotorshaft	Splined Shaft	1
4	Piston		2	28	Vanes		26
5	Piston		2	29	Cam Ring		1
6	O-Ring	1A-P5	2	29-1	Cam Ring		1
7	O-Ring	1A-P22	2	30	Thrust Plate		2
8	Thrust Screw		2	31	O-Ring	AS568-030	2
9	Socket Set Screw	M12×P1.75×25L	2	32	Endless Back-up Ring		2
10	Hexagon Nut	M12×P1.75	2	33	O-Ring	AS568-035	2
11	Slide Screw		2	34	Cover		2
12	O-Ring	1A-P14	2	35	Skt. HD. Cap Scr	1A-S85	2
13	Spring Retainer	M16×P1.0	2	36	Piston		1
14	Cap		2	Parts numbers 4-1 26-1 are same as 4 26. Quantity are calculated togther.(spring 16-1 is not included)			
15	Piston		2	37	Plug	NO.406	1
16	Spring		1	38	Plug		1
16-1	Spring		1	Parts numbers 28-1 23-1 are same as 28 23-1.Quantity are calculated togther.(camring 29-1 is not included)			
17	Spring Retainer		2	39	Cover		1
18	O-Ring	1A-P22A	2	40	Skt. HD. Cap Scr	M10×P1.5×110L	4
19	Cover		2	41	Name Plate		1
20	Skt. HD. Cap Scr.	M6×P1.0×20L	8	42	Fixing Screw		3
21	Socket Set Screw	M10×P1.5×35L	2	43-1	Hexagon Nut	M10×P1.5	1
22	Hexagon Nut	M10×P1.5	2	43-2	Coupling		1
23	Spring Pin	ø4 10	2	43-3	Retainer Ring	IRTW 24	1
23-1	Spring Pin	ø4 10	4	44	Spring Washer	M10	4
24	Straight Pin	ø4 10	4	45	Skt. HD. Cap Scr	M10×P1.5×30L	4
25	Engine Bush	DIADO(JAPAN)DD2225	1				
25-1	Engine Bush	DIADO(JAPAN)DD2225	2	※43~47 are Accessories.			

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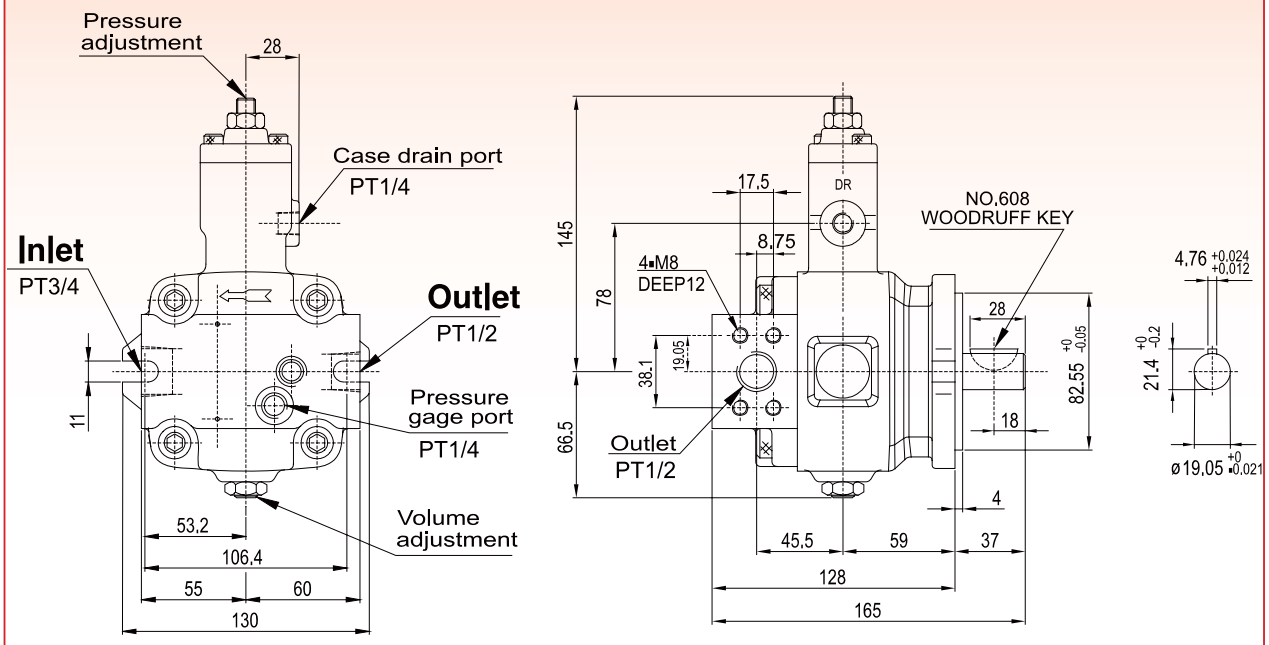
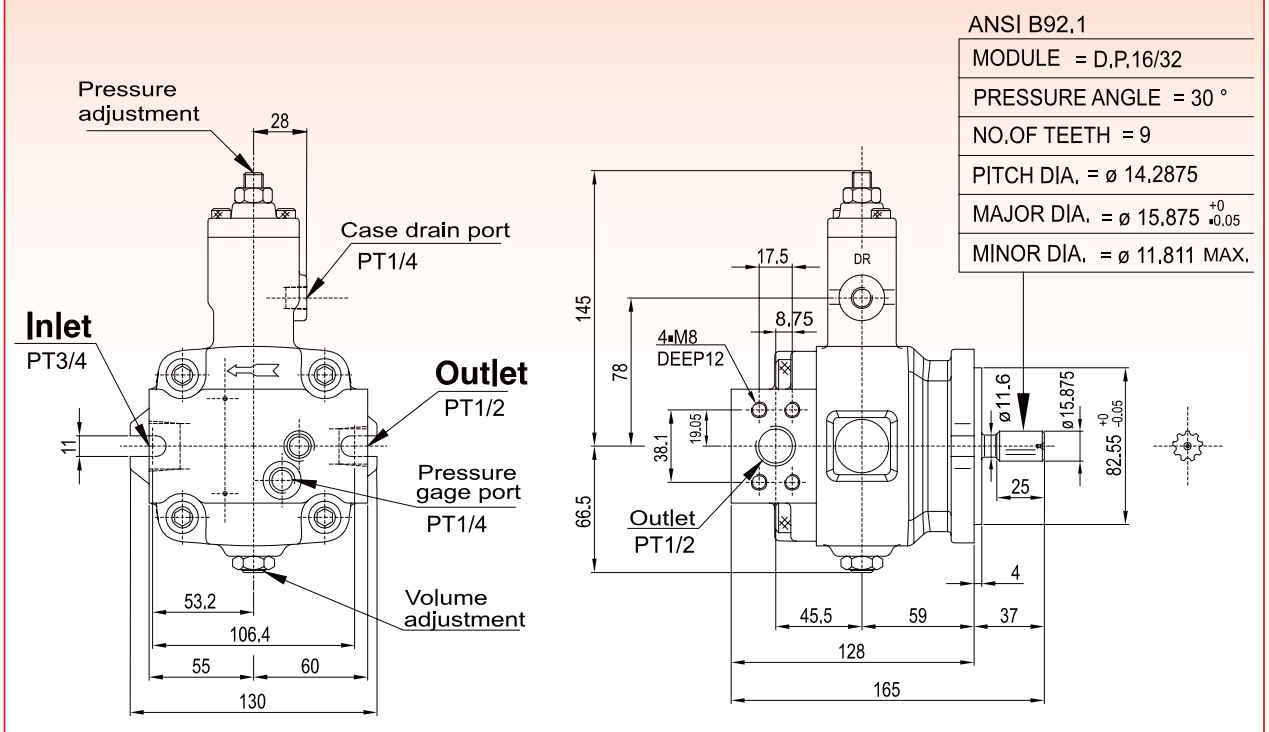
[DIMENSIONS]

VD※※-※-10 (WOODRUFF KEY)

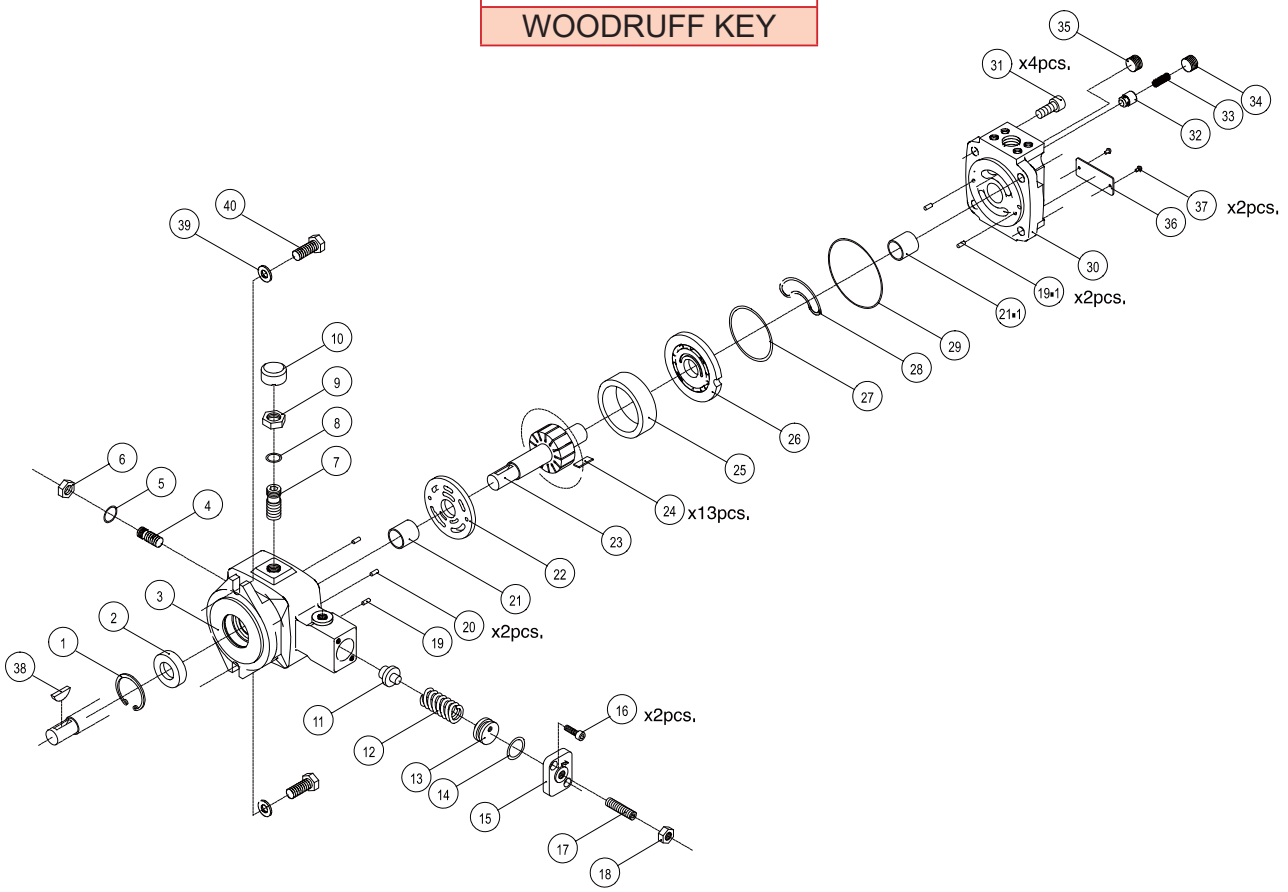


VD※※-※-10S (SPLINED SHAFTS)



【ASSEMBLY & PARTS LIST】

VD※※-※-10
WOODRUFF KEY



PARTS LIST

NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1	22	Port Plate		1
2	Shaft Seal	TCV-224211	1	23	Rotorshaft		1
3	Pump Body		1	24	Vanes		13
4	Retainer Ring	M12×P1.0×30L	1	25	Cam Ring		1
5	O-Ring	1A-P10	1	26	Thrust Plate		1
6	Hexagon Nut	M12×P1.0	1	27	O-Ring	AS568-034	1
7	Slide Screw	M16×P1.0×32L	1	28	Endless Back-up Ring		1
8	O-Ring	1A-P14	1	29	O-Ring	1A-S85	1
9	Hexagon Nut	M16×P1.0	1	30	Cover		1
10	Cap		1	31	Skt. HD. Cap Scr	M10×P1.5×25L	4
11	Piston		1	32	Piston		1
12	Spring		1	33	Spring		1
13	Spring Retainer		1	34	Plug	PT 3/8"	1
14	O-Ring	1A-P22A	1	35	Plug	PT 1/4"	1
15	Cover		1	36	Name Plate		1
16	Skt. HD. Cap Scr	M6×P1.0×20L	2	37	Fixing Screw	M10×P1.5×25L	2
17	Socket Set Screw	M10×P1.5×35L	1	38	Woodruff Key	NO.608	1
18	Hexagon Nut	M10 P1.5	1	39	Washer	M10	2
19	Spring Pin	ø4×10	1	40	Hexagon Screw	M10×P1.5×25L	2
19-1	Spring Pin	ø4×10	2				
20	Straight Pin	ø4×10	2				
21	Engine Bush	DIADO(JAPAN)DD2225	1				
21-1	Engine Bush	DIADO(JAPAN)DD2225	1	※39~40 are Accessories.			

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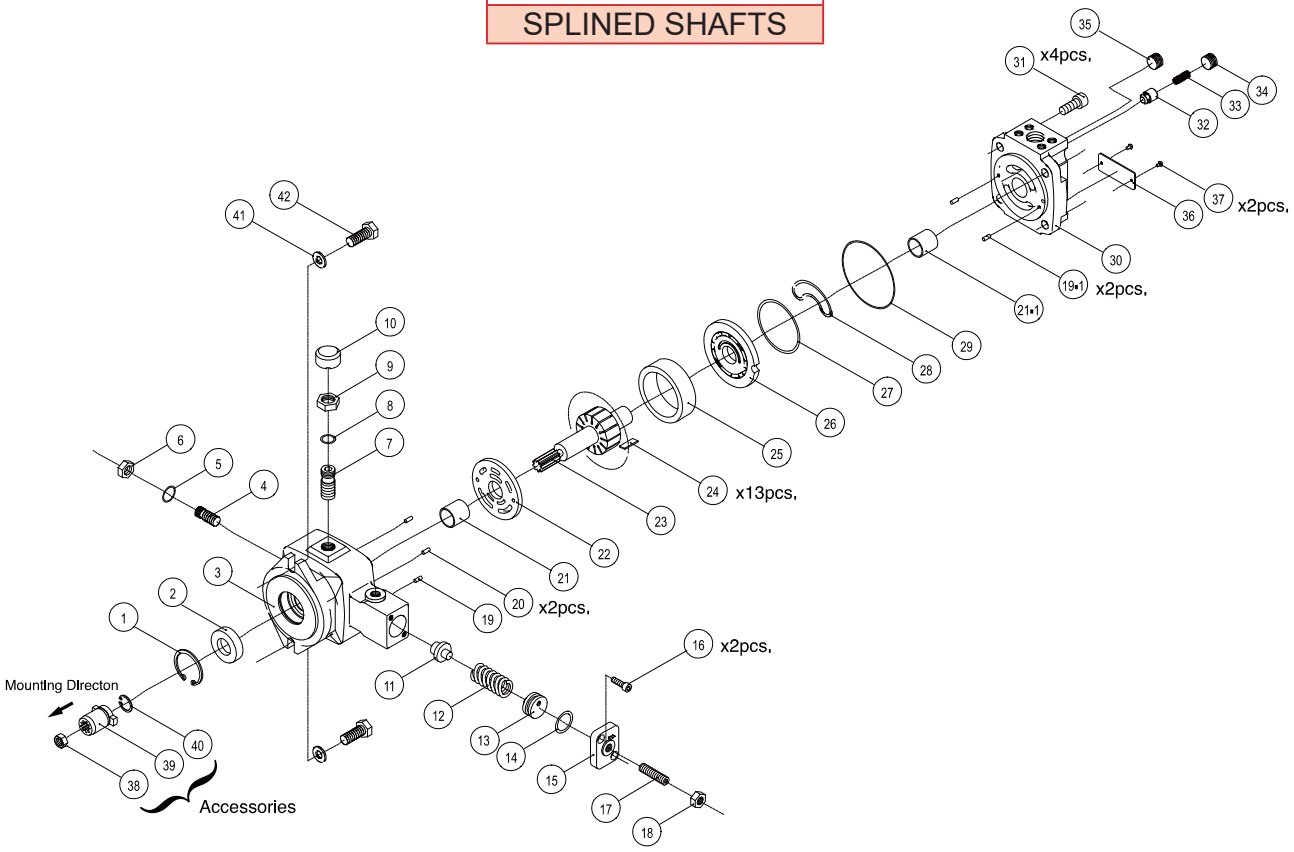
【ASSEMBLY & PARTS LIST】

VD※※-※-10S
SPLINED SHAFTS



PARTS LIST							
NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1	22	Port Plate		1
2	Shaft Seal	TCV-224211	1	23	Rotorshaft		1
3	Pump Body		1	24	Vanes		13
4	Retainer Ring	M12×P1.0×30L	1	25	Cam Ring		1
5	O-Ring	1A-P10	1	26	Thrust Plate		1
6	Hexagon Nut	M12×P1.0	1	27	O-Ring	AS568-034	1
7	Slide Screw	M16×P1.0×32L	1	28	Endless Back-up Ring		1
8	O-Ring	1A-P14	1	29	O-Ring	1A-S85	1
9	Hexagon Nut	M16×P1.0	1	30	Cover		1
10	Cap		1	31	Skt. HD. Cap Scr	M10×P1.5×25L	4
11	Piston		1	32	Piston		1
12	Spring		1	33	Spring		1
13	Spring Retainer		1	34	Plug	PT 3/8"	1
14	O-Ring	1A-P22A	1	35	Plug	PT 1/4"	1
15	Cover		1	36	Name Plate		1
16	Skt. HD. Cap Scr	M6×P1.0×20L	2	37	Fixing Screw		2
17	Socket Set Screw	M10×P1.5×35L	1	38	Hexagon Nut	M10×P1.5	1
18	Hexagon Nut	M10 P1.5	1	39	Coupling		1
19	Spring Pin	ø4×10	1	40	Retainer Ring	IRTW24	1
19-1	Spring Pin	ø4×10	2	41	Washer	M10	2
20	Straight Pin	ø4×10	2	42	Hexagon Screw	M10×P1.5×25L	2
21	Engine Bush	DIADO(JAPAN)DD2225	1				
21-1	Engine Bush	DIADO(JAPAN)DD2225	1	※38~42 are Accessories.			

【TPF-G00, TPF-GH】

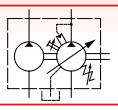
※SPECIFICATION

MODEL	MAX. PRES. MPa(PSI)	MAX. FLOW ℓ/min(GPM)	WEIGHT (Kg)	
			-G00	-GH
TPF-VL30	21 (3045)	30(6.6)	10	11.7
TPF-VL40		40(8.8)		

►**TPF PUMPS SPEED LIMITS: Min. : 800 r/min, Max. : 1800 r/min**

※GRAPHIC SYMBOL

TPF



※MODEL NUMBER DESIGNATION(DOUBLE PUMP)

TPF	VL30	2	GH5		10	S
	SHAFT END PUMP		COVER END PUMP			
FRAME SIZE FLANGE MOUNTING	OUTLET FLOW (AT 3.5 Bar, 1800 R/MIN) VL30: 30 **(ℓ/min)** ★VL40: 40 **(ℓ/min)**	OPR. PRES. RANGE 1: 15 bar - 35 bar ★2: 20 bar - 70 bar	DISPLACEMENT (cm^3/rev) GH1: 1.09 GH2: 2.07 GH3:3.08 GH4:4.06 GH5:6.16 GH6:7.67 GH7:9.24 GH8:10.77 GH9:12.0 GH00: variable vane pump only ,no including the gear pump.	OPR. PRES. RANGE 210 bar PEAK : 250 bar	DESIGN	SHAFT CODE OMIT: WOODRUFF KEY S: SPLINED SHAFTS

"★" FACTORY DEFAULT SETTING

STABLE FLOW

Due to use new design "PRESSURE BALANCE MECHANISM" the output flow pressure control systems ,the output flow is very stable even in the high pressure ranges.

ENERGY SAVING TYPE

Power loss has been reduced further by application of our highly advanced precision machining technology to assure the same high efficiency performance. As the "VP5" series with many new mechanisms of our improvement designs. And the power loss at the "dead head" has been reduced by a large degree.

NO VIBRATION AND QUIET

The cam ring is specifically designed to have a special curve so the noise level [dB] is very low , even in the high pressure operations.

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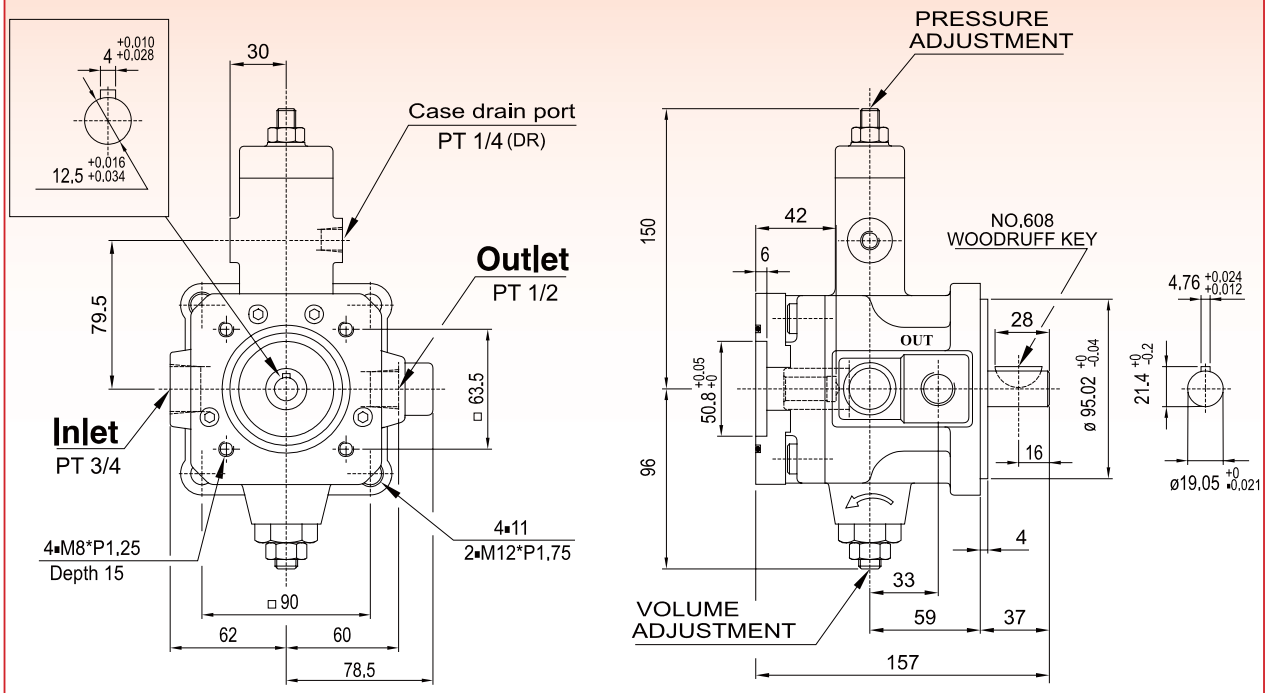
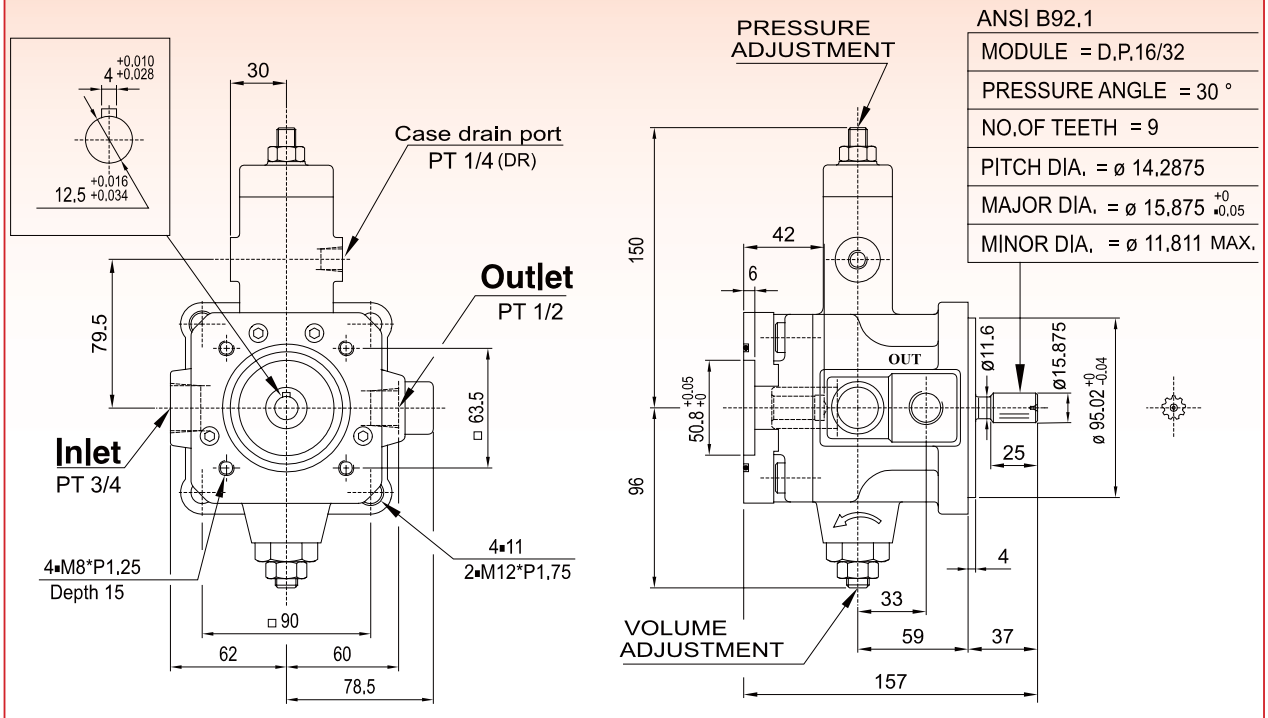
【DIMENSIONS】

TPF-VL30(40)-※-G00-10 (WOODRUFF KEY)



TPF-VL30(40)-※-G00-10S (SPLINED SHAFTS)

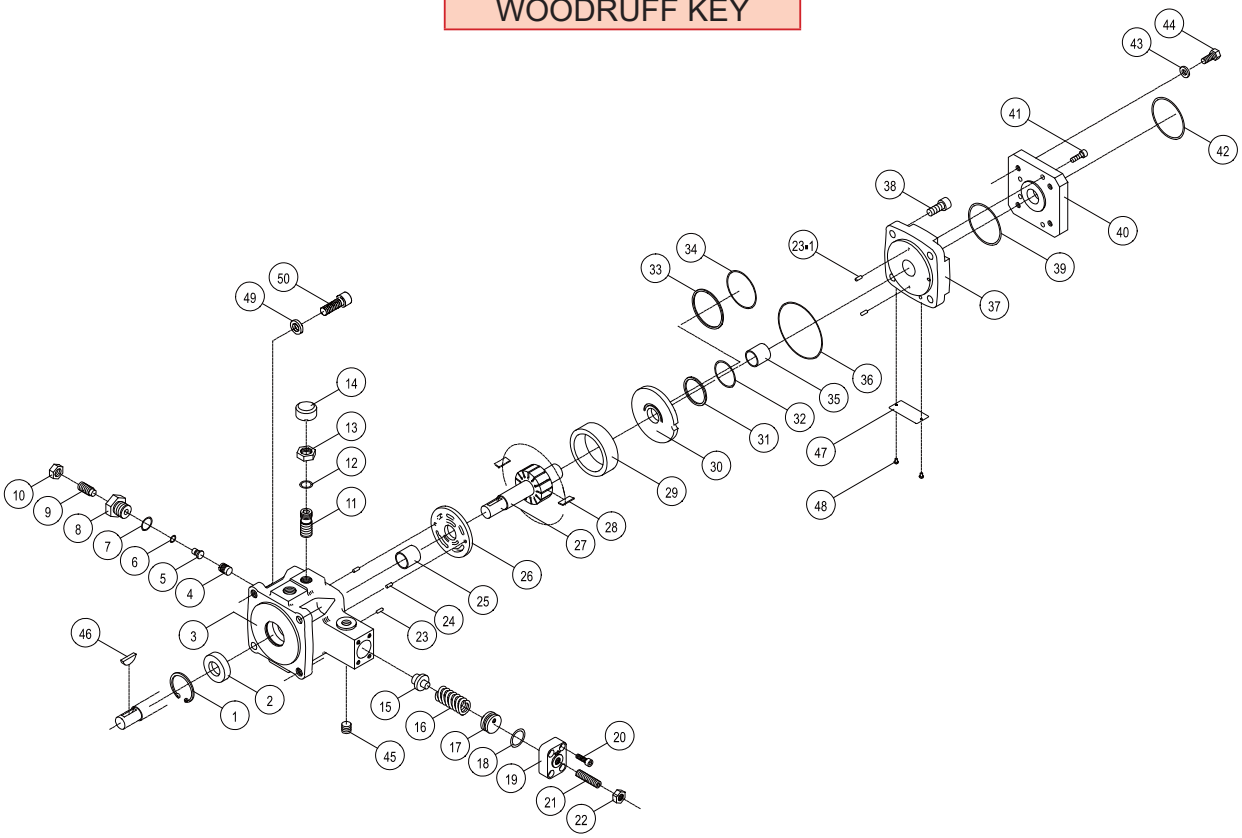


ANSI B92,1

MODULE	= D.P.16/32
PRESSURE ANGLE	= 30 °
NO.OF TEETH	= 9
PITCH DIA.	= ø 14,2875
MAJOR DIA.	= ø 15,875 +0 -0.05
MINOR DIA.	= ø 11,811 MAX.

【ASSEMBLY & PARTS LIST】

TPF-VL30(40)※-G00-10
WOODRUFF KEY



PARTS LIST											
NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1	19	Cover		1	36	O-Ring	1A-S85	1
2	Shaft Seal	TCV 224211	1	20	Skt. HD. Cap Scr.	M6×P1.0×20L	4	37	Cover		1
3	Pump Body		1	21	Socket Set Screw	M10×P1.5×35L	1	38	Skt. HD. Cap Scr	M10×P1.5×25L	4
4	Piston(B)		1	22	Hexagon Nut	M10×P1.5	1	39	O-Ring	1B-G60	1
5	Piston(A)		1	23	Spring Pin	ø4×10	1	40	Connecting Flange		1
6	O-Ring	1A-P5	1	23-1	Spring Pin	ø4×10	2	41	Skt. HD. Cap Scr	M6×P1.0×16L	1
7	O-Ring	1A-P22	1	24	Straight Pin	ø4×10	2	42	O-Ring	1B-G60	1
8	Thrust Screw		1	25	Engine Bush	DIADO(JAPAN)DD2225	1	43	Washer	M8	4
9	Socket Set Screw	M12×P1.75×25L	1	26	Port Plate		1	44	Skt. HD. Cap Scr	M8×P1.25×20L	4
10	Hexagon Nut	M12×P1.75	1	27	Rotorshaft		1	45	Plug	PT 1/4"	1
11	Slide Screw		1	28	Vanes		13	46	Woodruff Key	NO.608	1
12	O-Ring	1A-P14	1	29	Cam Ring		1	47	Name Plate		1
13	Hexagon Nut	M16 P1.0	1	30	Thrust Plate		1	48	Fixing Screw		2
14	Cap		1	31	O-Ring	AS568-030	1	49	Spring Washer	M10	4
15	Piston		1	32	Endless Back-up Ring		1	50	Skt. HD. Cap Scr	M10×P1.5×30L	4
16	Spring		1	33	O-Ring	AS568-035	1				
17	Spring Retainer		1	34	Endless Back-up Ring		1				
18	O-Ring	1A-P22A	2	35	Engine Bush	DIADO(JAPAN)DD2220	1	▶49~50 are Accessories.			

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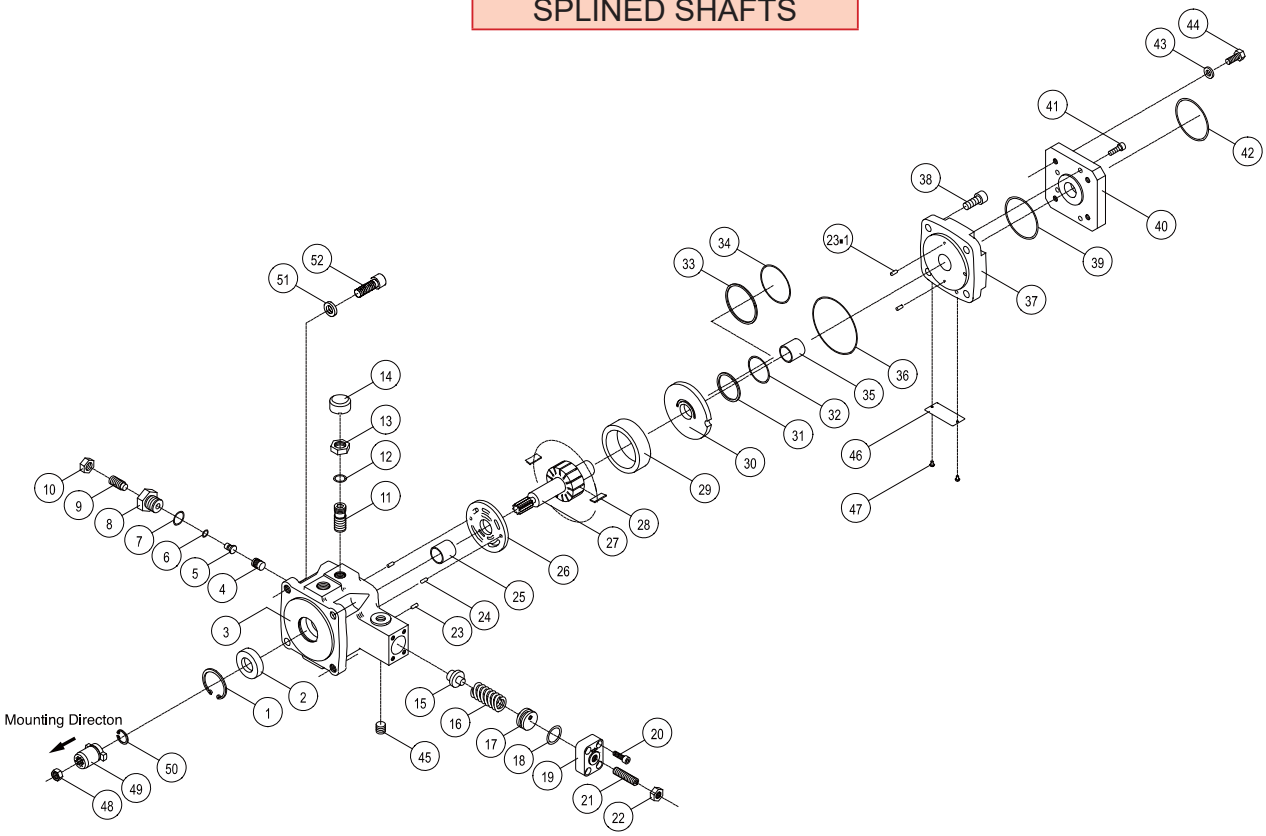
【ASSEMBLY & PARTS LIST】

TPF-VL30(40)※-G00-10S
SPLINED SHAFTS



PARTS LIST											
NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1	19	Cover		1	36	O-Ring	1A-S85	1
2	Shaft Seal	TCV 224211	1	20	Skt. HD. Cap Scr.	M6×P1.0×20L	4	37	Cover		1
3	Pump Body		1	21	Socket Set Screw	M10×P1.5×35L	1	38	Skt. HD. Cap Scr	M10×P1.5×25L	4
4	Piston(B)		1	22	Hexagon Nut	M10×P1.5	1	39	O-Ring	1B-G60	1
5	Piston(A)		1	23	Spring Pin	ø4×10	1	40	Connecting Flange		1
6	O-Ring		1	23-1	Spring Pin	ø4×10	2	41	Skt. HD. Cap Scr	M6×P1.0×16L	1
7	O-Ring	1A-P22	1	24	Straight Pin	ø4×10	2	42	O-Ring	1B-G60	1
8	Thrust Screw		1	25	Engine Bush	DIADO(JAPAN)DD2225	1	43	Washer	M8	4
9	Socket Set Screw	M12×P1.75×25L	1	26	Port Plate		1	44	Skt. HD. Cap Scr	M8×P1.25×20L	4
10	Hexagon Nut	M12×P1.75	1	27	Rotorshaft		1	45	Plug	PT 1/4"	1
11	Slide Screw		1	28	Vanes		13	46	Name Plate		1
12	O-Ring	1A-P14	1	29	Cam Ring		1	47	Fixing Screw		2
13	Hexagon Nut	M16 P1.0	1	30	Thrust Plate		1	48	Hexagon Nut	M10×P1.5	1
14	Cap		1	31	O-Ring	AS568-030	1	49	Coupling		1
15	Piston		1	32	Endless Back-up Ring		1	50	Retainer Ring	IRTW 24	1
16	Spring		1	33	O-Ring	AS568-035	1	51	Spring Washer	M10	4
17	Spring Retainer		1	34	Endless Back-up Ring		1	52	Skt. HD. Cap Scr	M10×P1.5×30L	4
18	O-Ring	1A-P22A	2	35	Engine Bush	DIADO(JAPAN)DD2220	1	▶48~52 are Accessories.			

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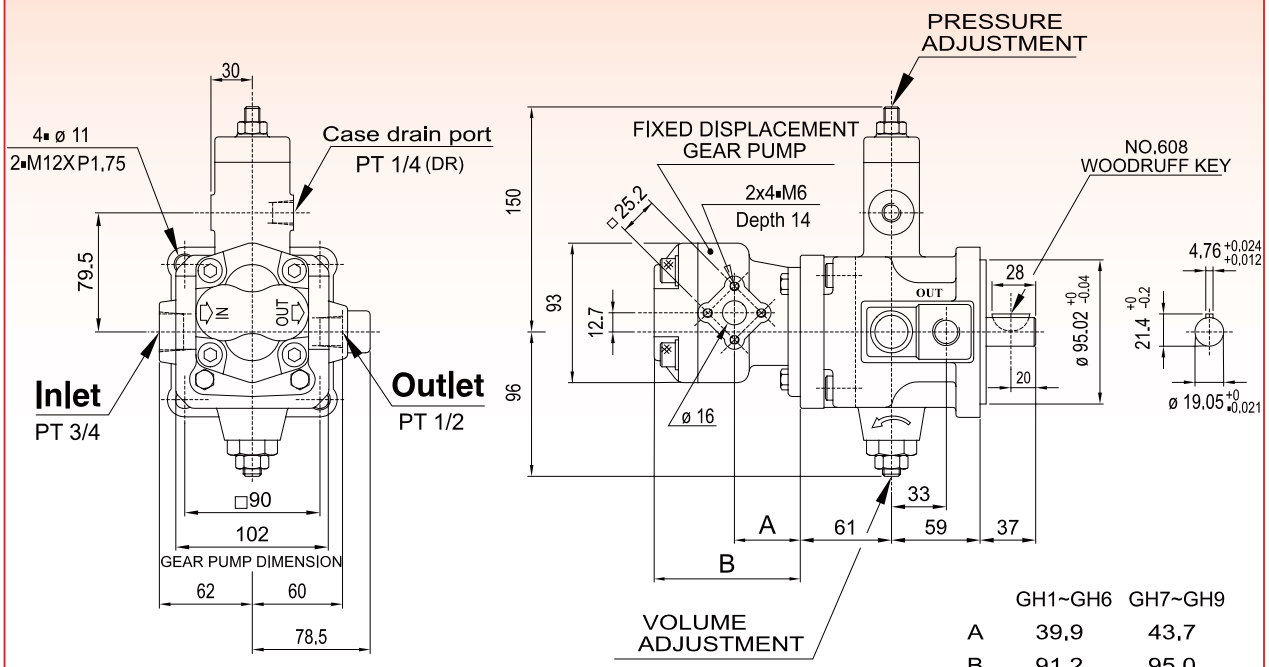
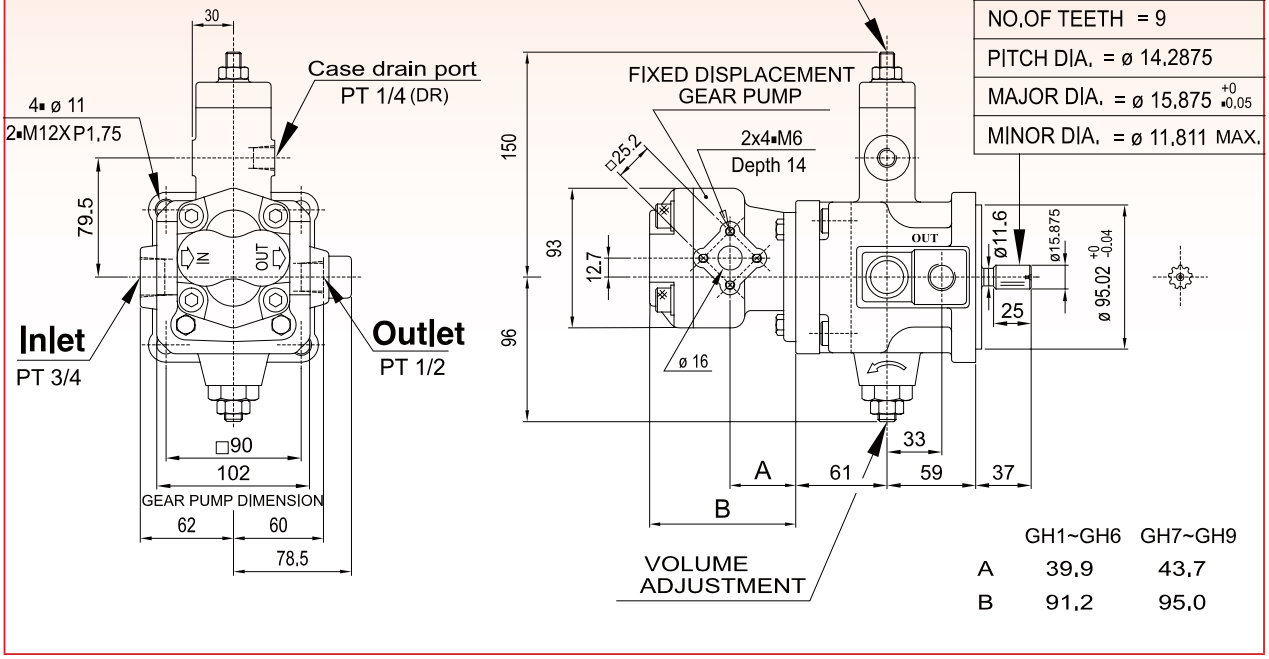
【DIMENSIONS】

TPF-VL30(40)-※-GH-10 (WOODRUFF KEY)



	GH1~GH6	GH7~GH9
A	39.9	43.7
B	91.2	95.0

TPF-VL30(40)-※-GH-10S (SPLINED SHAFTS)



ANSI B92.1

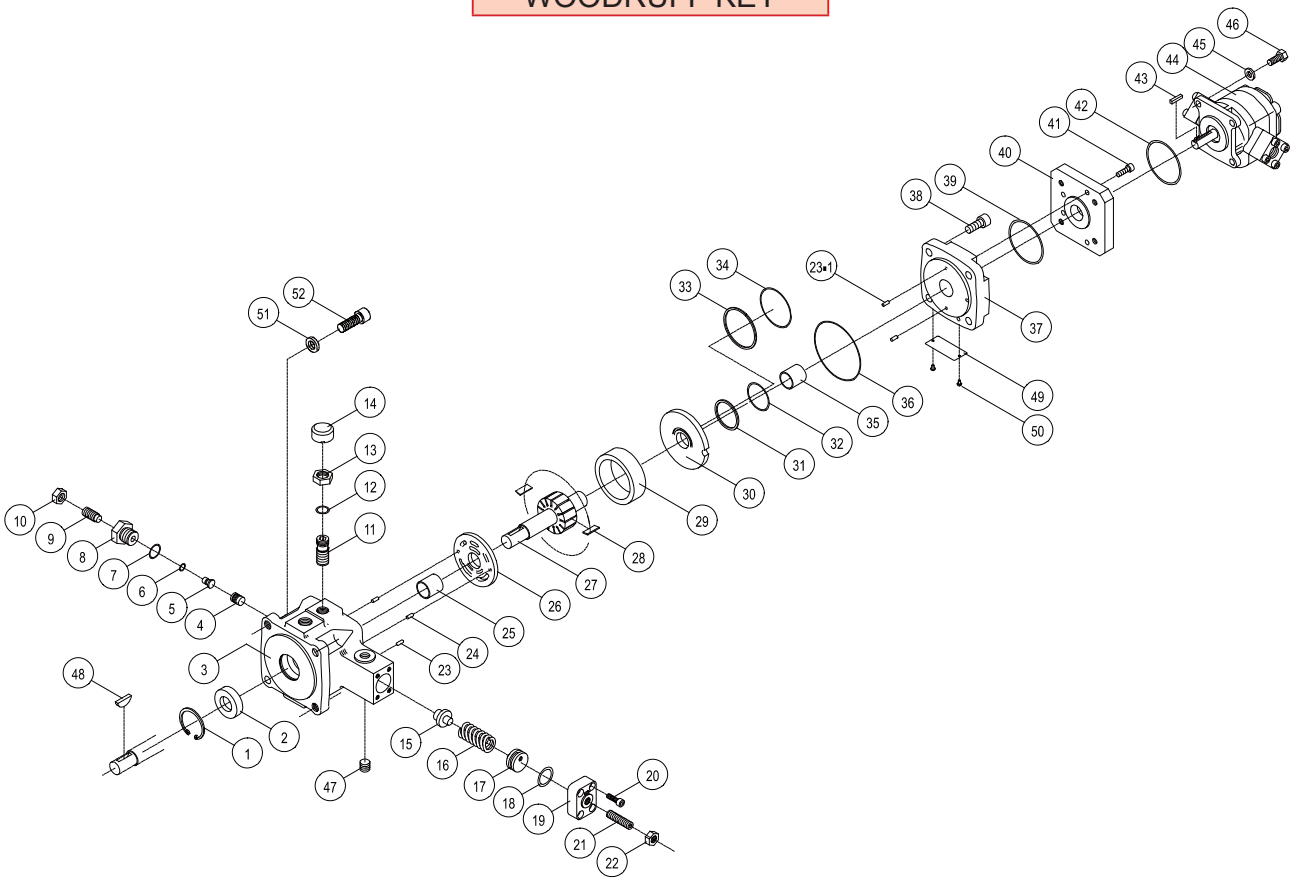
MODULE	= D.P.16/32
PRESSURE ANGLE	= 30 °
NO.OF TEETH	= 9
PITCH DIA.	= ø 14.2875
MAJOR DIA.	= ø 15.875 +0 -0.05
MINOR DIA.	= ø 11.811 MAX.

	GH1~GH6	GH7~GH9
A	39.9	43.7
B	91.2	95.0

F

【ASSEMBLY & PARTS LIST】

TPF-VL30(40)※-GH-10
WOODRUFF KEY

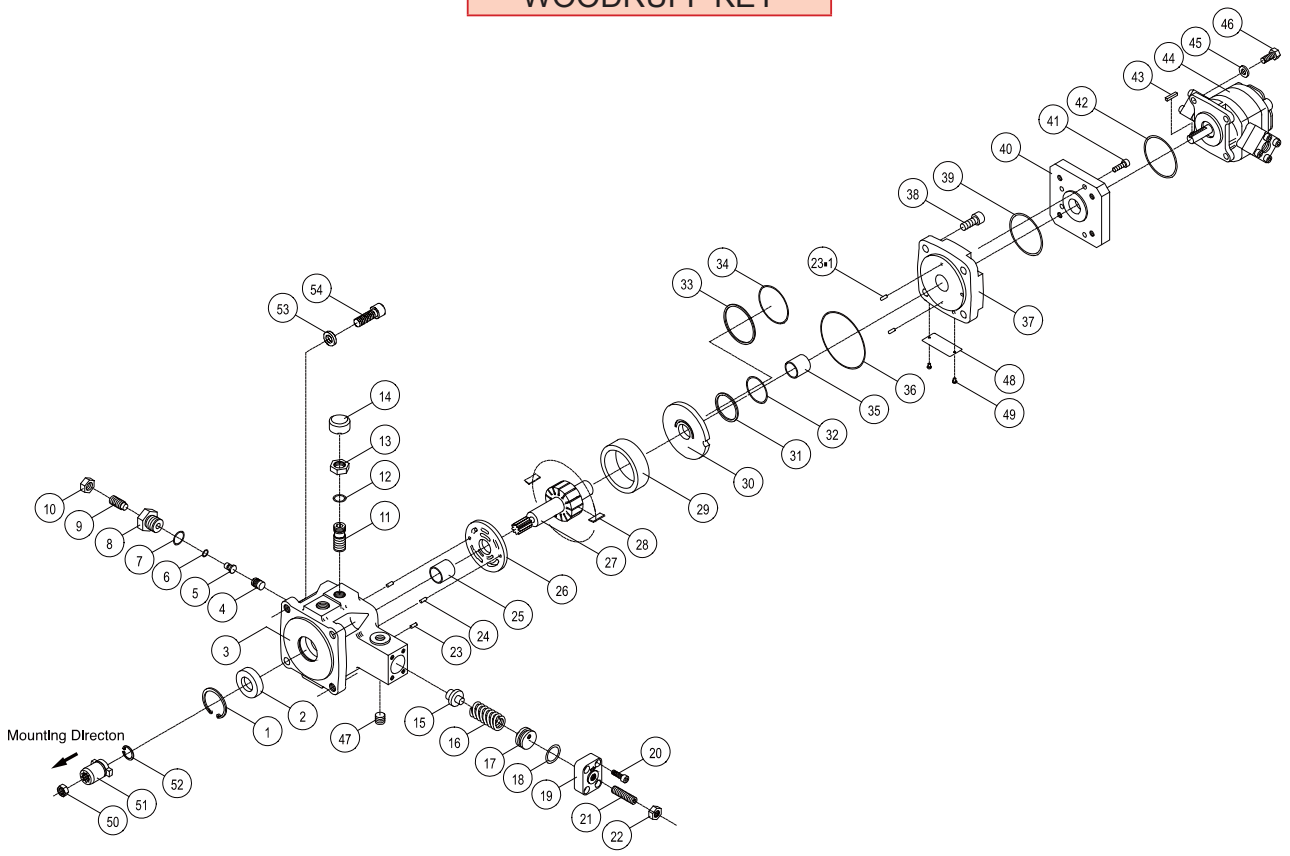


PARTS LIST											
NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1	20	Skt. HD. Cap Scr.	M6×P1.0×20L	4	38	Skt. HD. Cap Scr	M10×P1.5×25L	4
2	Shaft Seal	TCV 224211	1	21	Socket Set Screw	M10×P1.5×35L	1	39	O-Ring	1B-G60	1
3	Pump Body		1	22	Hexagon Nut	M10×P1.5	1	40	Connecting Flange		1
4	Piston(B)		1	23	Spring Pin	ø4×10	1	41	Skt. HD. Cap Scr	M6×P1.0×16L	1
5	Piston(A)		1	23-1	Spring Pin	ø4×10	2	42	O-Ring	1B-G60	1
6	O-Ring	1A-P5	1	24	Straight Pin	ø4×10	2	43	Key		1
7	O-Ring	1A-P22	1	25	Engine Bush	DIADO(JAPAN)DD2225	1	44	Fixed displacement gear pump		1
8	Thrust Screw		1	26	Port Plate		1	45	Washer	M8	4
9	Socket Set Screw	M12×P1.75×25L	1	27	Rotorshaft		1	46	Skt. HD. Cap Scr	M8×P1.25×20L	4
10	Hexagon Nut	M12×P1.75	1	28	Vanes		13	47	Plug	PT 1/4"	1
11	Slide Screw		1	29	Cam Ring		1	48	Woodruff Key	NO.608	1
12	O-Ring	1A-P14	1	30	Thrust Plate		1	49	Name Plate		1
13	Hexagon Nut	M16 P1.0	1	31	O-Ring	AS568-030	1	50	Fixing Screw		2
14	Cap		1	32	Endless Back-up Ring		1	51	Spring Washer	M10	4
15	Piston		1	33	O-Ring	AS568-035	1	52	Skt. HD. Cap Scr	M10×P1.5×30L	4
16	Spring		1	34	Endless Back-up Ring		1				
17	Spring Retainer		1	35	Engine Bush	DIADO(JAPAN)DD2220	1				
18	O-Ring	1A-P22A	1	36	O-Ring	1A-S85	1	▶51~52 are Accessories.			
19	Cover		1	37	Cover		1				

F

【ASSEMBLY & PARTS LIST】

TPF-VL30(40)※-GH-10S
WOODRUFF KEY

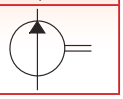


PARTS LIST											
NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY	NO.	DESCRIPTION	SPECIFICATION	QTY
1	Retainer Ring	R42	1	20	Skt. HD. Cap Scr.	M6×P1.0×20L	4	38	Skt. HD. Cap Scr	M10×P1.5×25L	4
2	Shaft Seal	TCV 224211	1	21	Socket Set Screw	M10×P1.5×35L	1	39	O-Ring	1B-G60	1
3	Pump Body		1	22	Hexagon Nut	M10×P1.5	1	40	Connecting Flange		1
4	Piston(B)		1	23	Spring Pin	ø4×10	1	41	Skt. HD. Cap Scr	M6×P1.0×16L	1
5	Piston(A)		1	23-1	Spring Pin	ø4×10	2	42	O-Ring	1B-G60	1
6	O-Ring	1A-P5	1	24	Straight Pin	ø4×10	2	43	Key		1
7	O-Ring	1A-P22	1	25	Engine Bush	DIADO(JAPAN)DD2225	1	44	Fixed displacement gear pump		1
8	Thrust Screw		1	26	Port Plate		1	45	Washer	M8	4
9	Socket Set Screw	M12×P1.75×25L	1	27	Rotorshaft		1	46	Skt. HD. Cap Scr	M8×P1.25×20L	4
10	Hexagon Nut	M12×P1.75	1	28	Vanes		13	47	Plug	PT 1/4"	1
11	Slide Screw		1	29	Cam Ring		1	48	Name Plate		1
12	O-Ring	1A-P14	1	30	Thrust Plate		1	49	Fixing Screw		2
13	Hexagon Nut	M16 P1.0	1	31	O-Ring	AS568-030	1	50	Hexagon Nut	M10×P1.5	1
14	Cap		1	32	Endless Back-up Ring		1	51	Coupling		1
15	Piston		1	33	O-Ring	AS568-035	1	52	Retainer Ring	IRTW 24	1
16	Spring		1	34	Endless Back-up Ring		1	53	Spring Washer	M10	4
17	Spring Retainer		1	35	Engine Bush	DIADO(JAPAN)DD2220	1	54	Skt. HD. Cap Scr	M10×P1.5×30L	4
18	O-Ring	1A-P22A	1	36	O-Ring	1A-S85	1				
19	Cover		1	37	Cover		1	▶51~52 are Accessories.			

【50T, 150T】

※GRAPHIC SYMBOL

50T, 150T



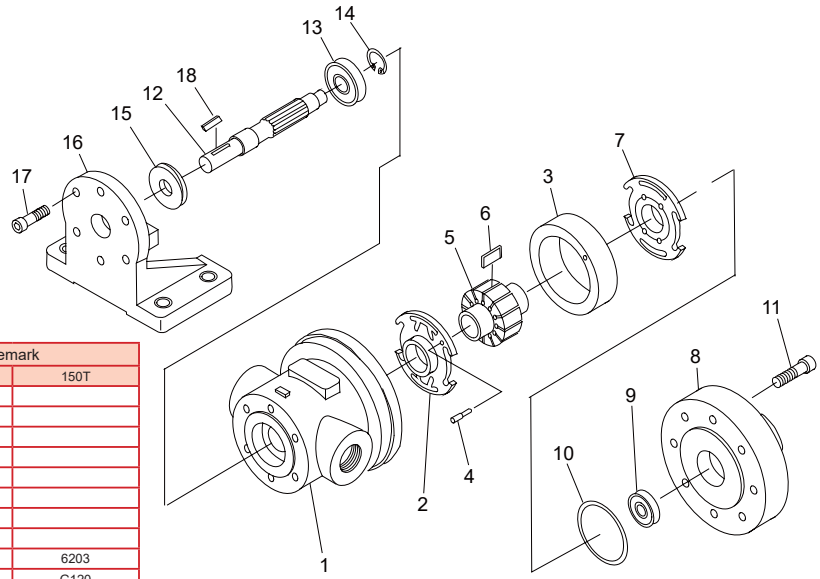
※MODEL NUMBER DESIGNATION

50-	T-	36-	F-	R-	L
Series No.	Connections T: Threaded F: Flanged	Displacement (c.c./rev.) 50T: 09, 12, 14, 17, 19, 23, 26, 30, 36, 39, 43 150T: 48, 61, 75, 94, 116	Mounting Type L: Foot F: Flange	Direction of Rotation (View from Shaft End) R: Clockwise L: Counter-Clockwise	Discharge Port Position (View from Shaft End) R: Right L: Left(Normal)

※SPECIFICATION

Model		Delivery Capacity (c.c./rev) Speed of Rotation(rpm)				Speed of Rotation(rpm)		Max. Pressure Kg/Cm²(MPa)	Weight (Kg)	
		1000	1200	1500	1800	Max	Min		Foot Type	Flange Type
50T-	09	---	10.8	13.5	16.2	1800	1200	70(7)	10.5	9.5
	12	12.0	14.4	18.0	21.6	1800	950	70(7)	10.5	9.5
	14	14.6	17.5	21.7	26.1	1800	950	70(7)	10.5	9.5
	17	17.0	20.3	25.5	31.5	1800	950	70(7)	10.5	9.5
	20	20.1	24.1	30.2	36	1800	950	70(7)	10.5	9.5
	23	23.0	27.6	34.5	41.4	1800	950	70(7)	10.5	9.5
	26	26.2	31.4	39.3	47.2	1800	950	70(7)	10.5	9.5
	30	30.0	36.0	44.5	53.0	1800	950	70(7)	10.5	9.5
	36	36.2	43.4	54.3	64.0	1800	950	70(7)	10.5	9.5
	39	39.0	46.5	58.5	70.0	1800	950	70(7)	10.5	9.5
	43	43.0	51.6	---	---	1200	900	35(3.5)	10.5	9.5
150T-	48	48.3	57.9	72.4	86.9	1800	900	70(7)	25.0	25.0
	61	61.5	73.8	92.2	110.7	1800	900	70(7)	25.0	25.0
	75	95.5	90.6	113.2	135.9	1800	900	70(7)	25.0	25.0
	94	94.2	113.0	141.3	169.5	1800	900	70(7)	25.0	25.0
	116	116.3	139.6	174.0	---	1200	900	70(7)	25.0	25.0

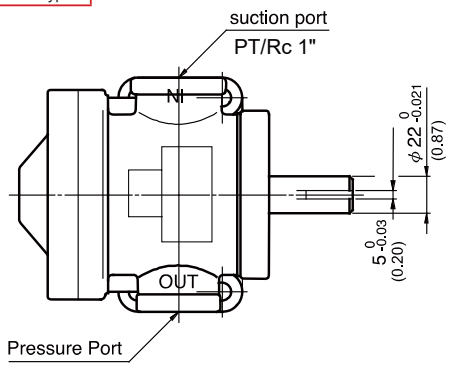
※PARTS LIST



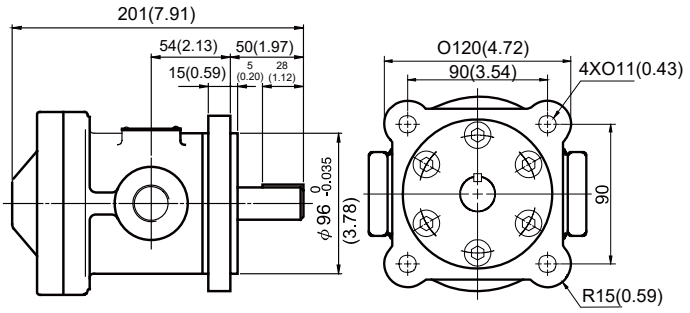
No.	Description	Quantity		Remark	
		50T	150T	50T	150T
1	Pump Housing	1	1		
2	Front Port Plate	1	1		
3	Cam Ring	1	1		
4	Looking Pin	1	1		
5	Rotor	1	1		
6	Vane	12	12		
7	Rear Port Plate	1	1		
8	End Cover	1	1		
9	Bearing	1	1	6200	6203
10	O-Ring	1	1	G75	G120
11	Countersink Hex-Screw	8	10	M10X1.5X30	M10X1.5X40
12	Mandrel	1	1		
13	Bearing	1	1	6204	6205
14	Retainer Ring	1	1	S-20	S-25
15	Oil Seal	1	1	25X47X8	32X52X9
16	Flange(Lug)	1	1		
17	Counter Hex-Screw	4	6	M10X1.5X20	M10X1.5X20
18	Key	1	1	5X5X30	7X7X35

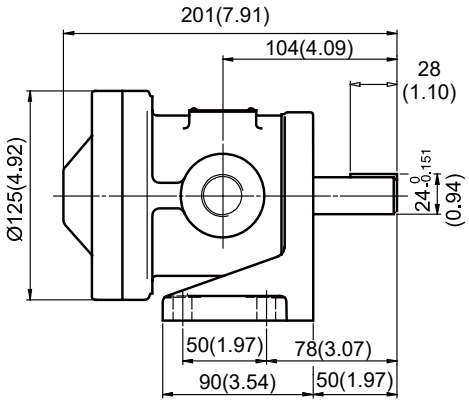
【DIMENSIONS】

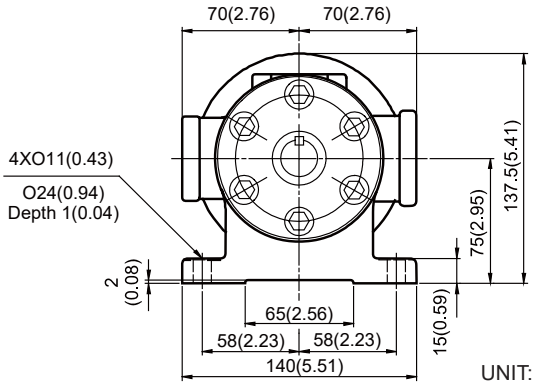
50T-*-L
Foot Type



50T-*-F
Flange Type

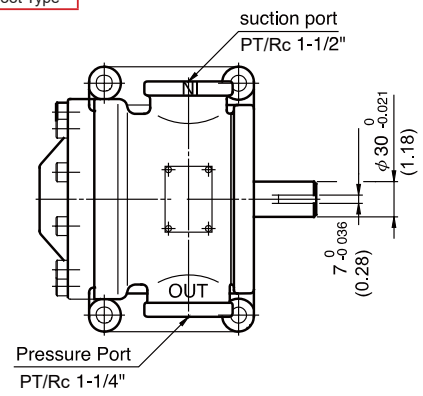




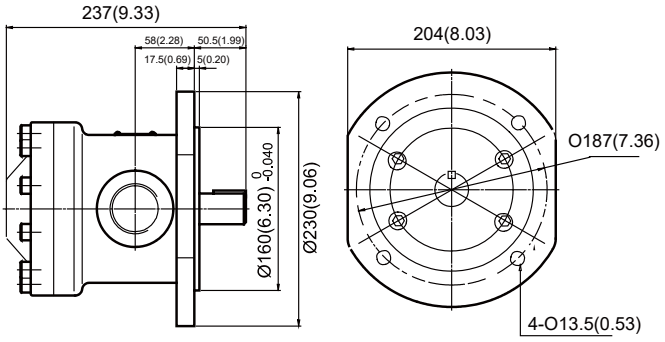


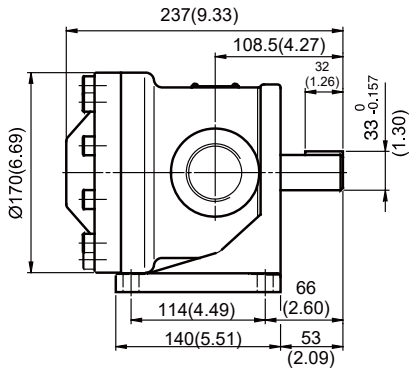
UNIT: M.M.(INCHES)

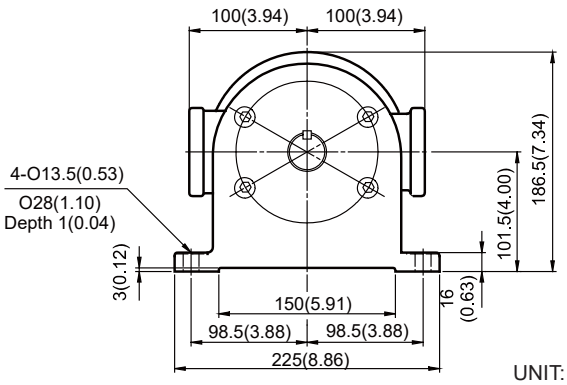
150T-*-L
Foot Type



150T-*-F
Flange Type



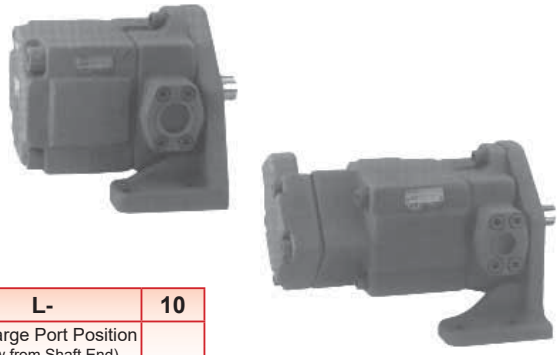




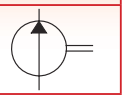
UNIT: M.M.(INCHES)

F

【PV2R1/2/3/4 PV2R12/13/23/24】



※GRAPHIC SYMBOL

PV2R※	PV2R※※
	

F

※MODEL NUMBER DESIGNATION-SINGLE PUMP

PV2R1-	11-	F-	R-	L-	10
Series No.	Displacement(c.c./rev.)	Mounting Type L: Foot F: Flange	Direction of Rotation (View from Shaft End) R: Clockwise L: Counter-Clockwise	Discharge Port Position (View from Shaft End) A: Upward-Normal B: Downward R: Right Hand L: Left Hand	Design No.
PV2R1	6, 8, 11, 14, 17, 19, 23, 25, 31				
PV2R2	41, 47, 53, 59, 65				
PV2R3	76, 94, 116				
PV2R4	136, 153, 184, 200, 237				

※MODEL NUMBER DESIGNATION-DOUBLE PUMP

PV2R12-	11-	53	F-	R-	A-	B-	10
Series No.	Displacement(ml/rev.)	Displacement(ml/rev.)	Mounting Type L: Foot F: Flange	Direction of Rotation (View from Shaft End) R: Clockwise L: Counter-Clockwise	Discharge Port Position (View from Shaft End) A: Upward-Normal B: Downward R: Right Hand L: Left Hand	Suction Port Position (View from Shaft End) A: Upward-Normal B: Downward R: Right Hand L: Left Hand	Design No.
PV2R12	6, 8, 10, 12, 14, 17, 19, 23, 25, 31	26, 33, 41, 47, 53, 59, 65					
PV2R13		76, 94, 116					
PV2R23	41, 47, 53, 59, 65	52, 60, 66, 76, 94, 116					
PV2R24	26, 33, 41, 47	136, 153, 184, 200, 237					

※SPECIFICATION

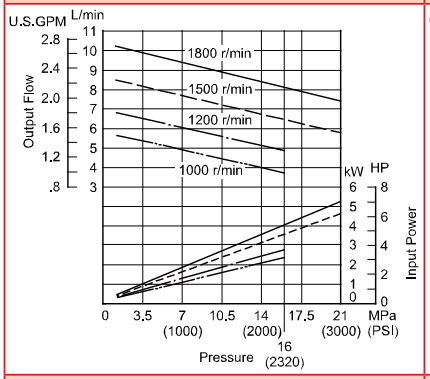
Model		Geometric Displacement ml/rev (cu.in./rev)	Max. Operating Pressure MPa (PSI)					Output Flow & Input Power	Shaft Speed Range r/min		Approx. Mass kg (lbs.)	
			Petroleum Base Oils		Water Containing Fluids			Synthetic Fluids				
			Anti-Wear Type	VG-32/46	Anti-Wear Type Water Glycols	Water Glycols	Water in Oil Emulsions	Phosphate Esters		Max.	Min.	Flange Mtg.	Foot Mtg.
PV2R1-	06	5.8 (.354)	21(3050) *5	16 (2320)	16 (2320)	7 (1020)	7 (1020)	16 (2320)	Refer to Next Page	1800(1200) *3	750 *4	9.0	11.2
	08	8.0 (.488)											
	10	9.4 (.574)	21 (3050)										
	12	12.2 (.744)											
	14	13.7 (.836)											
	17	16.6 (1.013)											
	19	18.6 (1.135)											
	23	22.7 (1.385)											
	25	25.3 (1.544)											
	31	31.0 (1.892)	16(2320)										
PV2R2-	41	41.3 (2.52)	21 (3050)	14 (2030)	16 (2320)	7 (1020)	7 (1020)	14 (2030)	Refer to Next Page	1800(1200) *3	600 *4	19.0	23.3
	47	47.2 (2.88)											
	53	52.5 (3.20)											
	59	58.2 (3.55)											
	65	64.7 (3.95)											
PV2R3-	76	76.4 (4.66)	21 (3050)	14 (2030)	16 (2320)	7 (1020)	7 (1020)	14 (2030)	Refer to Next Page	1800(1200) *3	600	36.7	46.7
	94	93.6 (5.71)											
	116	115.6 (7.05)	16(2320)							1800(1200) *1 *3			
PV2R4-	136	136 (8.30)	17.5 (2540)	14 (2030)	16 (2320)	7 (1020)	7 (1020)	14 (2030)	Refer to Next Page	1800(1200) *3	600	68.5	93.5
	153	153 (9.34)											
	184	184 (11.23)											
	200	201 (12.26)											
	237	237 (14.46)								1800(1200) *2 *3			

*1. If PV2R3-116 is used at speed above 1700 r/min, the suction pressure is limited to 0 kPa (0 in. Hg.).
*2. If PV2R4-237 is used at speed above 1700 r/min, the suction pressure is limited to -13 kPa (3.94 in. Hg. vacuum).
*3. If phosphate ester or water containing fluids are used, the maximum speed is limited to 1200 r/min.
*4. For starting at low speed, the maximum viscosity is limited.
*5. For pressure above 16 MPa (2320 PSI), raise the speed over 1450 r/min.

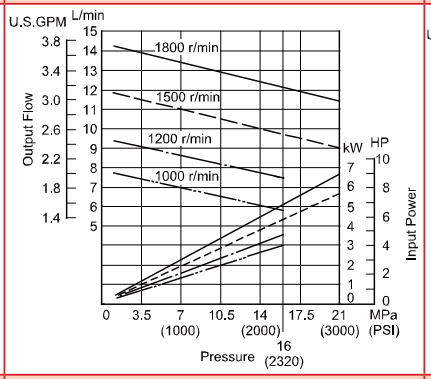
F

※PERFORMANCE CURVE

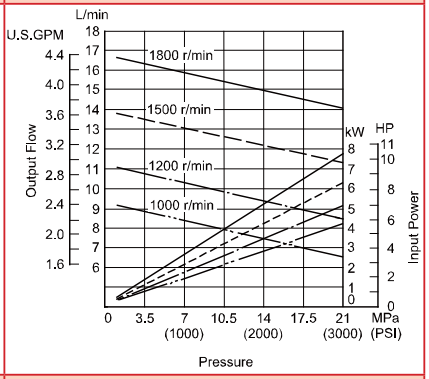
PV2R1-6



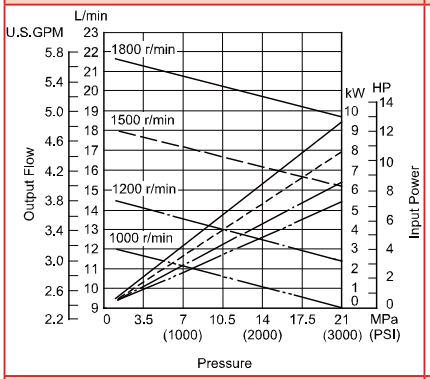
PV2R1-8



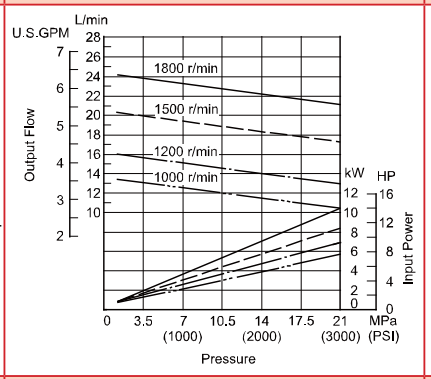
PV2R1-10



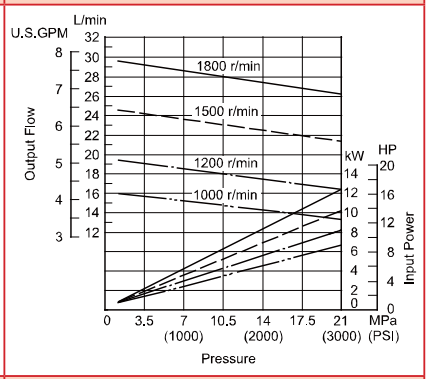
PV2R1-12



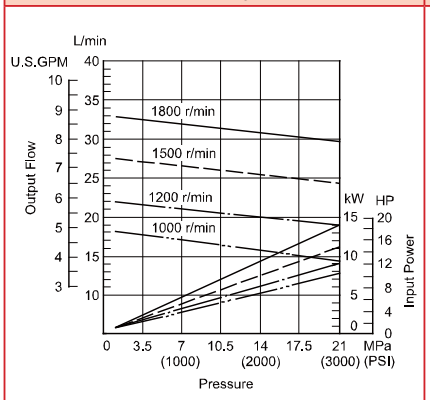
PV2R1-14



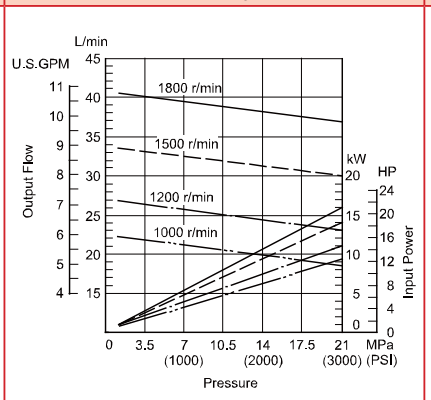
PV2R1-17



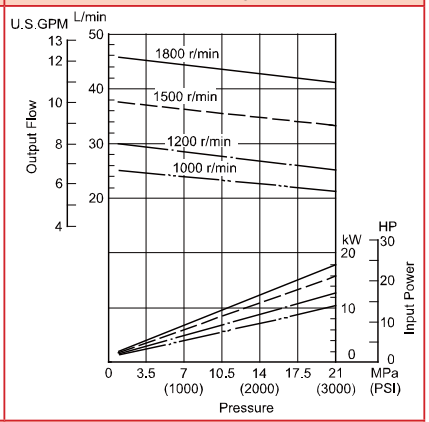
PV2R1-19



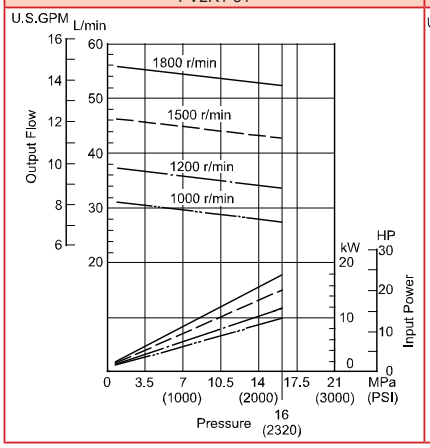
PV2R1-23



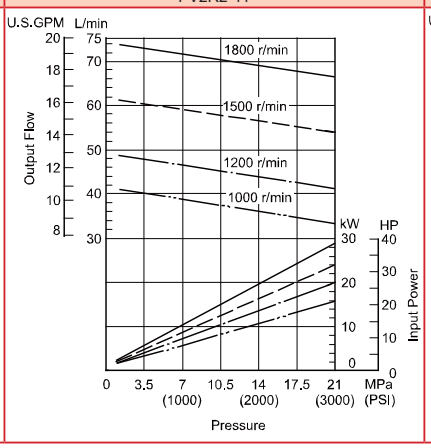
PV2R1-25



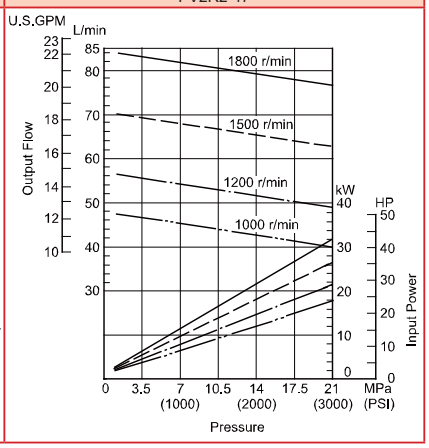
PV2R1-31



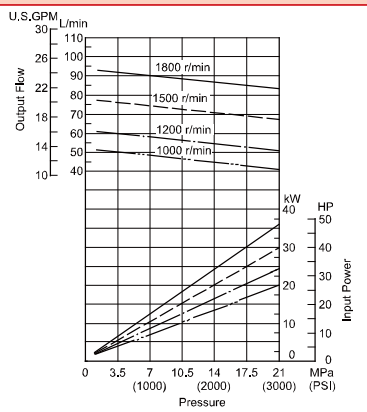
PV2R2-41



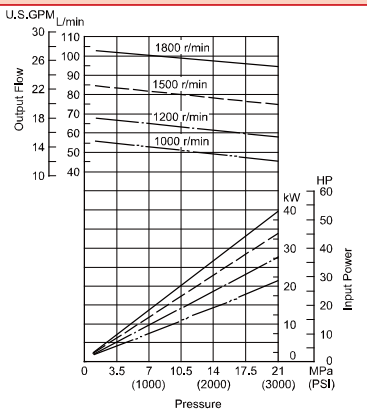
PV2R2-47



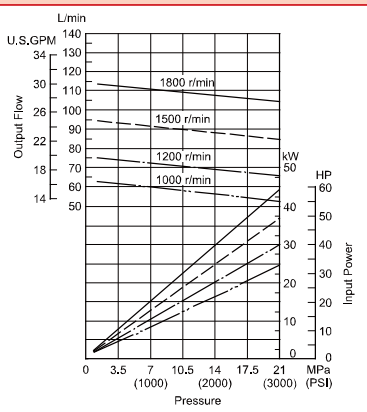
PV2R2-53



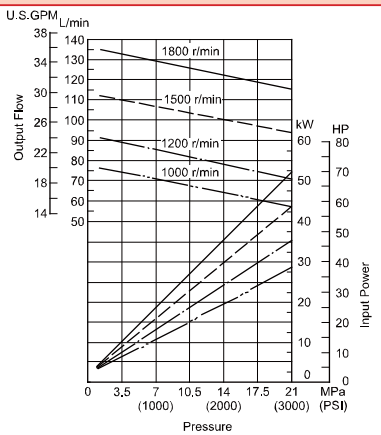
PV2R2-59



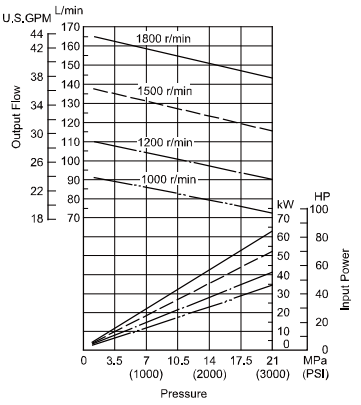
PV2R2-65



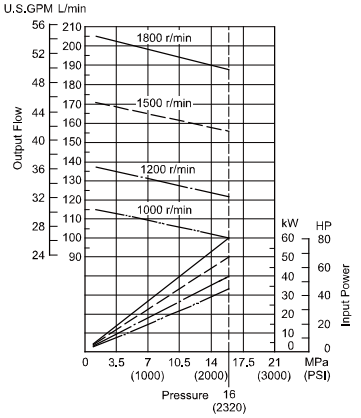
PV2R3-76



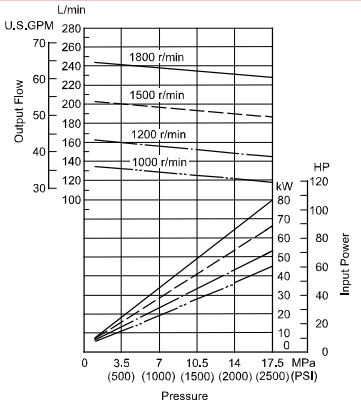
PV2R3-94



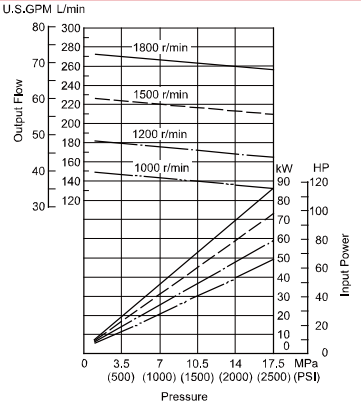
PV2R3-116



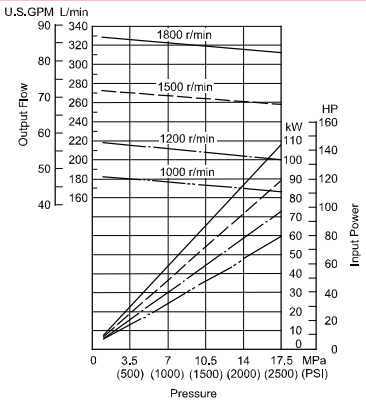
PV2R4-136



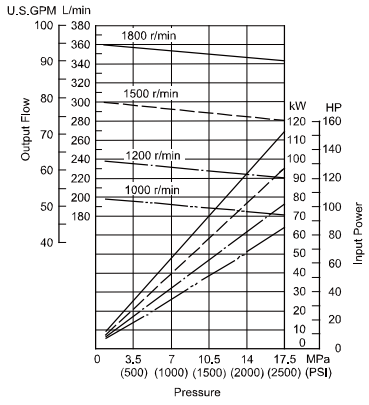
PV2R4-153



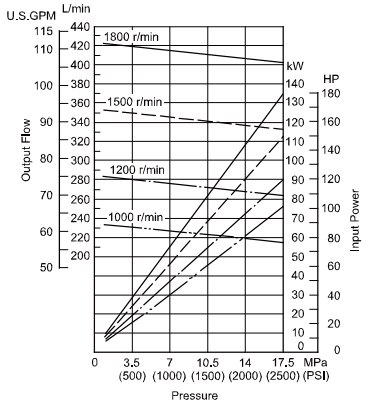
PV2R4-184



PV2R4-200



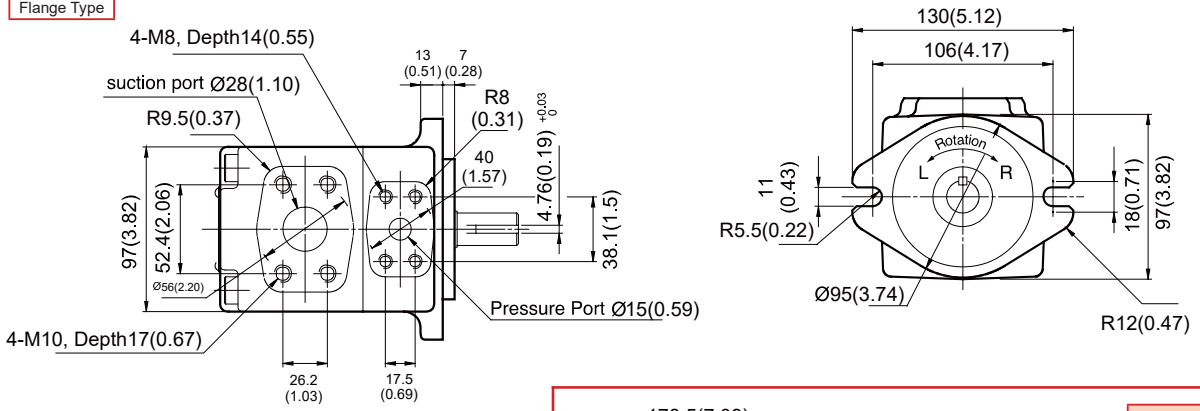
PV2R4-237

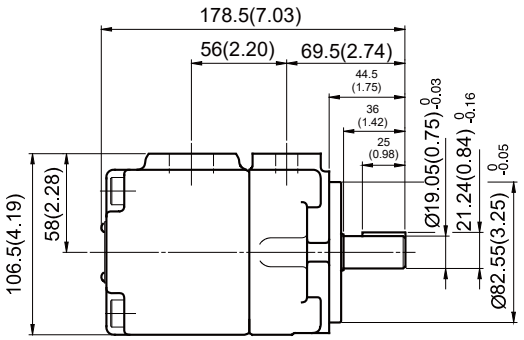


F

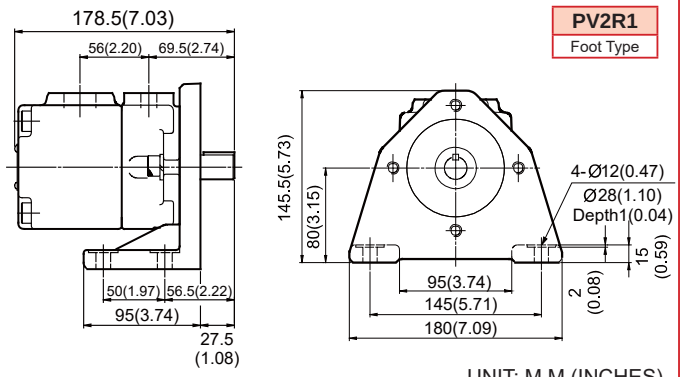
【DIMENSIONS】

PV2R1
Flange Type



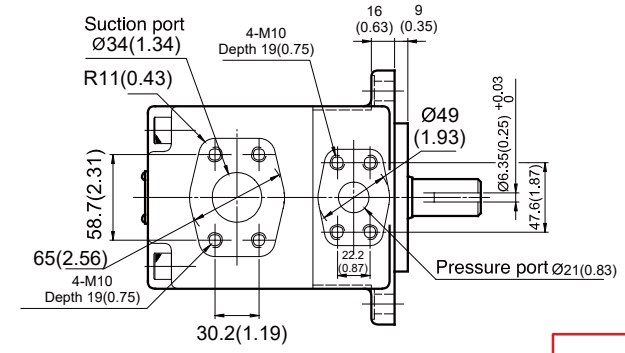


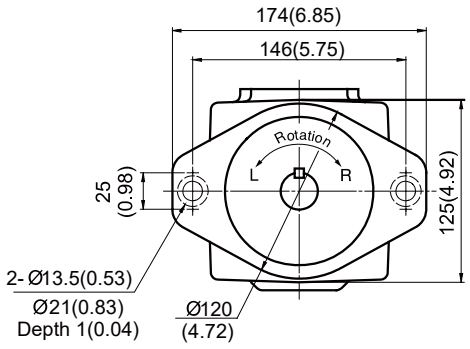
PV2R1
Foot Type

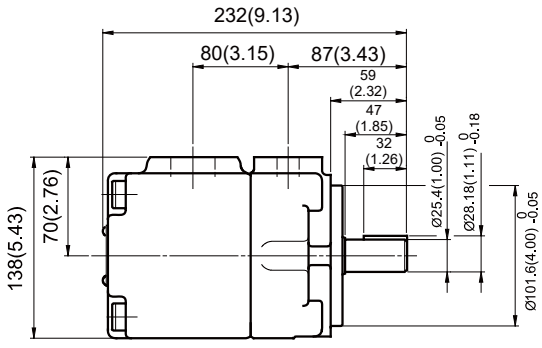


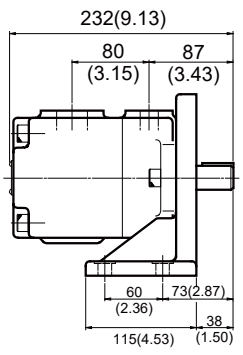
UNIT: M.M.(INCHES)

PV2R2
Flange Type

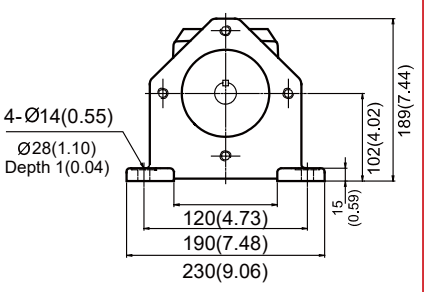








PV2R2
Foot Type

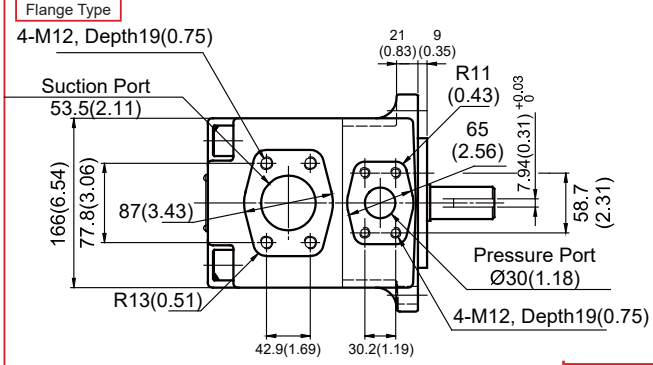


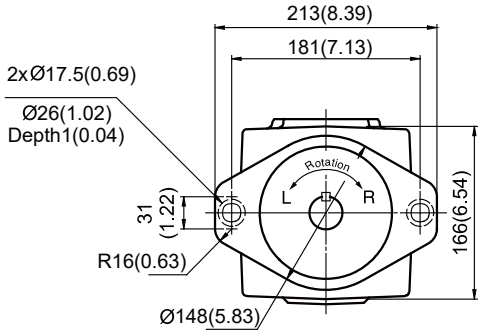
UNIT: M.M.(INCHES)

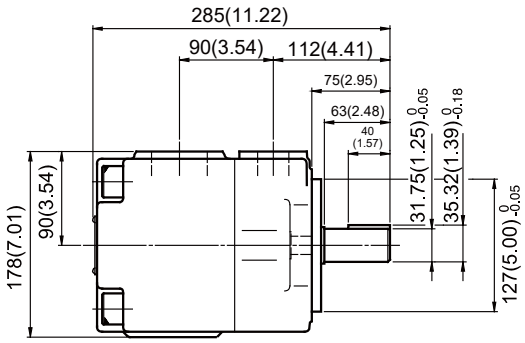
F

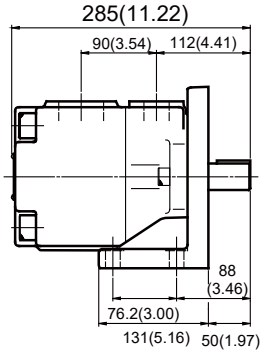
[DIMENSIONS]

PV2R3
Flange Type

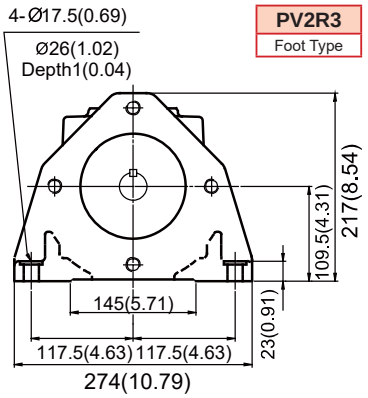






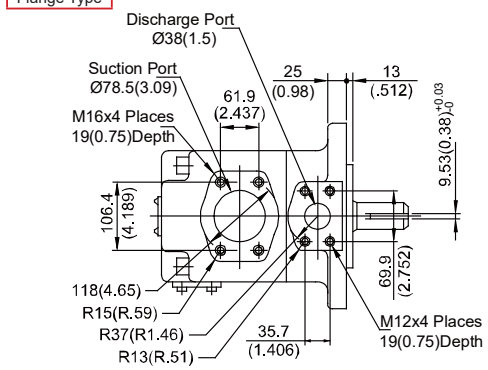


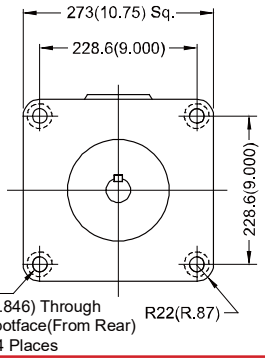
PV2R3
Foot Type

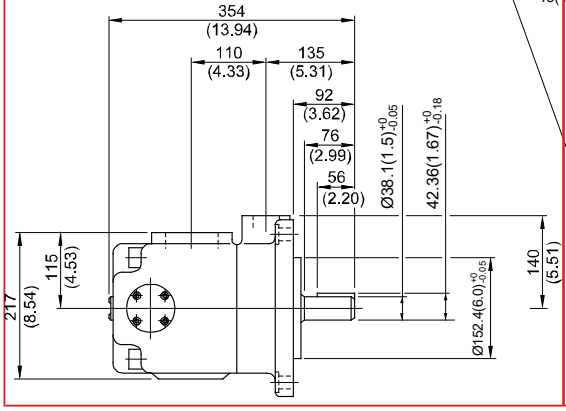


UNIT: M.M.(INCHES)

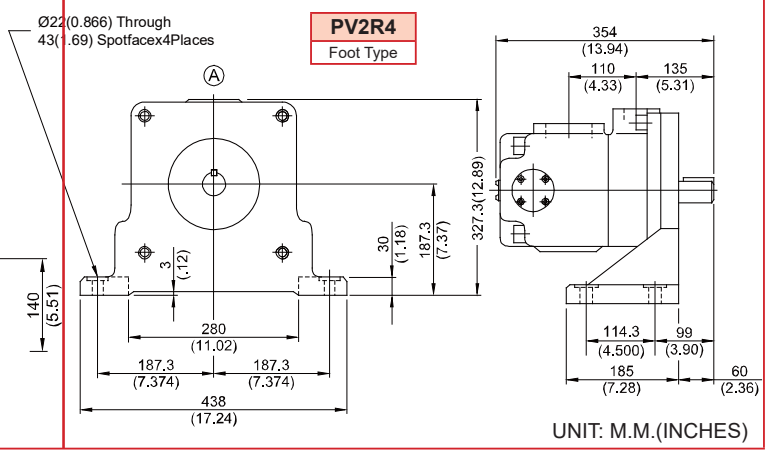
PV2R4
Flange Type







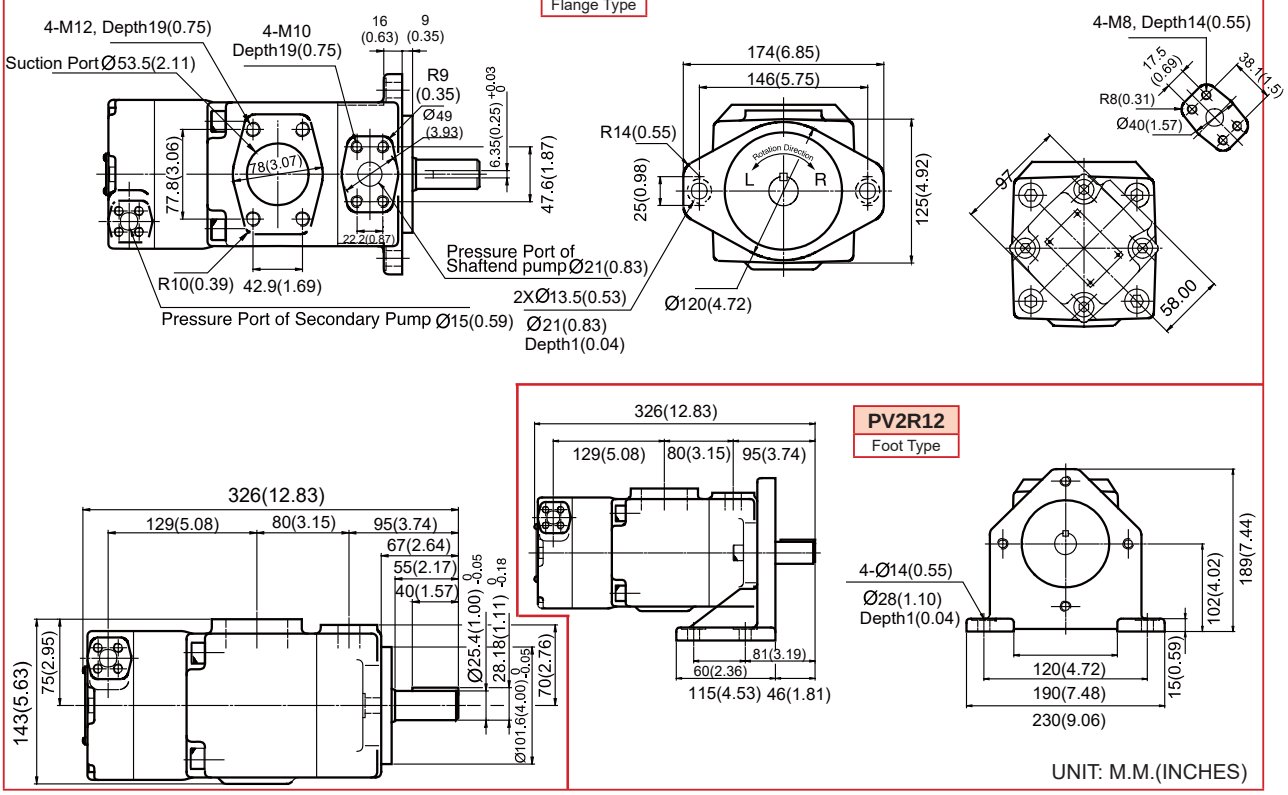
PV2R4
Foot Type



UNIT: M.M.(INCHES)

【DIMENSIONS】

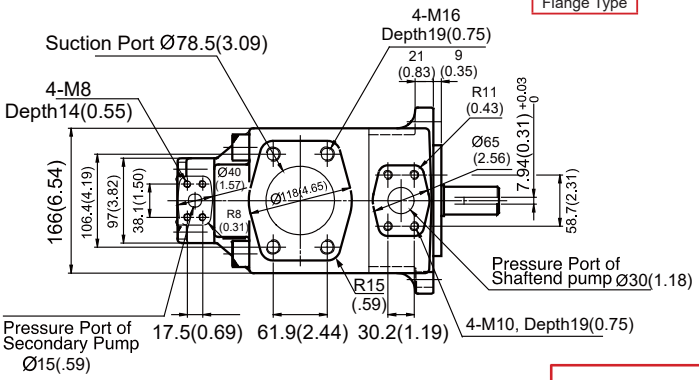
PV2R12
Flange Type

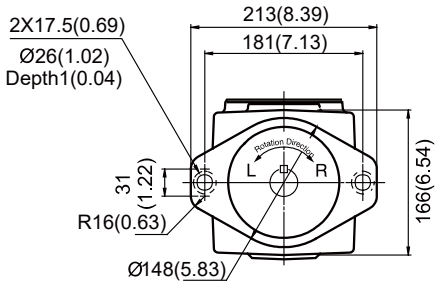


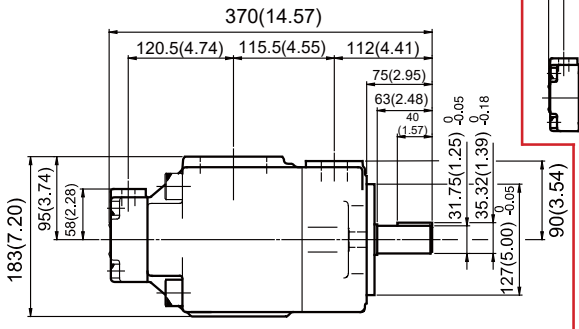
PV2R12
Foot Type

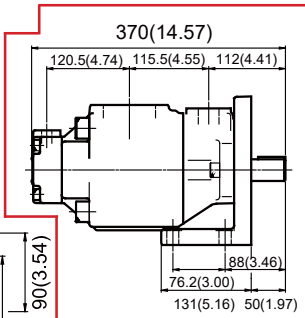
UNIT: M.M.(INCHES)

PV2R13
Flange Type

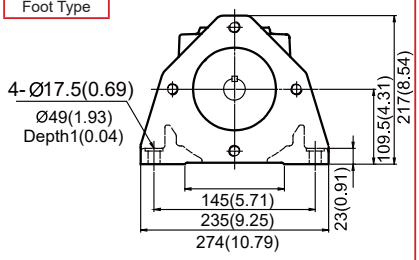








PV2R13
Foot Type

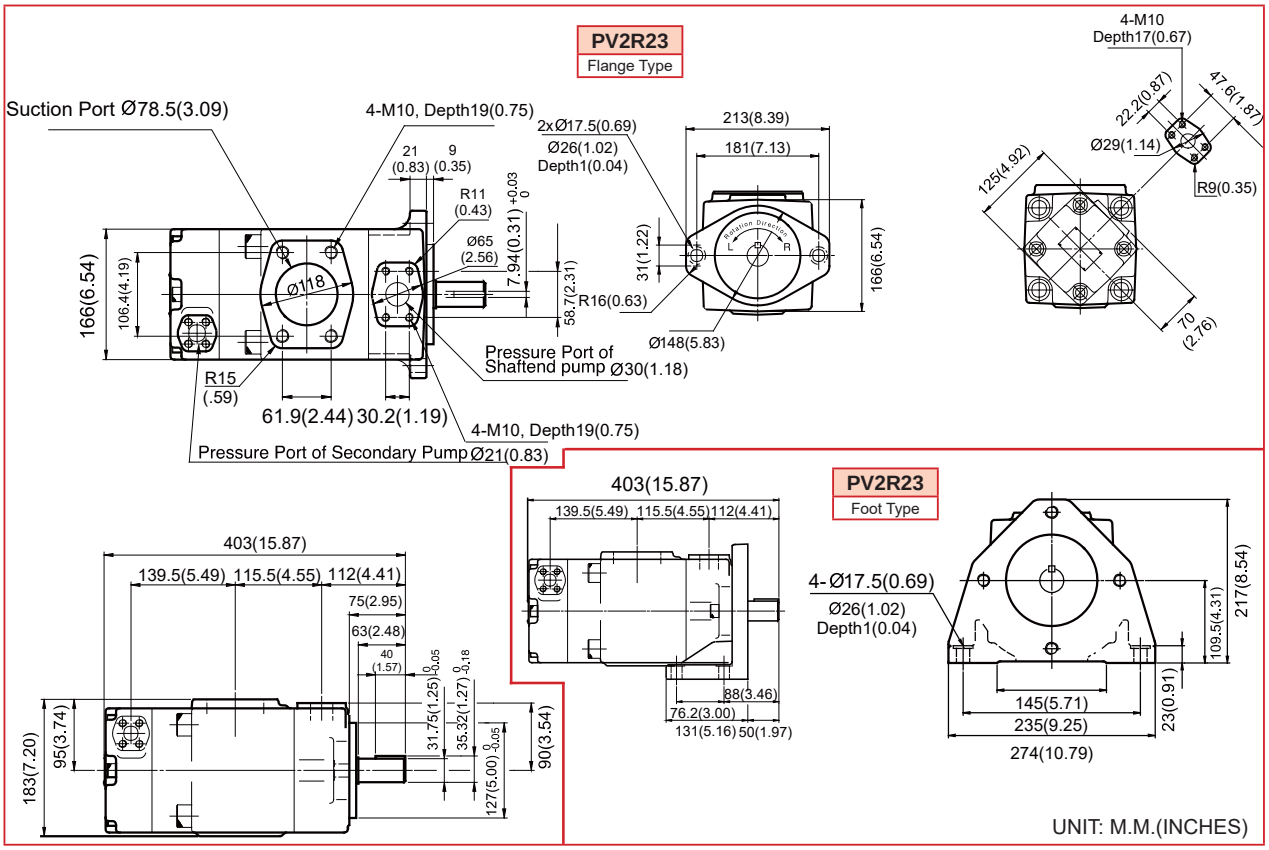


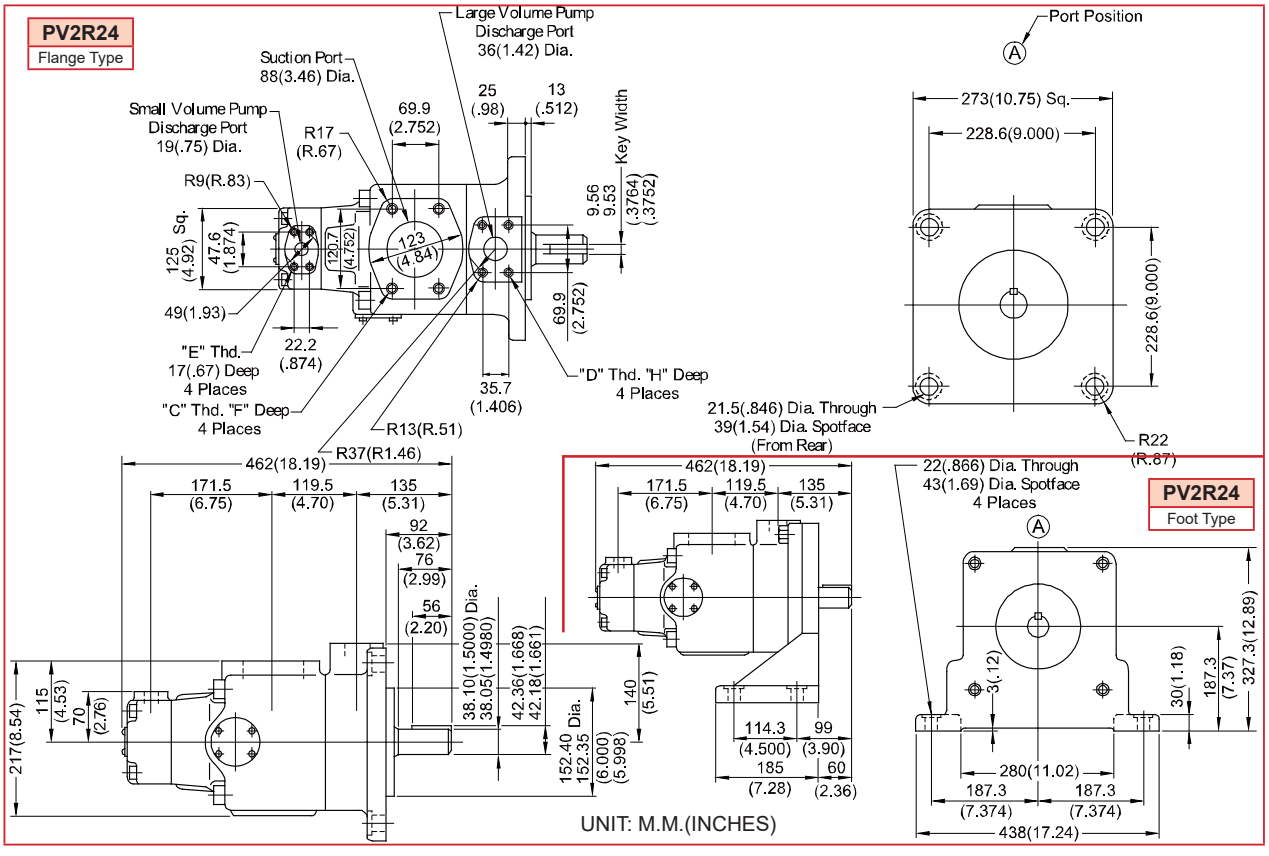
UNIT: M.M.(INCHES)

F

F

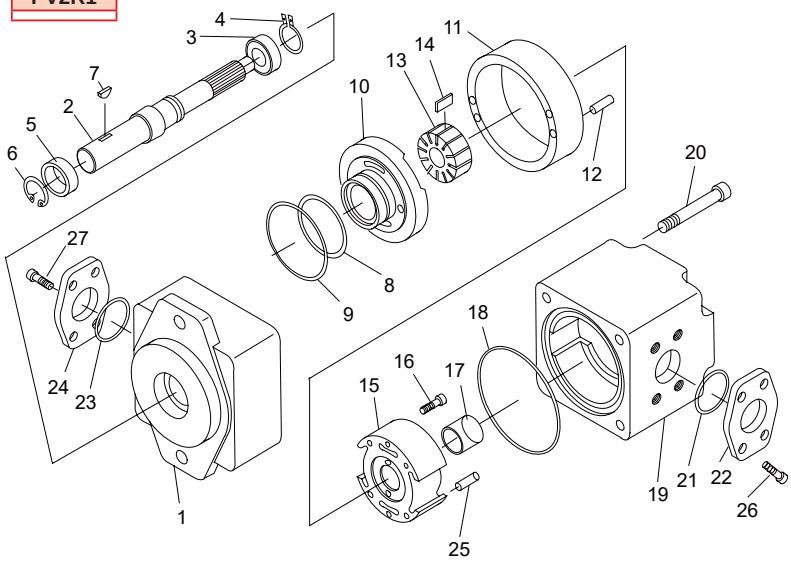
[DIMENSIONS]





【PARTS LIST】

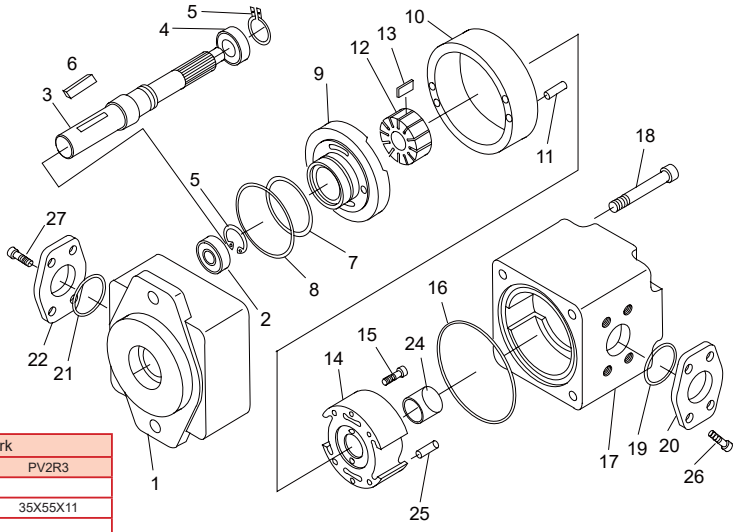
PV2R1



No.	Description	Quantity	Remark
1	Pump Housing	1	
2	Mandrel	1	
3	Bearing	1	6004
4	Retainer Ring	1	S-20
5	Oil Seal	1	22X42X7
6	Retainer Ring	1	R41
7	Woodruff Key	1	No.607
8	O-Ring	1	G30
9	O-Ring	1	G62
10	Front Port Plate	1	
11	Cam Ring	1	
12	Locking Pin	2	Ø6.0X37
13	Rotor	1	
14	Vane	12	
15	Rear Port Plate	1	
16	Countersink Hex-Screw	2	M4X0.7X50
17	Dry Bearings	1	15X15
18	O-Ring	1	G80
19	Rear Cover	1	
20	Countersink Hex-Screw	4	M10X1.5X80
21	O-ring	1	G35
22	Flange	1	
23	O-Ring	1	P22
24	Flange	1	
25	Locking Pin	1	Ø6.0X12.5
26	Countersink Hex-Screw	4	M10X1.5X30
27	Countersink Hex-Screw	4	M8X12.5X30

PV2R2

PV2R3



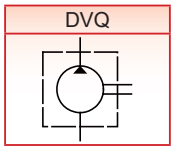
No.	Description	Quantity		Remark	
		PV2R2	PV2R3	PV2R2	PV2R3
1	Pump Housing	1	1		
2	Oil Sear	1	1	30x42x10.5	35X55X11
3	Mandrel	1	1		
4	Bearings	1	1	3205	6207
5	Retainer Ring	1	1	R52	R72
6	Key	1	1	6.35X6.35X32	7.49X7.49X40
7	O-Ring	1	1	P45	AS568
8	O-Ring	1	1	G85	G115
9	Front Port Plate	1	1		
10	Cam Ring	1	1		
11	Locking Pin	2	2	Ø6.0X45	Ø6.0X50
12	Rotor	1	1		
13	Vane	12	12		
14	Rear Port Plate	1	12		
15	Countersink Hex-Screw	1	1	M5X0.8X60	M6X1.0X80
16	O-Ring	1	1	G105	G135
17	Rear Cover	1	1		
18	Countersink Hex-Screw	1	1	M12X1.75X110	M16X2.0X180
19	O-Ring	1	1	G40	G65
20	Flange	1	1		
21	O-Ring	1	1	G30	G40
22	Flange	1	1		
23	Retainer Ring	1	1	S-25	S-35
24	Dry Bearings	1	1	20X20	25X25
25	Locking Pin	1	1	Ø6X12.5	Ø6X12.5
26	Countersink Hex-Screw	4	4	M10X1.5X35	M12X1.75X35
27	Countersink Hex-Screw	4	4	M10X1.5X30	M10X1.5X35

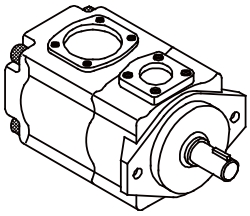
F

【DVQ20/25】

F

※GRAPHIC SYMBOL





Model	Weight(Kg)	
	Flange Type	Foot Type
DVQ20	11.0	13.5
DVQ25	18.0	23.0

※MODEL NUMBER DESIGNATION

DVQ20-	19-	F-	R-	A	A-	01-
Series No.	Displacement (cm^3/rev.)	Mounting Type	Rotation (View from Shaft End)	Discharge Position	Suction Position	Shaft Design Number
DVQ20	6, 8, 11, 14, 17, 19, 23, 26, 32, 34, 38	F: Flange Type L: Foot Type	R: Clockwise L: Counter Clockwise	A: Upward (Normal) B : Downward R : On Right Hand L : On Left Hand	A: Upward (Normal) B : Downward R : On Right Hand L : On Left Hand	01:Standard. 02: Refer to Dimension 03: Refer to Dimension 04: Refer to Dimension
DVQ25	18, 22, 26, 32, 38, 43, 47, 52, 60, 65, 75					

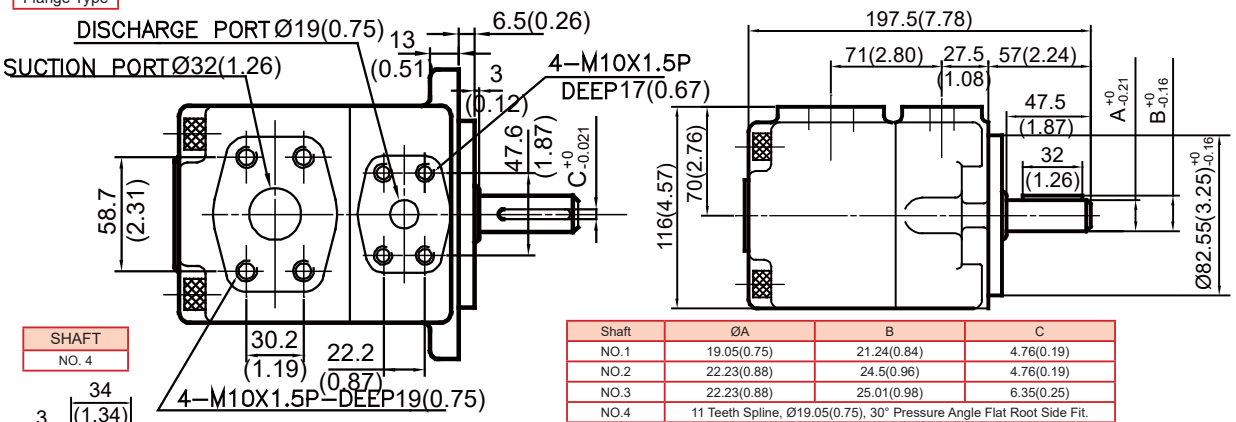
※SPECIFICATION

Model		Deliver Flow(ℓ/min) at No-Load Pressure				Running Speed (rpm)		Max. Pressure MPa (kgf/cm²)	
		Running Speed (rpm)				Max.	Min.	Cont.	Peak.
		1000	1200	1500	1800				
DVQ20-	06	6.2	7.4	9.3	11.2	1800	800	210	260
	08	8.1	9.7	12.1	14.6	1800	800	210	260
	11	11.2	13.4	13.4	20.1	1800	800	210	260
	14	14.3	17.1	21.5	25.7	1800	800	210	260
	17	17.1	20.5	25.6	30.7	1800	800	210	260
	19	19.2	23.0	28.8	34.5	1800	800	210	260
	23	23.3	27.9	34.9	41.9	1800	800	210	260
	26	26.1	31.3	39.1	46.9	1800	800	210	260
	32	32.1	38.3	47.6	---	1500	800	175	240
	34	34.1	40.8	50.4	---	1500	800	175	240
	38	38.1	45.9	---	---	1200	800	175	240
DVQ25-	18	18.1	21.7	27.2	32.6	1800	800	210	260
	22	22.1	26.5	33.3	39.8	1800	800	210	260
	26	26.2	31.4	39.3	47.1	1800	800	210	260
	32	32.1	38.5	48.1	57.7	1800	800	210	260
	38	38.2	45.8	57.3	68.7	1800	800	210	260
	43	43.2	51.8	64.8	77.7	1800	800	210	260
	47	47.1	56.5	70.0	85.0	1800	800	210	260
	52	52.3	62.7	78.4	94.1	1800	800	210	260
	60	60.2	72.7	90.3	108.3	1800	800	210	260
	65	65.3	78.3	97.9	117.5	1800	800	210	230
	75	75.0	90.0	112.5	---	1500	800	210	230

F

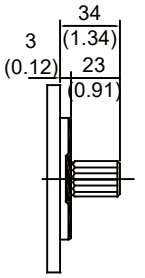
【DIMENSIONS】

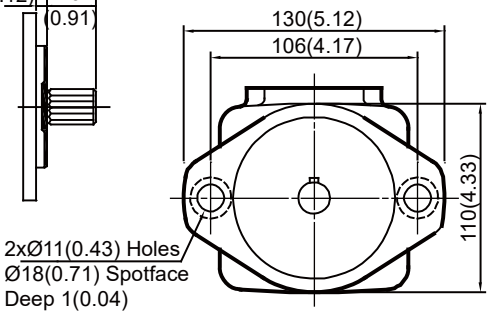
DVQ20
Flange Type



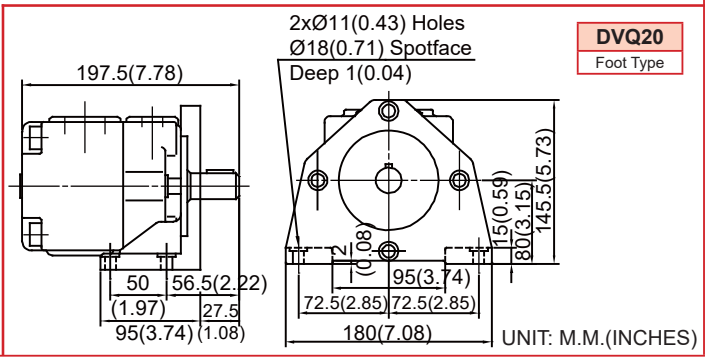
Shaft	ØA	B	C
NO.1	19.05(0.75)	21.24(0.84)	4.76(0.19)
NO.2	22.23(0.88)	24.5(0.96)	4.76(0.19)
NO.3	22.23(0.88)	25.01(0.98)	6.35(0.25)
NO.4	11 Teeth Spline, Ø19.05(0.75), 30° Pressure Angle Flat Root Side Fit.		

SHAFT
NO. 4



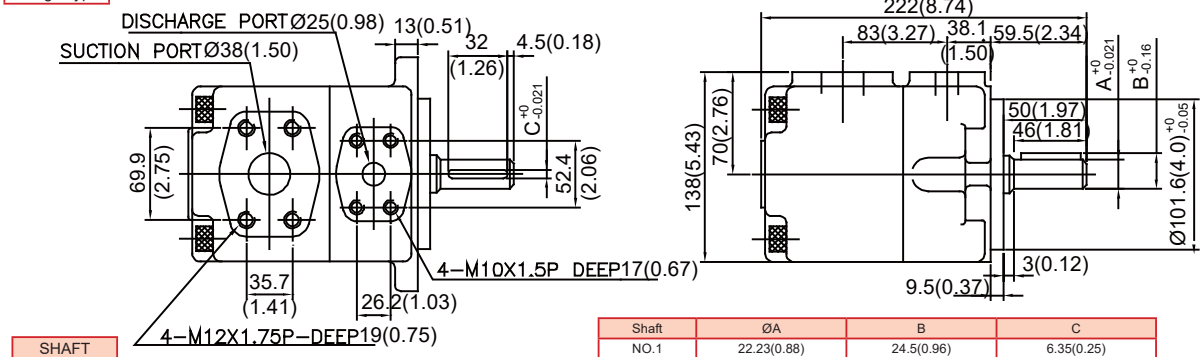


DVQ20
Foot Type



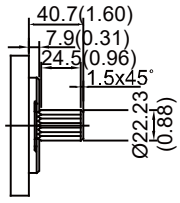
UNIT: M.M.(INCHES)

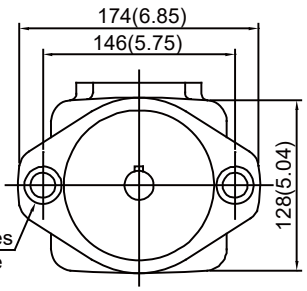
DVQ25
Flange Type



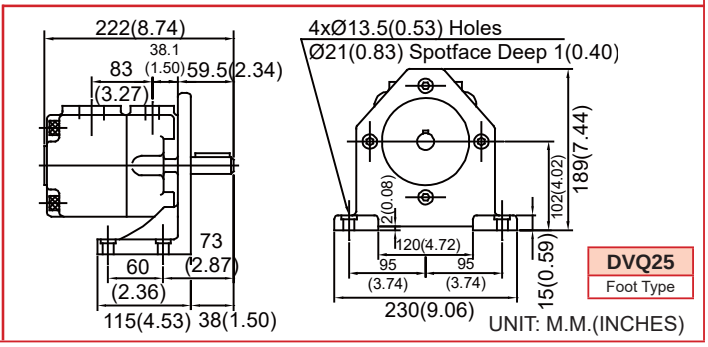
Shaft	ØA	B	C
NO.1	22.23(0.88)	24.5(0.96)	6.35(0.25)
NO.2	25.4(1.0)	28.18(1.11)	6.35(0.25)
NO.3	30.0(1.18)	33.0(1.30)	7.0(0.28)
NO.4	16/32 d.p.-13 Teeth, Ø19.05(0.75), 30° Pressure Angle Flat Root Side Fit.		

SHAFT
NO. 4



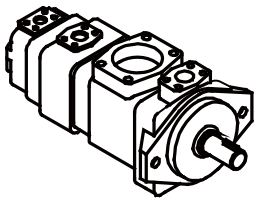


DVQ25
Foot Type



UNIT: M.M.(INCHES)

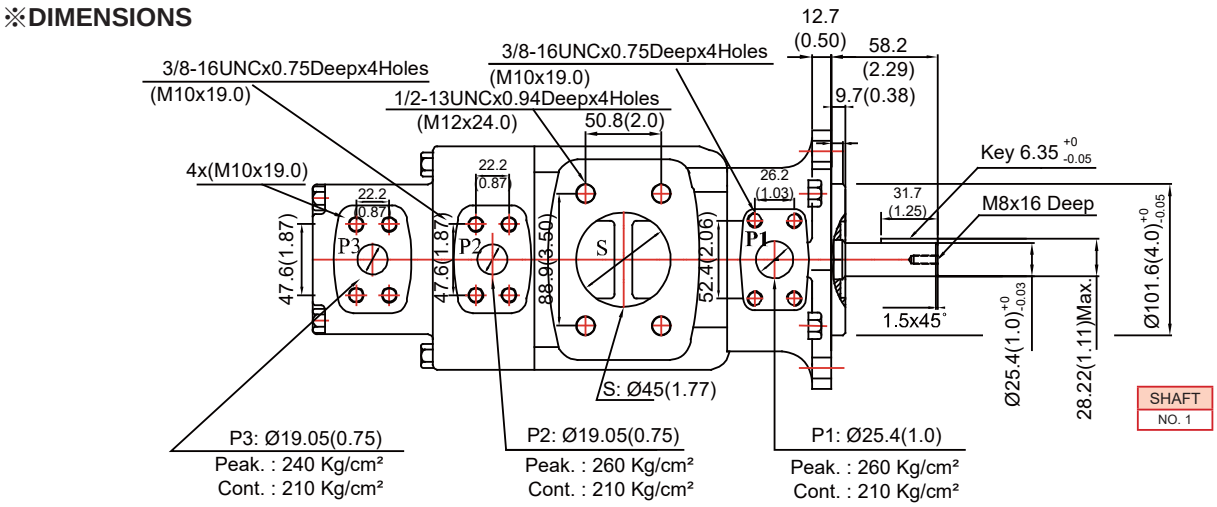
【DVQ2215】

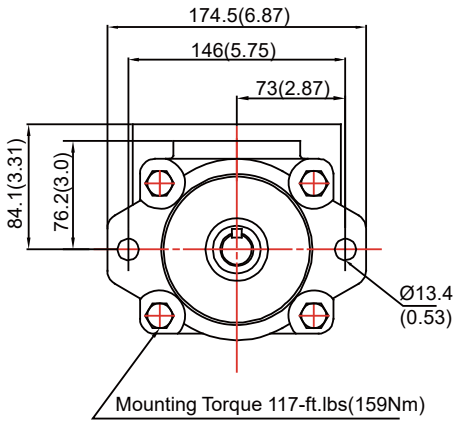


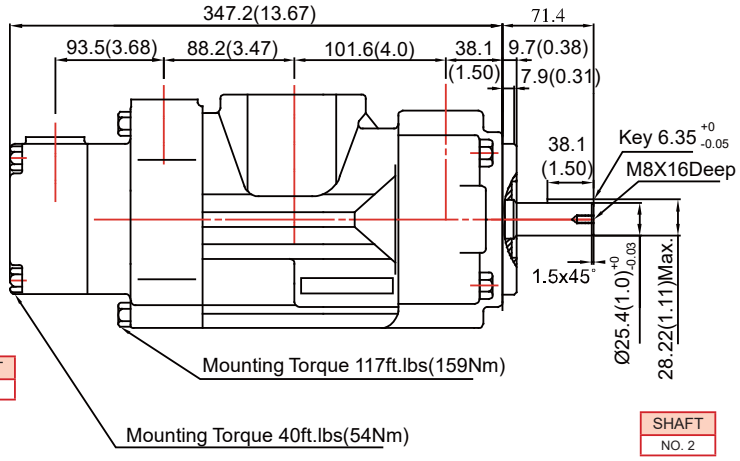
※MODEL NUMBER DESIGNATION

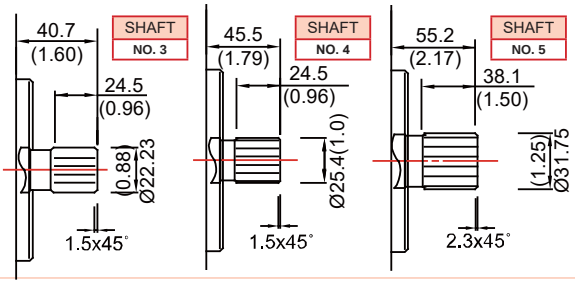
DVQ2215-	18-	08-	06-	F-	R-	A-	A-	A-	A-	NO.1
Series No.	P1 Displacement cm³/rev.	P2 Displacement cm³/rev.	P3 Displacement cm³/rev.	Mounting Type	Rotation (View from Shaft End)	P1 Discharge Position (View from Shaft End)	Suction Position	P2 Discharge Position (View from Shaft End)	P3 Discharge Position (View from Shaft End)	Shaft Design Number
Triple Pump	18, 22, 26, 32, 38, 43, 47, 52, 60, 65, 75	06, 08, 11, 14, 17, 19, 23, 26, 31, 34, 38	06, 08, 11, 14, 17, 19, 23, 26, 31	F: Flange Type L: Foot Type	R: Clockwise L: Counter Clockwise	A: Upward (Normal) B : Downward R : On Right Hand L : On Left Hand	A: Upward (Normal) B : Downward R : On Right Hand L : On Left Hand	A: Upward (Normal) B : Downward R : On Right Hand L : On Left Hand	A: Upward (Normal) B : Downward R : On Right Hand L : On Left Hand	01:Standard. 02: Refer to Dimension 03: Refer to Dimension 04: Refer to Dimension

※DIMENSIONS









Shaft	Description
NO.3	SAE B-B splined shaft Class 1-J498 b 16/32 d.p.-13 teeth 30° pressure angle flat root side fit
NO.4	splined shaft Class 1-J498 b 16/32 d.p.-15 teeth 30° pressure angle flat root side fit
NO.5	splined shaft Class 1-J498 b 14/24 d.p.-13 teeth 30° pressure angle flat root side fit

■■■■~INDEX~■■■■

Model	Mounting Std. (SAE J744c, ISO/3019-1)	Displacement (ml/rev.)	Speed		Max. Pressure		Weight (Without Connectors and Bracket)		SAE 4 Bolts J518-ISO/DIS 6162-1			Page
			Max.	Min.	PSI	Bar	lbs	Kg	Suction	Pressure		
T6C/T6CM	SAE-B	10.8~100.0	2800	600/400	4000	275	34.0	15.5	1-1/2"	1"		177
T6D/T6DM	SAE-C	47.6~190.5	2500	600/400	3500	240	52.9	24.0	2"	1-1/4"		179
T6E/T6EM	SAE-C	132.3~269.8	2200	600/400	3500	240	95.5	43.3	3"	1-1/2"		181
T6GC	R.17-102	10.8~100.0	2800	400	4000	275	39.7	18.0	1-1/2"	1" SAE		183
T7B	ISO 3019-2 100 A2 HW	5.7~50.0	3600	600	4640	320	50.7	23.0	1-1/2"	1" or 3/4"		184
T7BS	SAE B											
T7D	ISO 3019-2 100 A2 HW	43.9~158.0	3000	600	4350	300	57.3	26.1	2"	1" or 1/4"		185
T7DS	SAE C											
T6CR	SAE-B	10.8~100.0	2800	600/400	4000	275	37.6	17.1	1-1/2"	1"		177
T6DR	SAE-C	47.6~190.5	2500	600/400	3500	240	63.9	29.0	2"	1-1/4"		179
T6ER	SAE-C	132.3~269.8	2200	600/400	3500	240	86.4	39.2	3"	1-1/2"		181
										P1	P2	
T6CC/T6CCM	SAE-B	P1= 10.8~100.0 P2= 10.8~100.0	2800	600/400	4000	275	57.4	26.0	2-1/2" or 3"	1"	1" or 3/4"	186
T6GCC	R.17-102	P1= 10.8~100.0 P2= 10.8~100.0	2800	400	4000	275	60.0	27.2	1"	1"	1" or 3/4"	191
T6DC/T6DCM	SAE-C	P1=47.6~190.5 P2= 10.8~100.0	2500	600/400	3500 4000	240 275	80.7	36.6	3"	1-1/4"	1" or 3/4"	187
T6DDS	SAE-C	P1=47.6~190.5 P2=47.6~190.5	2500	600	3500	240	123.4	56.0	4"	1-1/4"	1-1/4"	188
T6EC/T6ECM	SAE-C	P1=132.3~269.8 P2= 10.8~100.0	2200	600/400	3500 4000	240 275	121.0	55.0	3-1/2"	1-1/2"	1"	189
T6ED/T6EDM	SAE-C	P1=132.3~269.8 P2=47.6~190.5	2200	600/400	3500 3500	240 240	145.5	66.0	4"	1-1/2"	1-1/4"	190
T7EE	ISO 3019-2 250 B4 HW	P1=132.3~269.8 P2=132.3~269.8	2200	600	3500	240	209.4	95.0	4"	1-1/2"	1-1/4"	196
T7EES	SAE-E											
T67CB	SAE B	P1= 10.8~100.0 P2=5.7~50.0	2800	600	4350	300	57.2	26.0	2-1/2"	1"	3/4"	192
T7DB	SAE C	P1=47.6~190.5 P2=5.7~50.0	2500	600	4350	300	80.5	36.6	3"	1-1/4"	3/4"	193
T7EB	SAE C	P1=132.2~269.8 P2=5.7~50.0	2200	600	4350	300	122.1	55.0	3-1/2"	1-1/2"	3/4"	195
										P1	P2 P3	
T6DCC	SAE-C	P1=47.6~190.5 P2=10.8~100.0 P3=10.8~100.0	2500	600/400	3500 4000	240 275	134.5	61.0	4"	1`1/4"	1" 1" or 3/4"	197
T6DCCS	SAE-C	P1=47.6~190.5 P2=47.6~190.5 P3=10.8~100.0	2500	600/400	3500 4000	240 275	145.2	66.0	4"	1-1/4"	1-1/4" 1" or 3/4"	198
T6EDC	ISO 3019-2 250 B4 HW	P1=132.3~269.8 P2=47.6~190.5 P3=10.8~100.0	2200	600/400	3500 3500 3500	240 240 275	220.4	100.0	4"	1-1/2"	1-1/4" 1" or 3/4"	199
T67DCB	SAE C	P1=47.6~190.5 P2=10.8~100.0 P3=5.7~50.0	2500	600	4350	300	134.5	61.0	4"	1-1/4"	1" 3/4"	201

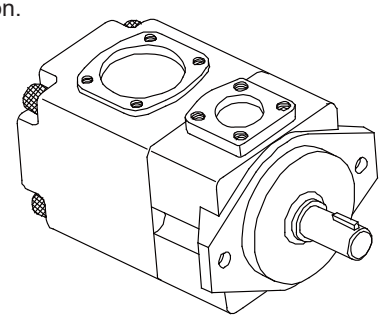
F

【T6/T7- MOBILE & INDUSTRIAL APPLICATION】

F

CARE IN APPLICATIONS

1. Check speed range, pressure, temperature, fluid quality, viscosity and pump rotation.
2. Check inlet conditions of the pump, if it can accept application requirements.
3. Type of shaft: if it would support operating torque.
4. Coupling must be chosen to minimize pump shaft load(weight, misalignment.)
5. Filtration: must be adequate for lowest contamination level.
6. Enviroment of pump: to avoid noise reflection, pullution and shocks.



LARGE FLOW

General flow for the envelope size achieved by increased displacement cam ring: at high permissible speeds with atmospheric inlet.
B → 5,8 to 50,0 ml/rev. C → 6 to 31 GPM, (21 to 100 ml/rev.)
D → 20 to 50 GPM, (66 to 158 ml/rev.) E → 42 to 72 GPM, (132 to 227 ml/rev.)

HIGH PRESSURE

Pressure rating to 320 bar, reduce size and cost of acuators, valves and lines, give extended lift at reduced pressures.

EXCELLENT EFFICIENCY

Better efficiency under load, increase productivity, reduces heating and operating costs.

FLEXIBLE MOUNTING

Up to 32 positions for double pumps and up to 128 for triple pumps, this reduces mounting costs and imporves performance.

LOW NOISE

Increase operator safety and acceptance.

CONFORM TO

To SAE-J744c 2 Bolt standards and to ISO 3019-1 in the various keyed and splined shaft options offered.

REAR DRIVE

Mounting pads and couplings are fully conformable to SAE J744c and ISO 3019-1. Simple pumps: SAE A/B/C rear adaptors, SAE A/B/BB/C couplings. Triple pumps: SAE A adaptor and coupling.

ADVANCED LARGE CARTRIDGE

Provide for drop-in assembles. They permit easy conversion or renewal of serviceable elements in minutes at minimum expense and risk of contamination. Pump rotation is easy to change by changing position of cam ring on port plate dowel pin hole.

ALLOW LARGE RANGE OF VISCOSITIES.

Viscosities from 2000 to 10 cSt, permit colder starts and hotter running. The balanced design compensates for wear and temperature changes. At high viscosity or cold temperature the rotors to side plates gap is well lubricated and improves mechanical efficiency.

SYNTHETIC FIRE RESISTANT FLUIDS

Including phosphate esters, chlorinated hydrocarbons, water gylcols and invert emulsions may be pumped at higher pressure and with longer service life by these pumps.

CAUTIONS FOR STARTING

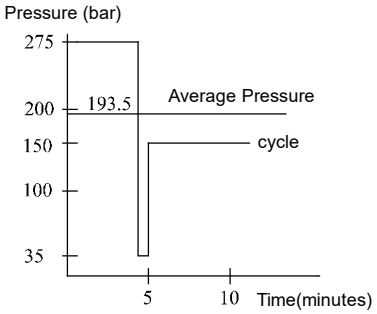
After first operation of the pump shaft at the lowest speed and at the lowest pressure to obtain priming. When a pressure releft valve is used at the outlet it should be backed off to minimize return pressure.
When possible an air bleed off should be provided in the circuit to facilitate purging of system air.
Never operate pump shaft at top speed and pressure without checking for completion of pump priming, and the fluid has no aeration disaerated.

INTERMITTENT PRESSURE RATING

T6 units may be operated intermittently at pressure higher than the recommended continuous rating when the time weighted average of pressure is less than or equal to the continuous duty pressure rating. This intermittent pressure rating calculation is only valid if other parameters: speed, fluid, viscosity and contamination level are respected. For total cycle time higher than 15 minutes, please consult your SOLTECH hydraulic representative.

Example: T6C-014
Duty cycle 4 min. at 275 bar
1 min. at 35 bar
5 min. at 160 bar

$$\frac{(4x275)+(1x35)+(5x160)}{10} = 193.5 \text{ bar}$$



193.5 bar is lower than 240 bar allowed as continuous pressure for KT6C-014 with HF-0 fluid.

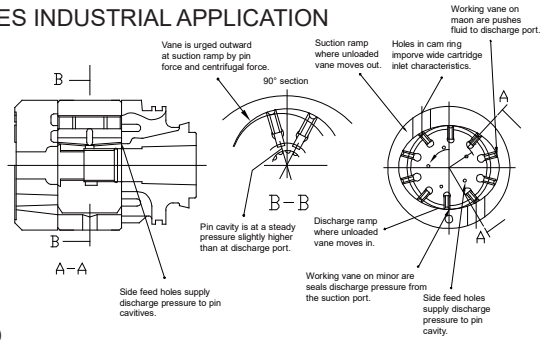
Size	Series	Theoretical Displacement Vi	Minimum Speed	Maximum Speed		Maximum Pressure					
				HF-0 , HF-1 HF-2	HF-3 , HF-4 HF-5	HF-0 , HF-2		HF-1 , HF-4 , HF-5		HF-3	
						Int.	Cont.	Int.	Cont.	Int.	Cont.
		ml/rev	RPM	RPM	RPM	bar	bar	bar	bar	bar	bar
C	003	10.8	600	2800	1800	275	240	210	175	175	140
	005	17.2									
	006	21.3									
	008	26.4									
	010	34.1									
	012	37.1									
	014	46.0									
	017	58.3									
	020	63.8									
	022	70.3									
	025	79.3		2500							
	028	88.8				210	160		160		
	031	100.0									
D	014	46.0	600	2500	1800	240	210	210	175	175	175
	017	58.2									
	020	66.0									
	024	79.5									
	028	89.7									
	031	98.3									
	035	111.0									
	038	120.3									
	042	136.0		2200							
	045	145.0									
	050	158.0				210	160		160		
E	042	132.3	600	2200	1800	240	210	210	175	175	140
	045	142.4									
	050	158.5									
	052	164.8									
	062	196.7									
	066	213.3									
	072	227.1									
	085	269.0				210	175	175	175	160	140

HF-0 , HF-2 = Antiwear Petroleum Base
HF-1 = Non Antiwear Petroleum Base
HF-3 = Water in oil Emulsions
HF-4 = Water Glycols
HF-5 = Synthetic Fluids

APPLICATION ADVANTAGES

The high pressure capability to 275 bar, in the small envelope, reduces installation costs and provides extended life at reduced pressure.
The high volumetric efficiency, typically 94%, reduces heat generation, and allows speeds down to 600 RPM at full pressure.
The high mechanical efficiency, typical 94%, reduces energy consumption.
The wide speed range from 600 RPM to 2800 RPM, combined with large size cartridge displacements, will optimize operation for the lowest noice level in the smallest envelope.
The low speed 600 RPM, low pressure, high viscosity 860 cSt allow application in cold environments with minimum energy consumption and without seizure risk.
The low ripple pressure ± 2 bar reduces piping noise and increases life time of other components in the circuit.
The high resistance to particle contamination because of the double lip vane increases pump life.
The large variety of options(cam displacement, shaft, porting) allows customized installation.

DESCRIPTION-T6 SERIES INDUSTRIAL APPLICATION



RECOMMENDED FLUID

Petroleum based antiwear R&O fluids. These fluids are recommended fluids for SOLTECH series pumps. Maximum catalog ratings and performance data are based on operation with these fluids. These fluids are covered by SOLECH Hydraulic HF-0 and HF-2 specification.

ACCEPTABLE ALTERNATE FLUIDS

The use of fluids other than petroleum based antiwear R&O fluids, requires that the maximum ratings of the pump will be reduced. In some cases the minimum replenishment pressures must be increased. Consult specific for more detail.

VISCOSITY

	mm²/s (cSt)
Max. (cold start, low speed & pressure)	860
Max. (full speed & pressure)	108
Optimum (Max. life)	18
Min (full speed & pressure for HF-1, HF-3, HF-4 & HF-5 fluids)	10
Min (full speed & pressure for HF-0 & HF-2 fluids)	

F

F

VISCOSITY INDEX

90° min. higher values extend range of operating temperatures.			
Maximum fluid temperature (θ) °C	mm²/s (cSt)	Minimum fluid temperature (θ) °C	mm²/s (cSt)
HF-0, HF-1, HF-2	+ 100°	HF-0, HF-1, HF-2, HF-5	- 18°
HF-3, HF-4	+ 50°	HF-3, HF-4	+ 10°
HF-5	+ 70°		
Biodegradable fluids (esters & rapeseed base)	+ 65°	Biodegradable fluids (esters & rapeseed base)	- 20°

FLUID CLEANLINESS

The fluid must be cleaned before and during operation to maintain contamination level of NAS 1638 class 8 (or ISO 18/14) or better. Filters with 25 micron (or better ß10 ≤ 100) nominal ratings may be adequate but do not guarantee the required cleanliness levels. Suction strainers must be of adequate size to provide minimum inlet pressure specified. 100 mesh (149 micron) is the finest mesh recommended. Use oversize strainers or omit
them altogether on applications which require cold starts or use fire resistant fluids.

OPERATING TEMPERATURES AND VISCOSITIES

Operating temperatures are a function of fluid viscosities, fluid type, and the pump. Fluid viscosity should be selected to provide optimum viscosity at normal operating temperatures. For cold starts the pumps should be operated at low speed and pressure until fluid warms up to an acceptable viscosity for full power operation.

WATER CONTAMINATION IN THE FLUID

Maximum acceptable content of water.
• 0,10 % for mineral base fluids.
• 0,05 % for synthetic fluids, crankcase oils, biodegradable fluids.
If amount of water is higher, then it should be drained off the circuit.

COUPLINGS AND FEMALE SPLINES

• The mating female spline should be free to float and find its own center. If both members are rigidly supported, they must be aligned within 0,15 TIR or less to reduce fretting. The angular alignment of two spline axes must be less than ± 0,05 per 25,4 radius.
• The coupling spline must be lubricated with a lithium molydisulfide grease or a similar lubricant.
• The coupling must be hardened to a hardness between 27 and 45 R.C.
• The female spline must be made to conform to the Class 1 fit as described in SAE-J498b (1971). This is described as a Flat Root Side Fit.

KEYED SHAFTS

SOLTECH Hydraulics supplies the T6 series keyed shaft pumps with high strength heat-treated keys. Therefore, when installing or replacing these pumps, the heat-treated keys must be used in order to insure maximum life in the application. If the key is replaced it must be a heat-treated key between 27 and 34 R.C. hardness. The corners of the keys must be chamfered from 0,76 to 1,02 at 45° to clear radii in the key way.

NOTE

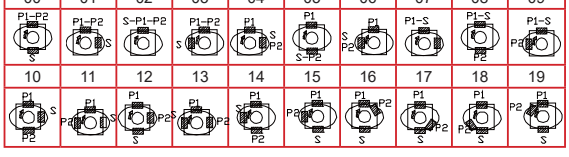
Alignment of keyed shafts must be within tolerances given for splined shafts.

SHAFT LOADS

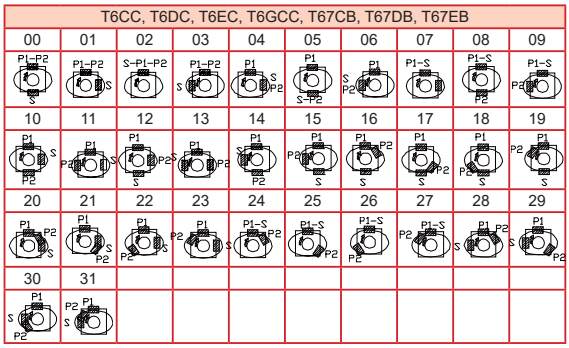
These products are designed primarily for coaxial drives which do not impose axial or side loading on the shaft. Consult specific sections for more details.

PORTING DIAGRAMS

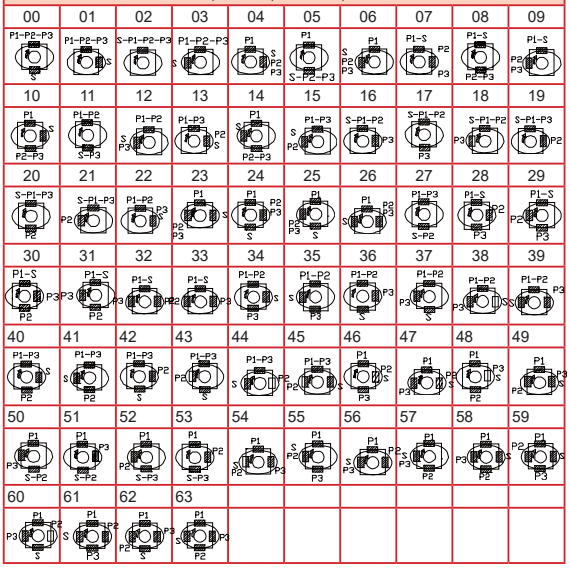
T6DD, T6DDS, T6EE, T6EES, T6ED



T6CC, T6DC, T6EC, T6GCC, T67CB, T67DB, T67EB



T6DCC, T6EDC, T6DCCS, T67DCB



※MODEL NUMBER DESIGNATION

T6C(M)-	014-	1-	R-	00-	B-	1-	(M0)
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ

Ⅰ: Series No.
T6C: Industrial Application
T6CM: Moblie Application

Ⅱ: Volumetric Displacement(ml/rev.)

003 = 10.8	017 = 58.3
005 = 17.2	020 = 63.8
006 = 21.3	022 = 70.3
008 = 26.4	025 = 79.3
010 = 34.1	028 = 88.8
012 = 37.1	031 = 100.0
014 = 46.0	

Ⅲ: Type of shaft
1 = keyed (SAE B)
2 = keyed (no SAE)
3 = splined (SAE B)
4 = splined (SAE BB)

Ⅳ: Direct. of rotation (view on shaft end)
R = clockwise
L = counter-clockwise

Ⅴ: Porting combination

00 (Standard)	01	02	03
			

P = Pressure port, S = Suction port

Ⅵ: Design letter

Ⅶ: Seal class
1 = S1 (for mineral oil)
4 = S4 (for the resistant fluids)
5 = S5 (for mineral oil and fire resistant fluids)

Ⅷ: Port Connection
M0: DIN 912 Bolts(Metric Std.) Omit: UNC Bolts

T6CR-	014-	1-	R-	00-	A-	1-	0-	A-	1-	(M0)
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ	Ⅺ

Ⅰ: Series No: Rear Drive Type

Ⅱ: Volumetric Displacement(ml/rev.)

003 = 10.8	017 = 58.3
005 = 17.2	020 = 63.8
006 = 21.3	022 = 70.3
008 = 26.4	025 = 79.3
010 = 34.1	028 = 88.8
012 = 37.1	031 = 100.0
014 = 46.0	

Ⅲ: Type of shaft
1 = keyed (SAE BB), 3 = splined (SAE B),
2 = keyed (No SAE), 4 = splined (SAE BB),
5 = keyed (No SAE)

Ⅳ: Direct. of rotation (view on shaft end)
R = clockwise, L = counter-clockwise

Ⅴ: Porting combination

00(Standard)	01	02	03
			

Ⅵ: Adaptor
0 = None, B = SAE B,
A = SAE A, C = SAE C

Ⅶ: Coupling
1 = SAE A, 3 = SAE BB, 5 = SAE J498b,
2 = SAE B, 4 = SAE C 16/32-11 TEETH

Ⅷ: Porting adaptor

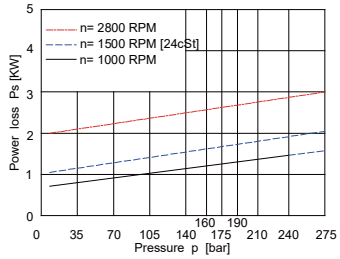
SAE C			
SAE A - SAE B		---	
0	1	2	3
			

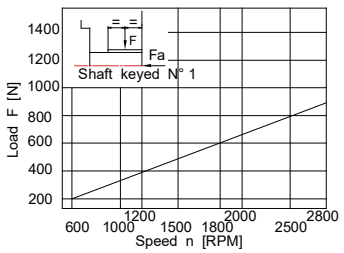
Ⅸ: Design letter

Ⅹ: Seal class
1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

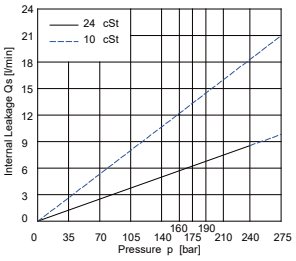
Ⅺ: Port Connection
M0: DIN 912 Bolts(Metric Std.) Omit: UNC Bolts

※PERFORMANCE CURVE





Maximum permissible axial load Fa = 800 N



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

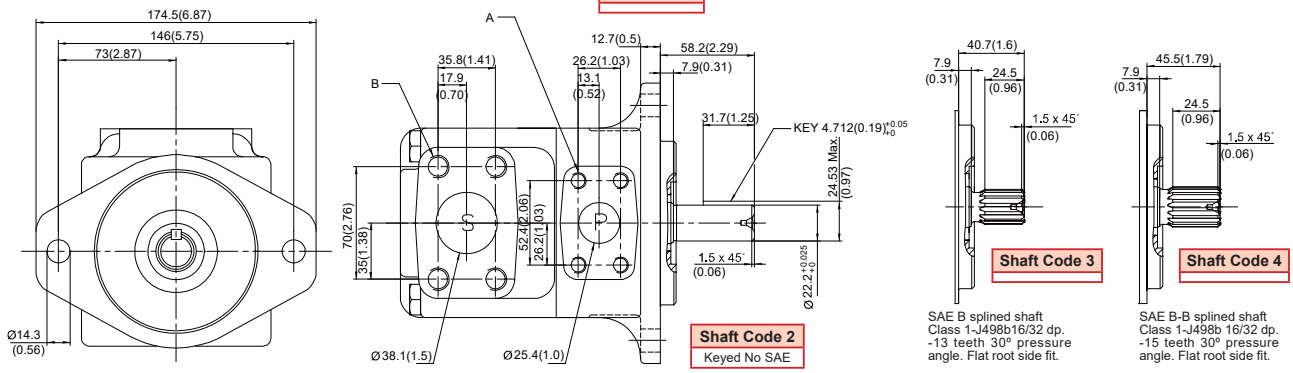
OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

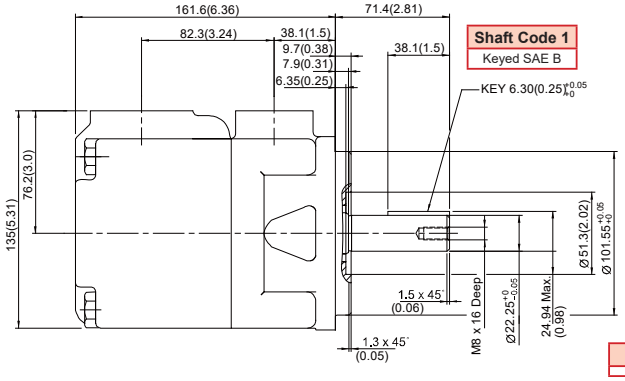
Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
003	10.8ml/rev	1000(1500)	10.8(16.2)	7.5(11.2)	5.1(7.7)	0.9(1.3)	3.6(5.3)	5.7(8.4)
005	17.3ml/rev		17.2(25.8)	13.9(20.8)	11.5(17.3)	1.0(1.4)	5.1(7.5)	8.3(12.2)
006	21.3ml/rev		21.3(31.9)	16.3(26.9)	12.8(23.4)	1.1(1.5)	6.0(8.9)	10.0(14.7)
008	26.4 ml/rev		26,4(39,6)	34.6(21.4)	17.9(31.1)	1.2(1.6)	7.2(10.7)	12.1(17.7)
010	34.1ml/rev		34,1(51,1)	29.1(46.1)	25.6(42.6)	1.3(1.7)	8.9(13.4)	15.1(22.3)
012	37.1 ml/rev		37,1(55,6)	32.1(50.6)	28.6(47.1)	1.3(1.7)	9.6(14.4)	16.3(24.1)
014	46.0ml/rev		46,0(69,0)	41.0(64.0)	37.5(60.5)	1.4(1.9)	11.7(17.6)	19.9(29.5)
017	58.3 ml/rev		58,3(87,4)	53.3(82.4)	49.8(78.9)	1.6(2.1)	14.5(21.9)	24.8(36.9)
020	63.8ml/rev		63,8(95,7)	58,3(90,2)	55.3(87.2)	1.6(2.2)	15.81(23.82)	27.0(40.2)
022	70.3 ml/rev		70,3(105,4)	65.3(100.4)	61.8(96.9)	1.7(2.3)	17.3(26.1)	29.6(44.1)
025 [1]	79.3ml/rev		79,3(118,9)	74.3(113.9)	70.8(110.4)	1.8(2.5)	19.3(29.2)	33.2(49.5)
028 [1]	88.8 ml/rev		88,8(133,2)	83.8(128.2)	81.4(125.8) [2]	1.9(2.8)	21.9(32.7)	32.5(48.5) [2]
031 [1]	100.0ml/rev		100,0(150,0)	95.0(145.0)	92.6(142.6) [2]	2.0(2.8)	24.4(36.5)	36.4(54.4) [2]

1) 025 - 028 - 031 = 2500 R.P.M. max. 2) 028 - 031 = 210 bar max. int. T6C/T6CR Min. Speed = 600 r.p.m. T6CM Min. Speed = 400 r.p.m.
- Not to use because internal leakage greater than 50% theoretical flow. Port connection can be furnished with metric threads.

※DIMENSIONS

T6C/T6CM

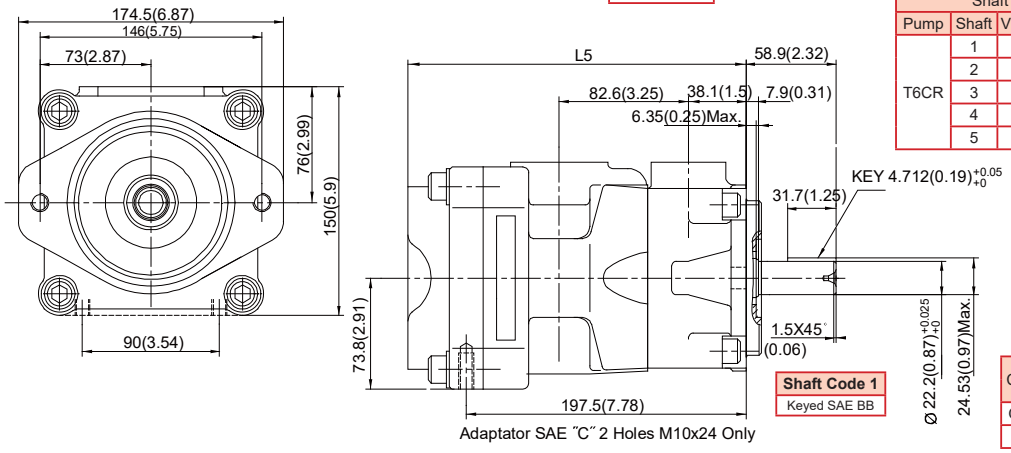




Shaft torque limits [ml/rev x bar]		
Pump	Shaft	Vi x p max.
T6C/T6CM	1	16500
	2	14300
	3	20600
	4	21812

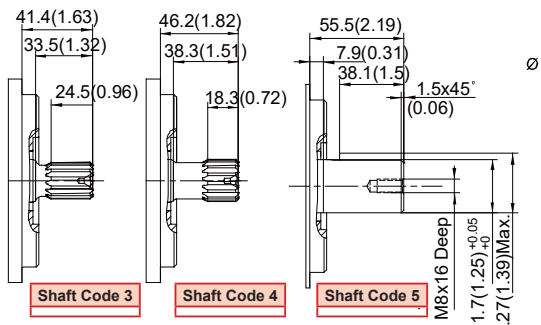
Code	Dimension for 4 Holes	
	B(S Port)	A(P Port)
Omit	1/2"-13UNC x 0.88 Deep	3/8"-16UNC x 0.75 Deep
M0	M12 x 22.3	M10 x 19

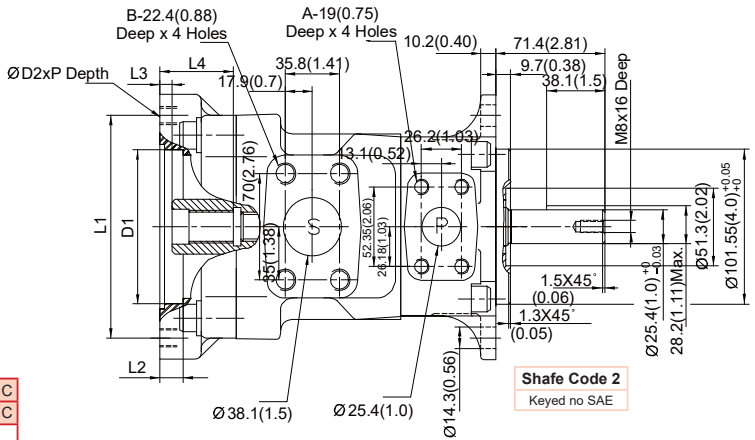
T6CR



Shaft torque limits [ml/rev x bar]				
Pump	Shaft	V x p Max.	Coupling Drive	V x p Max.
T6CR	1	21420	SAE A	11000
	2	14300	SAE B	20600
	3	20600	SAE BB	22050
	4	32670	SAE C	22050
	5	34180	SAE-11 Teeth	15850

Code	Dimension for 4 Holes	
	B(S Port)	A(P Port)
Omit	1/2"-13UNC	3/8"-16UNC
M0	M12 x 22.4	M10 x 19





Adapter	SAE A			SAE B		SAE C
Coupling Drive	SAE A	SAE 11 Teeth	SAE B	SAE B	SAE BB	SAE C
Number of Teeth	9	11	13	13	15	14
Pitch	16/32	16/32	16/32	16/32	16/32	12/24
Pressure Angle	30°	30°	30°	30°	30°	30°
Major Dia.(min)	15.875	19.05	22.225	22.225	25.40	31.750
Minor Dia.(min)	12.7	16.017	19.134	19.134	22.268	27.589

Adapter	D1	D2	P	L1	L2	L3	L4	L5
SAE A	82.6(3.25)	M10	24(0.94)	106.4(4.19)	11(0.43)	7.9(0.31)	32(1.26)	209(8.23)
SAE B	101.65(4.0)	M12	28(1.10)	146(5.75)	16(0.63)	7.9(0.31)	46(1.81)	223(8.78)
SAE C	127.1(5.0)	M16	---	181(7.13)	16(0.63)	7.9(0.31)	56(2.20)	233(9.17)

※MODEL NUMBER DESIGNATION

T6D(M)-	045-	1-	R-	00-	B-	1-	(M0)
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ

Ⅰ: Series No.
T6D: Industrial Application
T6DS: SAE C 6 Bolts
T6DM: Moblie Application

Ⅱ: Volumetric Displacement(ml/rev.)

014 = 47.6	035 = 111.0
017 = 58.2	038 = 120.3
020 = 66.0	042 = 136.0
024 = 79.5	045 = 145.7
028 = 89.7	050 = 158.0
031 = 98.3	

Ⅲ: Type of shaft
1 = keyed (SAE C)
2 = keyed (no SAE)
3 = splined (SAE C)
4 = splined (no SAE)

Ⅳ: Direct. of rotation (view on shaft end)
R = clockwise L = counter-clockwise

Ⅴ: Porting combination

00 (Standard)	01	02	03
			

P = Pressure port, S = Suction port

Ⅵ: Design letter

Ⅶ: Seal class
1 = S1 (for mineral oil)
4 = S4 (for the resistant fluids)
5 = S5 (for mineral oil and fire resistant fluids)

Ⅷ: Port Connection
M0: DIN 912 Bolts(Metric Std.) Omit: UNC Bolts

T6DR(S)-	045-	1-	R-	00-	A-	1-	0-	A-	1-	(M0)
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ	Ⅺ

Ⅰ: Series No: Rear Drive Type
DRS: SAE C 6 Bolts
DRSS: SAE C 4 Bolts

Ⅱ: Volumetric Displacement(ml/rev.)

014 = 47.6	035 = 111.0
017 = 58.2	038 = 120.3
020 = 66.0	042 = 136.0
024 = 79.5	045 = 145.7
028 = 89.7	050 = 158.0
031 = 98.3	

Ⅲ: Type of shaft
1 = keyed (SAE C), 3 = splined (SAE C),
2 = keyed (SAE CC), 5 = keyed (no SAE),

Ⅳ: Direct. of rotation (view on shaft end)
R = clockwise, L = counter-clockwise

Ⅴ: Porting combination

00(Standard)	01	02	03
			

Ⅵ: Adaptor
0 = None, A = SAE A, B = SAE B, C = SAE C

Ⅶ: Coupling
1 = SAE A, 3 = SAE BB, 5 = SAE J498b,
2 = SAE B, 4 = SAE C, 16/32-11 TEETH

Ⅷ: Porting adaptor

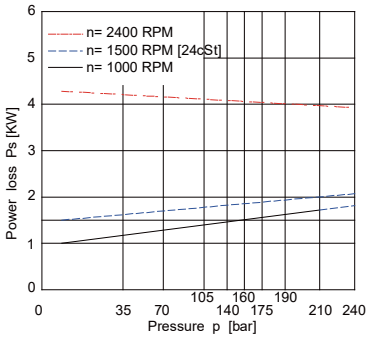
SAE C			
SAE A - SAE B		---	
0	1	2	3
			

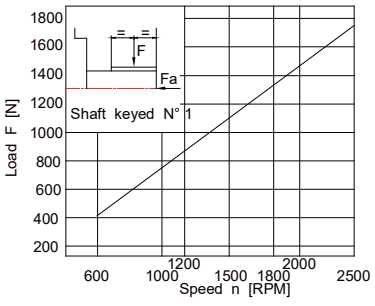
Ⅸ: Design letter

Ⅹ: Seal class
1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

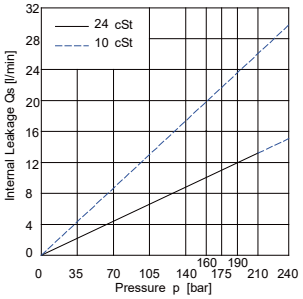
Ⅺ: Port Connection
M0: DIN 912 Bolts(Metric Std.) Omit: UNC Bolts

※PERFORMANCE CURVE





Maximum permissible axial load Fa = 1200 N



OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

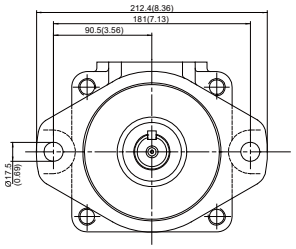
Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
014	47.6 ml/rev	1000(1500)	47.6(71.4)	38.3(62.1)	32.1(55.9)	1.5(2.3)	12.5(18.5)	20.7(30.6)
017	58.2 ml/rev		58.2(87.3)	52.0(78.0)	47.8(71.8)	1.6(2.5)	14.8(22.2)	24.6(37.0)
020	66.0 ml/rev		66.0(99.0)	56.7(89.7)	50.5(83.5)	1.7(2.8)	16.8(24.9)	28.0(41.7)
024	79.5 ml/rev		79.5(119.3)	70.2(110.0)	64.0(103.8)	1.9(3.0)	19.9(29.6)	33.4(49.8)
028	89.7 ml/rev		89.7(134.5)	80.4(125.2)	74.2(119.0)	2.0(3.2)	22.3(33.2)	37.5(55.9)
031	98.3 ml/rev		98.3(147.4)	89.0(138.1)	82.8(131.9)	2.1(3.3)	24.3(36.2)	40.9(61.0)
035	111.0 ml/rev		111.0(166.5)	101.7(157.2)	95.5(151.0)	2.3(3.5)	27.3(40.7)	46.0(68.7)
038	120.3 ml/rev		120.3(180.4)	111.0(171.1)	104.8(164.9)	2.4(3.7)	29.4(43.9)	49.8(74.3)
042 1)	136.0 ml/rev		136.0(204.0)	126.7(194.7)	120.5(188.5)	2.6(4.0)	33.1(49.4)	56.0(83.7)
045 1)	145.7 ml/rev		145.7(218.2)	136.4(209.2)	130.2(203.0)	2.7(4.1)	35.3(52.8)	59.9(89.5)
050 1)	158.0 ml/rev		158.0(237.0)	148.7(227.7)	145.0(224.0) 2)	2.8(4.4)	38.2(57.0)	56.8(85.0) 2)

1) 042 - 045 - 050 = 2200 R.P.M. max. 2) 050 = 210 bar max. int. Port connection can be furnished with metric threads. T6D/T6DR Min. Speed = 600 r.p.m. T6DM Min. Speed = 400 r.p.m.

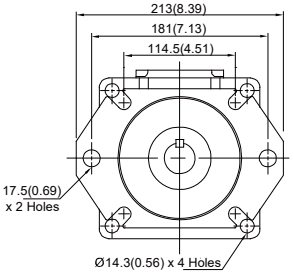
F

※DIMENSIONS

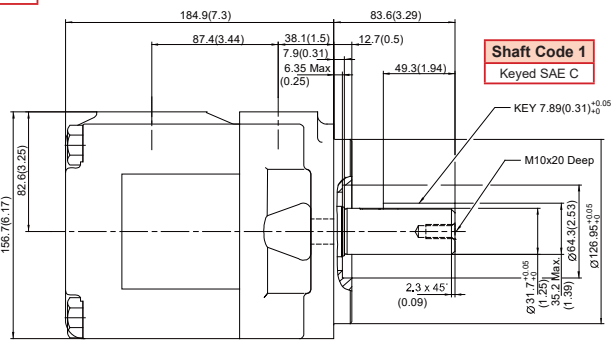
T6D/T6DM



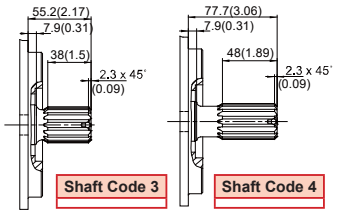
T6DS



T6D/T6DM/T6DS



Shaft Code 1
Keyed SAE C

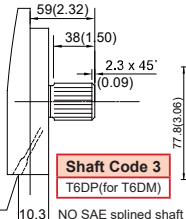


Shaft Code 3

SAE C splined shaft, Class 1-J498b 12/24 dp.-14 teeth, 30° pressure angle, flat root side fit.

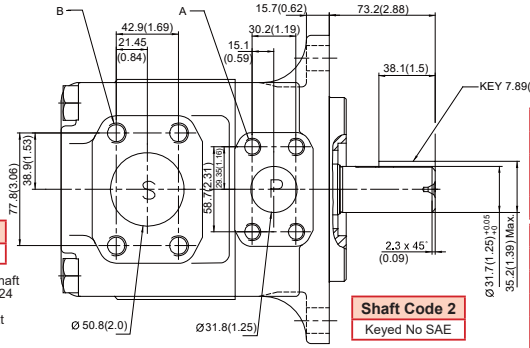
Shaft Code 4

NO SAE splined shaft Class 1-J498b 12/24 dp.-14 teeth, 30° pressure angle, flat root side fit.



Shaft Code 3
T6DP(for T6DM)

NO SAE splined shaft Class 1-J498b 12/24 dp.-14 teeth, 30° pressure angle, flat root side fit.

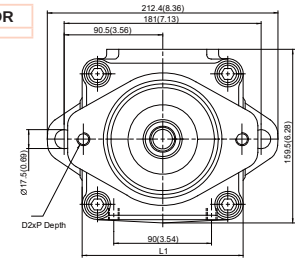


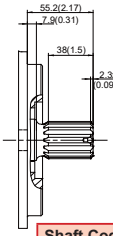
Shaft Code 2
Keyed No SAE

Code	Dimension for 4 Holes	
	S Port	P Port
Omit	1/2"-13UNC x 0.94 Deep	7/16"-14UNC x 0.88 Deep
M0	M12 x 23.9	M12 x 22.3

Shaft torque limits [ml/rev x bar]		
Pump	Shaft	Vp x p max.
T6D/T6DM	1	43283
	2	34590
	3	61200
	4	61200

T6DR

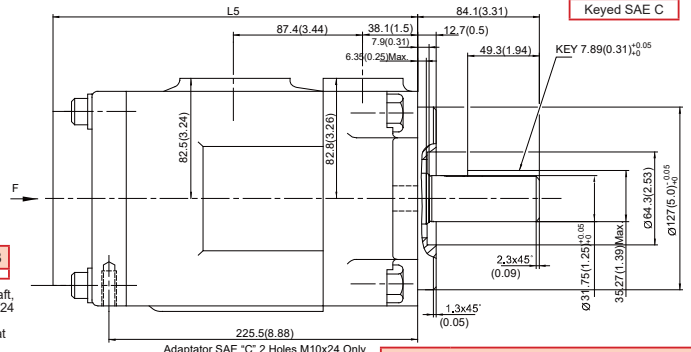




Shaft Code 3

SAE C splined shaft, Class 1-J498b 12/24 dp.-14 teeth, 30° pressure angle, flat root side fit.

T6DR/T6DRS/T6DRSS



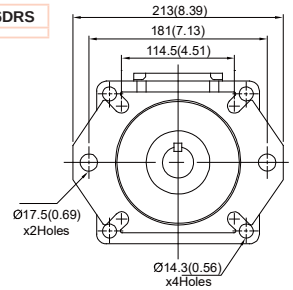
Adaptator SAE "C" 2 Holes M10x24 Only

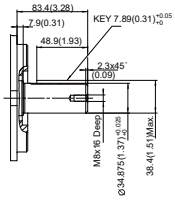
Shaft Code 1
Keyed SAE C

Model	Code	Dimension for 4 Holes	
		B(S Port)	A(P Port)
T6DR(S)	Omit	1/2"-13UNC	7/16"-14UNC
	M0	M12 x 24	M12 x 22.3
T6DRSS	Omit	1/2" 13UNC	7/16"-14UNC
	M0	M12x1.75P Deep 24	M10x1.5P Deep 19

Shaft torque limits [ml/rev x bar]				
Pump	Shaft	V x p Max.	Coupling Drive	V x p Max.
T6DR/ T6DRS/ T6DRSS	1	43240	SAE A	11000
	2	66036	SAE B	20600
	3	61200	SAE BB	32670
	5	55600	SAE C	37390
			SAE-11 Teeth	15850

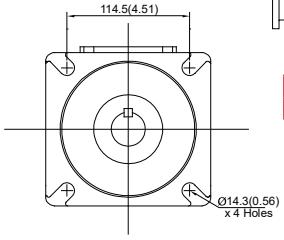
T6DRS

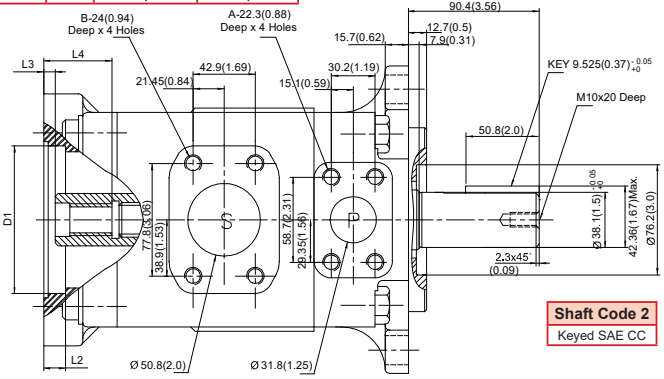




Shaft Code 5
Keyed No SAE

T6DRSS





Shaft Code 2
Keyed SAE CC

Adapter	SAE A		SAE B	SAE B		SAE C
Coupling Drive	SAE A	SAE 11 Teeth	SAE B	SAE B	SAE BB	SAE C
Number of Teeth	9	11	13	13	15	14
Pitch	16/32	16/32	16/32	16/32	16/32	12/24
Pressure Angle	30°	30°	30°	30°	30°	30°
Major Dia.(min)	15.875	19.05	22.225	22.225	25.40	31.750
Minor Dia.(min)	12.7	16.017	19.134	19.134	22.268	27.589

Adapter	D1	D2	P	L1	L2	L3	L4	L5
SAE A	82.6/82.65(3.25)	M10	24(0.94)	106.4(4.19)	11(0.43)	7.9(0.31)	32(1.26)	237(9.33)
SAE B	101.65/101.70(4.0)	M12	28(1.10)	146(5.75)	16(0.63)	7.9(0.31)	46(1.81)	251(9.88)
SAE C	127.05/127.1(5.0)	M16	---	181(7.13)	16(0.63)	7.9(0.31)	56(2.20)	261(10.28)

※MODEL NUMBER DESIGNATION

T6E(M)-	066-	1-	R-	00-	B-	1-	(M0)
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ

Ⅰ: Series No.
T6D: Industrial Application
T6DM: Moblie Application

Ⅱ: Volumetric Displacement(ml/rev.)

042= 132.3	062 = 196.7
045 = 142.4	066 = 213.3
050 = 158.5	072 = 227.1
052 = 164.8	085 = 269.8

Ⅲ: Type of shaft
1 = keyed (SAE C)
2 = keyed (no SAE)
3 = splined (SAE C)
4 = splined (SAE CC)

Ⅳ: Direct. of rotation (view on shaft end)
R = clockwise L = counter-clockwise

Ⅴ: Porting combination

00 (Standard)	01	02	03
			

P = Pressure port, S = Suction port

Ⅵ: Design letter

Ⅶ: Seal class
1 = S1 (for mineral oil)
4 = S4 (for the resistant fluids)
5 = S5 (for mineral oil and fire resistant fluids)

Ⅷ: Port Connection
M0: DIN 912 Bolts(Metric Std.) Omit: UNC Bolts

T6ER	066-	1-	R-	00-	A-	1-	0-	A-	1-	(M0)
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ	Ⅺ

Ⅰ: Series No: Rear Drive Type

Ⅱ: Volumetric Displacement(ml/rev.)

042= 132.3	062 = 196.7
045 = 142.4	066 = 213.3
050 = 158.5	072 = 227.1
052 = 164.8	085 = 269.8

Ⅲ: Type of shaft
1 = keyed (SAE CC),
3 = splined (SAE C),
4 = splined (SAECC),

Ⅳ: Direct. of rotation (view on shaft end)
R = clockwise, L = counter-clockwise

Ⅴ: Porting combination

00(Standard)	01	02	03
			

Ⅵ: Adaptor
0 = None, A = SAE A, B = SAE B, C = SAE C

Ⅶ: Coupling
1 = SAE A, 3 = SAE BB, 5 = SAE J498b,
2 = SAE B, 4 = SAE C, 16/32-11 TEETH

Ⅷ: Porting adaptor

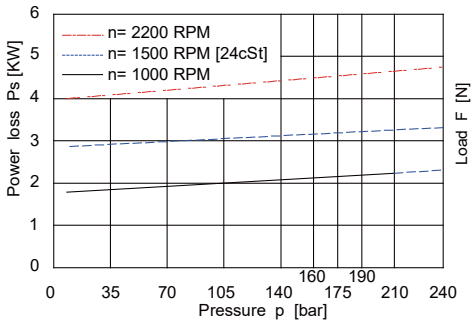
SAE C			
SAE A - SAE B		---	
0	1	2	3
			

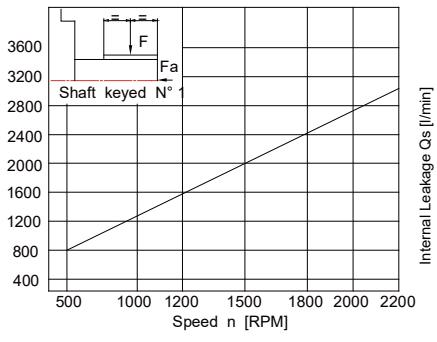
Ⅸ: Design letter

Ⅹ: Seal class
1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

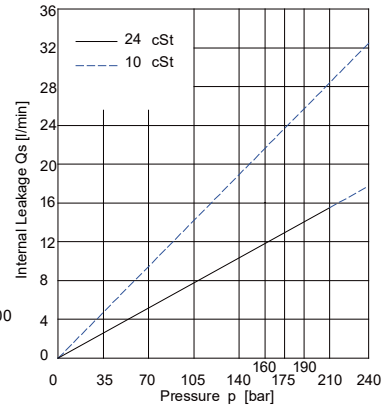
Ⅺ: Port Connection
M0: DIN 912 Bolts(Metric Std.) Omit: UNC Bolts

※PERFORMANCE CURVE





Maximum permissible axial load Fa = 2000 N



OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

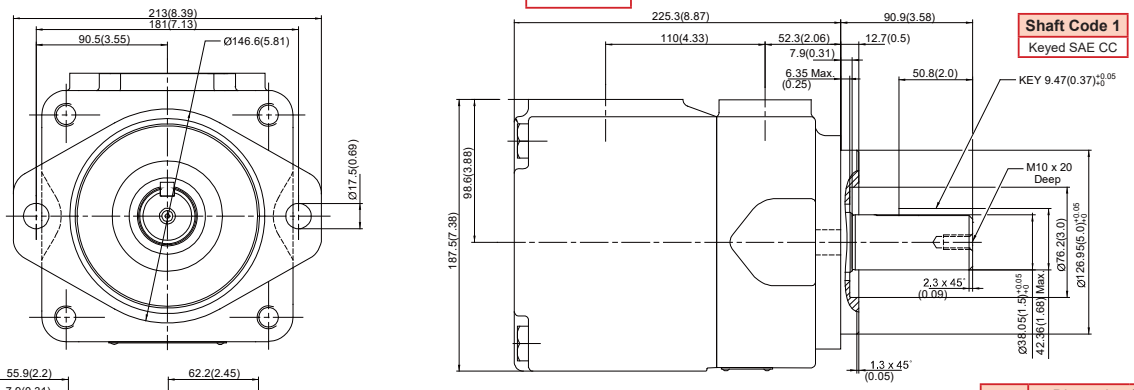
Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
042	132.3 ml/rev	1000 1500	132.3(198.5)	122.3(188.5)	115.2(181.3)	3.2(5.2)	32.9(49.4)	55.2(82.6)
045	142.4 ml/rev		142.4(213.6)	132.4(203.6)	125.3(196.5)	3.4(5.4)	35.3(52.9)	59.2(88.7)
050	158.5 ml/rev		158.5(237.7)	148.5(227.2)	141.4(220.6)	3.5(5.7)	39.0(58.5)	65.6(98.3)
052	164.8 ml/rev		164.8(247.2)	154.8(237.2)	147.7(230.1)	3.6(5.8)	40.5(60.8)	68.2(102.1)
062	196.7 ml/rev		196.7(295.0)	186.7(285.0)	179.6(277.9)	4.0(6.4)	47.9(71.9)	80.9(121.3)
066	213.3 ml/rev		213.3(319.9)	203.3(309.9)	196.2(302.8)	4.2(6.7)	51.8(77.7)	87.6(131.2)
072	227.1 ml/rev		227.1(340.6)	217.1(330.6)	210.0(323.5)	4.3(6.9)	55.0(82.6)	93.1(139.5)
085 [1]	269.8 ml/rev		269.8(404.7) [2]	265.1(397.7)	---	4.8(7.3) [2]	43.5(65.3) [2]	---

1) 085 = 2000 R.P.M. max. 2) 085 = 75 bar max. cont. Port connection can be furnished with metric threads. T6E/T6ER Min. Speed = 600 r.p.m. T6EM Min. Speed = 400 r.p.m.

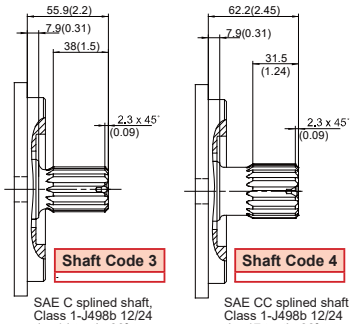
F

※DIMENSIONS

T6E/T6EM



Shaft Code 1
Keyed SAE CC

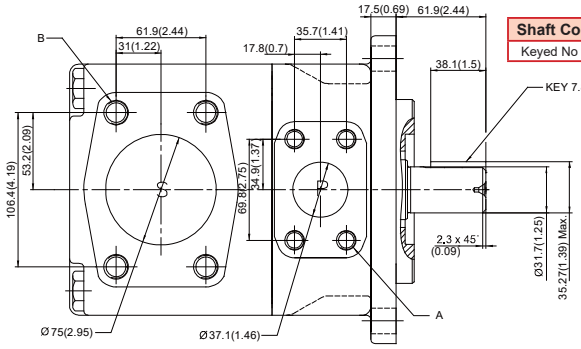


Shaft Code 3

SAE C splined shaft, Class 1-J498b 12/24 dp.-14 teeth, 30° pressure angle, flat root side fit.

Shaft Code 4

SAE CC splined shaft Class 1-J498b 12/24 dp.-17 teeth, 30° pressure angle, flat root side fit.

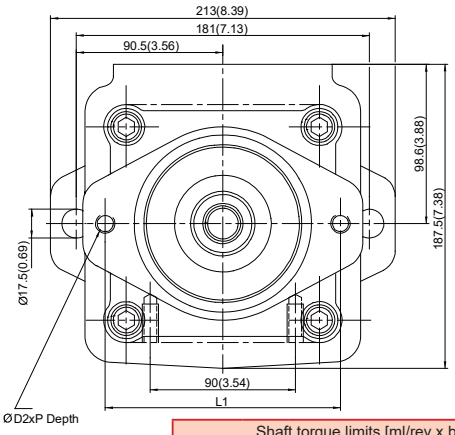


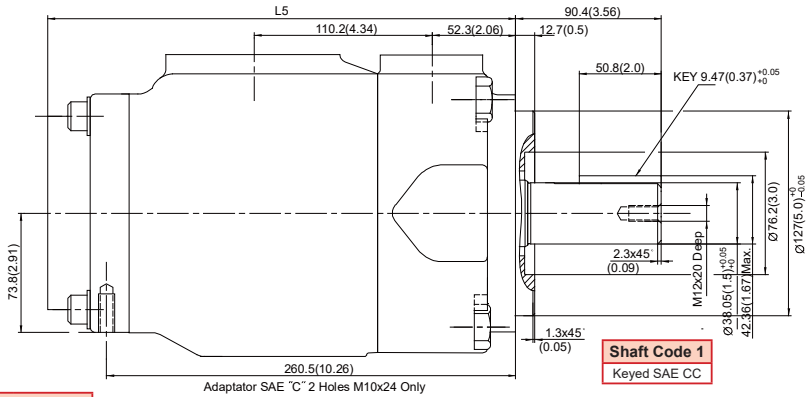
Shaft Code 2
Keyed No SAE

Code	Dimension for 4 Holes	
	A(P Port)	B(S Port)
Omit	1/2"-13UNC x 0.92 Deep	5/8"-11UNC x 0.94 Deep
M0	M12 x 23.4	M16 x 24

Shaft torque limits [ml/rev x bar]		
Pump	Shaft	Vp x p max.
T6E/T6EM	1	54555
	2	34590
	3	61200
	4	61200

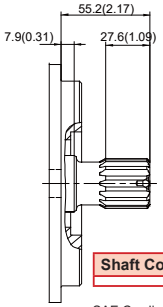
T6ER



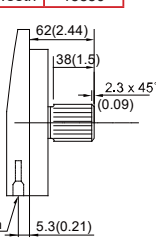


Shaft Code 1
Keyed SAE CC

Shaft torque limits [ml/rev x bar]				
Pump	Shaft	V x p Max.	Coupling Drive	V x p Max.
T6ER	1	80560	SAE A	11000
	3	61200	SAE B	20600
	4	120210	SAE BB	32670
			SAE C	66480
			SAE-11 Teeth	15850



Code	Dimension for 4 Holes	
	A(P Port)	B(S Port)
Omit	1/2"-13UNC	5/8"-11UNC
M0	M12 x 23.4	M16 x 24



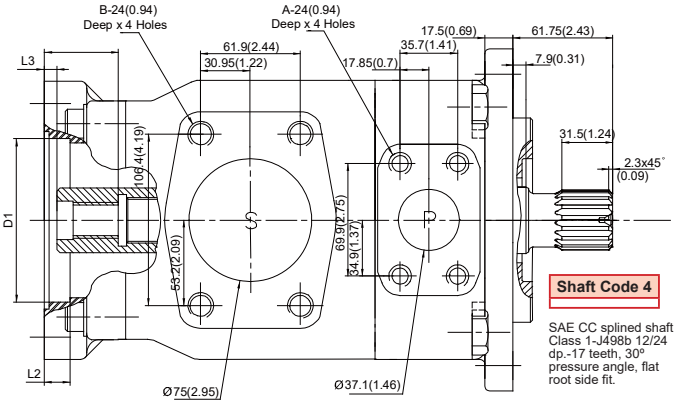
Shaft Code 3

SAE C splined shaft, Class 1-J498b 12/24 dp.-14 teeth, 30° pressure angle, flat root side fit.

Shaft Code 3
T6EP(for T6EM)

no SAE splined shaft, Class 1-J498b 12/24 dp.-14 teeth, 30° pressure angle, flat root side fit.

Drain Hole Between Double Shaft Seals



Shaft Code 4

SAE CC splined shaft Class 1-J498b 12/24 dp.-17 teeth, 30° pressure angle, flat root side fit.

Adapter	SAE A			SAE B		SAE C
Coupling Drive	SAE A	SAE 11 Teeth	SAE B	SAE B	SAE BB	SAE C
Number of Teeth	9	11	13	13	15	14
Pitch	16/32	16/32	16/32	16/32	16/32	12/24
Pressure Angle	30°	30°	30°	30°	30°	30°
Major Dia.(min)	15.875	19.05	22.225	22.225	25.40	31.750
Minor Dia.(min)	12.7	16.017	19.134	19.134	22.268	27.589

Adapter	D1	D2	P	L1	L2	L3	L4	L5
SAE A	82.6/82.65(3.25)	M10	24(0.94)	106.4(4.19)	11(0.43)	7.9(0.31)	32(1.26)	272(10.7)
SAE B	101.65/101.70(4.0)	M12	28(1.10)	146(5.75)	16(0.63)	7.9(0.31)	46(1.81)	286(11.26)
SAE C	127.05/127.1(5.0)	M16	---	181(7.13)	16(0.63)	7.9(0.31)	56(2.20)	296(11.65)

※MODEL NUMBER DESIGNATION

T6GC-	B14-	6-	R-	00-	A-	1-	00-
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ

Ⅰ : Series No.
High Shaft Load Type

Ⅱ : Volumetric Displacement(ml/rev.)
B03 = 10.8 B17 = 58.3
B05 = 17.2 B20 = 63.8
B06 = 21.3 B22 = 70.3
B08 = 26.4 B25 = 79.3
B10 = 34.1 B28 = 88.8
B12 = 37.1 B31 = 100.0
B14 = 46.0

Ⅲ : Type of shaft
6 = splined (DIN 5462)

Ⅳ : Direct. of rotation (view on shaft end)
R = clockwise, L = counter-clockwise

Ⅴ : Porting combination: See page 180
00 = Standard

Ⅵ : Design letter

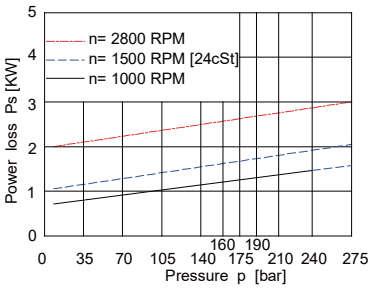
Ⅶ : Seal class 1 = S1 (for mineral oil)

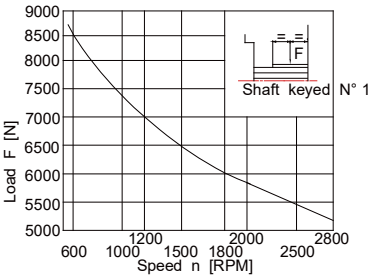
Ⅷ : Mounting W/connection variables

	UNC		Metric	
Code	00	01	M0	M1
S=1-1/2"	SAE	SAE	SAE	SAE
P=1"	BSPP	SAE	BSPP	SAE

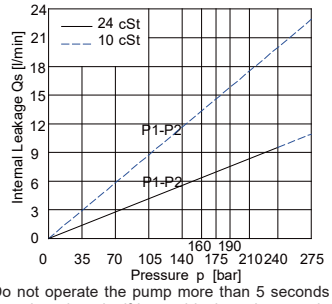
F

※PERFORMANCE CURVE





Life time 3000 hours when 70% of the time at 500 N and 30% at max. load.



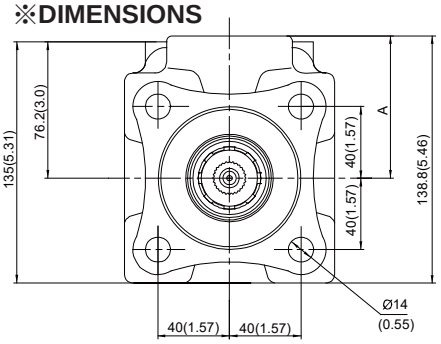
Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

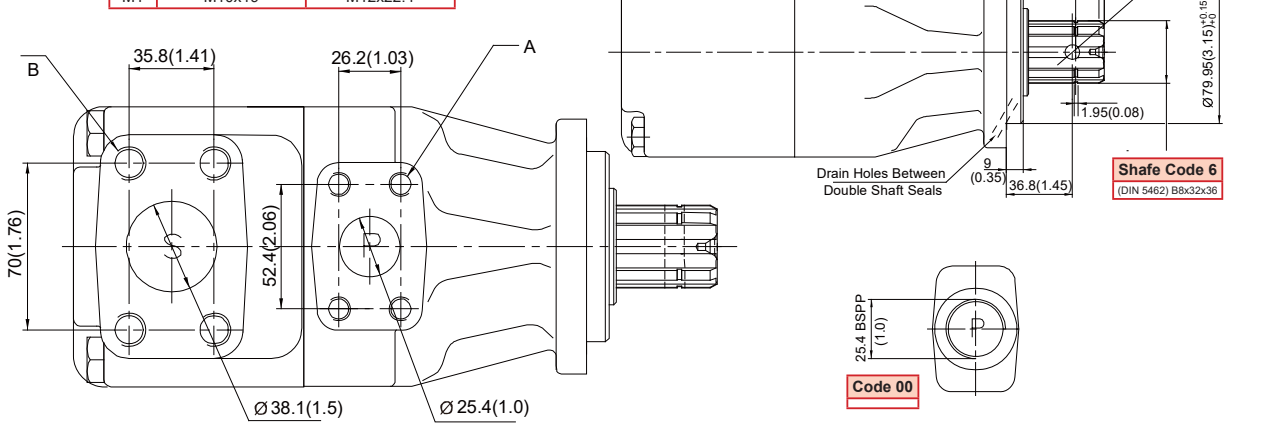
Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
B03	10.8ml/rev	1000(1500)	10.8(16.2)	7.5(11.2)	---	0.9(1.3)	3.6(5.3)	---
B05	17.3ml/rev		17.2(25.8)	13.9(20.8)	11.5(17.3)	1.0(1.4)	5.1(7.5)	8.3(12.2)
B06	21.3ml/rev		21.3(31.9)	16.3(26.9)	12.8(23.4)	1.1(1.5)	6.0(8.9)	10.0(14.7)
B08	26.4 ml/rev		26,4(39,6)	34.6(21.4)	17.9(31.1)	1.2(1.6)	7.2(10.7)	12.1(17.7)
B10	34.1ml/rev		34,1(51,1)	29.1(46.1)	25.6(42.6)	1.3(1.7)	8.9(13.4)	15.1(22.3)
B12	37.1 ml/rev		37,1(55,6)	32.1(50.6)	28.6(47.1)	1.3(1.7)	9.6(14.4)	16.3(24.1)
B14	46.0ml/rev		46,0(69,0)	41.0(64.0)	37.5(60.5)	1.4(1.9)	11.7(17.6)	19.9(29.5)
B17	58.3 ml/rev		58,3(87,4)	53.3(82.4)	49.8(78.9)	1.6(2.1)	14.5(21.9)	24.8(36.9)
B20	63.8ml/rev		63,8(95,7)	58,3(90,2)	55.3(87.2)	1.6(2.2)	15.81(23.82)	27.0(40.2)
B22	70.3 ml/rev		70,3(105,4)	65.3(100.4)	61.8(96.9)	1.7(2.3)	17.3(26.1)	29.6(44.1)
B25 1)	79.3ml/rev		79,3(118,9)	74.3(113.9)	70.8(109)	1.8(2.5)	19.3(29.2)	33.2(49.5)
B28 1)	88.8 ml/rev		88,8(133,2)	83.8(128.2)	81.4(1224.5) 2)	1.9(2.8)	21.9(32.7)	32.5(48.5) 2)
B31 1)	100.0ml/rev		100,0(150,0)	95.0(145.0)	92.6(141.3) 2)	2.0(2.8)	24.4(36.5)	36.4(54.4) 2)

1) B25, B28, B31 = 2500 R.P.M. max. 2) B28, B31 = 210 bar max. int.
* Not to use because internal leakage greater than 50% theoretical flow.

※DIMENSIONS



Code	Dimension for 4 Holes	
	A(P Port)	B(S Port)
01	3/8"-16UNCx0.75 Deepx4Holes	1/2"-13UNCx0.9 Deepx4Holes
M1	M10x19	M12x22.4



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※MODEL NUMBER DESIGNATION

T7B(S)-	B14-	4-	R-	00-	A-	1-	00-
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ

Ⅰ : Series No.
T7B: 100 A2 HW, ISO 2 Bolts 3019-2 mounting flange.
T7BS: SAE B 2 Bolts, J744 mounting flange

Ⅱ : Volumetric Displacement(ml/rev.)

B02 = 5.7	B09 = 28.0
B03 = 9.8	B10 = 31.8
B04 = 12.8	B11 = 34.9
B05 = 15.9	B12 = 40.9
B06 = 19.8	B14 = 45.1
B07 = 22.5	B15 = 50.0
B08 = 24.9	

Ⅲ : Type of shaft: T7B, T7BS
2 = keyed (ISO R775)
Type of shaft: T7BS
1 = keyed (SAE B)
3 = splined (SAE B)
4 = splined (SAE BB)

Ⅳ : Direct. of rotation (view on shaft end)
R = clockwise, L = counter-clockwise

Ⅴ : Porting combination

00 (Standard)	01	02	03
			

P = Pressure port, S = Suction port

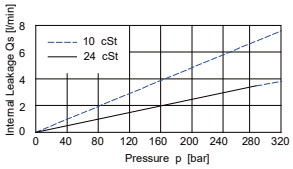
Ⅵ : Design letter

Ⅶ : Seal class: 1 = S1 (for mineral oil)
4 = S4 (for the resistant fluids)
5 = S5 (for mineral oil and fire resistant fluids)

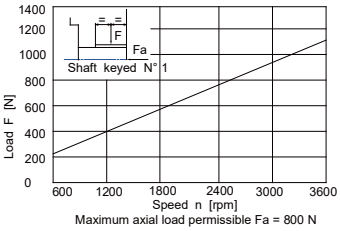
Ⅷ : Mounting W/connection variables: 4 bolts SAE flange (J518C)

Standard	UNC		Metric	
Model	T7BS		T7B, T7BS	
Code	00	01	M0	M1
P	1"	3/4"	1"	3/4"
S	1-1/2"			

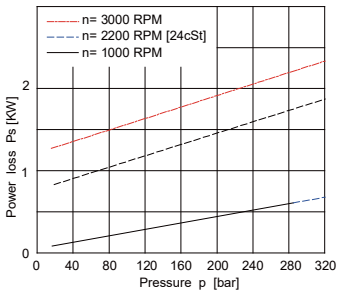
※PERFORMANCE CURVE



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow



Maximum axial load permissible Fa = 800 N

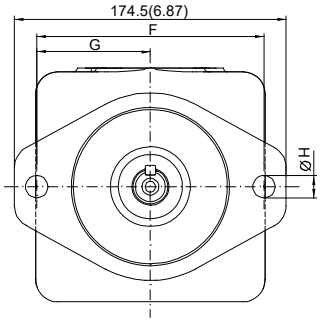


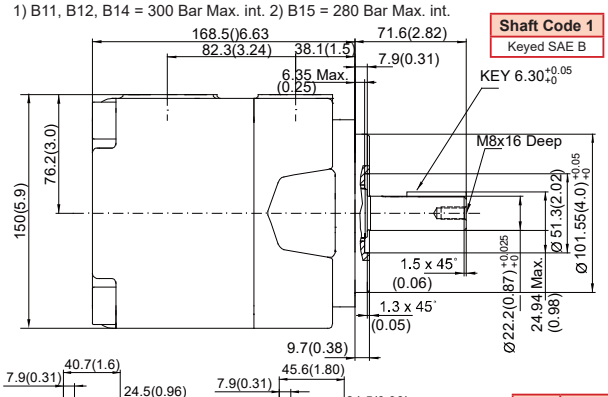
OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

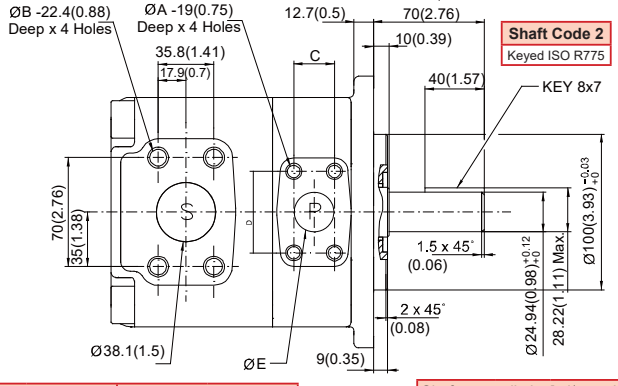
Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 320 bar	p = 7 bar	p = 140 bar	p = 320 bar
B02	5.8 ml/rev.	1500 (1800)	8.7(10.4)	7(8.8)	4.8(6.5)	0.5(0.55)	2.6(2.99)	5.4(6.4)
B03	9.8 ml/rev.		14.7(17.6)	13(15.9)	10.8(13.7)	0.6(0.63)	4(4.65)	8.6(10.25)
B04	12,8 ml/rev		19.2(23)	17.5(21.4)	15,3(19.2)	0,6(0.7)	5(5.89)	11(13.13)
B05	15,9 ml/rev		23.9(28.6)	22.2(26.9)	20(24.6)	0.7(0.76)	6.1(7.17)	13.5(16.12)
B06	19,8 ml/rev		29.7(35.6)	28(33.9)	25.8(31.7)	0.7(0.84)	7.5(8.79)	16.6(19.88)
B07	22,5 ml/rev		33.7(40.4)	32(38.8)	29.9(36.5)	0.8(0.89)	8.5(9.91)	18.8(22.47)
B08	24,9 ml/rev		37.4(44.7)	35.7(43.1)	33.5(40.9)	0.8(0.94)	9.3(10.9)	20.7(24.78)
B09	28,0 ml/rev		42(50.3)	40.3(48.6)	38.1(46.4)	0.9(1.01)	10.4(12.19)	23.2(27.77)
B10	31,8 ml/rev		47.7(57.2)	46(55.5)	43.8(53.4)	0.9(1.11)	11.7(13.75)	26.2(31.42)
B11	35,0 ml/rev		52.5(62.9)	50.8(61.2)	48.9(59) 1)	1(1.15)	12.8(15.04)	27(32.22) 1)
B12	41,0 ml/rev		61.5(73/7)	59.8(72.1)	57.9(70.1) 1)	1.1(1.28)	14.9(17.56)	31.5(37.71) 1)
B14	45,0 ml/rev		67.5(80.8)	65.8(79.2)	63.9(77) 1)	1.2(1.36)	16.3(19.23)	34.5(41.37) 1)
B15	50,0 ml/rev		75(89.8)	73.3(88.3)	71.6(86.5) 2)	1.3(1.47)	18.1(21.28)	35.7(42.76) 2)

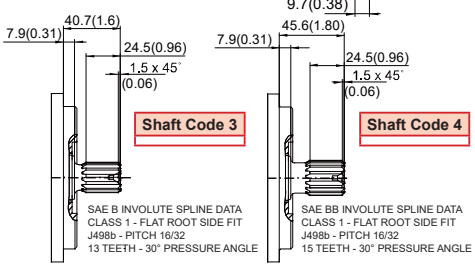
1) B11, B12, B14 = 300 Bar Max. int. 2) B15 = 280 Bar Max. int.

※DIMENSIONS









Code	T7BS		T7B	
	00	01	M0	M1
A	3/8"-16UNC		M10x19	
B	1/2"-13UNC		M12x22.4	
C	26.2(1.03)	22.25(0.88)	26.2(1.03)	22.25(0.88)
D	52.4(2.06)	47.65(1.88)	52.4(2.06)	47.65(1.88)
E	25.4(1.0)	19.1(0.75)	25.4(1.0)	19.1(0.75)
F	146(5.75)		140(5.51)	
G	73(2.87)		70(2.76)	
H	14.3(0.56)		14(0.55)	

Shaft torque limits [ml/rev x bar]		
Pump	Shaft	Vp x p max.
T7B	1	16516
	2	20620
	3	20620
	4	20620

※MODEL NUMBER DESIGNATION

T7D(S)-	B24-	4-	R-	00-	A-	1-	00-
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ

Ⅰ : Series No.
T7B: 125 A2 HW, ISO 2 Bolts 3019-2 mounting flange.
T7BS: SAE C 2 Bolts, J744 mounting flange

Ⅱ : Volumetric Displacement(ml/rev.)

B14 = 44.0	B31 = 99.2
B17 = 55.0	B35 = 113.4
B20 = 66.0	B38 = 120.6
B22 = 70.3	B42 = 137.5
B24 = 81.1	045 = 147.5
B28 = 90.0	050 = 158.0

Ⅲ : Type of shaft: T7D, T7DS
5 = keyed (ISO 3019-2-G32M)
Type of shaft: T7DS
1 = keyed (SAE C 32-1)
2 = keyed (non SAE)
3 = splined (SAE C 32-4)
4 = splined (non SAE)

Ⅳ : Direct. of rotation (view on shaft end)
R = clockwise, L = counter-clockwise

Ⅴ : Porting combination

00 (Standard)	01	02	03
			

P = Pressure port, S = Suction port

Ⅵ : Design letter

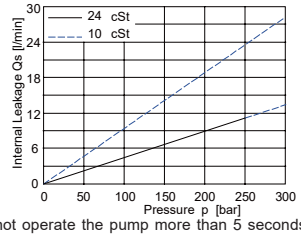
Ⅶ : Seal class: 1 = S1 (for mineral oil)
4 = S4 (for the resistant fluids)
5 = S5 (for mineral oil and fire resistant fluids)

Ⅷ : Mounting W/connection variables: 4 bolts SAE flange (J518)

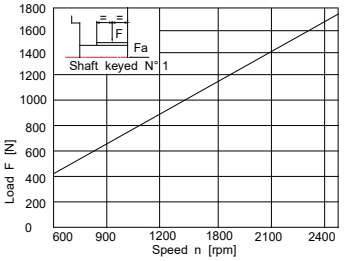
	P= 1-1/4", S= 2"		
Standard	UNC	Metric	
T7D		M0	
T7DS	00	M0	Y0*

Y0* = 250 Bar Max. int.

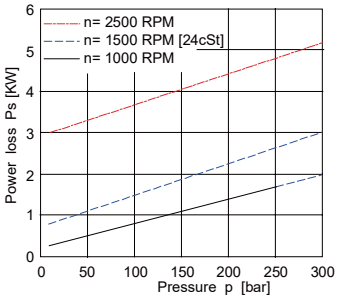
※PERFORMANCE CURVE



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow



Maximum permissible axial load Fa = 1200 N

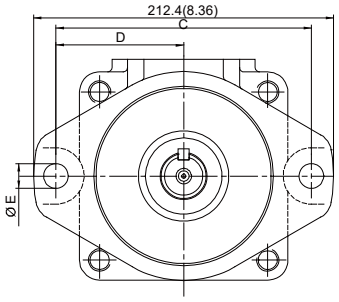


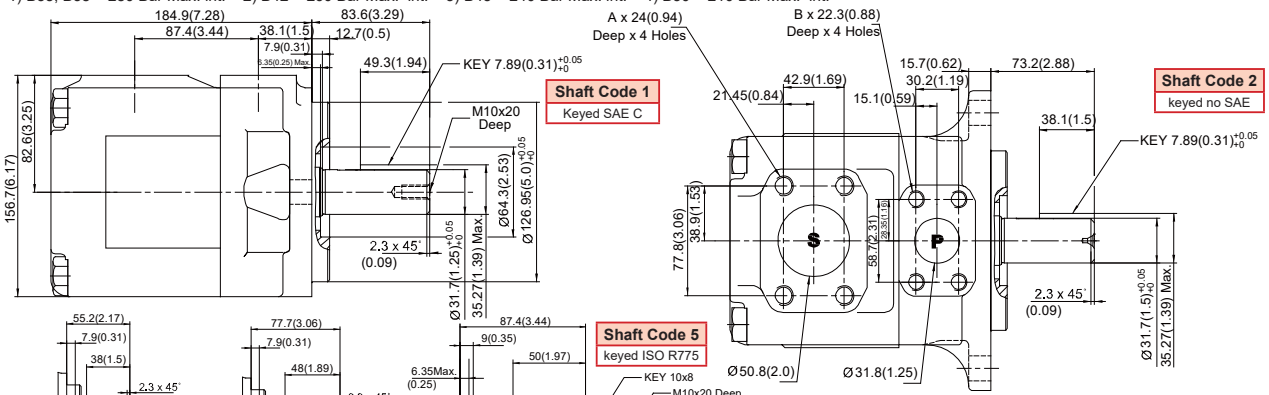
OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 300 bar	p = 7 bar	p = 140 bar	p = 300 bar
B14	44.0 ml/rev.	1500 (1800)	66(79.1)	59.4(72.5)	51.9(64.9)	1.5(2.6)	16.6(20.7)	34.2(43.6)
B17	55,0 ml/rev.		82.5(98.8)	75.9(92.3)	68.4(84.7)	1.7(2.8)	20.4(25.3)	42.4(53.6)
B20	66.0 ml/rev		99(118.6)	92.4(112)	84.9(104.5)	1.9(3.0)	24.3(29.8)	50.7(63.6)
B24	81,1 ml/rev		121.7(145.8)	115(139.2)	107.5(131.6)	2.2(3.4)	29.5(36.1)	62(77.4)
B28	90,0 ml/rev		135(161.8)	128.4(155.2)	120.9(147.6)	2.3(3.5)	32.7(39.7)	68.7(85.5)
B31	99,2 ml/rev		148.8(178.3)	142.2(171.7)	134.7(164.2)	2.5(3.7)	35.9(43.6)	75.6(93.7)
B35	113,4 ml/rev		170.1(203.9)	163.5(197.2)	156.9(190.6) 1)	2.7(4.0)	40.8(49.4)	80.5(97.2) 1)
B38	120,6 ml/rev		180.9(216.8)	174.3(210.2)	167.7(203.6) 1)	2.9(4.2)	43.4(52.4)	85.6(103.2) 1)
B42	137,5 ml/rev		206.3(247.2)	199.6(240.6)	194(234.9) 2)	3.2(4.5)	49.3(59.4)	90.5(111.4) 2)
B45	145,7 ml/rev		218.6(262)	209.2(253.6)	202.6(247.5) 3)	4.1(5.0)	52.8(62.4)	89.5(107.7) 3)
B50	158.0 ml/rev		237(284)	227.7(275.8)	223(271.3) 4)	4.4(5.3)	57.1(67.5)	85(100.3) 4)

1) B35, B38 = 280 Bar Max. int. 2) B42 = 260 Bar Max. int. 3) B45 = 240 Bar Max. int. 4) B50 = 210 Bar Max. int.

※DIMENSIONS





SAE B INVOLUTE SPLINE DATA
CLASS 1 - FLAT ROOT SIDE FIT
J498b - PITCH 16/32
13 TEETH - 30° PRESSURE ANGLE

SAE BB INVOLUTE SPLINE DATA
CLASS 1 - FLAT ROOT SIDE FIT
J498b - PITCH 16/32
15 TEETH - 30° PRESSURE ANGLE

	T7DS			T7D
Code	00	01	M0	M1
A	1/2"-13UNC	M12	M12	M12
B	7/16"-14UNC	M12	M10	M12
C	181(7.13)			180(7.09)
D	90.5(3.56)			90(3.54)
E	17.5(0.69)			18(0.71)

Shaft torque limits [ml/rev x bar]		
Pump	Shaft	Vp x p max.
T7D	1	4283
	2	34590
	3	61200
	4	61200
	5	44344

F

F

※MODEL NUMBER DESIGNATION

T6CC-	W-	022-	008-	1-	R-	00-	C-	1	00
Ⅰ	Ⅱ	Ⅲ(P1)	Ⅳ(P2)	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ

Ⅰ: Series No.
Ⅱ: Use for severe duty shaft only*
Ⅲ, Ⅳ: Volumetric Displacement(ml/rev.)

003 = 10.8	017 = 58.3
005 = 17.2	020 = 63.8
006 = 21.3	022 = 70.3
008 = 26.4	025 = 79.3
010 = 34.1	028 = 88.8
012 = 37.1	031 = 100.0
014 = 46.0	

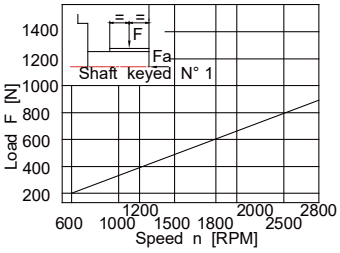
Ⅴ: Type of shaft
1 = keyed (no SAE), 3 = splined (SAE BB),
5 = splined (SAE B)
W Version:
2 = keyed (SAE BB),
Ⅵ: Direct. of rotation (view on shaft end)
R = clockwise, L = counter-clockwise

Ⅶ: Porting combination: See page 180
00 = Standard
Ⅷ: Design letter
Ⅸ: Seal class
1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)
Ⅹ: Mounting W/connection variables: 4 bolts SAE flange (J518)

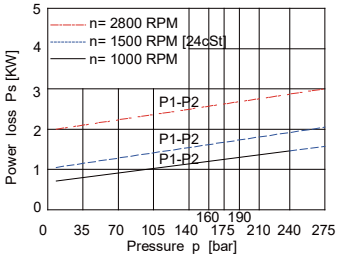
		P1=1",S=3"		P1 = 1" , S= 2-1/2"2)	
P2		1"	3/4"1)	1"	3/4"2)
Code	UNC	00	01	10	11
	Metric	M0	W0	1M	W1

1) for 46 ml/rev. max., 2) for 126 ml/rev. max. The largest cartridge must be always mounted in the front.

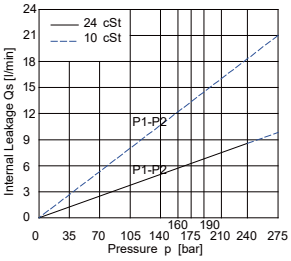
※PERFORMANCE CURVE



Maximum permissible axial load Fa = 800 N



Total hydrodynamic power loss is the sum of each section at its operating conditions.



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

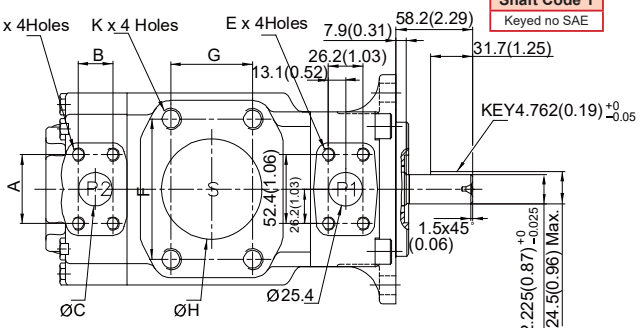
OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

Pressure Port	Series	Volumetric Displacement Vp	Flow Q [l/min] & n= 1500 RPM			Input power P [kW] & n=1500 RPM		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
P1 & P2	003	10.8 ml/rev	16.2	11.2	7.7	1.3	5.3	8.4
	005	17.2 ml/rev	25.8	20.8	17.3	1.4	7.5	12.2
	006	21.3 ml/rev	31.9	26.9	23.4	1.5	8.9	14.7
	008	26.4 ml/rev	39.6	34.6	31.1	1.6	10.7	17.7
	010	34.1 ml/rev	51.1	46.1	42.6	1.7	13.4	22.3
	012	37.1 ml/rev	55.6	50.6	47.1	1.7	14.4	24.1
	014	46.0 ml/rev	69.0	64.0	60.5	1.9	17.6	29.5
	017	58.3 ml/rev	87.4	82.4	78.9	2.1	21.9	36.9
	020	63.8 ml/rev	95.7	90.7	87.2	2.2	23.8	40.2
	022	70.3 ml/rev	105.4	100.4	96.9	2.3	26.1	44.1
	025 1)	79.3 ml/rev	118.9	113.9	110.4	2.5	29.2	49.5
	028 1,2)	88.8 ml/rev	133.2	128.2	125.8	2.8	32.7	48.5
	031 1,2)	100.0 ml/rev	150.0	145.0	142.6	2.8	36.5	54.4

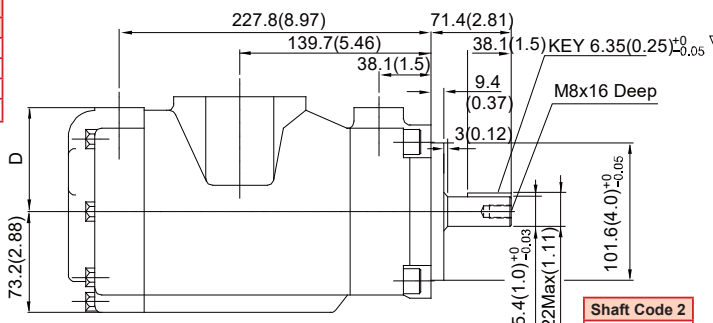
1) 025, 028, 031 = 2500 R.P.M. max. 2) 028, 031 = 210 bar max. int.

Shaft torque limits [ml/rev x bar]		
Pump	Shaft	V x p max. P1+P2
T6CC	1	14300
	2	21420
	3	32670
	5	20600

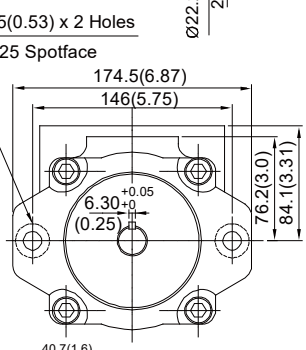
※DIMENSIONS



Shaft Code 1
Keyed no SAE

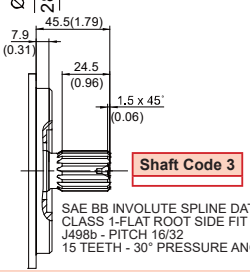


Shaft Code 2
keyed SAE BB



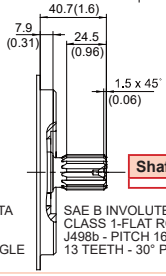
Alternate ports								
	S = 3"				S = 2"1/2**			
F	106.4(4.19)				88.9(3.5)			
G	61.9(2.44)				50.9(2.0)			
H	76.2(3.0)				63.5(2.5)			
Code	00	01*	0M	W0*	10	11*	1M	W1*
A	52.4(2.06)	47.7(1.88)	52.4(2.06)	47.7(1.88)	52.4(2.06)	47.7(1.88)	52.4(2.06)	47.7(1.88)
B	26.2(1.03)	22.4(088)	26.2(1.03)	22.4(088)	26.2(1.03)	22.4(088)	26.2(1.03)	22.4(088)
C	25.4(1.0)	19(0.75)	25.4(1.0)	19(0.75)	25.4(1.0)	19(0.75)	25.4(1.0)	19(0.75)
D	74.7(2.94)	76.2(3.0)	74.7(2.94)	76.2(3.0)	74.7(2.94)	76.2(3.0)	74.7(2.94)	76.2(3.0)
E	3/8"-16 UNC x 19(0.75) Deep		M10 x 19(075)Deep		3/8"-16 UNC x 19(0.75) Deep		M10 x 19(075)Deep	
K	5/8"-11 UNC x 28.4(1.12) Deep		M16 x 28.4(1.12)Deep		1/2" - 13 UNC x 23.9(0.94)Deep		M12 x 23,9(0.94) deep	

* Max. cam 014, ** P1 + P2 = 126 ml/rev max.



Shaft Code 3

SAE BB INVOLUTE SPLINE DATA
CLASS 1-FLAT ROOT SIDE FIT
J498b - PITCH 16/32
15 TEETH - 30° PRESSURE ANGLE



Shaft Code 5

SAE B INVOLUTE SPLINE DATA
CLASS 1-FLAT ROOT SIDE FIT
J498b - PITCH 16/32
13 TEETH - 30° PRESSURE ANGLE

※MODEL NUMBER DESIGNATION

T6DC-	W-	045-	014-	1-	R-	00-	B-	1	00
Ⅰ	Ⅱ	Ⅲ(P1)	Ⅳ(P2)	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ

Ⅰ : Series No.

Ⅱ : Use for severe duty shaft only*

Ⅲ : Volumetric Displacement(ml/rev.) for P1

014 = 47.6 035 = 111.0
017 = 58.2 038 = 120.3
020 = 66.0 042 = 136.0
024 = 79.5 045 = 145.7
028 = 89.7 050 = 158.0
031 = 98.3

Ⅳ : Volumetric Displacement(ml/rev.) for P2

003 = 10.8 017 = 58.3
005 = 17.2 020 = 63.8
006 = 21.3 022 = 70.3
008 = 26.4 025 = 79.3
010 = 34.1 028 = 88.8
012 = 37.1 031 = 100.0
014 = 46.0

Ⅴ : Type of shaft

1 = keyed (SAE C), 2 = keyed (no SAE), 3 = splined (SAE C), 4 = splined (no SAE)
Type of shaft- Severe duty (T6DCW only) 5 = keyed (no SAE)

Ⅵ : Direct. of rotation (view on shaft end) R = clockwise, L = counter-clockwise

Ⅶ : Porting combination: See page 180

00 = Standard

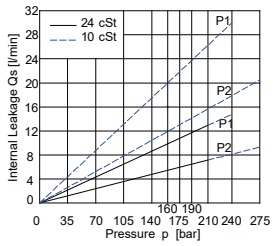
Ⅷ : Design letter

Ⅸ : Seal class 1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids), 5 = S5 (for mineral oil and fire resistant fluids)

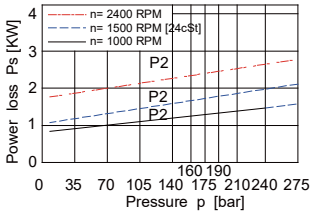
Ⅹ : Mounting W/connection variables

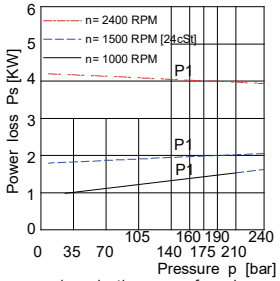
	UNC		Metric	
Code	00	01	M0	M1
P2	1"	3/4"	1"	3/4"

※PERFORMANCE CURVE

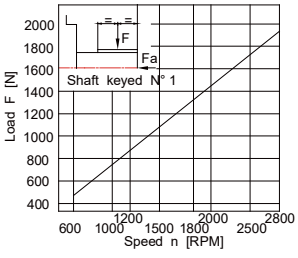


Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.





Total hydrodynamic power loss is the sum of each section at its operating conditions.



Maximum permissible axial load Fa = 1200 N

OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

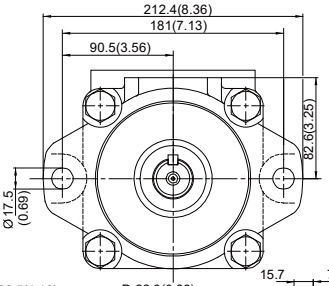
Pressure Port	Series	Volumetric Displacement Vp	Flow Q [l/min] & n= 1500 RPM			Input power P [kW] & n=1500 RPM		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
P1	014	47.6 ml/rev	71.4	62.1	55.9	2.3	18.5	30.6
	017	58.2 ml/rev	87.3	78.0	71.8	2.5	22.2	37.0
	020	66.0ml/rev	99.0	89.7	83.5	2.8	24.9	41.7
	024	79.5 ml/rev	119.3	110.0	103.8	3.0	29.6	49.8
	028	89.7 ml/rev	134.5	125.2	119.0	3.2	33.2	55.9
	031	98.3 ml/rev	147.4	138.1	131.9	3.3	36.2	61.0
	035	111.0 ml/rev	166.5	157.2	151.0	3.5	40.7	68.7
	038	120.3 ml/rev	180.4	171.1	164.9	3.7	43.9	74.3
	042 1)	136.0 ml/rev	204.0	194.7	188.5	4.0	49.4	83.7
	045 1)	145.7 ml/rev	218.5	209.2	203.0	4.1	52.8	89.5
	050 1)	158.0 ml/rev	237.0	227.7	224.0 2)	4.4	57.0	85.0 2)
P2	003	10.8 ml/rev	16.2	11.2	7.7	1.3	5.3	8.4
	005	17.2 ml/rev	25.8	20.8	17.3	1.4	7.5	12.2
	006	21.3 ml/rev	31.9	26.9	23.4	1.5	8.9	14.7
	008	26.4 ml/rev	39.6	34.6	31.1	1.6	10.7	17.7
	010	34.1 ml/rev	51.1	46.1	42.6	1.7	13.4	22.3
	012	37.1 ml/rev	55.6	50.6	47.1	1.7	14.4	24.1
	014	46.0 ml/rev	69.0	64.0	60.5	1.9	17.6	29.5
	017	58.3 ml/rev	87.4	82.4	78.9	2.1	21.9	36.9
	020	63.8 ml/rev	95.7	90.7	87.2	2.2	23.8	40.2
	022	70.3 ml/rev	105.4	100.4	96.9	2.3	26.1	44.1
	025	79.3 ml/rev	118.9	113.9	110.4	2.5	29.2	49.5
	028	88.8 ml/rev	133.2	128.2	125.8 2)	2.8	32.7	48.5 2)
	031	100.0 ml/rev	150.0	145.0	142.6 2)	2.8	36.5	54.4 2)

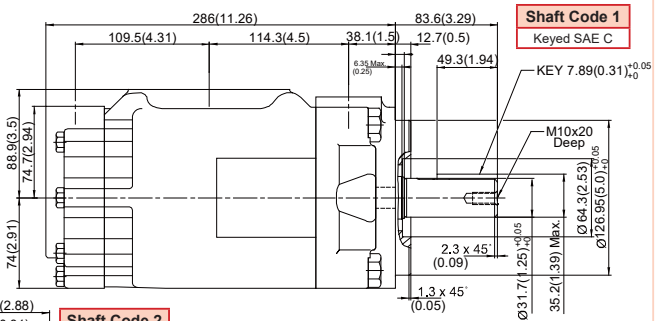
1) 042, 045, 050 = 2200 R.P.M. 2) 028, 031, 050 = 210 bar max. int. max.

※DIMENSIONS

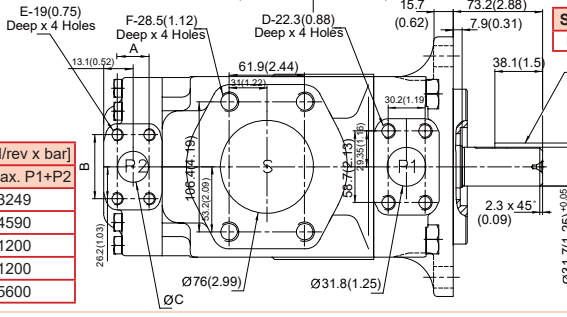
Code	00 & M0	01 & M1
A	26.2(1.03)	22.2(0.87)
B	52.4(2.06)	47.6(1.87)
C	25.4(1.0)	19.05(0.75)

Code	00 & 01	M0 & M1
D	7/16"-14UNC	M12
E	3/8"-16UNC	M10
F	5/8"-11UNC	M16

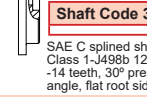




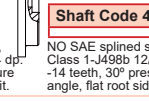
Shaft Code 1
Keyed SAE C



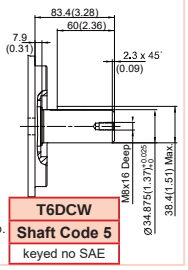
Shaft Code 2
keyed no SAE



Shaft Code 3
SAE C splined shaft, Class 1-J498b 12/24 dp. -14 teeth, 30º pressure angle, flat root side fit.



Shaft Code 4
NO SAE splined shaft Class 1-J498b 12/24 dp. -14 teeth, 30º pressure angle, flat root side fit.



T6DCW
Shaft Code 5
keyed no SAE

Shaft torque limits [ml/rev x bar]		
Pump	Shaft	V x p max. P1+P2
T6DC	1	43249
	2	34590
	3	61200
	4	61200
	5	55600

F

※MODEL NUMBER DESIGNATION

T6DDS-	024-	024-	1-	R-	00-	C-	1	00
Ⅰ	Ⅱ(P1)	Ⅲ(P2)	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ

Ⅰ: Series No.: SAE C 6 Bolts

Ⅱ, Ⅲ: Volumetric Displacement(ml/rev.)

014 = 47.6	035 = 111.0
017 = 58.2	038 = 120.3
020 = 66.0	042 = 136.0
024 = 79.5	045 = 145.7
028 = 89.7	050 = 158.0
031 = 98.3	

Ⅳ: Type of shaft

1 = keyed (SAE C), 4 = splined (SAE BB),
2 = keyed (SAE CC), 5 = keyed(no SAE)
3 = splined (SAE C)

Ⅴ: Direct. of rotation (view on shaft end)

R = clockwise, L = counter-clockwise

Ⅵ: Porting combination: See page 180

00 = Standard

Ⅶ: Design letter

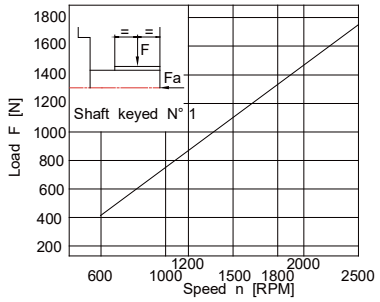
Ⅷ: Seal class

1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

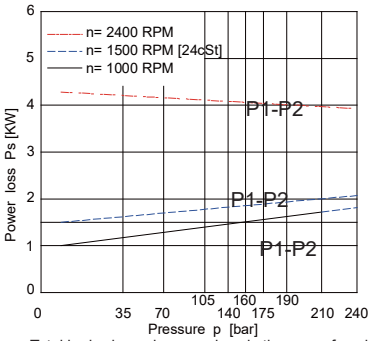
Ⅸ: Mounting W/connection variables: 4 bolts SAE flange (J518)

P1 & P2 = 1-1/4", S = 4"		
T6DDS	UNC	Metric
	00	M0

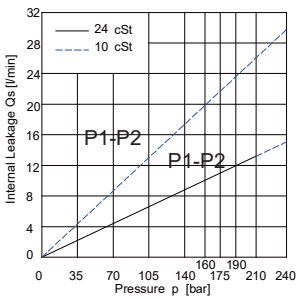
※PERFORMANCE CURVE



Maximum permissible axial load Fa = 1200 N



Total hydrodynamic power loss is the sum of each section at its operating conditions.



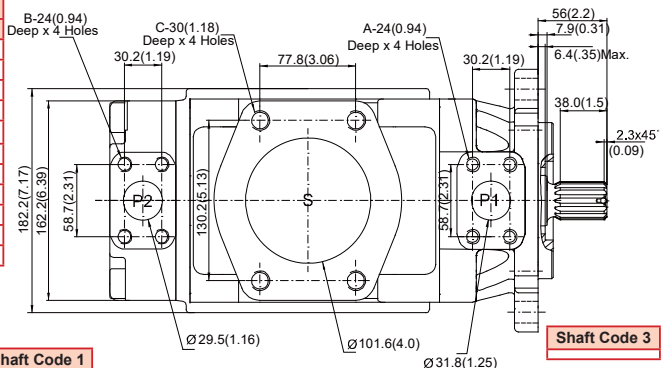
Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

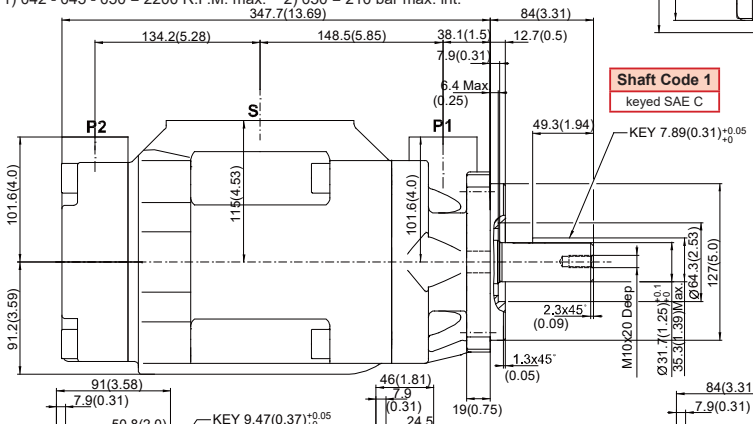
Pressure Port	Series	Volumetric Displacement Vp	Flow Q [l/min] & n= 1500 RPM			Input power P [kW] & n=1500 RPM		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
P1 & P2	014	47.6 ml/rev	71.4	62.1	55.9	2.3	18.5	30.6
	017	58.2 ml/rev	87.3	78.0	71.8	2.5	22.2	37.0
	020	66.0ml/rev	99.0	89.7	83.5	2.8	24.9	41.7
	024	79.5 ml/rev	119.3	110.0	103.8	3.0	29.6	49.8
	028	89.7 ml/rev	134.5	125.2	119.0	3.2	33.2	55.9
	031	98.3 ml/rev	147.4	138.1	131.9	3.3	36.2	61.0
	035	111.0 ml/rev	166.5	157.2	151.0	3.5	40.7	68.7
	038	120.3 ml/rev	180.4	171.1	164.9	3.7	43.9	74.3
	042 1)	136.0 ml/rev	204.0	194.7	188.5	4.0	49.4	83.7
	045 1)	145.7 ml/rev	218.5	209.2	203.0	4.1	52.8	89.5
	050 1)	158.0 ml/rev	237.0	227.7	224.0 2)	4.4	57.0	85.0 2)

1) 042 - 045 - 050 = 2200 R.P.M. max. 2) 050 = 210 bar max. int.

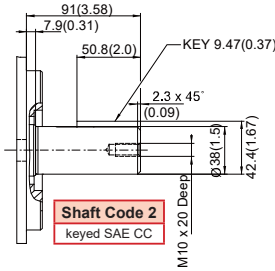
※DIMENSIONS



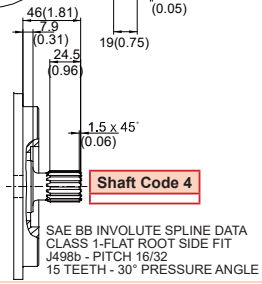
Shaft Code 3



Shaft Code 1
keyed SAE C

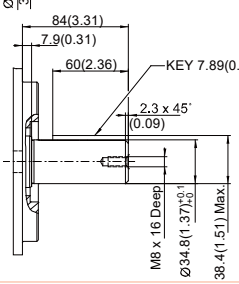


Shaft Code 2
keyed SAE CC



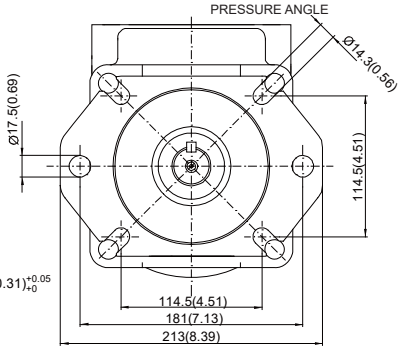
Shaft Code 4

SAE BB INVOLUTE SPLINE DATA
CLASS 1-FLAT ROOT SIDE FIT
J498b - PITCH 16/32
15 TEETH - 30° PRESSURE ANGLE



Shaft Code 5
keyed no SAE

SAE C INVOLUTE SPLINE DATA
CLASS 1-FLAT ROOT SIDE FIT
J498b -PITCH 12/24
14TEETH -30°
PRESSURE ANGLE



Shaft torque limits [ml/rev x bar]		
Pump	Shaft	V x p max. P1+P2
T6DDS	1	14300
	2	21420
	3	32670
	5	20600

※MODEL NUMBER DESIGNATION

T6EC-	066-	014-	1-	R-	00-	B-	1	(M0)
Ⅰ	Ⅱ(P1)	Ⅲ(P2)	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ

Ⅰ: Series No.

Ⅱ: Volumetric Displacement(ml/rev.) for P1

042 = 132.3 062 = 196.7
045 = 142.4 066 = 213.3
050 = 158.5 072 = 227.1
052 = 164.8 085 = 268.8

Ⅲ: Volumetric Displacement(ml/rev.) for P2

003 = 10.8 017 = 58.3
005 = 17.2 020 = 63.8
006 = 21.3 022 = 70.3
008 = 26.4 025 = 79.3
010 = 34.1 028 = 88.8
012 = 37.1 031 = 100.0
014 = 46.0

Ⅳ: Type of shaft

1 = keyed (SAE CC), 3 = splined (SAE C),
2 = keyed (no SAE), 4 = splined (SAE CC)

Ⅴ: Direct. of rotation (view on shaft end)

R = clockwise, L = counter-clockwise

Ⅵ: Porting combination: See page 180

00 = Standard

Ⅶ: Design letter

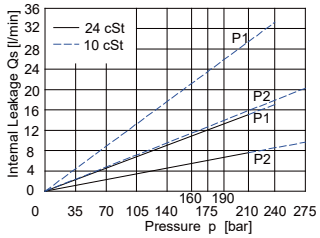
Ⅷ: Seal class

1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

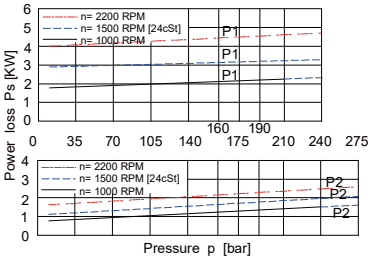
Ⅸ: Port Connection

M0: DIN 912 Bolts(Metric Std.) Omit: UNC Bolts

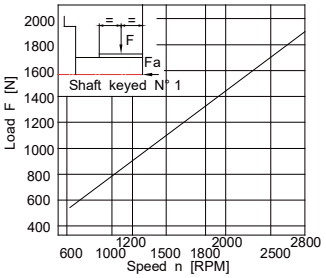
※PERFORMANCE CURVE



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.



Total hydrodynamic power loss is the sum of each section at its operating conditions.



Maximum permissible axial load Fa = 2000 N

OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

Pressure Port	Series	Volumetric Displacement Vp	Flow Q [l/min] & n= 1500 RPM			Input power P [kW] & n=1500 RPM		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
P1	042	132.3ml/rev	198.5	188.5	181.3	5.2	49.4	82.6
	045	142.4 ml/rev	213.6	203.6	196.5	5.4	52.9	88.7
	050	158.5 ml/rev	237.7	227.7	220.6	5.7	58.5	98.3
	052	164.8 ml/rev	247.2	237.2	230.1	5.8	60.8	102.1
	062	196.7ml/rev	295.0	285.0	277.9	6.4	71.9	121.3
	066	213.3 ml/rev	319.9	309.9	302.8	6.7	77.7	131.2
	072	227.1ml/rev	340.6	330.6	323.5	6.9	82.6	139.5
	085 1)	268.0ml/rev	404.7	397.7 2)	---	7.3	65.3 2)	---

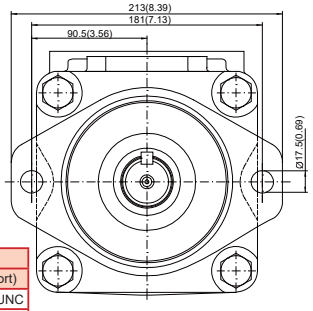
1) 085= 2000 rpm Max. 2) 085 = 90 Bar Max. int. 3) 028, 031 = 210 bar max. int.

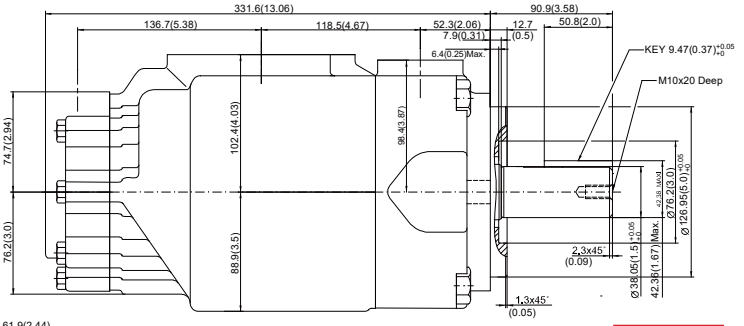
Pressure Port	Series	Volumetric Displacement Vp	Flow Q [l/min] & n= 1500 RPM			Input power P [kW] & n=1500 RPM		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
P2	003	10.8 ml/rev	16.2	11.2	7.7	1.3	5.3	8.4
	005	17.2 ml/rev	25.8	20.8	17.3	1.4	7.5	12.2
	006	21.3 ml/rev	31.9	26.9	23.4	1.5	8.9	14.7
	008	26.4 ml/rev	39.6	34.6	31.1	1.6	10.7	17.7
	010	34.1 ml/rev	51.1	46.1	42.6	1.7	13.4	22.3
	012	37.1 ml/rev	55.6	50.6	47.1	1.7	14.4	24.1
	014	46.0 ml/rev	69.0	64.0	60.5	1.9	17.6	29.5
	017	58.3 ml/rev	87.4	82.4	78.9	2.1	21.9	36.9
	020	63.8 ml/rev	95.7	90.7	87.2	2.2	23.8	40.2
	022	70.3 ml/rev	105.4	100.4	96.9	2.3	26.1	44.1
	025	79.3 ml/rev	118.9	113.9	110.4	2.5	29.2	49.5
	028	88.8 ml/rev	133.2	128.2	125.8 3)	2.8	32.7	48.5 3)
	031	100.0 ml/rev	150.0	145.0	142.6 3)	2.8	36.5	54.4 3)

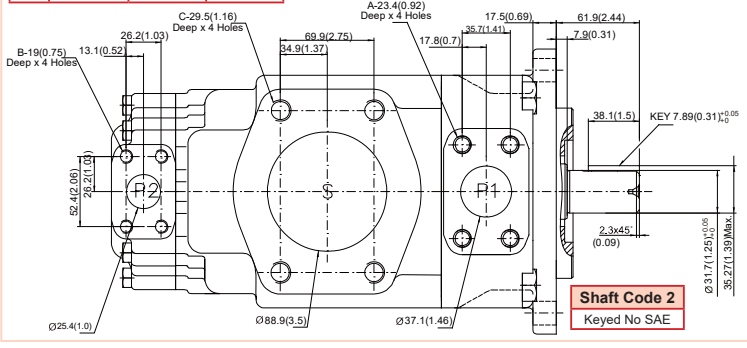
※DIMENSIONS

Shaft torque limits [ml/rev x bar]		
Pump	Shaft	V x p max. P1+P2
T6EC	1	72306
	2	34590
	3	61200
	4	76376

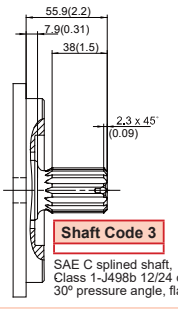
Code	Dimension for 4 Holes		
	A(P1 Port)	B(P2 Port)	C(S Port)
Omit	1/2"-13UNC	3/8"-16UNC	5/8"-11UNC
M0	M12 x 23.4	M10x19	M16 x 29.5



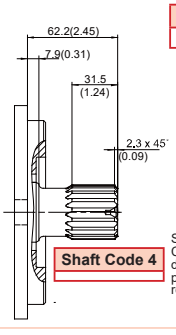




Shaft Code 2
Keyed No SAE



Shaft Code 3
SAE C splined shaft,
Class 1-J498b 12/24 dp.-14 teeth,
30° pressure angle, flat root side fit.



Shaft Code 4
SAE CC splined shaft
Class 1-J498b 12/24
dp.-17 teeth, 30°
pressure angle, flat
root side fit.

Shaft Code 1
Keyed SAE CC

F

※MODEL NUMBER DESIGNATION

T6ED-	066-	024-	1-	R-	00-	B-	1	(M0)
Ⅰ	Ⅱ(P1)	Ⅲ(P2)	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ

Ⅰ: Series No.

Ⅱ: Volumetric Displacement(ml/rev.) for P1

042 = 132.3 062 = 196.7
045 = 142.4 066 = 213.3
050 = 158.5 072 = 227.1
052 = 164.8 085 = 268.8

Ⅲ: Volumetric Displacement(ml/rev.) for P2

014 = 44.0 031 = 99.2
017 = 55.0 035 = 113.4
020 = 66.0 038 = 120.6
022 = 70.3 042 = 137.5
024 = 81.1 045 = 145.7
028 = 90.0 050 = 158.0

Ⅳ: Type of shaft

1 = keyed (SAE CC), 3 = splined (SAE C),
2 = keyed (no SAE), 4 = splined (SAE CC)

Ⅴ: Direct. of rotation (view on shaft end)

R = clockwise, L = counter-clockwise

Ⅵ: Porting combination: See page 180

00 = Standard

Ⅶ: Design letter

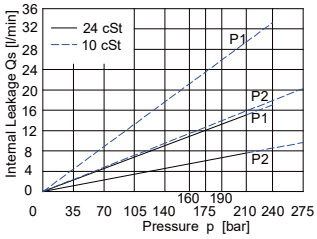
Ⅷ: Seal class

1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

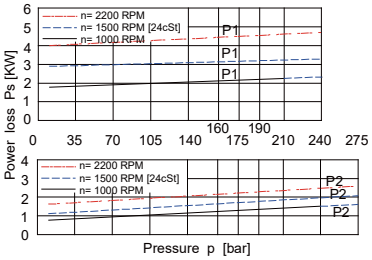
Ⅸ: Port Connection

M0: DIN 912 Bolts(Metric Std.) Omit: UNC Bolts

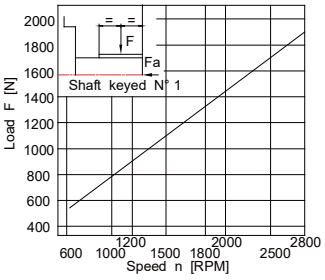
※PERFORMANCE CURVE



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.



Total hydrodynamic power loss is the sum of each section at its operating conditions.



Maximum permissible axial load Fa = 2000 N

OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

Pressure Port	Series	Volumetric Displacement Vp	Flow Q [l/min] & n= 1500 RPM			Input power P [kW] & n=1500 RPM		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
P1	042	132.3ml/rev	198.5	188.5	181.3	5.2	49.4	82.6
	045	142.4 ml/rev	213.6	203.6	196.5	5.4	52.9	88.7
	050	158.5 ml/rev	237.7	227.7	220.6	5.7	58.5	98.3
	052	164.8 ml/rev	247.2	237.2	230.1	5.8	60.8	102.1
	062	196.7ml/rev	295.0	285.0	277.9	6.4	71.9	121.3
	066	213.3 ml/rev	319.9	309.9	302.8	6.7	77.7	131.2
	072	227.1ml/rev	340.6	330.6	323.5	6.9	82.6	139.5
	085 1)	268.0ml/rev	402.0	397.7 2)	---	7.3	65.3 2)	---

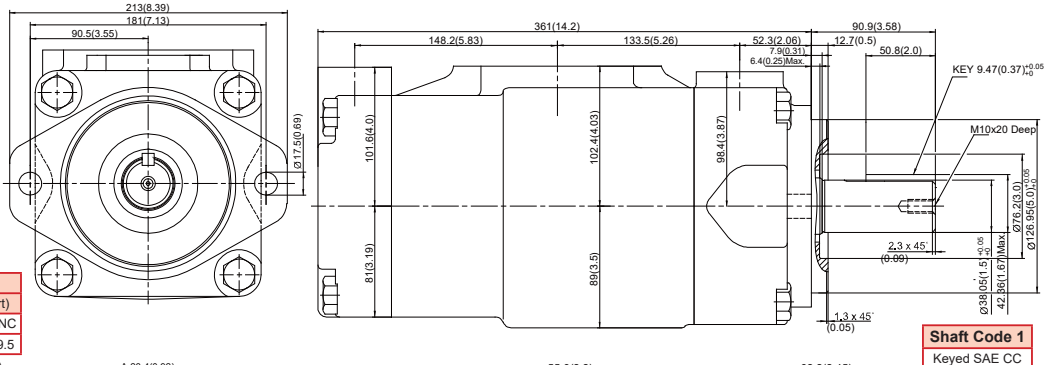
1) 085= 2000 rpm Max. 2) 085 = 90 Bar Max. int. 3) 050 = 210 bar max. int.

Pressure Port	Series	Volumetric Displacement Vp	Flow Q [l/min] & n= 1500 RPM			Input power P [kW] & n=1500 RPM		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
P2	014	47.6 ml/rev	71.4	62.1	55.9	2.3	18.5	30.6
	017	58.2 ml/rev	87.3	78.0	71.8	2.5	22.2	37.0
	020	66.0ml/rev	99.0	89.7	83.5	2.8	24.9	41.7
	024	79.5 ml/rev	119.3	110.0	103.8	3.0	29.6	49.8
	028	89.7 ml/rev	134.5	125.2	119.0	3.2	33.2	55.9
	031	98.3 ml/rev	147.4	138.1	131.9	3.3	36.2	61.0
	035	111.0 ml/rev	166.5	157.2	151.0	3.5	40.7	68.7
	038	120.3 ml/rev	180.4	171.1	164.9	3.7	43.9	74.3
	042	136.0 ml/rev	204.0	194.7	188.5	4.0	49.4	83.7
	045	145.7 ml/rev	218.5	209.2	203.0	4.1	52.8	89.5
	050	158.0 ml/rev	237.0	227.7	224.0 3)	4.4	57.0	85.0 3)

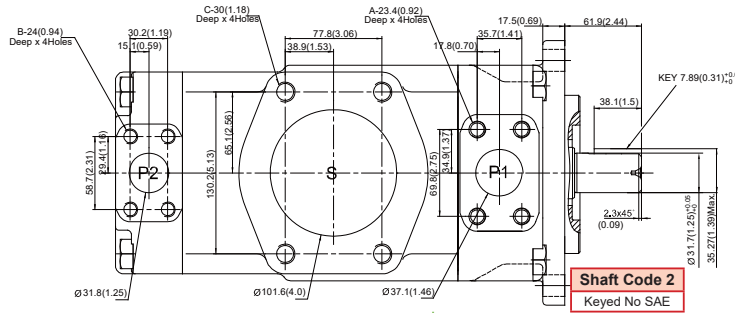
※DIMENSIONS

Shaft torque limits [ml/rev x bar]		
Pump	Shaft	V x p max. P1+P2
T6ED	1	72306
	2	34590
	3	61200
	4	76376

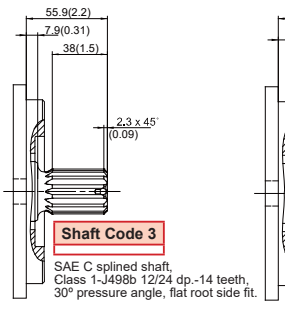
Code	Dimension for 4 Holes		
	A(P1 Port)	B(P2 Port)	C(S Port)
Omit	1/2"-13UNC	7/16"-14UNC	5/8"-11UNC
M0	M12 x 23.4	M10x19	M16 x 29.5



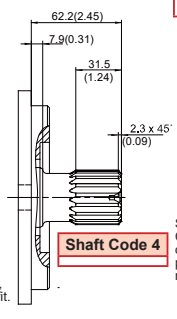
Shaft Code 1
Keyed SAE CC



Shaft Code 2
Keyed No SAE



Shaft Code 3
SAE C splined shaft,
Class 1-J498b 12/24 dp.-14 teeth,
30° pressure angle, flat root side fit.



Shaft Code 4
SAE CC splined shaft
Class 1-J498b 12/24
dp.-17 teeth, 30°
pressure angle, flat
root side fit.

※MODEL NUMBER DESIGNATION

T6GCC-	B14-	B14-	6-	R-	00-	A-	1-	00-
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ

Ⅰ: Series No.
High Shaft Load Type

Ⅱ, Ⅲ: Volumetric Displacement(ml/rev.)

B03 = 10.8	B17 = 58.3
B05 = 17.2	B20 = 63.8
B06 = 21.3	B22 = 70.3
B08 = 26.4	B25 = 79.3
B10 = 34.1	B28 = 88.8
B12 = 37.1	B31 = 100.0
B14 = 46.0	

Ⅴ: Type of shaft
6 = splined (DIN 5462)

Ⅴ: Direct. of rotation (view on shaft end)
R = clockwise, L = counter-clockwise

Ⅵ: Porting combination: See page 180
00 = Standard

Ⅶ: Design letter

Ⅷ: Seal class 1 = S1 (for mineral oil)

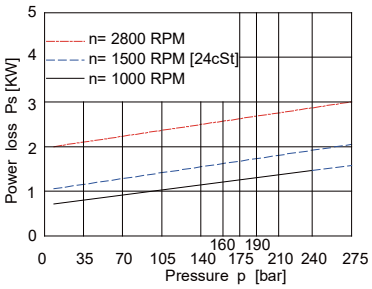
Ⅸ: Mounting W/connection variables

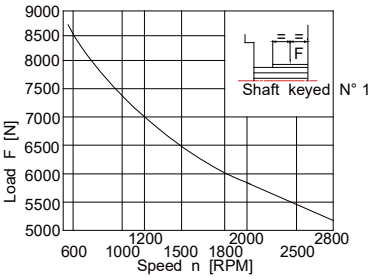
		P1=1", S=3"		P1=1", S=2-1/2" 2)	
P2		1"	3/4" 1)	1"	3/4" 1)
Code	UNC	00	01	10	11
	Metric	0M	M0	1M	M1

1) for 46 ml/rev. Max. 2) for 126 ml/rev. Max. The large cartridge must be always mounted in the front.

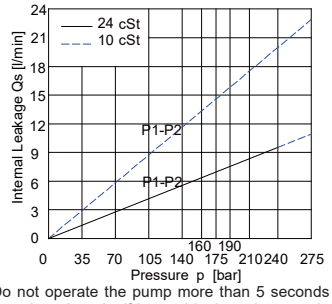
F

※PERFORMANCE CURVE





Life time 3000 hours when 70% of the time at 500 N and 30% at max. load.



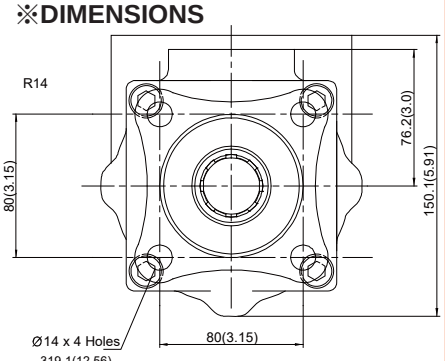
Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

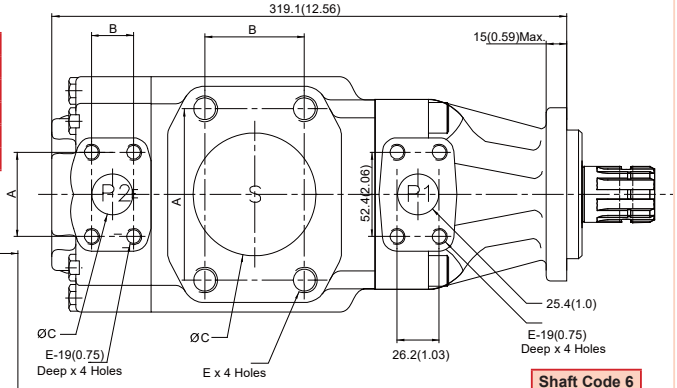
Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
B03	10.8ml/rev	1000(1500)	10.8(16.2)	7.5(11.2)	---	0.9(1.3)	3.6(5.3)	---
B05	17.3ml/rev		17.2(25.8)	13.9(20.8)	11.5(17.3)	1.0(1.4)	5.1(7.5)	8.3(12.2)
B06	21.3ml/rev		21.3(31.9)	16.3(26.9)	12.8(23.4)	1.1(1.5)	6.0(8.9)	10.0(14.7)
B08	26.4 ml/rev		26,4(39,6)	34.6(21.4)	17.9(31.1)	1.2(1.6)	7.2(10.7)	12.1(17.7)
B10	34.1ml/rev		34,1(51,1)	29.1(46.1)	25.6(42.6)	1.3(1.7)	8.9(13.4)	15.1(22.3)
B12	37.1 ml/rev		37,1(55,6)	32.1(50.6)	28.6(47.1)	1.3(1.7)	9.6(14.4)	16.3(24.1)
B14	46.0ml/rev		46,0(69,0)	41.0(64.0)	37.5(60.5)	1.4(1.9)	11.7(17.6)	19.9(29.5)
B17	58.3 ml/rev		58,3(87,4)	53.3(82.4)	49.8(78.9)	1.6(2.1)	14.5(21.9)	24.8(36.9)
B20	63.8ml/rev		63,8(95,7)	58,3(90,2)	55.3(87.2)	1.6(2.2)	15.81(23.82)	27.0(40.2)
B22	70.3 ml/rev		70,3(105,4)	65.3(100.4)	61.8(96.9)	1.7(2.3)	17.3(26.1)	29.6(44.1)
B25 1)	79.3ml/rev		79,3(118,9)	74.3(113.9)	70.8(110.4)	1.8(2.5)	19.3(29.2)	33.2(49.5)
B28 1)	88.8 ml/rev		88,8(133,2)	83.8(128.2)	81.4(125.8) 2)	1.9(2.8)	21.9(32.7)	32.5(48.5) 2)
B31 1)	100.0ml/rev		100,0(150,0)	95.0(145.0)	92.6(142.6) 2)	2.0(2.8)	24.4(36.5)	36.4(54.4) 2)

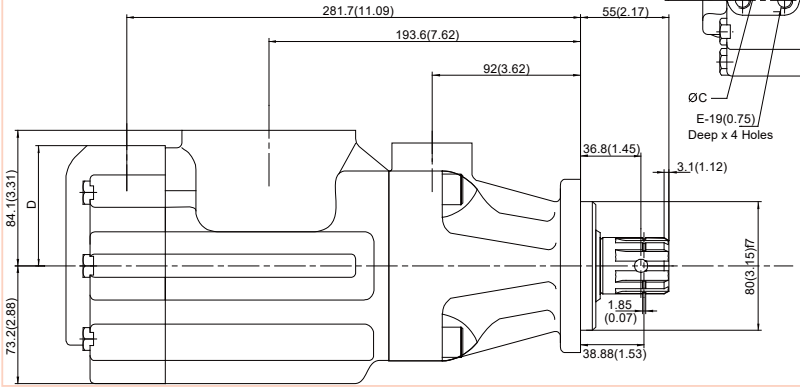
1) B25, B28, B31 = 2500 R.P.M. max. 2) B28, B31 = 210 bar max. int.
* Not to use because internal leakage greater than 50% theoretical flow.

※DIMENSIONS



PORT	A	B	C	D	E	
					UNC	Metric
S	106.4(4.19)	61.9(2.44)	76.2(3.0)	---	5/8"-11UNCx1.12	M16x28.4Deep
S	88.9(3.5)	50.8(2.0)	63.5(2.5)	---	1/3"-13UNCx0.94	M12X24Deep
P2	47.7(1.88)	22.2(0.87)	19(0.75)	76.2(3.0)	3/8"-16UNCx0.75	M10X19Deep
P2	52.4(2.06)	26.2(1.03)	25.4(1.0)	74.7(2.94)		





Shaft Code 6
(DIN 5462) B8x32x36

Shaft torque limits(ml/rev x Bar)	
Shaf	Vp x p Max.(P1+P2)
6	32670

F

※MODEL NUMBER DESIGNATION

T67CB-	W-	014-	B04-	1-	R-	00-	A-	1-	M1
Ⅰ	Ⅱ	Ⅲ(P1)	Ⅳ(P2)	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ

Ⅰ: Series No.: SAE B 2 Bolts

Ⅱ: Use for severe duty shaft only*

Ⅲ: Volumetric Displacement(ml/rev.) for P1

003 = 10.8 017 = 58.3
005 = 17.2 020 = 63.8
006 = 21.3 022 = 70.3
008 = 26.4 025 = 79.3
010 = 34.1 028 = 88.8
012 = 37.1 031 = 100.0
014 = 46.0

Ⅳ: Volumetric Displacement(ml/rev.) for P2

B02 = 5.7 B09 = 28.0
B03 = 9.8 B10 = 31.8
B04 = 12.8 B11 = 34.9
B05 = 15.9 B12 = 40.9
B06 = 19.8 B14 = 45.1
B07 = 22.5 B15 = 50.0
B08 = 24.9

Ⅴ: Type of shaft
1 = keyed (no SAE), 3 = splined (SAE BB), 5 = splined (SAE B)
Type of shaft- Severe duty (T67CBW only) 2 = keyed(SAE BB)

Ⅵ: Direct. of rotation (view on shaft end) R = clockwise, L = counter-clockwise

Ⅶ: Porting combination: See page 180
00 = Standard

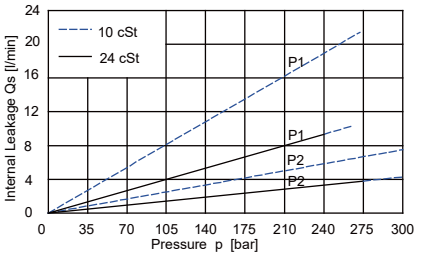
Ⅷ: Design letter

Ⅸ: Seal class 1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

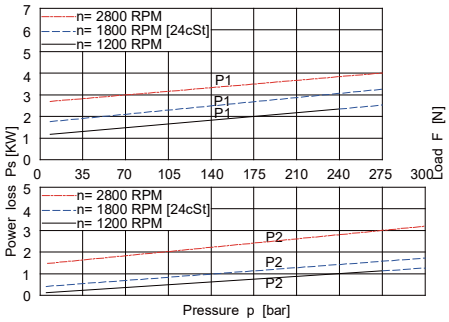
Ⅹ: Mounting W/connection variables

Standard	UNC	Metric
Code	11	M1

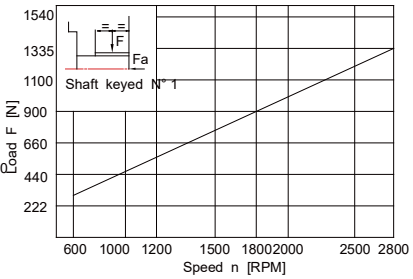
※PERFORMANCE CURVE



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.



Total hydrodynamic power loss is the sum of each section at its operating conditions.



Maximum permissible axial load Fa = 800 N

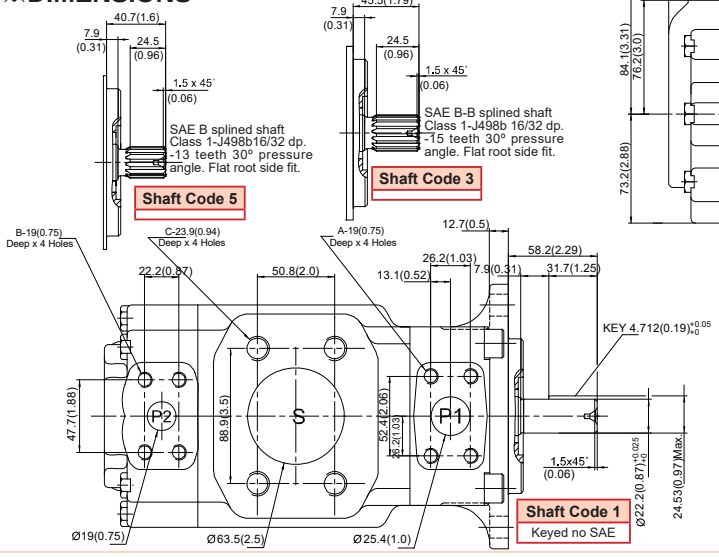
OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

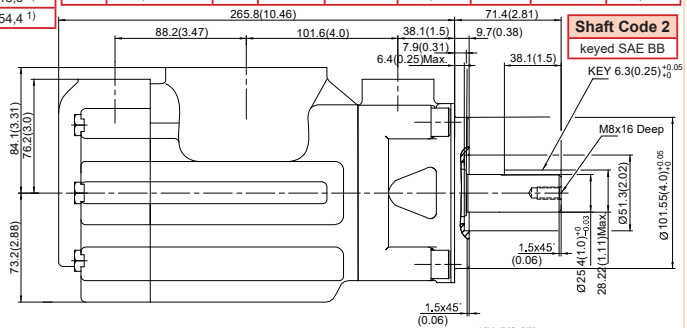
P1 Series	Volumetric Displacement Vp	Speed [r.p.m]	Flow Q [l/min]			Input power P [kW] RPM		
			p = 0 bar	p = 140 bar	p = 275 bar	p = 7 bar	p = 140 bar	p = 275 bar
003	10.8ml/rev	1500	16.2	11.2	---	1.3	5.3	---
005	17.3ml/rev		25.8	20.8	16,1	1.4	7.5	13,9
006	21.3ml/rev		31.9	26.9	22,2	1.5	8.9	16,8
008	26.4 ml/rev		39,6	34.6	29,9	1.6	10.7	20,3
010	34.1ml/rev		51,1	46.1	41,4	1.7	13.4	25,6
012	37.1 ml/rev		55,6	50.6	45,9	1.7	14.4	27,6
014	46.0ml/rev		69,0	64.0	59,3	1.9	17.6	33,7
017	58.3 ml/rev		87,4	82.4	77,7	2.1	21.9	42,2
020	63.8ml/rev		95,7	90,2	86,0	2.2	23.82	46,0
022	70.3 ml/rev		105,4	100.4	95,7	2.3	26.1	50,4
025	79.3ml/rev		118,9	113.9	109,2	2.5	29.2	56,6
028	88.8 ml/rev		133,2	128.2	125,8 1)	2.8	32.7	48,5 1)
031	100.0ml/rev		150,0	145.0	142,6 1)	2.8	36.5	54,4 1)

P2 Series	Volumetric Displacement Vp	Speed [r.p.m.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 300 bar	p = 7 bar	p = 140 bar	p = 300 bar
B02	5.8 ml/rev.	1500	8.7	7	5,1	0.5	2.6	5,1
B03	9.8 ml/rev.		14.7	13	11,1	0.6	4	8,1
B04	12,8 ml/rev		19.2	17.5	15,6	0,6	5	10,4
B05	15,9 ml/rev		23.9	22.2	20,2	0.7	6.1	12,7
B06	19,8 ml/rev		29.7	28	26,1	0.7	7.5	15,6
B07	22,5 ml/rev		33.7	32	30,2	0.8	8.5	17,6
B08	24,9 ml/rev		37.4	35.7	33,7	0.8	9.3	19,5
B09	28,0 ml/rev		42	40.3	38,4	0.9	10.4	21,8
B10	31,8 ml/rev		47.7	46	44,1	0.9	11.7	26,2
B11	35,0 ml/rev		52.5	50.8	48,9	1	12.8	27,0
B12	41,0 ml/rev		61.5	59.8	57,9	1.1	14.9	31,5
B14	45,0 ml/rev		67.5	65.8	63,9	1.2	16.3	34,5
B15	50,0 ml/rev		75	73.3	71,6 2)	1.3	18.1	35,7 2)

1) 028, 031 = 2500 R.P.M., 2) B15= 280 Bar Max.

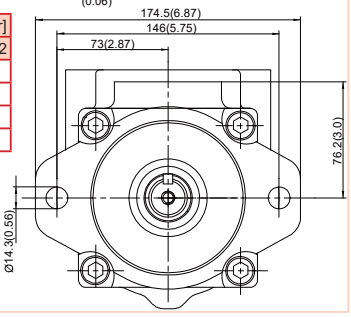
※DIMENSIONS





Shaft torque limits [ml/rev x bar]		
Pump	Shaft	V x p max. P1+P2
T6DC	1	14300
	2	21420
	3	32670
	5	20600

Code	11	M1
A	3/8"-16UNC	M10
B	3/8"-16UNC	M10
C	1/2"-13UNC	M12



※MODEL NUMBER DESIGNATION

T7DB(S)-	B24-	B04-	1-	R-	00-	A-	1-	M1
Ⅰ	Ⅱ(P1)	Ⅲ(P2)	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ

Ⅰ: Series No.:
T7DB: 125 A2 HW, ISO 2 Bolts 3019-2 mounting flange.
T7DBS: SAE C 2 Bolts, J744 mounting flange

Ⅱ: Volumetric Displacement(ml/rev.) for P1

B14 = 44.0	B31 = 99.2
B17 = 55.0	B35 = 113.4
B20 = 66.0	B38 = 120.6
B22 = 70.3	B42 = 137.5
B24 = 81.1	045 = 147.5
B28 = 90.0	050 = 158.0

Ⅲ: Volumetric Displacement(ml/rev.) for P2

B02 = 5.7	B09 = 28.0
B03 = 9.8	B10 = 31.8
B04 = 12.8	B11 = 34.9
B05 = 15.9	B12 = 40.9
B06 = 19.8	B14 = 45.1
B07 = 22.5	B15 = 50.0
B08 = 24.9	

Ⅳ: Type of shaft (T7DB) 1 = keyed (SAE C), 2 = keyed (no SAE), 3 = splined (SAE C), 4 = splined (spec.SAE C)
Type of shaft- Severe duty (T7DBW only) 5 = keyed (ISO 3019-2-G32M)

Ⅴ: Direct. of rotation (view on shaft end) R = clockwise, L = counter-clockwise

Ⅵ: Porting combination: See page 180
00 = Standard

Ⅶ: Design letter

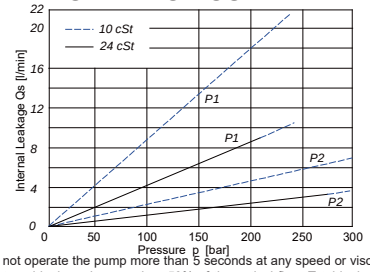
Ⅷ: Seal class 1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids), 5 = S5 (for mineral oil and fire resistant fluids)

Ⅸ: Mounting W/connection variables: 4 bolts SAE flanges J518

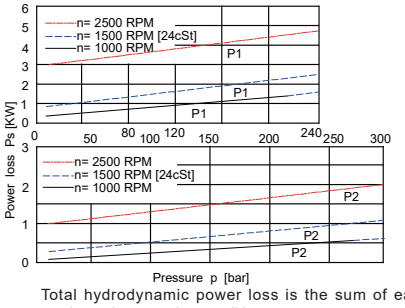
	Metric-T7DB, T7DBS		UNC-T7DBS	
	M0	M1	00	01
P1	1-1/4"	1-1/4"	1-1/4"	1-1/4"
P2	1"	3/4"	1"	3/4"
S	3"	3"	3"	3"

F

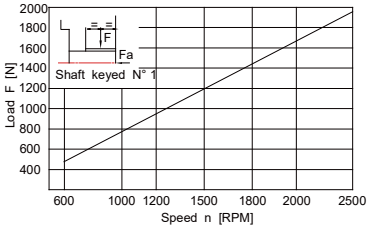
※PERFORMANCE CURVE



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.



Total hydrodynamic power loss is the sum of each section at its operating conditions.



Maximum permissible axial load Fa = 1200 N

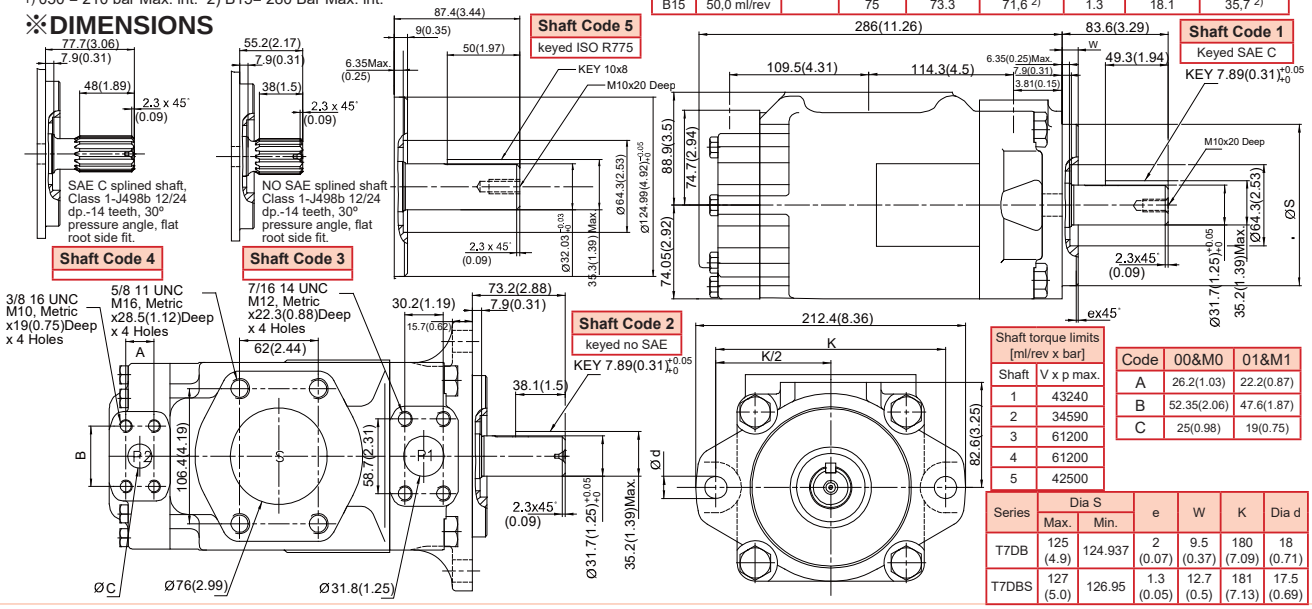
OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

P1 Series	Volumetric Displacement Vp	Flow Q [l/min] & n = 1500 r.p.m.			Input power P [kW] & n = 1500 r.p.m.		
		p = 0 bar	p = 140 bar	p = 250 bar	p = 7 bar	p = 140 bar	p = 250 bar
B14	44.0 ml/rev.	66	59.4	54.2	1.5	16.6	34.2
B17	55,0 ml/rev.	82.5	75.9	70.7	1.7	20.4	42.4
B20	66.0 ml/rev	99	92.4	87.2	1.9	24.3	50.7
B24	81,1 ml/rev	121.7	115	109.9	2.2	29.5	62
B28	90,0 ml/rev	135	128.4	123.2	2.3	32.7	68.7
B31	99,2 ml/rev	148.8	142.2	137	2.5	35.9	75.6
B35	113,4 ml/rev	170.1	163.5	158.3	2.7	40.8	80.5
B38	120,6 ml/rev	180.9	174.3	169.1	2.9	43.4	85.6
B42	137,5 ml/rev	206.3	199.6	195.4	3.2	49.3	90.5
B45	145,7 ml/rev	218.6	209.2	202.6	4.1	52.8	89.5
B50	158.0 ml/rev	237	227.7	223 1)	4.4	57.1	85 1)

1) 050 = 210 bar Max. int. 2) B15= 280 Bar Max. int.

P2 Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 300 bar	p = 7 bar	p = 140 bar	p = 300 bar
B02	5.8 ml/rev.	1500	8.7	7	5,1	0.5	2.6	5,1
B03	9.8 ml/rev.		14.7	13	11,1	0.6	4	8,1
B04	12,8 ml/rev		19.2	17.5	15,6	0,6	5	10,4
B05	15,9 ml/rev		23.9	22.2	20,2	0.7	6.1	12,7
B06	19,8 ml/rev		29.7	28	26,1	0.7	7.5	15,6
B07	22,5 ml/rev		33.7	32	30,2	0.8	8.5	17,6
B08	24,9 ml/rev		37.4	35.7	33,7	0.8	9.3	19,5
B09	28,0 ml/rev		42	40.3	38,4	0.9	10.4	21,8
B10	31,8 ml/rev		47.7	46	44,1	0.9	11.7	26,2
B11	35,0 ml/rev		52.5	50.8	48,9	1	12.8	27,0
B12	41,0 ml/rev		61.5	59.8	57,9	1.1	14.9	31,5
B14	45,0 ml/rev		67.5	65.8	63,9	1.2	16.3	34,5
B15	50,0 ml/rev		75	73.3	71,6 2)	1.3	18.1	35,7 2)

※DIMENSIONS



Shaft torque limits [ml/rev x bar]	
Shaft	V x p max.
1	43240
2	34590
3	61200
4	61200
5	42500

Code	00&M0	01&M1
A	26.2(1.03)	22.2(0.87)
B	52.35(2.06)	47.6(1.87)
C	25(0.98)	19(0.75)

Series	Dia S		e	W	K	Dia d
	Max.	Min.				
T7DB	125 (4.9)	124.937	2 (0.07)	9.5 (0.37)	180 (7.09)	18 (0.71)
T7DBS	127 (5.0)	126.95	1.3 (0.05)	12.7 (0.5)	181 (7.13)	17.5 (0.69)

F

※MODEL NUMBER DESIGNATION

T67DC-	W-	B45-	014-	1-	R-	00-	B-	1	00
Ⅰ	Ⅱ	Ⅲ(P1)	Ⅳ(P2)	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ

Ⅰ : Series No.

Ⅱ : Use for severe duty shaft only*

Ⅲ : Volumetric Displacement(ml/rev.) for P1

B14 = 44.0 B31 = 99.2
B17 = 55.0 B35 = 113.4
B20 = 66.0 B38 = 120.6
B22 = 70.3 B42 = 137.5
B24 = 81.1 045 = 147.5
B28 = 90.0 050 = 158.0

Ⅳ : Volumetric Displacement(ml/rev.) for P2

003 = 10.8 017 = 58.3
005 = 17.2 020 = 63.8
006 = 21.3 022 = 70.3
008 = 26.4 025 = 79.3
010 = 34.1 028 = 88.8
012 = 37.1 031 = 100.0
014 = 46.0

Ⅴ : Type of shaft
1 = keyed (SAE C), 2 = keyed (no SAE), 3 = splined (SAE C), 4 = splined (spec. SAE)
Type of shaft- Severe duty (T6DCW only) 5 = keyed (no SAE)

Ⅵ : Direct. of rotation (view on shaft end) R = clockwise, L = counter-clockwise

Ⅶ : Porting combination: See page 180
00 = Standard

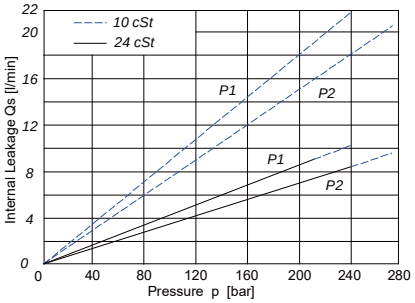
Ⅷ : Design letter

Ⅸ : Seal class 1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

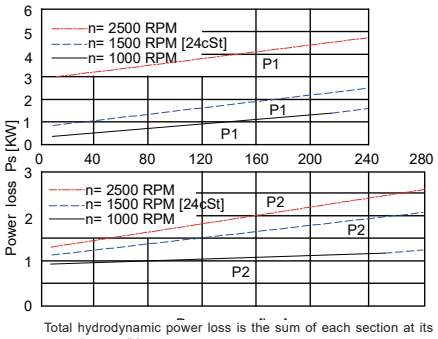
Ⅹ : Mounting W/connection variables

	UNC		Metric	
Code	00	01	M0	M1
P2	1"	3/4"	1"	3/4"

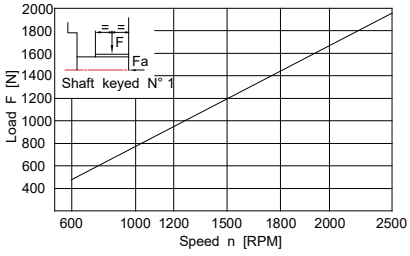
※PERFORMANCE CURVE



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.



Total hydrodynamic power loss is the sum of each section at its operating conditions.



Maximum permissible axial load Fa = 1200 N

OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

P1 Series	Volumetric Displacement Vp	Flow Q [l/min] & n= 1500 RPM			Input power P [kW] & n=1500 RPM		
		p = 0 bar	p = 140 bar	p = 250 bar	p = 7 bar	p = 140 bar	p = 250 bar
B14	44.0 ml/rev.	66	59.4	54,2	1.5	16.6	29,0
B17	55,0 ml/rev.	82.5	75.9	70,7	1.7	20.4	35,8
B20	66.0 ml/rev	99	92.4	87,2	1.9	24.3	42,7
B24	81,1 ml/rev	121.7	115	109,9	2.2	29.5	52,1
B28	90,0 ml/rev	135	128.4	123,2	2.3	32.7	57,7
B31	99,2 ml/rev	148.8	142.2	137,0	2.5	35.9	63,5
B35	113,4 ml/rev	170.1	163.5	158,3	2.7	40.8	72,3
B38	120,6 ml/rev	180.9	174.3	169,1	2.9	43.4	76,8
B42	137,5 ml/rev	206.3	199.6	194,5	3.2	49.3	87,4
B45	145,7 ml/rev	218.6	209.2	202,6	4.1	52.8	89,5
B50	158.0 ml/rev	237	227.7	223.0 1)	4.4	57.1	85,0 1)

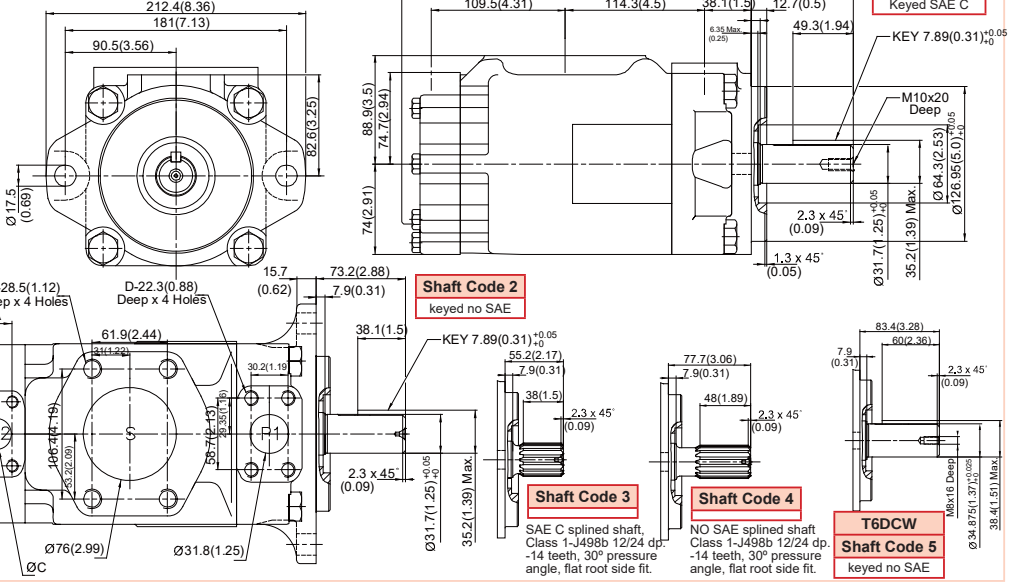
P2 Series	Volumetric Displacement Vp	Flow Q [l/min] & n= 1500 RPM			Input power P [kW] & n=1500 RPM		
		p = 0 bar	p = 140 bar	p = 275 bar	p = 7 bar	p = 140 bar	p = 275 bar
003	10.8 ml/rev	16.2	11.2	7.7	1.3	5.3	8.4
005	17.2 ml/rev	25.8	20.8	17.3	1.4	7.5	12.2
006	21.3 ml/rev	31.9	26.9	23.4	1.5	8.9	14.7
008	26.4 ml/rev	39.6	34.6	31.1	1.6	10.7	17.7
010	34.1 ml/rev	51.1	46.1	42.6	1.7	13.4	22.3
012	37.1 ml/rev	55.6	50.6	47.1	1.7	14.4	24.1
014	46.0 ml/rev	69.0	64.0	60.5	1.9	17.6	29.5
017	58.3 ml/rev	87.4	82.4	78.9	2.1	21.9	36.9
020	63.8 ml/rev	95.7	90.7	87.2	2.2	23.8	40.2
022	70.3 ml/rev	105.4	100.4	96.9	2.3	26.1	44.1
025	79.3 ml/rev	118.9	113.9	110.4	2.5	29.2	49.5
028	88.8 ml/rev	133.2	128.2	125.8 1)	2.8	32.7	48.5 1)
031	100.0 ml/rev	150.0	145.0	142.6 1)	2.8	36.5	54.4 1)

-We do not recommand to use this 003 at 275 bar & 1500 RPM as the internal leakage is over 50% of theoretical flow.
1) 028, 031, 050 = 210 bar max. int.

※DIMENSIONS

Code	00 & M0	01 & M1
A	26.2(1.03)	22.2(0.87)
B	52.4(2.06)	47.6(1.87)
C	25.4(1.0)	19.05(0.75)

Code	00 & 01	M0 & M1
D	7/16"-14UNC	M12
E	3/8"-16UNC	M10
F	5/8"-11UNC	M16



Shaft torque limits [ml/rev x bar]		
Pump	Shaft	V x p max. P1+P2
T6DC	1	43249
	2	34590
	3	61200
	4	61200
	5	55600

※MODEL NUMBER DESIGNATION

T7EB(S)-	014-	B04-	1-	R-	00-	A-	1-	M1
Ⅰ	Ⅱ (P1)	Ⅲ (P2)	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ

Ⅰ : Series No.:
T7EB: 125 A2 HW, ISO 4 Bolts 3019-2 mounting flange.
T7EBS: SAE C 2 Bolts, J744 mounting flange

Ⅱ : Volumetric Displacement(ml/rev.) for P1
042= 132.3 062 = 196.7
045 = 142.4 066 = 213.3
050 = 158.5 072 = 227.1
052 = 164.8 085 = 269.8

Ⅲ : Volumetric Displacement(ml/rev.) for P2
B02 = 5.7 B09 = 28.0
B03 = 9.8 B10 = 31.8
B04 = 12.8 B11 = 34.9
B05 = 15.9 B12 = 40.9
B06 = 19.8 B14 = 45.1
B07 = 22.5 B15 = 50.0
B08 = 24.9

Ⅳ : Type of shaft
1 = keyed (SAE CC), 3 = splined (SAE C)
2 = keyed (no SAE), 4 = splined(SAE CC)

Ⅴ : Direct. of rotation (view on shaft end) R = clockwise, L = counter-clockwise

Ⅵ : Porting combination: See page 180
00 = Standard

Ⅶ : Design letter

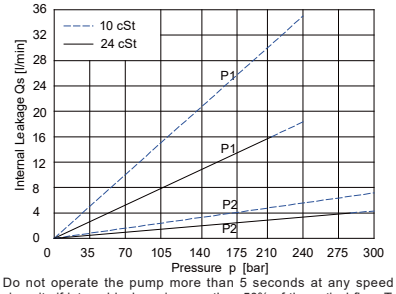
Ⅷ : Seal class
1 = S1 (for mineral oil) 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

Ⅸ : Mounting W/connection variables

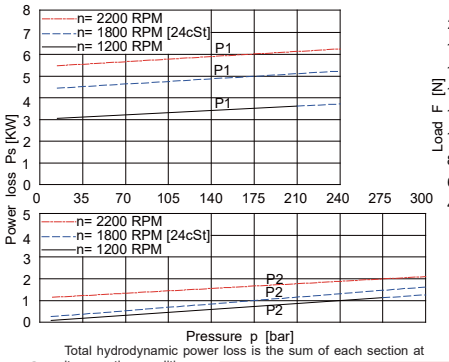
Standard	UNC	Metric
Code	01	M1

F

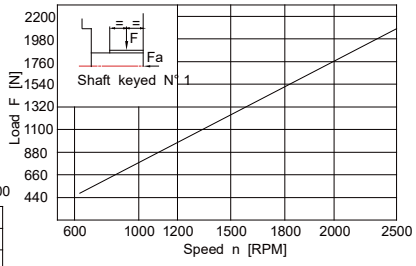
※PERFORMANCE CURVE



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.



Total hydrodynamic power loss is the sum of each section at its operating conditions.



Maximum permissible axial load Fa = 800 N

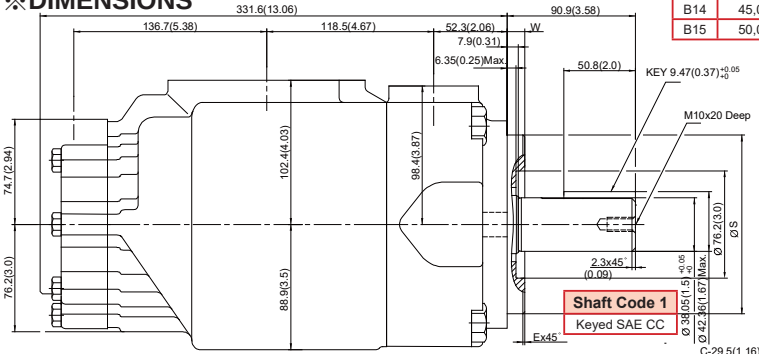
OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

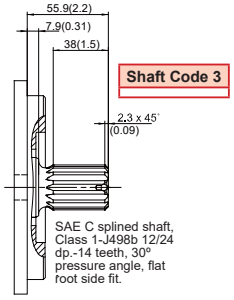
P1 Series	Volumetric Displacement Vp	Speed [r.p.m.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
042	132.3ml/rev	1500	198.5	188.5	181.3	5.2	49.4	82.6
045	142.4 ml/rev		213.6	203.6	196.5	5.4	52.9	88.7
050	158.5 ml/rev		237.7	227.7	220.6	5.7	58.5	98.3
052	164.8 ml/rev		247.2	237.2	230.1	5.8	60.8	102.1
062	196.7ml/rev		295.0	285.0	277.9	6.4	71.9	121.3
066	213.3 ml/rev		319.9	309.9	302.8	6.7	77.7	131.2
072	227.1ml/rev		340.6	330.6	323.5	6.9	82.6	139.5
085 1)	268.0ml/rev		402.0	381.0	---	7.1	97.4	---

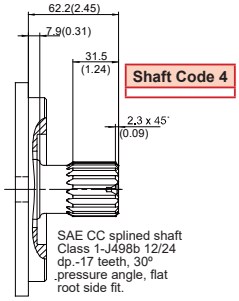
1) 085 = 2000 rpm Max. 2) 085= 75 Bar cont. , 90 Bar Max. int. 3) B15= 280 Bar Max.

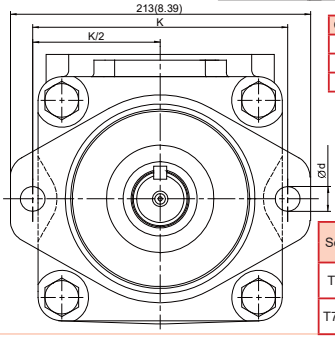
P2 Series	Volumetric Displacement Vp	Speed [r.p.m.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 300 bar	p = 7 bar	p = 140 bar	p = 300 bar
B02	5.8 ml/rev.	1500 (1800)	8.7	7	5,1	0.5	2.6	5,1
B03	9.8 ml/rev.		14.7	13	11,1	0.6	4	8,1
B04	12,8 ml/rev		19.2	17.5	15,6	0,6	5	10,4
B05	15,9 ml/rev		23.9	22.2	20,2	0.7	6.1	12,7
B06	19,8 ml/rev		29.7	28	26,1	0.7	7.5	15,6
B07	22,5 ml/rev		33.7	32	30,2	0.8	8.5	17,6
B08	24,9 ml/rev		37.4	35.7	33,7	0.8	9.3	19,5
B09	28,0 ml/rev		42	40.3	38,4	0.9	10.4	21,8
B10	31,8 ml/rev		47.7	46	44,1	0.9	11.7	26,2
B11	35,0 ml/rev		52.5	50.8	48,9	1	12.8	27,0
B12	41,0 ml/rev		61.5	59.8	57,9	1.1	14.9	31,5
B14	45,0 ml/rev		67.5	65.8	63,9	1.2	16.3	34,5
B15	50,0 ml/rev		75	73.3	71,6 2)	1.3	18.1	35,7 2)

※DIMENSIONS



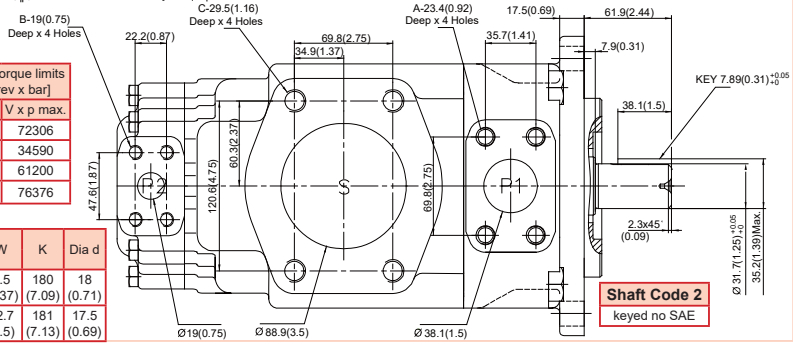






Code	01	M1
A	1/2"-13UNC	M12
B	5/8"-16UNC	M10
C	5/8"-11UNC	M16

Shaft torque limits [ml/rev x bar]	
Shaft	V x p max.
1	72306
2	34590
3	61200
4	76376



Series	Dia S		E	W	K	Dia d
	Max.	Min.				
T7EB	125 (4.9)	124.937	2 (0.07)	9.5 (0.37)	180 (7.09)	18 (0.71)
T7EBS	127 (5.0)	126.95	1.3 (0.05)	12.7 (0.5)	181 (7.13)	17.5 (0.69)

F

※MODEL NUMBER DESIGNATION

T7EE(S)-	042-	045-	4-	R-	00-	A-	1-	0-	00
I	II	III	IV	V	VI	VII	VIII	IX	X

I : Series No.
T7EE: 250 B4 HW, ISO 2 Bolts 3019-2 mounting flange.
T7EES: SAE E 4 Bolts, J744 mounting flange

II , III : Volumetric Displacement(ml/rev.)
042= 132.3 062 = 196.7
045 = 142.4 066 = 213.3
050 = 158.5 072 = 227.1
052 = 164.8 085 = 269.8

IV : Type of shaft:
1 = keyed (SAE CC)
3 = splined (SAE CC)
4 = splined (SAE D&E)
5 = keyed (SAE D&E)

V : Direct. of rotation (view on shaft end)
R = clockwise, L = counter-clockwise

V : Porting combination: See page 180
00 = Standard

VII : Design letter

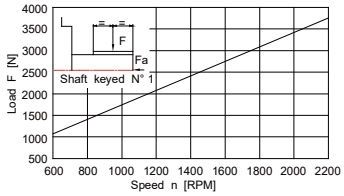
VIII : Seal class: 1 = S1 (for mineral oil)
4 = S4 (for the resistant fluids)
5 = S5 (for mineral oil and fire resistant fluids)

IX : Coupling Adapter:
0 = None
2 = SAE B
3 = SAE BB

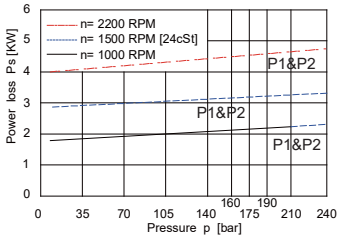
X : Mounting W/connection variables

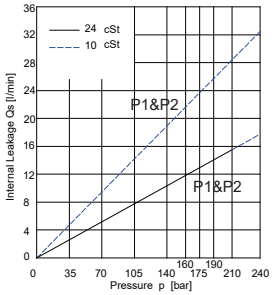
	P1&P2= 1-1/2", S= 4"	
Standard	UNC	Metric
T7EE		M0
T7EES	00	M0

※PERFORMANCE CURVE



Maximum permissible axial load Fa = 1200 N





Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow

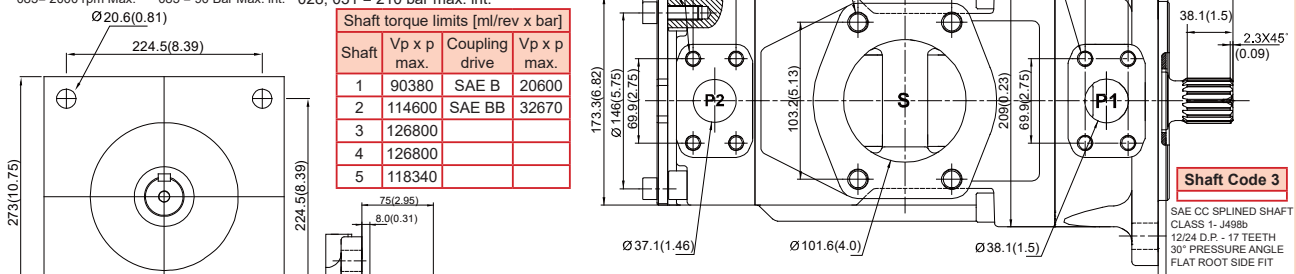
OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

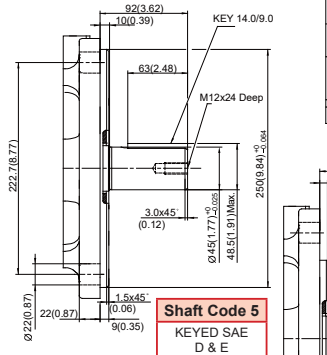
Pressure Port	Series	Volumetric Displacement Vp	Flow Q [l/min] & n= 1500 RPM			Input power P [kW] & n=1500 RPM		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
P1	042	132.3ml/rev	198.5	188.5	181.3	5.2	49.4	82.6
	045	142.4 ml/rev	213.6	203.6	196.5	5.4	52.9	88.7
	050	158.5 ml/rev	237.7	227.7	220.6	5.7	58.5	98.3
	052	164.8 ml/rev	247.2	237.2	230.1	5.8	60.8	102.1
	062	196.7ml/rev	295.0	285.0	277.9	6.4	71.9	121.3
	066	213.3 ml/rev	319.9	309.9	302.8	6.7	77.7	131.2
	072	227.1ml/rev	340.6	330.6	323.5	6.9	82.6	139.5
	085*	268.0ml/rev	402.0	381.0	---	7.1	97.4	---

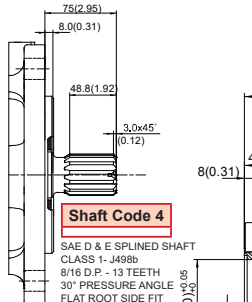
** 085= 2000 rpm Max. *** 085 = 90 Bar Max. int. * 028, 031 = 210 bar max. int.

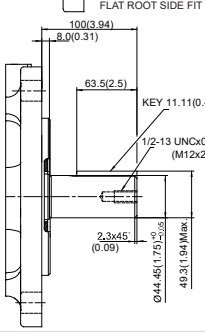
Shaft torque limits [ml/rev x bar]			
Shaft	Vp x p max.	Coupling drive	Vp x p max.
1	90380	SAE B	20600
2	114600	SAE BB	32670
3	126800		
4	126800		
5	118340		

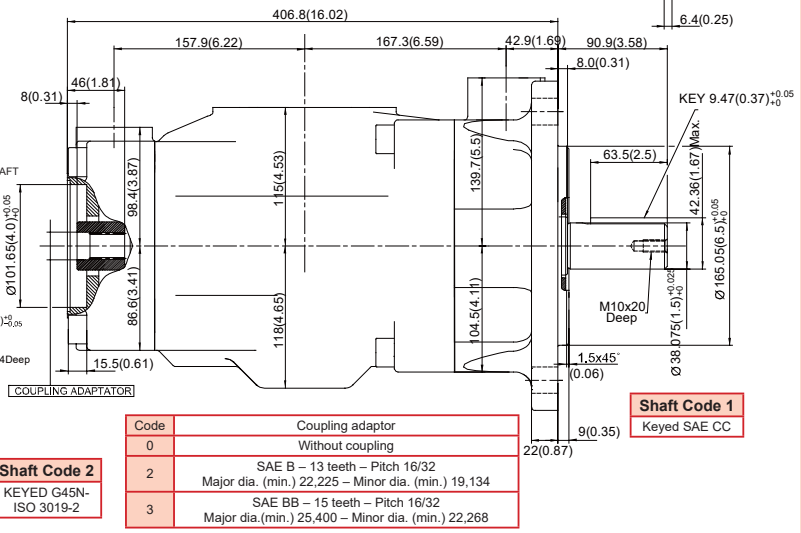
※DIMENSIONS











Code	Coupling adaptor
0	Without coupling
2	SAE B – 13 teeth – Pitch 16/32 Major dia. (min.) 22,225 – Minor dia. (min.) 19,134
3	SAE BB – 15 teeth – Pitch 16/32 Major dia.(min.) 25,400 – Minor dia. (min.) 22,268

※MODEL NUMBER DESIGNATION

T6DCC-	024-	014-	014-	1-	R-	00-	A-	1	00
Ⅰ	Ⅱ(P1)	Ⅲ(P2)	Ⅳ(P3)	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ

Ⅰ: Series No.

Ⅱ: Volumetric Displacement(ml/rev.) for P1

014 = 44.0 035 = 113.4
017 = 55.0 038 = 120.6
020 = 66.0 042 = 137.5
024 = 81.1 045 = 147.5
028 = 90.0 050 = 158.0
031 = 99.2

Ⅲ, Ⅳ: Volumetric Displacement(ml/rev.) for P2&P3

003 = 10.8 017 = 58.3
005 = 17.2 020 = 63.8
006 = 21.3 022 = 70.3
008 = 26.4 025 = 79.3
010 = 34.1 028 = 88.8
012 = 37.1 031 = 100.0
014 = 46.0

Ⅴ: Type of shaft 1 = keyed (no SAE), 3 = splined (SAE C), 2 = keyed (SAE CC), 4 = splined (SAE CC)

Ⅵ: Direct. of rotation (view on shaft end) R = clockwise, L = counter-clockwise

Ⅶ: Porting combination: See page 180
00 = Standard

Ⅷ: Design letter

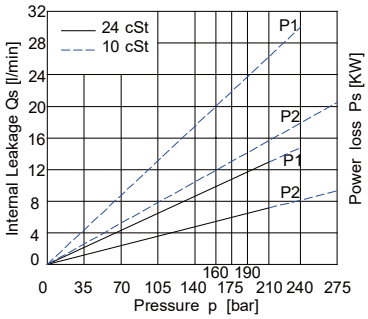
Ⅸ: Seal class 1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids), 5 = S5 (for mineral oil and fire resistant fluids)

Ⅹ: Mounting W/connection variables

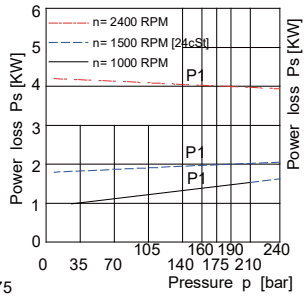
	UNC		Metric	
Code	00	01	M0	M1
P3	1"	3/4"	1"	3/4"

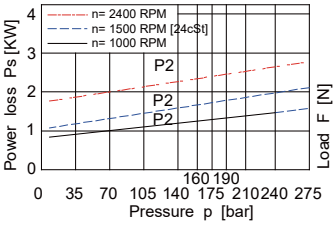
F

※PERFORMANCE CURVE

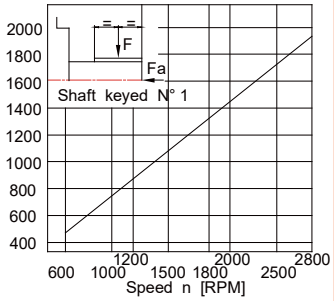


Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.





Total hydrodynamic power loss is the sum of each section at its operating conditions.



Maximum permissible axial load Fa = 1200 N

OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

P1 Series	Volumetric Displacement Vp	Speed [r.p.m]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
014	47.6 ml/rev	1500	71.4	62.1	55.9	2.3	18.5	30.6
017	58.2 ml/rev		87.3	78.0	71.8	2.5	22.2	37.0
020	66.0 ml/rev		99.0	89.7	83.5	2.8	24.9	41.7
024	79.5 ml/rev		119.3	110.0	103.8	3.0	29.6	49.8
028	89.7 ml/rev		134.5	125.2	119.0	3.2	33.2	55.9
031	98.3 ml/rev		147.4	138.1	131.9	3.3	36.2	61.0
035	111.0 ml/rev		166.5	157.2	151.0	3.5	40.7	68.7
038	120.3 ml/rev		180.4	171.1	164.9	3.7	243.9	74.3
042 2)	136.0 ml/rev		204.0	194.7	188.5	4.0	49.4	83.7
045 2)	145.7 ml/rev		218.2	209.2	203.0	4.1	52.8	89.5
050 2)	158.0 ml/rev		237.0	227.7	224.0 1)	4.4	57.0	85.0 1)

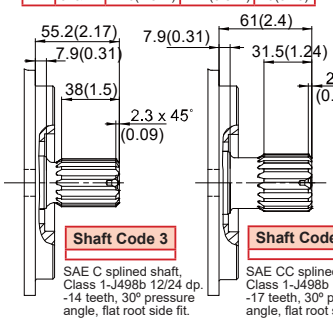
1) 028, 031, 050 = 210 bar max. int. 2) 042 - 045 - 050 = 2200 R.P.M. max.

P2&P3 Series	Volumetric Displacement Vp	Speed [r.p.m]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
003	10.8ml/rev	1500	16.2	11.2	7.7	1.3	5.3	8.4
005	17.3ml/rev		25.8	20.8	17,3	1.4	7.5	12.2
006	21.3ml/rev		31.9	26.9	23,4	1.5	8.9	14.7
008	26.4 ml/rev		39,6	34.6	31.1	1.6	10.7	17.7
010	34.1ml/rev		51,1	46.1	42.6	1.7	13.4	22.3
012	37.1 ml/rev		55,6	50.6	47.1	1.7	14.4	24.1
014	46.0ml/rev		69,0	64.0	60.5	1.9	17.6	29.5
017	58.3 ml/rev		87,4	82.4	78.9	2.1	21.9	36.9
020	63.8ml/rev		95,7	90,2	87.2	2.2	23.82	40.2
022	70.3 ml/rev		105,4	100.4	96.9	2.3	26.1	44.1
025	79.3ml/rev		118,9	113.9	110.4	2.5	29.2	49.5
028	88.8 ml/rev		133,2	128.2	125.8 1)	2.8	32.7	48.5 1)
031	100.0ml/rev		150,0	145.0	142.6 1)	2.8	36.5	54.2 1)

※DIMENSIONS

Shaft torque limits [ml/rev x bar]	
Shaft	V x p max.(P1+P2+P3)
1	43240
2	66500
3	61200
4	66500

Port	Code	A	B	C
P3	00&M0	52.4(2.06)	26.2(1.03)	25.4(1.0)
	01&M1	47.6(1.874)	22.2(0.874)	19(0.75)

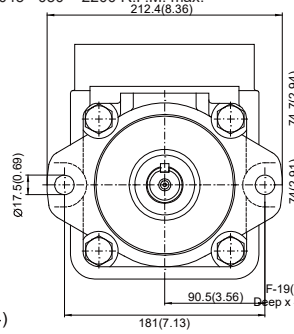


Shaft Code 3

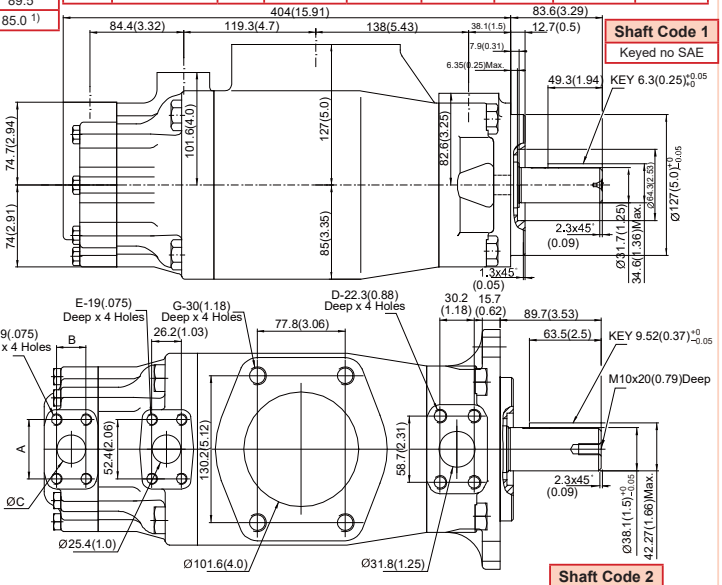
SAE C splined shaft, Class 1-J498b 12/24 dp. -14 teeth, 30º pressure angle, flat root side fit.

Shaft Code 4

SAE CC splined shaft, Class 1-J498b 12/24 dp. -17 teeth, 30º pressure angle, flat root side fit.



Code	00&01	M0&M1
D	7/16"-14UNC	M12
E	3/8"-16UNC	M10
F	3/8"-16UNC	M10
G	5/8"-11UNC	M16



Shaft Code 1
Keyed no SAE

Shaft Code 2
Keyed SAE CC

F

※MODEL NUMBER DESIGNATION

T67DDCS-	B24-	014-	014-	1-	R-	00-	A-	1	00
Ⅰ	Ⅱ(P1)	Ⅲ(P2)	Ⅳ(P3)	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ

Ⅰ: Series No.: SAE C 6 Bolts

Ⅱ: Volumetric Displacement(ml/rev.) for P1&P2

B14 = 44.0 B35 = 113.4
B17 = 55.0 B38 = 120.6
B20 = 66.0 B42 = 137.5
B24 = 81.1 045 = 147.5
B28 = 90.0 050 = 158.0
B31 = 99.2

Ⅲ, Ⅳ: Volumetric Displacement(ml/rev.) for P3

003 = 10.8 017 = 58.3
005 = 17.2 020 = 63.8
006 = 21.3 022 = 70.3
008 = 26.4 025 = 79.3
010 = 34.1 028 = 88.8
012 = 37.1 031 = 100.0
014 = 46.0

Ⅴ: Type of shaft 1 = keyed (SAE C), 4 = splined (SAE CC)
2 = keyed (SAE CC), 5 = keyed (noSAE)
3 = splined (SAE C),

Ⅵ: Direct. of rotation (view on shaft end) R = clockwise, L = counter-clockwise

Ⅶ: Porting combination: See page 180
00 = Standard

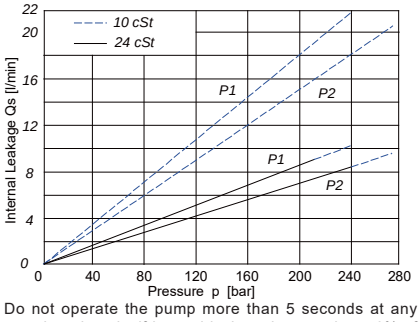
Ⅷ: Design letter

Ⅸ: Seal class 1 = S1 (for mineral oil), 4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

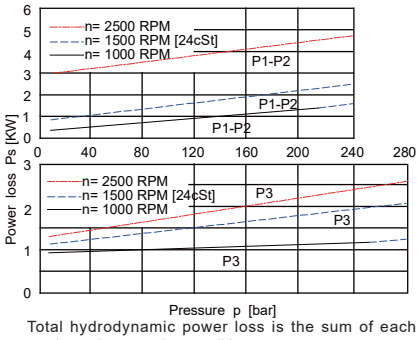
Ⅹ: Mounting W/connection variables

	UNC		Metric	
Code	00	01	M0	M1
P3	1"	3/4"	1"	3/4"

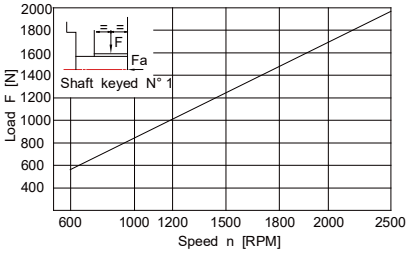
※PERFORMANCE CURVE



Do not operate the pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.



Total hydrodynamic power loss is the sum of each section at its operating conditions.



Maximum permissible axial load Fa = 1200 N

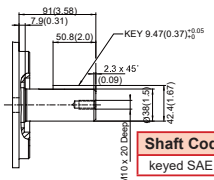
OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

P1&P2 Series	Volumetric Displacement Vp	Speed [r.p.m]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 250 bar	p = 7 bar	p = 140 bar	p = 250 bar
B14	44.0 ml/rev.	1500	66	59.4	54,2	1.5	16.6	29,0
B17	55,0 ml/rev.		82.5	75.9	70,7	1.7	20.4	35,8
B20	66.0 ml/rev		99	92.4	87,2	1.9	24.3	42,7
B24	81,1 ml/rev		121.7	115	109,9	2.2	29.5	52,1
B28	90,0 ml/rev		135	128.4	123,2	2.3	32.7	57,7
B31	99,2 ml/rev		148.8	142.2	137,0	2.5	35.9	63,5
B35	113,4 ml/rev		170.1	163.5	158,3	2.7	40.8	72,3
B38	120,6 ml/rev		180.9	174.3	169,1	2.9	43.4	76,8
B42	137,5 ml/rev		206.3	199.6	194,5	3.2	49.3	87,4
B45	145,7 ml/rev		218.6	209.2	202,6	4.1	52.8	89,5
B50	158.0 ml/rev		237	227.7	223.0 1)	4.4	57.1	85,0 1)

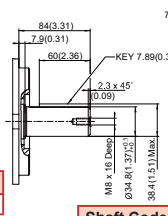
P3 Series	Volumetric Displacement Vp	Speed [r.p.m]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 275 bar	p = 7 bar	p = 140 bar	p = 275 bar
003	10.8ml/rev	1500	16.2	11.2	---	1.3	5.3	---
005	17.3ml/rev		25.8	20.8	16,1	1.4	7.5	13,9
006	21.3ml/rev		31.9	26.9	22,2	1.5	8.9	16,8
008	26.4 ml/rev		39,6	34.6	29,9	1.6	10.7	20,3
010	34.1ml/rev		51,1	46.1	41,4	1.7	13.4	25,6
012	37.1 ml/rev		55,6	50.6	45,9	1.7	14.4	27,6
014	46.0ml/rev		69,0	64.0	59,3	1.9	17.6	33,7
017	58.3 ml/rev		87,4	82.4	77,7	2.1	21.9	42,2
020	63.8ml/rev		95,7	90,2	86,0	2.2	23.82	46,0
022	70.3 ml/rev		105,4	100.4	95,7	2.3	26.1	50,4
025	79.3ml/rev		118,9	113.9	109,2	2.5	29.2	56,6
028	88.8 ml/rev		133,2	128.2	125,8 1)	2.8	32.7	48,5 1)
031	100.0ml/rev		150,0	145.0	142,6 1)	2.8	36.5	54,4 1)

-We do not recommand to use this 003 at 275 bar & 1500 RPM as the internal leakage is over 50% of theoretical flow.
1) 028, 031, 050 = 210 bar max. int.

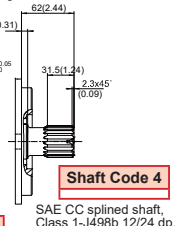
※DIMENSIONS



Shaft Code 2
keyed SAE CC

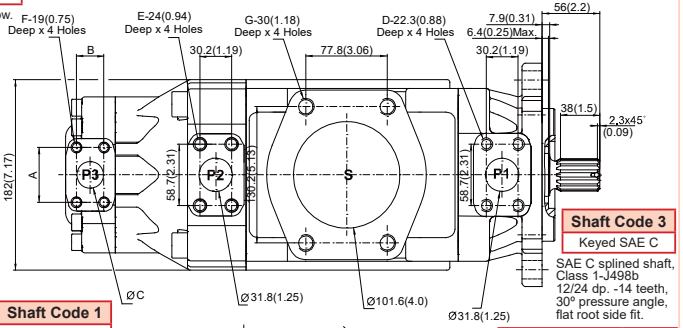


Shaft Code 5
keyed no SAE



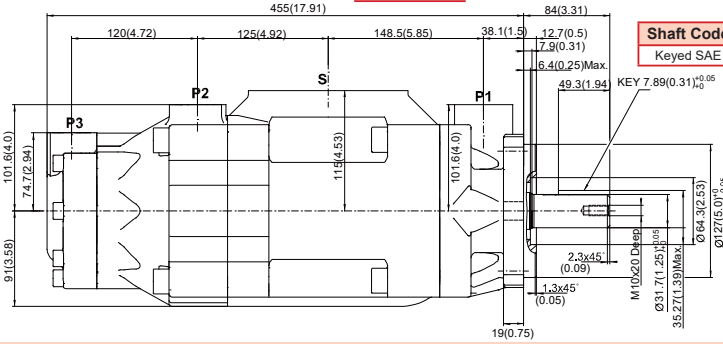
Shaft Code 4

SAE CC splined shaft, Class 1-J498b 12/24 dp. -17 teeth, 30° pressure angle, flat root side fit.

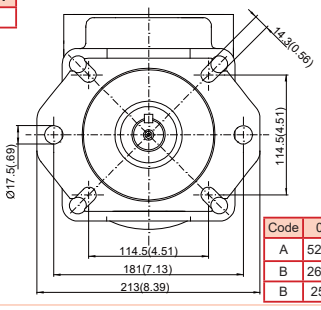


Shaft Code 3
Keyed SAE C

SAE C splined shaft, Class 1-J498b 12/24 dp. -14 teeth, 30° pressure angle, flat root side fit.



Shaft Code 1
Keyed SAE C



Code	00&M0	01&M1
A	52.4(2.06)	47.6(1.874)
B	26.2(1.03)	22.2(0.874)
B	25.4(1.0)	19(0.75)

Code	00&01	M0&M1
D	7/16"-14UNC	M12
E	7/16"-14UNC	M12
F	3/8"-16UNC	M10
G	5/8"-11UNC	M16

Shaft torque limits [ml/rev x bar]	
Shaft	V x p max.
1	43240
2	72306
3	61200
4	66500
5	55600

※MODEL NUMBER DESIGNATION

T6EDC-	054-	B24-	014-	1-	R-	00-	A-	1-	P-	M1
Ⅰ	Ⅱ(P1)	Ⅲ(P2)	Ⅳ(P3)	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ	ⅩⅠ

Ⅰ: Series No.

T6EDC: 250-B4 HW
ISO 4 Bolts 3019-2 mounting flange

Ⅱ: Volumetric Displacement(ml/rev.) for P1

042= 132.3
045 = 142.4
050 = 158.5
052 = 164.8
062 = 196.7
066 = 213.3
072 = 227.1
085 = 269.8

Ⅲ: Volumetric Displacement(ml/rev.) for P2

014 = 44.0
017 = 55.0
020 = 66.0
024 = 81.1
028 = 90.0
031 = 99.2
035 = 113.4
038 = 120.6
042 = 137.5
045 = 147.5
050 = 158.0

Ⅳ: Volumetric Displacement(ml/rev.) for P3

003 = 10.8
005 = 17.2
006 = 21.3
008 = 26.4
010 = 34.1
012 = 37.1
014 = 46.0
017 = 58.3
020 = 63.8
022 = 70.3
025 = 79.3
028 = 88.8
031 = 100.0

Ⅴ: Type of shaft

1 = keyed (G45N - ISO 3019-2)

Ⅵ: Direct. of rotation (view on shaft end)

R = clockwise,
L = counter-clockwise

Ⅶ: Porting combination: See page 180

00 = Standard

Ⅷ: Design letter

Ⅸ: Seal class

1 = S1 (for mineral oil),
4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

Ⅹ: Option

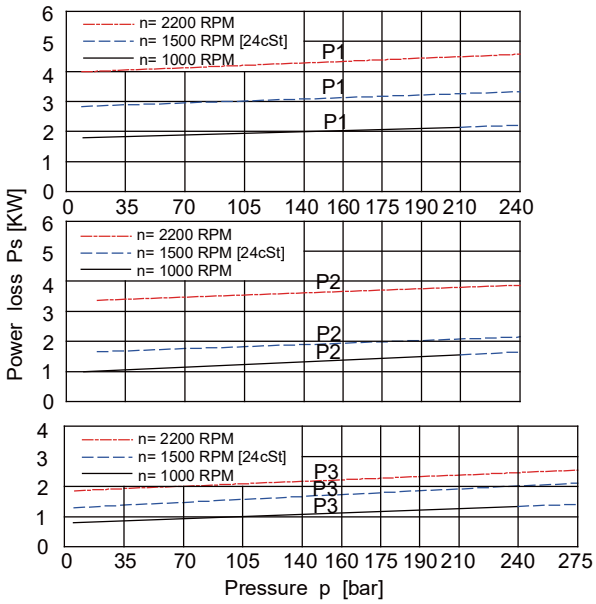
F: Face Mounting
P: Pedestal Mounting

Ⅹ: Mounting W/connection variables

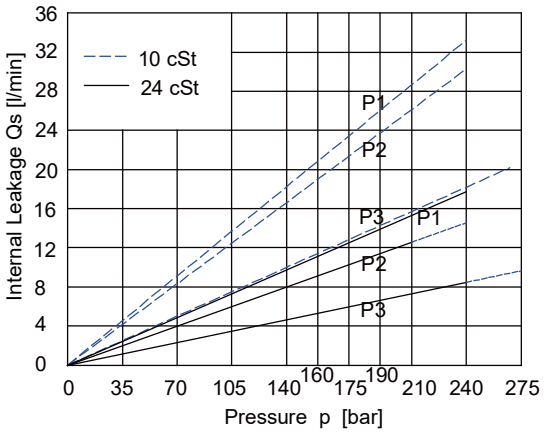
0: P3=1" SAE
1: P3= 3/4" SAE

F

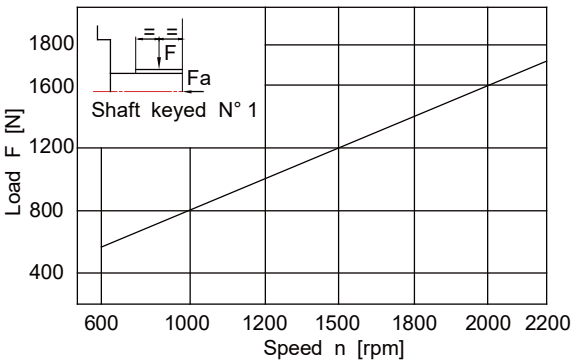
※PERFORMANCE CURVE



Total hydrodynamic power loss is the sum of each section at its operating conditions.



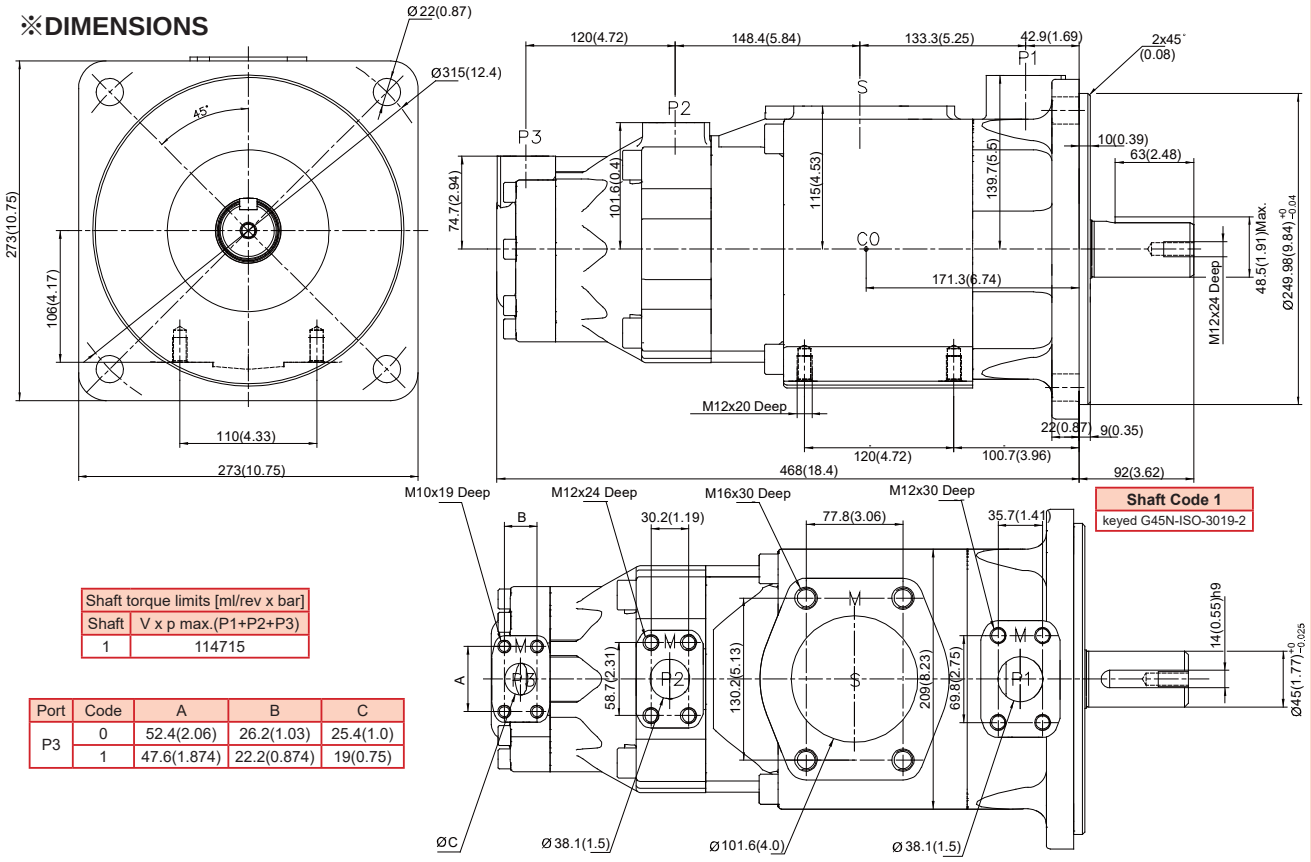
Total leakage is the sum of each section loss at its operating conditions.



Maximum permissible axial load Fa = 2000 N

F

※DIMENSIONS



Shaft Code 1
keyed G45N-ISO-3019-2

Shaft torque limits [ml/rev x bar]	
Shaft	V x p max.(P1+P2+P3)
1	114715

Port	Code	A	B	C
P3	0	52.4(2.06)	26.2(1.03)	25.4(1.0)
	1	47.6(1.874)	22.2(0.874)	19(0.75)

OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

P1 Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
042	132.3 ml/rev	1500	198.5	188.5	181.3	5.2	49.4	82.6
045	142.4 ml/rev		213.6	203.6	196.5	5.4	52.9	88.7
050	158.5 ml/rev		237.7	227.2	220.6	5.7	58.5	98.3
052	164.8 ml/rev		247.2	237.2	230.1	5.8	60.8	102.1
062	196.7 ml/rev		295.0	285.0	277.9	6.4	71.9	121.3
066	213.3 ml/rev		319.9	309.9	302.8	6.7	77.7	131.2
072	227.1 ml/rev		340.6	330.6	323.5	6.9	82.6	139.5
085 [1]	269.8 ml/rev		404.7 [2]	397.7	---	7.3 [2]	65.3 [2]	---
P2 Series	**Volumetric Displacement Vp**	**Speed n [R.P.M.]**	**Flow Q [l/min]**			**Input power P [kW]**		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
014	47.6 ml/rev	1500	71.4	62.1	55.9	2.3	18.5	30.6
017	58.2 ml/rev		87.3	78.0	71.8	2.5	22.2	37.0
020	66.0 ml/rev		99.0	89.7	83.5	2.8	24.9	41.7
024	79.5 ml/rev		119.3	110.0	103.8	3.0	29.6	49.8
028	89.7 ml/rev		134.5	125.2	119.0	3.2	33.2	55.9
031	98.3 ml/rev		147.4	138.1	131.9	3.3	36.2	61.0
035	111.0 ml/rev		166.5	157.2	151.0	3.5	40.7	68.7
038	120.3 ml/rev		180.4	171.1	164.9	3.7	243.9	74.3
042 [3]	136.0 ml/rev		204.0	194.7	188.5	4.0	49.4	83.7
045 [3]	145.7 ml/rev		218.2	209.2	203.0	4.1	52.8	89.5
050 [3]	158.0 ml/rev		237.0	227.7	224.0 [4]	4.4	57.0	85.0 [4]
P3 Series	**Volumetric Displacement Vp**	**Speed n [R.P.M.]**	**Flow Q [l/min]**			**Input power P [kW]**		
			p = 0 bar	p = 140 bar	p = 240 bar	p = 7 bar	p = 140 bar	p = 240 bar
003	10.8ml/rev	1500	16.2	11.2	7.7	1.3	5.3	8.4
005	17.3ml/rev		25.8	20.8	17.3	1.4	7.5	12.2
006	21.3ml/rev		31.9	26.9	23.4	1.5	8.9	14.7
008	26.4 ml/rev		39,6	34.6	31.1	1.6	10.7	17.7
010	34.1ml/rev		51,1	46.1	42.6	1.7	13.4	22.3
012	37.1 ml/rev		55,6	50.6	47.1	1.7	14.4	24.1
014	46.0ml/rev		69,0	64.0	60.5	1.9	17.6	29.5
017	58.3 ml/rev		87,4	82.4	78.9	2.1	21.9	36.9
020	63.8ml/rev		95,7	90,2	87.2	2.2	23.82	40.2
022	70.3 ml/rev		105,4	100.4	96.9	2.3	26.1	44.1
025	79.3ml/rev		118,9	113.9	110.4	2.5	29.2	49.5
028	88.8 ml/rev		133,2	128.2	125.8 [4]	2.8	32.7	48.5 [4]
031	100.0ml/rev		150,0	145.0	142.6 [4]	2.8	36.5	54.4 [4]

1) 085 = 2000 R.P.M. max. 2) 085 = 75 bar max. cont. 085=90 bar max. int. 3) 042, 045, 050 = 2200 R.P.M 4) 028, 031, 050 = 210 bar

※MODEL NUMBER DESIGNATION

T67DCB-	B24-	014-	B04-	1-	R-	00-	B-	1-	M1
Ⅰ	Ⅱ(P1)	Ⅲ(P2)	Ⅳ(P3)	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ

Ⅰ: Series No.

Ⅱ: Volumetric Displacement(ml/rev.) for P1

B14 = 44.0
B17 = 55.0
B20 = 66.0
B24 = 81.1
B28 = 90.0
B31 = 99.2
B35 = 113.4
B38 = 120.6
B42 = 137.5
045 = 147.5
050 = 158.0

Ⅲ: Volumetric Displacement(ml/rev.) for P2

003 = 10.8
005 = 17.2
006 = 21.3
008 = 26.4
010 = 34.1
012 = 37.1
014 = 46.0
017 = 58.3
020 = 63.8
022 = 70.3
025 = 79.3
028 = 88.8
031 = 100.0

Ⅳ: Volumetric Displacement(ml/rev.) for P3

B02 = 5.7
B03 = 9.8
B04 = 12.8
B05 = 15.9
B06 = 19.8
B07 = 22.5
B08 = 24.9
B09 = 28.0
B10 = 31.8
B11 = 34.9
B12 = 40.9
B14 = 45.1
B15 = 50.0

Ⅴ: Type of shaft

1 = keyed (non SAE)
2 = keyed (SAE CC)
3 = splined (SAE C)
4 = splined (SAECC)

Ⅵ: Direct. of rotation (view on shaft end)

R = clockwise,
L = counter-clockwise

Ⅶ: Porting combination: See page 180

00 = Standard

Ⅷ: Design letter

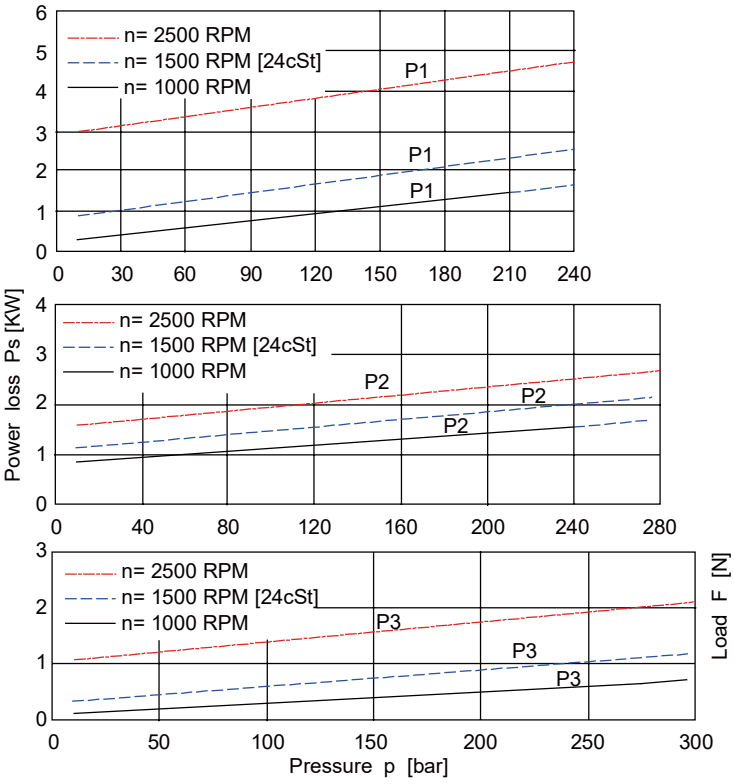
Ⅸ: Seal class

1 = S1 (for mineral oil),
4 = S4 (for the resistant fluids),
5 = S5 (for mineral oil and fire resistant fluids)

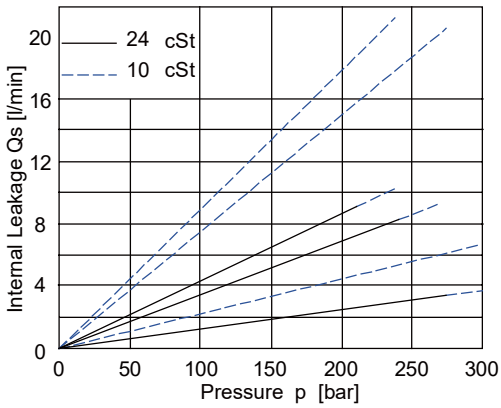
Ⅹ: Mounting W/connection variables

Standard	UNC	Metric
Code	01	M1

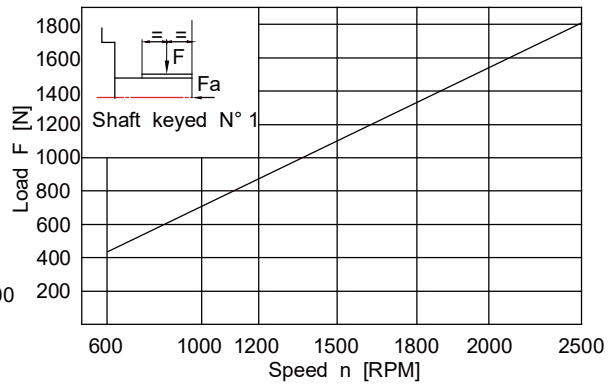
※PERFORMANCE CURVE



Total hydrodynamic power loss is the sum of each section at its operating conditions.



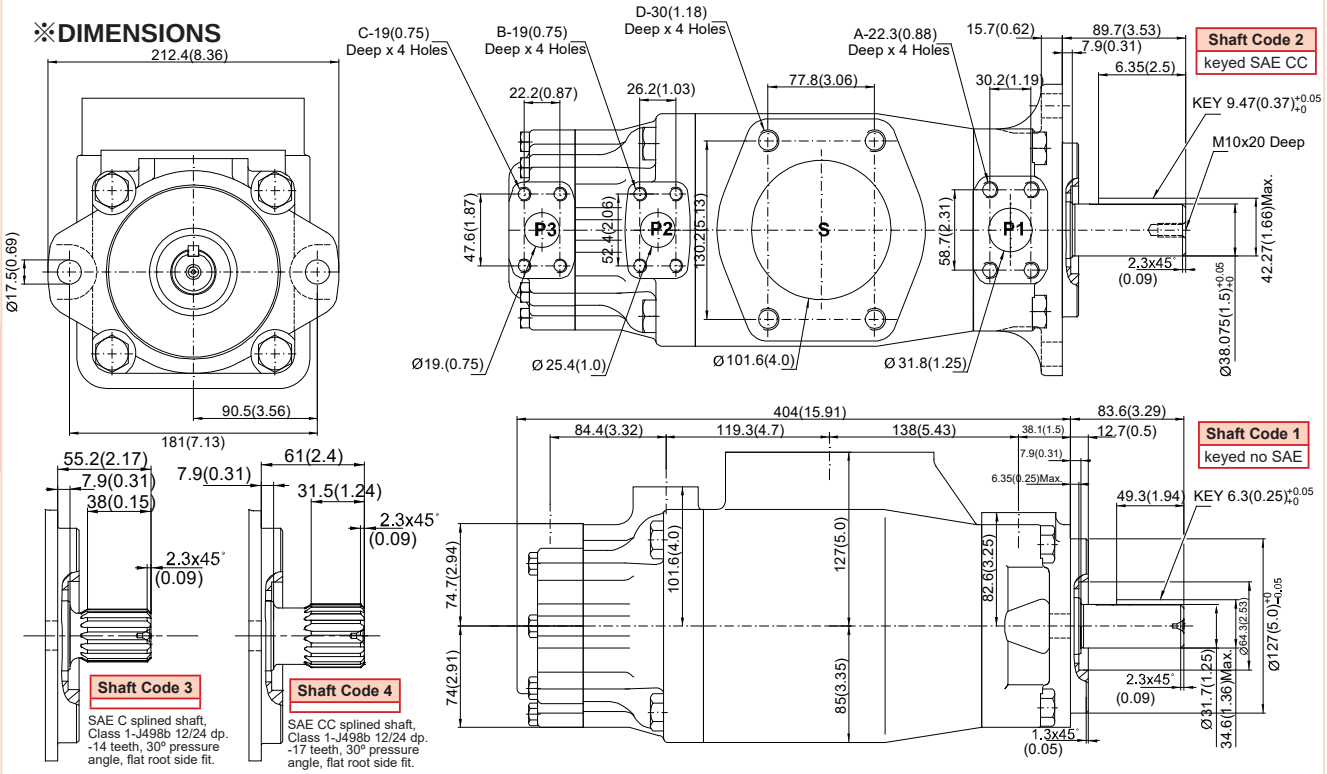
Total leakage is the sum of each section loss at its operating conditions.



Maximum permissible axial load Fa = 2000 N

F

※DIMENSIONS



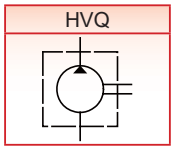
OPERATING CHARACTERISTICS - TYPICAL [24 cSt]

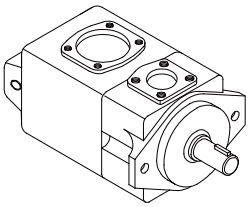
Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 250 bar	p = 7 bar	p = 140 bar	p = 250 bar
B14	44.0 ml/rev.	1500	66	59.4	54,2	1.5	16.6	29,0
B17	55,0 ml/rev.		82.5	75.9	70,7	1.7	20.4	35,8
B20	66.0 ml/rev		99	92.4	87,2	1.9	24.3	42,7
B24	81,1 ml/rev		121.7	115	109,9	2.2	29.5	52,1
B28	90,0 ml/rev		135	128.4	123,2	2.3	32.7	57,7
B31	99,2 ml/rev		148.8	142.2	137,0	2.5	35.9	63,5
B35	113,4 ml/rev		170.1	163.5	158,3	2.7	40.8	72,3
B38	120,6 ml/rev		180.9	174.3	169,1	2.9	43.4	76,8
B42	137,5 ml/rev		206.3	199.6	194,5	3.2	49.3	87,4
045	145,7 ml/rev		218.6	209.2	202,6	4.1	52.8	89,5
050	158.0 ml/rev		237	227.7	223.0 [1]	4.4	57.1	85,0 [1]
P3 Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 275 bar	p = 7 bar	p = 140 bar	p = 275 bar
003	10.8ml/rev	1500	16.2	11.2	---	1.3	5.3	---
005	17.3ml/rev		25.8	20.8	16,1	1.4	7.5	13,9
006	21.3ml/rev		31.9	26.9	22,2	1.5	8.9	16,8
008	26.4 ml/rev		39,6	34.6	29,9	1.6	10.7	20,3
010	34.1ml/rev		51,1	46.1	41,4	1.7	13.4	25,6
012	37.1 ml/rev		55,6	50.6	45,9	1.7	14.4	27,6
014	46.0ml/rev		69,0	64.0	59,3	1.9	17.6	33,7
017	58.3 ml/rev		87,4	82.4	77,7	2.1	21.9	42,2
020	63.8ml/rev		95,7	90,2	86,0	2.2	23.82	46,0
022	70.3 ml/rev		105,4	100.4	95,7	2.3	26.1	50,4
025	79.3ml/rev		118,9	113.9	109,2	2.5	29.2	56,6
028	88.8 ml/rev		133,2	128.2	125,8 [1]	2.8	32.7	48,5 [1]
031	100.0ml/rev		150,0	145.0	142,6 [1]	2.8	36.5	54,4 [1]
Series	Volumetric Displacement Vp	Speed n [R.P.M.]	Flow Q [l/min]			Input power P [kW]		
			p = 0 bar	p = 140 bar	p = 300 bar	p = 7 bar	p = 140 bar	p = 300 bar
B02	5.8 ml/rev.	1500	8.7	7	5,1	0.5	2.6	5,1
B03	9.8 ml/rev.		14.7	13	11,1	0.6	4	8,1
B04	12,8 ml/rev		19.2	17.5	15,6	0,6	5	10,4
B05	15,9 ml/rev		23.9	22.2	20,2	0.7	6.1	12,7
B06	19,8 ml/rev		29.7	28	26,1	0.7	7.5	15,6
B07	22,5 ml/rev		33.7	32	30,2	0.8	8.5	17,6
B08	24,9 ml/rev		37.4	35.7	33,7	0.8	9.3	19,5
B09	28,0 ml/rev		42	40.3	38,4	0.9	10.4	21,8
B10	31,8 ml/rev		47.7	46	44,1	0.9	11.7	26,2
B11	35,0 ml/rev		52.5	50.8	48,9	1	12.8	27,0
B12	41,0 ml/rev		61.5	59.8	57,9	1.1	14.9	31,5
B14	45,0 ml/rev		67.5	65.8	63,9	1.2	16.3	34,5
B15	50,0 ml/rev		75	73.3	71,6 [2]	1.3	18.1	35,7 [2]

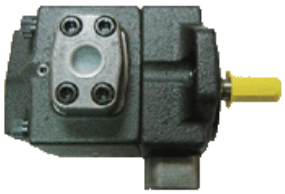
1) 028, 031, 050 = 210 bar max. int. 2) B15 = 280 bar max. int.

【HVQ20】

※GRAPHIC SYMBOL







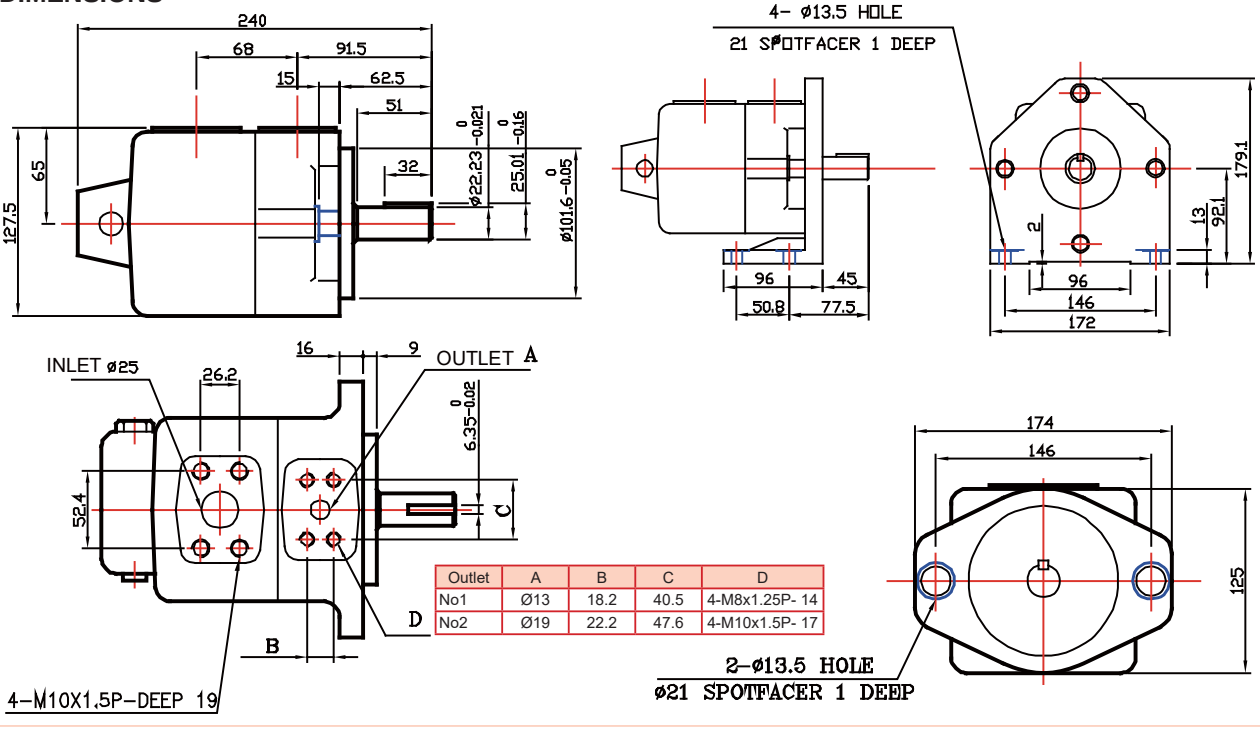
※SPECIFICATION

Model	Max. Pressure MPa (kgf/cm²)				Max. Running Speed r/min(rpm)			
	antiwear oil or phosphate ester fluid		water glycol fluid		antiwear oil or phosphate ester fluid		water glycol fluid	water-in-oil emulsions
	Cont.	Peak.	Cont.	Peak	Max.	Min.		
HVQ20-4	40(408)	450(44.1)	25(255)	280(27.4)	3000	800	1800	1800
HVQ20-6					2500	800		
HVQ20-8								
HVQ20-11					2300	800		
HVQ20-14					1800	800		
HVQ20-17	35(357)	380(37.3)	25(255)	280(27.4)				
HVQ20-19								
HVQ20-23								
HVQ20-26	30(306)	330	25(255)	280(27.4)				
HVQ20-32								

※MODEL NUMBER DESIGNATION

HVQ20-	19-	F-	R-	A	A-	01-	NO.1
Series No.	Displacement cm³/rev.	Mounting Type	Rotation (View from Shaft End)	Discharge Position	Suction Position	Shaft Design Number	Outlet Dimension
HVQ20	4, 6, 8, 11, 14, 17, 19, 23, 26, 32	F: Flange Type L: Foot Type	R: Clockwise L: Counter Clockwise	A: Upward (Normal) B : Downward R : On Right Hand L : On Left Hand	A: Upward (Normal) B : Downward R : On Right Hand L : On Left Hand	01:Straight Key 03: SAE B-B, Splined Shaft, Class 1~J498 b 16/32 d.p.-13teeth 30° Pressure angle flat root side fit.	NO.1: Refer to the dimension

※DIMENSIONS



Outlet	A	B	C	D
No1	Ø13	18.2	40.5	4-M8x1.25P- 14
No2	Ø19	22.2	47.6	4-M10x1.5P- 17

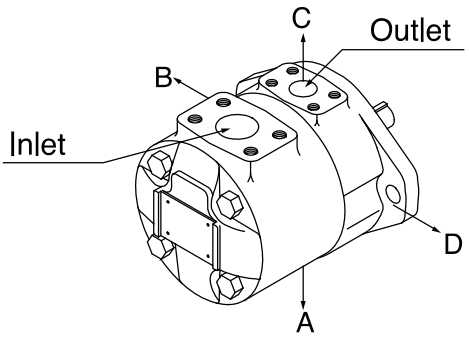
【IVP, IVPQ】

F

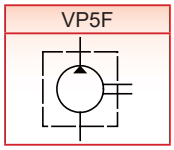
※SPECIFICATION

MODEL	MAX. PRES. bar(PSI)	MAX. SPEED r/min.	WEIGHT (Kg)	
			Flange Mounting	Foot Mounting
IVP1 / IVPQ1	207 (3000)	1800	16 / 18.5	19 / 21.5
IVP2 / IVPQ2	172(2500)		25 / 29.5	34.5 / 39
IVP3 / IVPQ3			35 / 43	44.5 / 52.5
IVP4 / IVPQ4			59.5 / 71	84.5 / 96

★Using antiwer oil or phosphte ester fluid



※GRAPHIC SYMBOL



※MODEL NUMBER DESIGNATION(SINGLE PUMP)

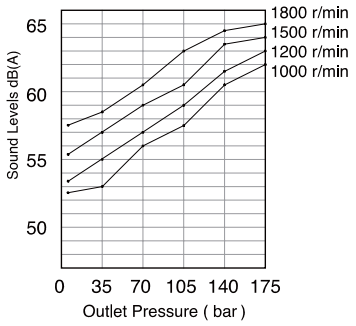
(F3)	IVP(Q)1	17	F	R	1		B	10
Prefix,fluid compatibility	Frame size	Geometric displacement Code	Mounting form	Shaft rotation	Shaft model		Outlet positions	Design
					str.key	HD str.key		
Omit- Using antiwear hydraulic oil or phosphate ester fluid. F11- Using water glycol fluid. F3- Using water-in-oil emulsions.	IVP(Q)1	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14	F- Flange mounting L- Foot mounting	Viewed from shaft end of pump R- Right hand for clockwise L- Left hand for counter-clockwise	1	N/A	Viewed from cover end of pump A- opposite inlet port B- 90˚CCW from inlet C- inline with inlet D- 90˚CW from inlet	10
	IVP(Q)2	10, 12, 14, 15, 17, 19, 21, 25			1	86		10
	IVP(Q)3	17, 21, 25, 30, 32, 35, 38, 42			1	86		10
	IVP(Q)4	30, 35, 38, 42, 50, 60, 67, 75			1	86		10

★Rated capacity in USgpm at 1200 r/min and 6.9 bar.

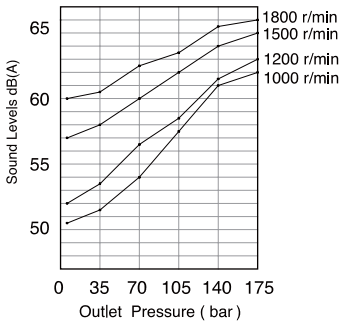
※NOISE LEVEL(SINGLE PUMP)

★Conditions : ISO VG32, 50 ,0 bar inlet, distance : 1m

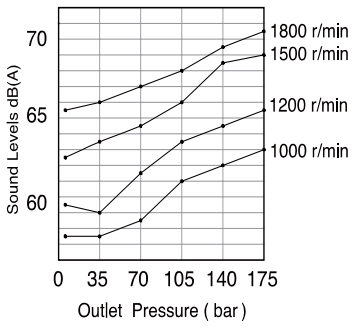
IVP1-11



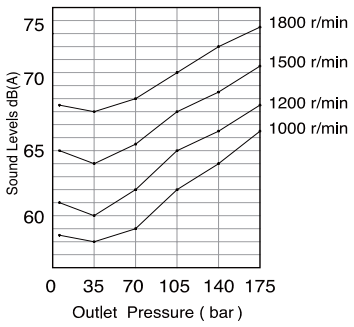
IVP2-21



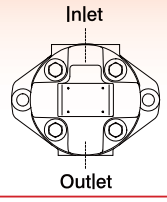
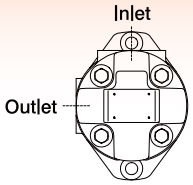
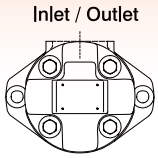
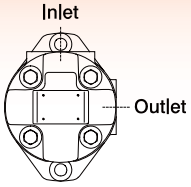
IVP3-38



IVP4-60



※PORT ORIENTATION: VIEWED FROM COVER END OF PUMP

Opposite Inlet PORT	90° CCW From Inlet	Inline With Inlet	90° C W From Inlet
			

※IVP(Q) SINGLE PUMPS- CARTRIDGE KIT MODEL CODE

(F)	CK-♦IVP(Q)2	17	R	10
Prefix,fluid compatibility	Cartridge Kit Model	Geometric displacement Cartridge Kit ●Code	Rotation	Design
Omit- Using antiwear oil or phosphate ester fluid. F11- Using water glycol fluid. F3- Using water-in-oil emulsions.	CK-IVP(Q)1	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14,	Viewed from shaft end of pump R- Right hand for clockwise L- Left hand for counterclockwise	10
	CK-IVP(Q)2	10, 12, 14, 15, 17, 19, 21, 25		10
	CK-IVP(Q)3	17, 21, 25, 30, 32, 35, 38, 42		10
	CK-IVP(Q)4	30, 35, 38, 42, 50, 60, 67, 75		10

※IVP(Q) SINGLE PUMPS- SEAL & BEARING

Frame size	Shaft Seal	Bearing	Frame size	Shaft Seal	Bearing
IVP1	TBY 29.36 x 42.82 x 7 . 9	6204	IVPQ1	TBY 29.36x 42.82 x 7 . 9	6204
IVP2	TBY 29.36x 42.82 x 7 . 9	6205	IVPQ2	TBY 24.59x 4 4 . 5 x 7 . 9	6205zz
IVP3	TBY 36.5x 5 0 . 8 x 7 . 9	6306	IVPQ3	TBY 29.36x 42.82 x 7 . 9	6306zz
IVP4	TBY 41.28x 60.32 x 9 . 5	6307	IVPQ4	TBY 34.93x 57.15 x 7 . 9	6307zz

※CARTRIDGE KIT WEIGHT

Cartridge Kit Model	Weight (Kg)
CK-IVP(Q)1	2 . 5
CK-IVP(Q)2	3 . 8
CK-IVP(Q)3	6 . 5
CK-IVP(Q)4	1 0 . 2

※MAX. CONTINUOUS PRESSURES(SINGLE PUMP)

Frame size	●Code	Geometric displ. cm³/r	IVP(Q) ►Using antiwer oil or phosphte ester fluid		F11-IVP(Q) Using water glycol fluid		F3-IVP(Q) Using water-in-oil emulsions		Min. speed r/min
			Max.Pressure bar	Max.Speed r/min	Max.Pressure bar	Max.Speed r/min	Max.Pressure bar	Max.Speed r/min	
IVP(Q)1	2	7.5	138	1800	138	1500	138	1200	600
	3	10.2							
	4	12.8	207		157				
	5	16.7							
	6	19.2							
	7	22.9							
	8	26.2							
	10	31.0							
	11	35.0							
	12	37.9	157		138				
	14	44.2	138						
IVP(Q)2	10	32.5	172	1800	157	1500	138	1200	600
	12	38.3							
	14	43.3							
	15	46.7							
	17	52.5							
	19	59.2							
	21	65.0							
	25	78.6	138		138				
IVP(Q)3	17	53.3	172	1800	157	1500	138	1200	600
	21	66.7							
	25	79.2							
	30	95.0							
	32	100							
	35	109							
	38	118							
	42	134	138		138				
IVP(Q)4	30	96.0	172	1800	157	1500	138	1200	600
	35	109							
	38	128							
	42	134							
	50	156							
	60	189							
	67	210	157		138				
	75	236	138						

●Rated capacity in USgpm at 1200 r/min and 6.9bar.

►A transient (peak) pressure 10% over the max. continuous pressure rating for 0.5 seconds or less duration is allowed.

F

F

※IVP(Q) SINGLE PUMPS-PERFORMANCE CHARACTERISTICS

Frame size	Speed r/min	(Output flow) L/min				(Input power) kw			
		6.9bar	69bar	138bar	172bar	6.9bar	69bar	138bar	172bar
IVP(Q)1-2	1000	7.5	6.0	4.5		0.2	1.2	2.1	
	1200	9.5	8.5	6.5		0.3	1.5	2.5	
	1500	11.2	9.3	7.5		0.3	1.8	3.2	
	1800	13.5	11.2	9.0		0.4	2.2	3.8	
IVP(Q)1-3	1000	10.2	8.8	7.4		0.3	1.5	3.1	
	1200	12.5	11.0	9.5		0.4	1.8	3.7	
	1500	15.3	13.7	12.1		0.5	2.3	4.7	
	1800	18.4	16.9	15.3		0.5	2.7	5.6	
IVP(Q)1-4	1000	12.8	12.3	10.8	10.0	0.4	1.8	3.7	4.6
	1200	16.0	15.0	13.5	13.0	0.5	2.2	4.4	5.5
	1500	19.2	17.7	16.2	15.7	0.6	2.7	5.6	6.9
	1800	23.1	21.3	19.5	19.0	0.7	3.2	6.7	8.3
IVP(Q)1-5	1000	16.7	15.7	14.7	14.2	0.4	2.8	4.8	6.0
	1200	20.0	19.0	18.0	17.5	0.5	3.2	5.8	7.2
	1500	25.0	24.0	23.0	22.5	0.6	3.9	7.3	9.0
	1800	30.0	29.0	28.0	27.5	0.6	4.2	8.6	10.7
IVP(Q)1-6	1000	19.2	18.2	17.0	16.2	0.4	3.0	5.5	6.6
	1200	23.0	22.0	20.5	20.0	0.5	3.5	6.5	7.9
	1500	28.5	27.5	26.0	25.0	0.6	4.3	8.1	9.8
	1800	34.5	33.5	32.0	31.0	0.7	5.2	9.7	11.8
IVP(Q)1-7	1000	22.9	21.4	19.9	18.9	0.5	3.4	6.2	7.6
	1200	27.5	26.0	24.5	23.5	0.6	4.0	7.4	9.1
	1500	34.4	32.9	31.4	30.4	0.7	5.0	9.2	11.3
	1800	41.3	39.8	38.3	37.3	0.8	5.9	11.0	13.6
IVP(Q)1-8	1000	26.2	24.2	22.7	21.2	0.5	3.9	6.7	8.3
	1200	31.5	29.5	28.0	26.5	0.6	4.5	8.0	10.0
	1500	39.4	37.4	35.9	34.4	0.8	5.5	10.0	12.5
	1800	47.2	45.2	43.7	42.2	0.8	6.6	11.8	14.8
IVP(Q)1-10	1000	31.0	29.2	26.5	24.8	0.6	4.6	8.4	10.4
	1200	37.2	34.7	32.4	30.9	0.7	5.4	10.0	12.5
	1500	46.5	43.1	41.3	39.4	0.9	6.5	12.5	15.6
	1800	55.8	53.2	50.6	48.5	0.9	7.8	14.7	18.5
IVP(Q)1-11	1000	35.0	33.0	30.5	29.5	0.7	4.9	9.2	11.4
	1200	42.0	40.0	37.5	36.5	0.8	5.7	11.0	13.7
	1500	52.5	50.5	48.0	47.0	1.0	6.9	13.8	17.1
	1800	63.2	61.0	58.5	57.5	1.0	8.3	16.2	20.3
IVP(Q)1-12	1000	37.9	36.4	34.4		0.7	5.6	10.4	
	1200	45.5	44.0	42.0		0.9	6.5	12.5	
	1500	56.9	55.4	53.4		1.1	7.9	15.6	
	1800	68.2	66.7	64.7		1.1	9.4	18.4	
IVP(Q)1-14	1000	44.2	42.7	40.7		1.0	6.6	12.2	
	1200	53.0	51.5	49.5		1.1	7.8	14.6	
	1500	66.0	64.0	62.0		1.3	9.6	18.2	
	1800	79.5	77.5	75.5		1.4	11.5	21.7	
IVP(Q)2-10	1000	32.5	29.5	26.0	24.5	0.9	4.9	9.3	11.3
	1200	39.0	36.0	32.5	31.0	1.0	5.8	11.1	13.5
	1500	48.8	45.8	42.3	40.8	1.2	7.2	13.8	16.8
	1800	58.5	55.5	52.0	50.5	1.3	8.5	16.5	20.1
IVP(Q)1-12	1000	38.3	35.9	3.3	31.8	1.0	5.7	10.9	13.4
	1200	46.0	43.6	41.0	39.5	1.1	6.5	1300	16.0
	1500	57.5	55.1	52.5	51.0	1.3	8.3	16.1	19.9
	1800	69.0	66.6	64.0	62.5	1.4	9.8	19.3	23.8
IVP(Q)1-14	1000	43.3	40.2	36.8	35.8	1.2	6.4	12.5	15.1
	1200	52.0	48.5	45.5	44.5	1.3	7.5	14.5	18.0
	1500	65.0	61.9	58.5	57.5	1.5	9.4	18.0	22.4
	1800	78.0	74.9	71.5	70.5	1.7	11.1	21.5	26.7
IVP(Q)1-15	1000	46.7	43.7	40.7	39.2	1.2	6.8	13.0	15.9
	1200	56.0	53.0	50.0	48.5	1.3	8.0	15.5	19.0
	1500	70.0	67.0	64.0	62.5	1.5	9.9	19.3	23.6
	1800	84.0	81.0	78.0	76.5	1.7	11.8	23.0	28.3
IVP(Q)1-17	1000	52.5	49.7	46.5	44.5	1.4	7.4	14.3	17.6
	1200	63.0	60.6	57.0	55.0	1.5	9.0	17.0	21.0
	1500	78.9	76.0	72.8	70.8	1.7	10.8	21.1	26.1
	1800	94.5	91.7	88.5	86.5	1.9	12.9	25.1	31.2
IVP(Q)2-19	1000	59.2	56.2	53.2	50.2	1.5	8.5	16.0	20.1
	1200	71.0	68.0	65.0	62.0	1.7	10.0	19.0	24.0
	1500	88.7	85.7	82.7	79.7	1.9	12.3	24.1	29.8
	1800	106.5	103.7	100.7	97.7	2.2	14.7	28.2	35.7
IVP(Q)2-21	1000	65.0	62.2	59.0	57.0	1.6	9.2	17.6	21.8
	1200	78.0	75.0	72.0	70.0	1.8	11.0	21.0	26.0
	1500	97.5	94.7	91.5	89.5	2.1	13.4	26.1	32.3
	1800	117	114	111	109	2.3	16.0	31.1	38.6

※IVP(Q) SINGLE PUMPS-PERFORMANCE CHARACTERISTICS

Frame size	Speed r/min	(Output flow) L/min				(Input power) kw			
		6.9bar	69bar	138bar	172bar	6.9bar	69bar	138bar	172bar
IVP(Q)2-25	1000	78.8	74.8	71.5		2.0	11.2	21.4	
	1200	94.6	90.3	87.8		2.2	13.4	25.6	
	1500	118.2	113.0	110.0		2.6	16.3	31.8	
	1800	141.0	137.0	134.0		2.8	19.5	32.4	
IVP(Q)3-17	1000	53.0	47.3	41.3	38.3	1.4	6.8	12.6	15.5
	1200	64.0	58.0	52.0	49.0	1.5	8.0	15.0	18.5
	1500	80.0	74.0	68.0	65.0	1.7	9.8	18.6	22.9
	1800	96.0	90.0	84.0	81.0	1.9	11.6	22.1	27.4
IVP(Q)3-21	1000	66.7	60.7	54.7	51.7	1.6	8.9	16.8	20.6
	1200	80.0	74.0	68.0	65.0	1.8	10.5	20.0	24.5
	1500	100	94.0	88.0	85.0	2.0	12.9	24.8	30.4
	1800	120	114	108.0	105.0	2.3	15.4	30.5	36.4
IVP(Q)3-25	1000	79.2	73.5	67.2	64.2	1.8	10.7	20.5	25.1
	1200	95.0	89.0	83.0	80.0	2.0	12.5	24.5	30.0
	1500	119	113	107.0	104.0	2.3	15.7	30.4	37.3
	1800	142	136	130.0	127.0	2.6	18.7	36.4	44.6
IVP(Q)3-30	1000	95.0	88.4	81.0	78.0	1.8	12.6	24.7	30.5
	1200	114	107	100	97.0	2.0	15.0	29.5	36.5
	1500	142	136	128	125	2.4	18.6	36.7	45.5
	1800	171	164	157	154	2.7	22.2	44.0	54.5
IVP(Q)3-32	1000	1000	92.0	85.0	82.0	2.1	13.5	26.0	32.2
	1200	120	112	105	102	2.3	16.0	31.0	38.5
	1500	150	142	135	132	2.7	19.8	38.6	47.9
	1800	180	172	165	162	3.1	23.6	46.1	57.4
IVP(Q)3-35	1000	109	103	95.2	92.2	2.2	14.2	27.6	34.3
	1200	131	124	117	114	2.5	17.0	33.0	41.0
	1500	164	157	150	147	2.9	20.9	41.0	51.0
	1800	196	189	182	179	3.3	24.9	50.4	61.1
IVP(Q)3-38	1000	118	111	102	99.3	2.7	15.5	29.8	36.9
	1200	142	134	126	123	3.0	18.5	35.5	44.0
	1500	177	170	161	158	3.4	22.7	44.0	54.7
	1800	213	205	197	194	3.9	27.0	52.6	65.4
IVP(Q)3-42	1000	1374	125	118		4.5	27.1	52.1	
	1200	160	152	144		5.0	32.2	62.2	
	1500	201	193	185		5.8	39.8	77.4	
	1800	241	233	225		6.6	47.5	92.5	
IVP(Q)4-30	1000	96.0	87.0	77.0	72.0	1.6	13.4	25.1	30.9
	1200	115	106	96.0	91.0	2.0	15.0	30.0	37.0
	1500	144	135	125	120	2.4	18.6	37.4	46.1
	1800	172.5	163.5	153.5	148.5	2.8	22.3	44.7	55.2
IVP(Q)4-35	1000	109	100	90.0	85.0	1.7	14.2	28.4	35.1
	1200	131	122	112	107	2.0	17.0	34.0	42.0
	1500	164	157	145	140	2.4	21.2	42.4	52.4
	1800	196.5	187.5	177.5	172.5	2.9	25.4	50.9	62.9
IVP(Q)4-38	1000	128	119	109	104	2.7	16.8	33.5	41.0
	1200	154	145	135	130	3.0	20.0	40.0	49.0
	1500	192.5	183.5	173.5	168.5	3.5	24.8	49.8	61.0
	1800	231	222	212	207	4.0	29.5	59.5	73.0
IVP(Q)4-42	1000	134	125	115	110	2.7	17.1	35.2	43.5
	1200	161	152	142	137	3.0	21.0	42.0	52.0
	1500	201	192	182	177	3.5	26.0	52.3	64.7
	1800	241	232	222	217	4.0	31.0	62.5	77.5
IVP(Q)4-50	1000	156	147	137	132	3.1	20.2	39.4	49.3
	1200	187	178	168	163	3.5	24.0	47.0	59.0
	1500	234	225	215	210	4.0	29.7	58.5	73.4
	1800	280	271	261	256	4.7	35.4	69.9	87.9
IVP(Q)4-60	1000	189	178	166	160	4.0	24.4	46.9	58.6
	1200	227	216	204	198	4.5	29.0	56.0	70.0
	1500	284	273	261	255	5.2	35.8	69.9	87.1
	1800	340	329	317	311	5.9	42.7	83.2	104
IVP(Q)4-67	1000	210	199	187		4.5	27.1	52.1	
	1200	252	241	229		5.0	32.2	62.2	
	1500	315	304	292		5.8	39.8	77.4	
	1800	378	366	354		6.6	47.5	92.5	
IVP(Q)4-75	1000	236	225	213		5.0	30.5	58.7	
	1200	289	280	269		5.6	36.3	70	
	1500	354	343	331		6.5	44.8	87	
	1800	424	414	401		7.4	53.4	104.0	

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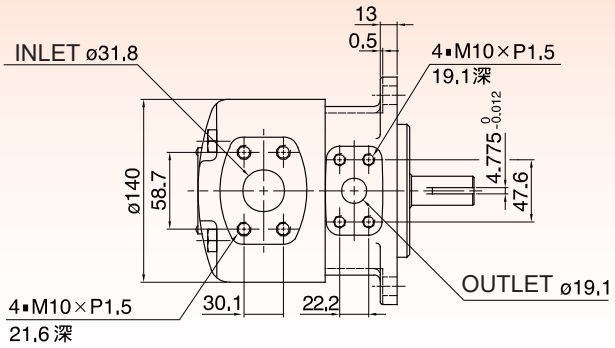
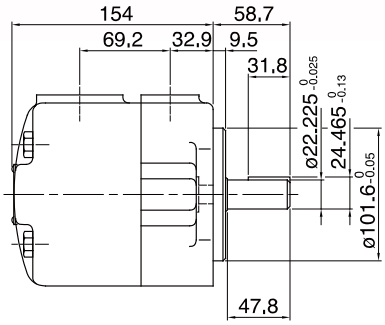
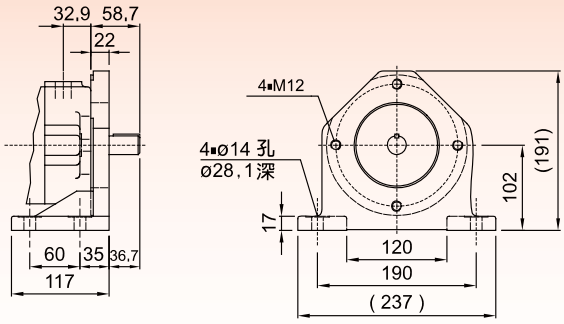
【DIMENSIONS】

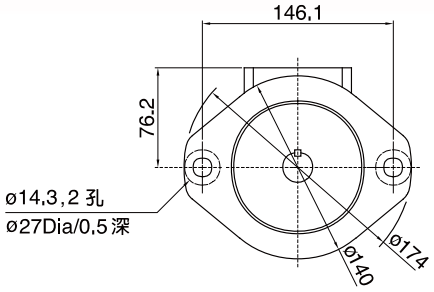
IVP1 Flange Mounting (Shaft Model No.1)



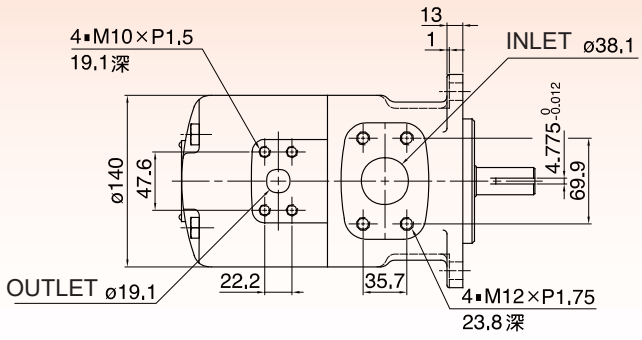


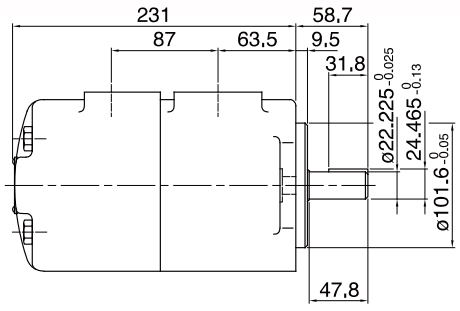
IVP1 Foot Mounting (Shaft Model No.1)



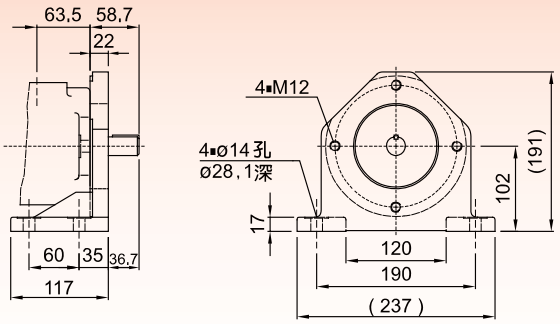


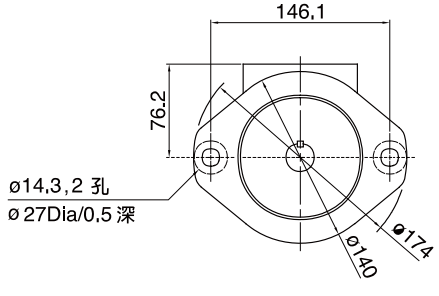
IVPQ1 Flange Mounting (Shaft Model No.1)





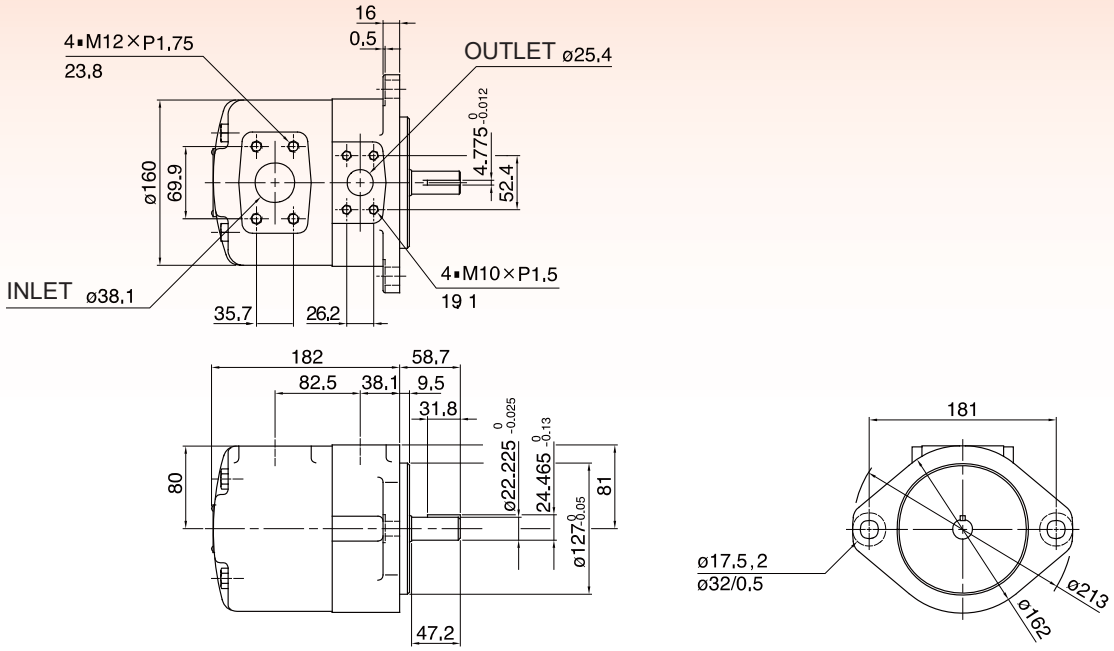
IVPQ1 Flange Mounting (Shaft Model No.1)



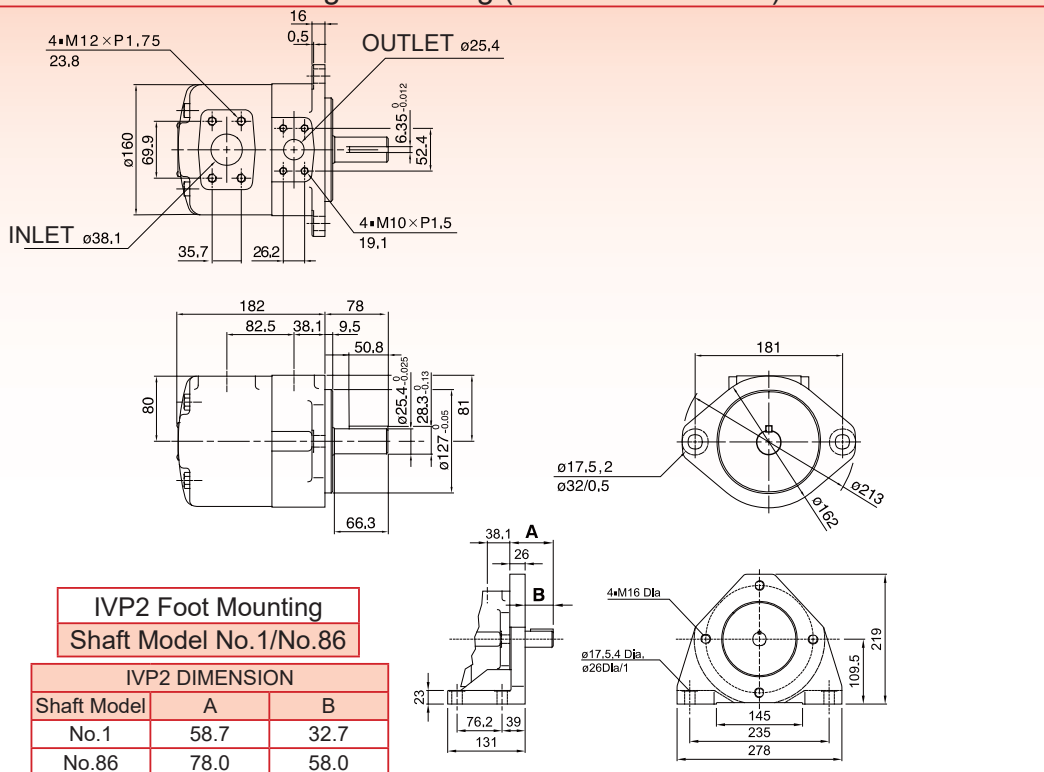


【DIMENSIONS】

IVP2 Flange Mounting (Shaft Model No.1)



IVP2 Flange Mounting (Shaft Model No.86)



IVP2 Foot Mounting Shaft Model No.1/No.86		
IVP2 DIMENSION		
Shaft Model	A	B
No.1	58.7	32.7
No.86	78.0	58.0

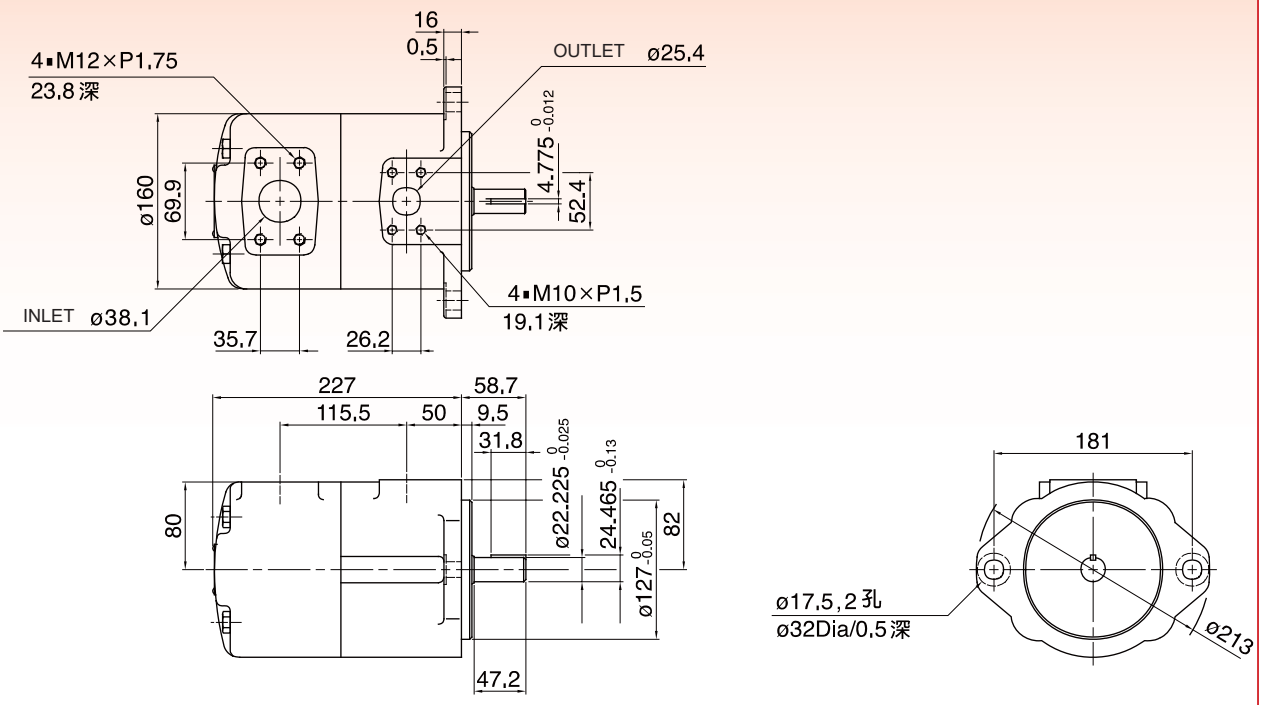
For other dimensions, refer to "Flange Mounting" type

F

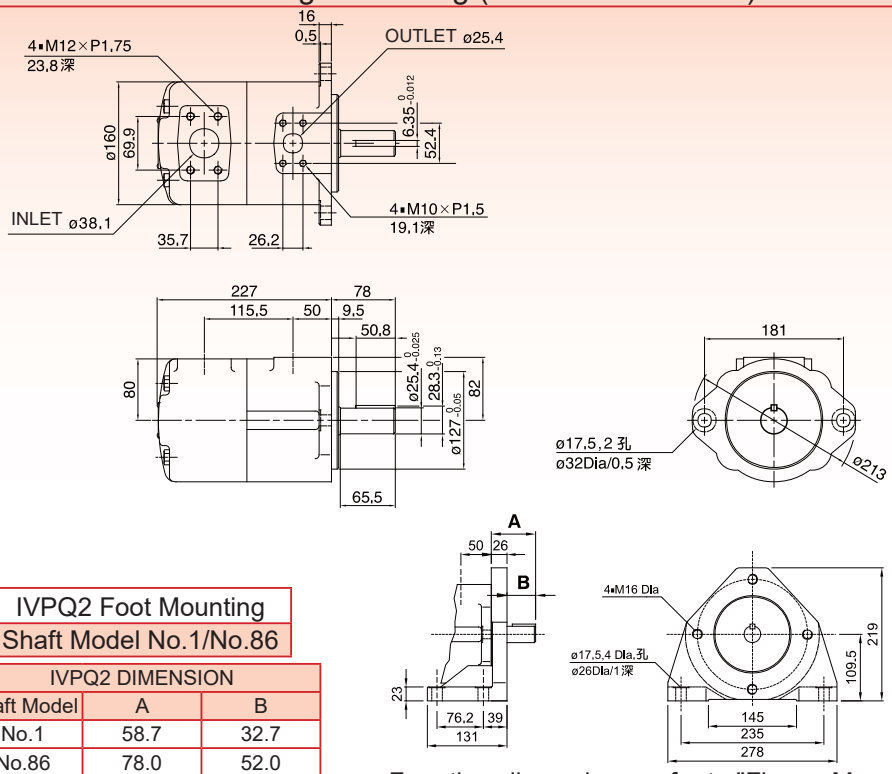
F

【DIMENSIONS】

IVPQ2 Flange Mounting (Shaft Model No.1)



IVPQ2 Flange Mounting (Shaft Model No.86)



IVPQ2 Foot Mounting
Shaft Model No.1/No.86

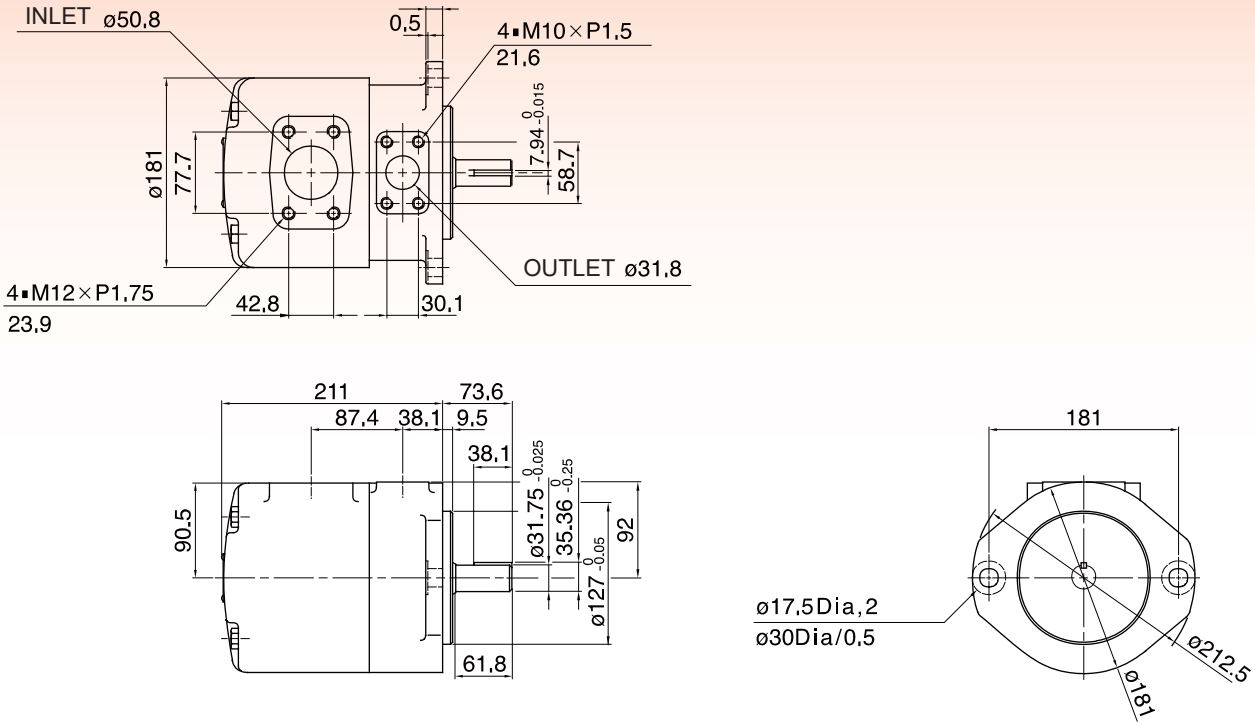
IVPQ2 DIMENSION		
Shaft Model	A	B
No.1	58.7	32.7
No.86	78.0	52.0

For other dimensions, refer to "Flange Mounting" type

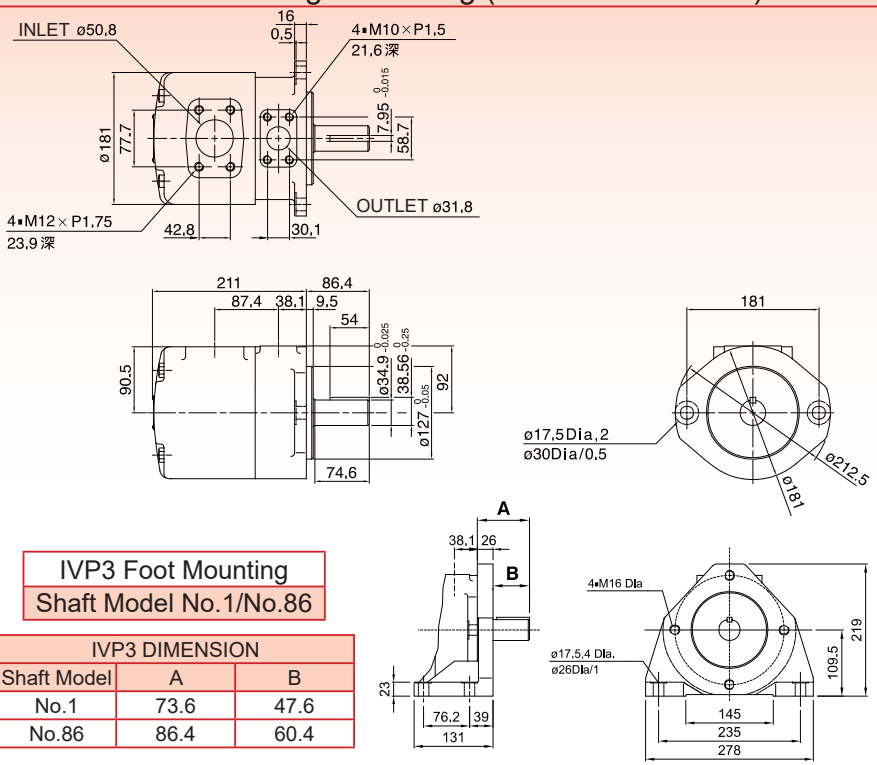
F

【DIMENSIONS】

IVP3 Flange Mounting (Shaft Model No.1)



IVP3 Flange Mounting (Shaft Model No.86)



IVP3 Foot Mounting
Shaft Model No.1/No.86

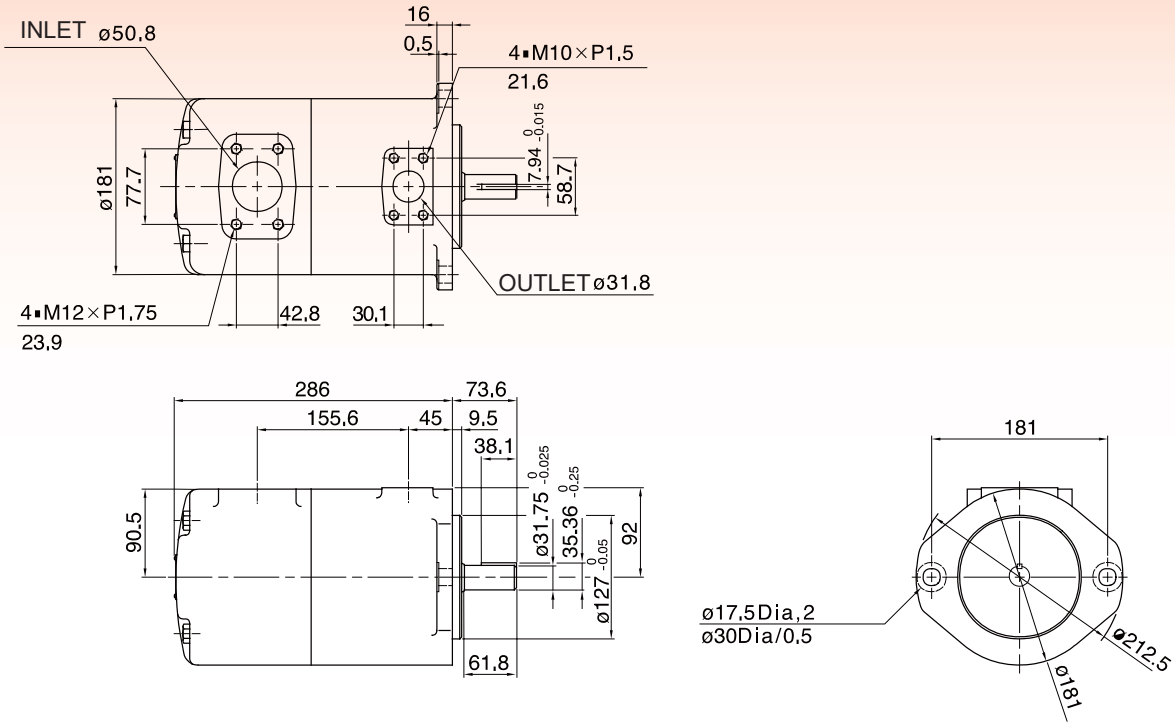
IVP3 DIMENSION		
Shaft Model	A	B
No.1	73.6	47.6
No.86	86.4	60.4

For other dimensions, refer to "Flange Mounting" type

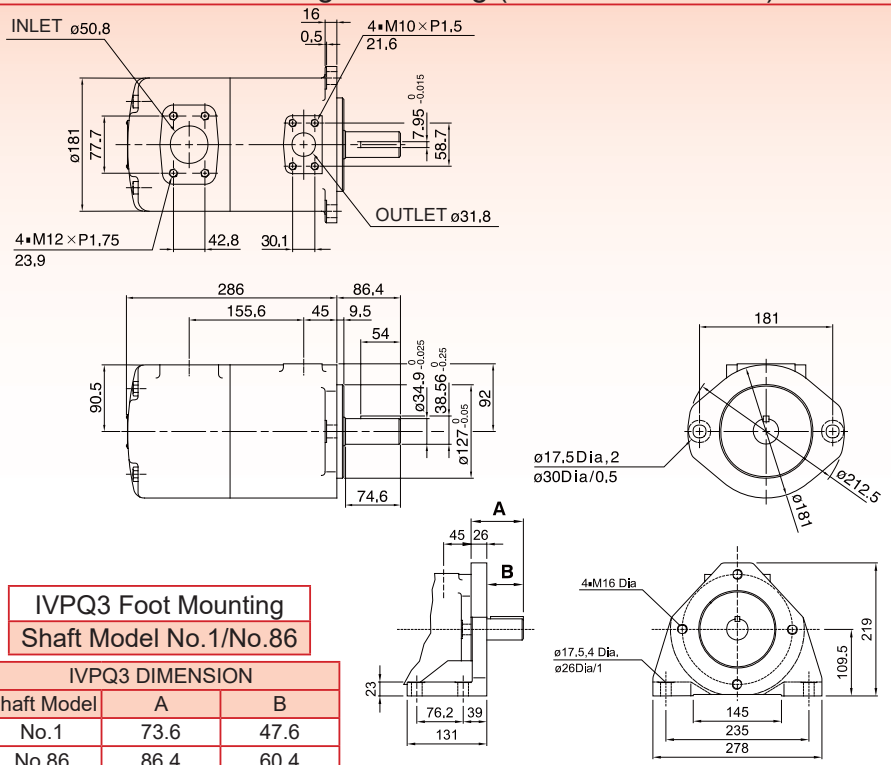
F

【DIMENSIONS】

IVPQ3 Flange Mounting (Shaft Model No.1)



IVPQ3 Flange Mounting (Shaft Model No.86)



IVPQ3 Foot Mounting
Shaft Model No.1/No.86

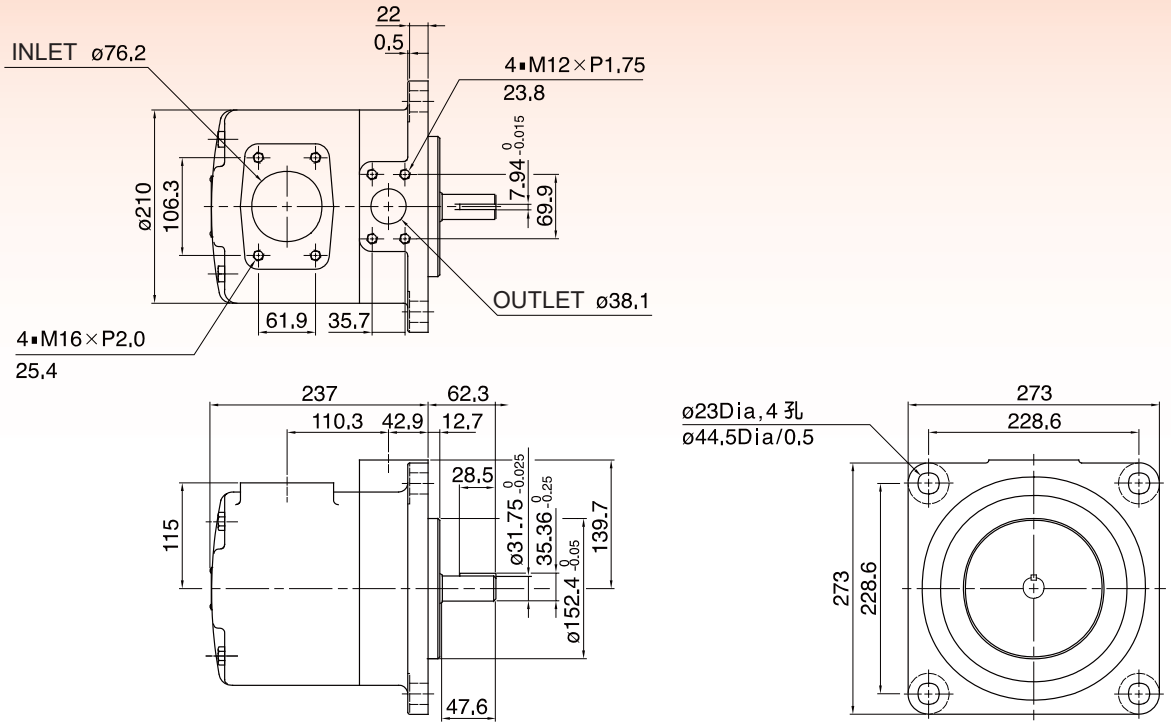
IVPQ3 DIMENSION		
Shaft Model	A	B
No.1	73.6	47.6
No.86	86.4	60.4

For other dimensions, refer to "Flange Mounting" type

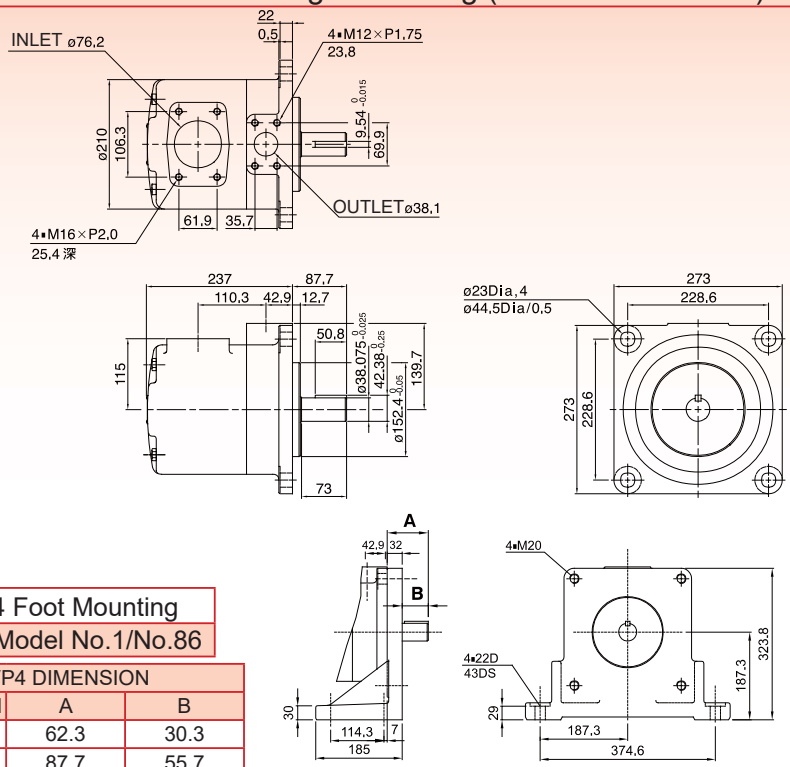
F

【DIMENSIONS】

IVP4 Flange Mounting (Shaft Model No.1)



IVP4 Flange Mounting (Shaft Model No.86)



IVP4 Foot Mounting Shaft Model No.1/No.86		
IVP4 DIMENSION		
Shaft Model	A	B
No.1	62.3	30.3
No.86	87.7	55.7

For other dimensions, refer to "Flange Mounting" type

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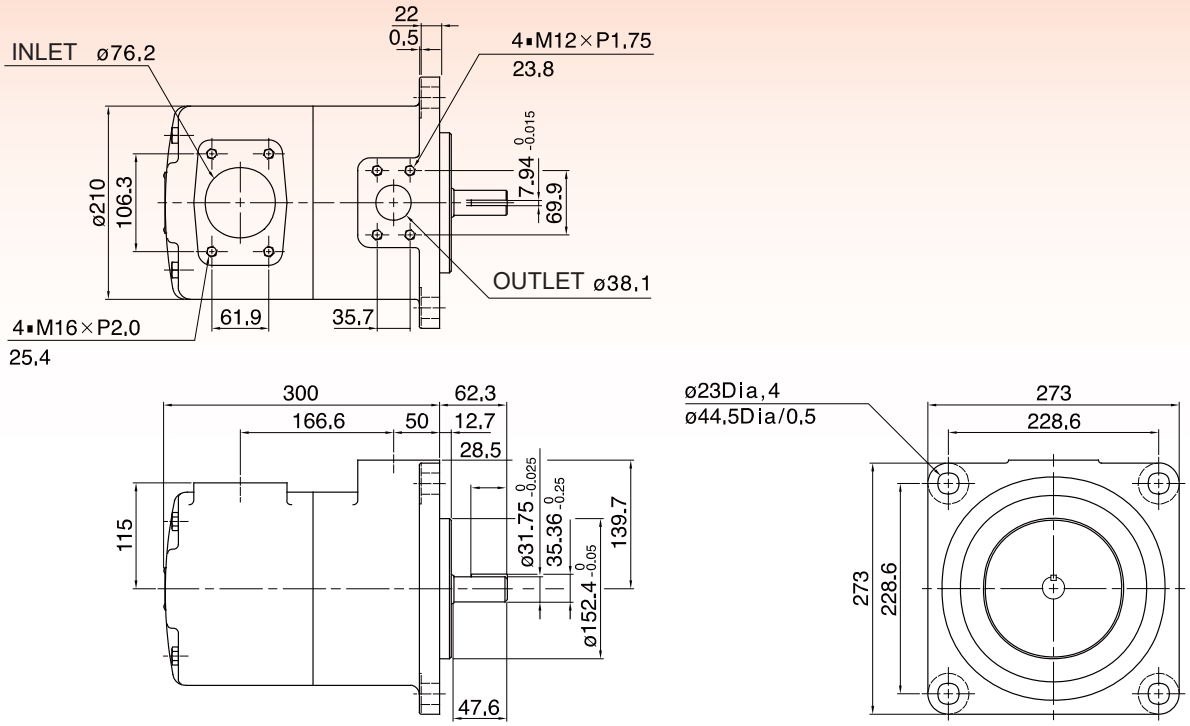
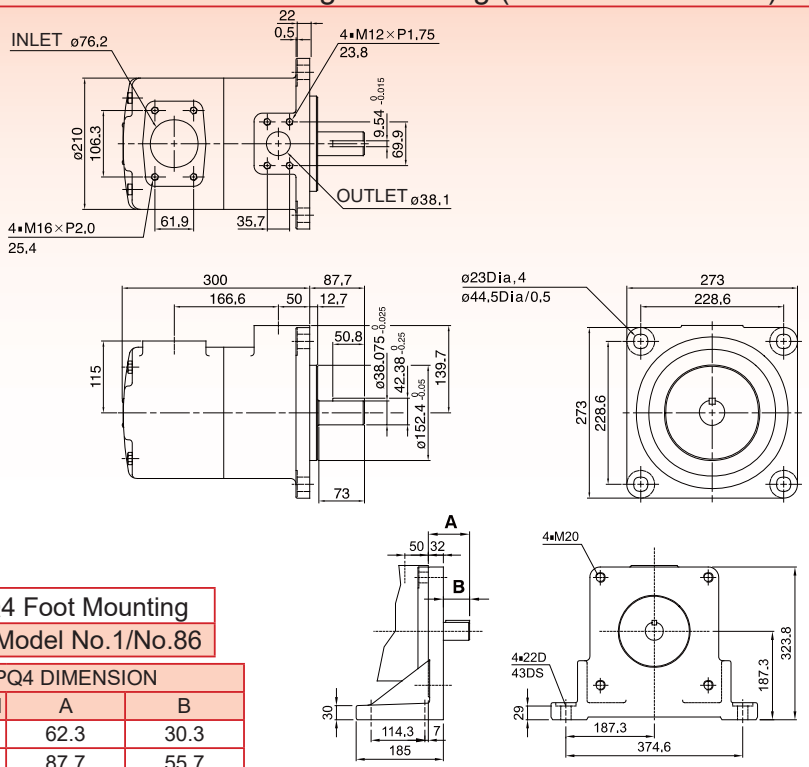
【DIMENSIONS】

IVPQ4 Flange Mounting (Shaft Model No.1)



IVPQ4 Flange Mounting (Shaft Model No.86)



IVPQ4 Foot Mounting
Shaft Model No.1/No.86

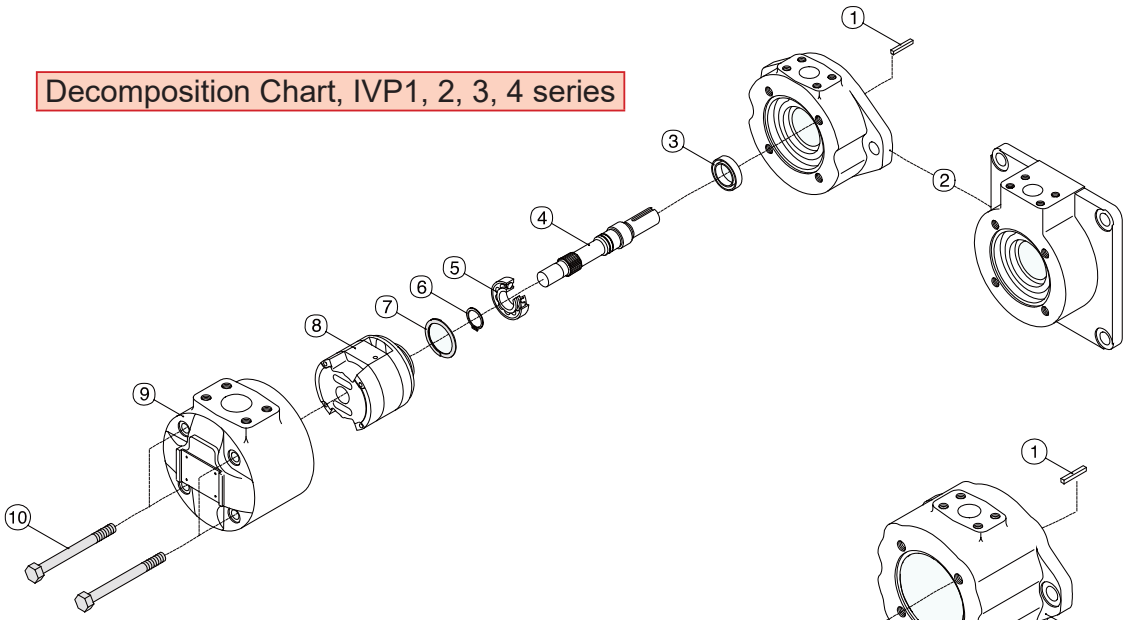
IVPQ4 DIMENSION		
Shaft Model	A	B
No.1	62.3	30.3
No.86	87.7	55.7

For other dimensions, refer to "Flange Mounting" type

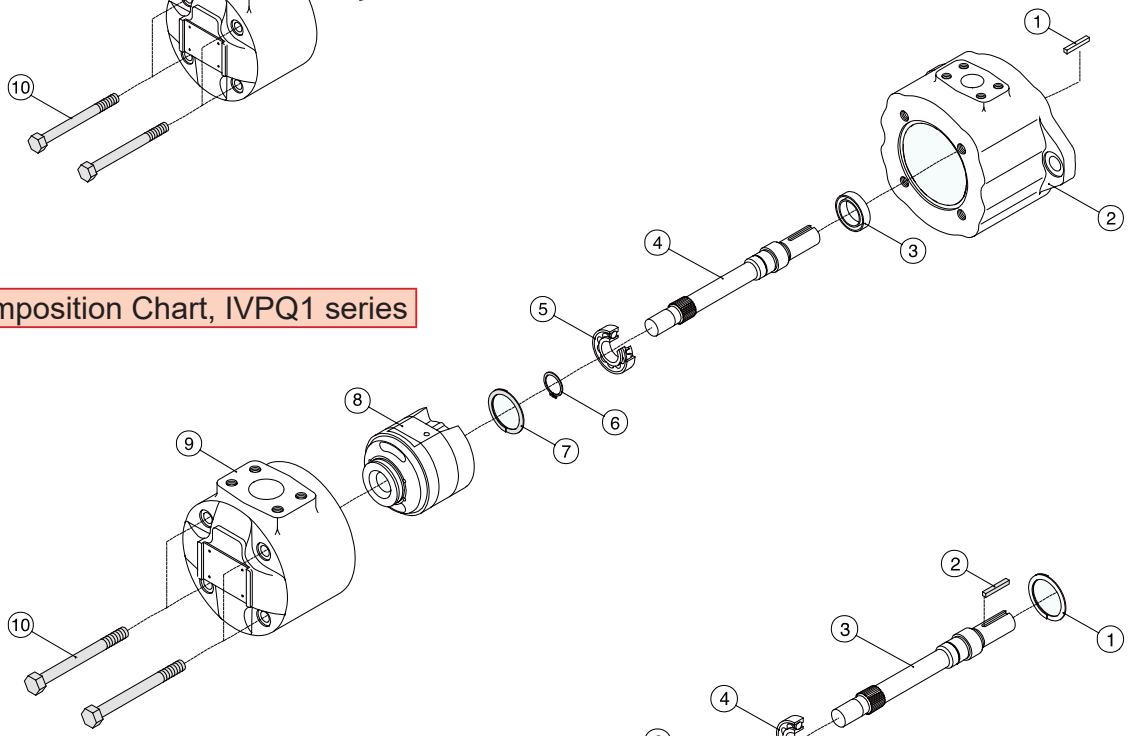
F

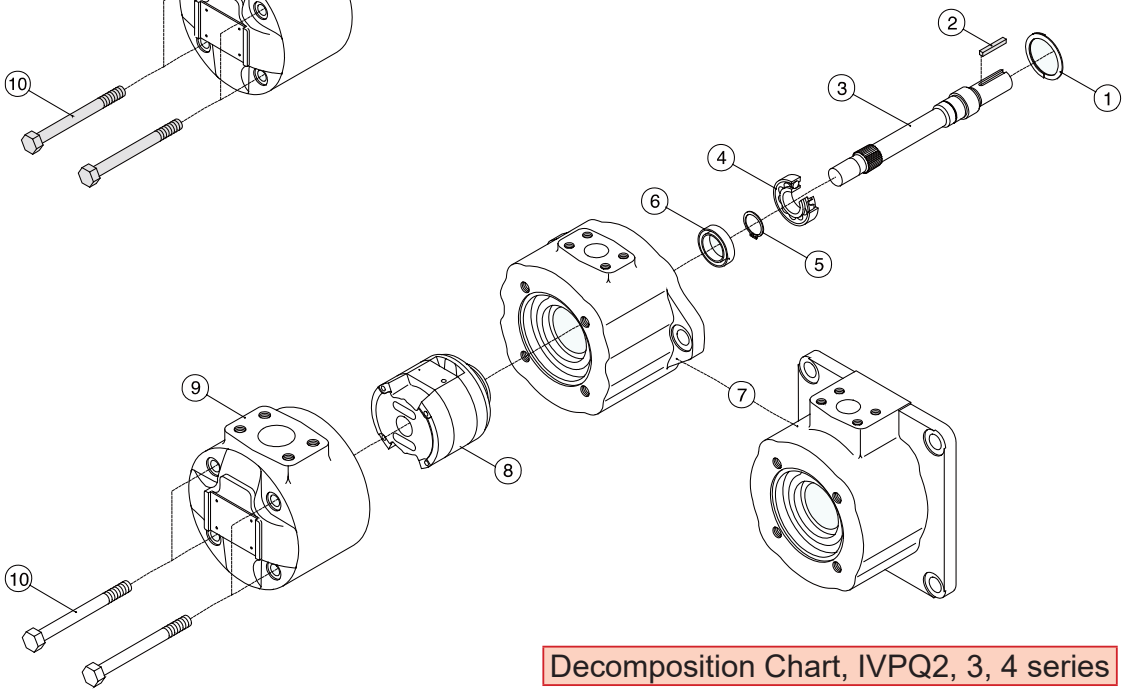
【ASSEMBLY】

Decomposition Chart, IVP1, 2, 3, 4 series



Decomposition Chart, IVPQ1 series





Decomposition Chart, IVPQ2, 3, 4 series

【IVP, IVPQ】

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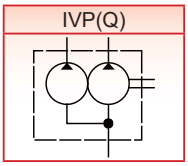
※SPECIFICATION

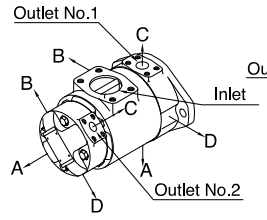
MODEL	MAX. PRES. bar(PSI)	MAX. SPEED r/min.	WEIGHT (Kg)	
			Flange Mounting	Foot Mounting
IVP21 / IVPQ21	172(2500)	1800	31.5 / 41	41 / 50.5
IVP31 / IVPQ31			46 / 56	55.5 / 65.5
IVP32 / IVPQ32			48 / 62	57.5 / 71.5
IVP41 / IVPQ41			74 / 83	99 / 108
IVP42 / IVPQ42			80 / 88	105 / 113
IVP43 / IVPQ43			88.5 / 99	113 / 123

★Using antiwer oil or phosphte ester fluid

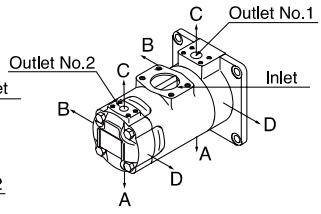
※GRAPHIC SYMBOL



Port Orientation



All series except IVP(Q)43



IVP(Q)43 Series

※MODEL NUMBER DESIGNATION(DOUBLE PUMP)

(F3)	IVP(Q)21	17	12	F	R	1		B	10
Prefix,fluid compatibility	Frame size	Geometric displacement Code	Geometric displacement Code	Mounting form	Shaft rotation	Shaft model		Outlet positions	Design
						str.key	HD str.key		
Omit-Using antiwear hydraulic oil or phosphate ester fluid. F11-Using water glycol fluid. F3-Using water-in-oil emulsions.	IVP(Q)21	10, 12, 14, 15, 17, 19, 21, 25	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14	F- Flange mounting L- Foot mounting	Viewed from shaft end of pump R- Right hand for clockwise L- Left hand for counter-clockwise	1	86	Viewed from cover end of pump With no.1 outlet opposite inlet AA- No.2 outlet 135˚CCW from inlet (NO.2 outlet opposite inlet) AB- NO.2 outlet 45˚CCW from inlet (NO.2 outlet 90˚CCW from inlet) AC- No.2 outlet 45˚CW from inlet (No.2 outlet inline with inlet) AD- No.2 outlet 135˚CW from inlet (No.2 outlet 90˚CW from inlet) With no.1 outlet 90˚CCW from inlet BA- No.2 outlet 135˚CCW from inlet (No.2 outlet opposite inlet) BB- NO.2 outlet 45˚CCW from inlet (NO.2 outlet 90˚CCW from inlet) BC- No.2 outlet 45˚CW from inlet (No.2 outlet inline with inlet) BD- No.2 outlet 135˚CW from inlet (No.2 outlet 90˚CW from inlet) With no.1 outlet inline with inlet CA- No.2 outlet 135˚CCW from inlet (No.2 outlet opposite inlet) CB- NO.2 outlet 45˚CCW from inlet (NO.2 outlet 90˚CCW from inlet) CC- No.2 outlet 45˚CW from inlet (No.2 outlet inline with inlet) CD- No.2 outlet 135˚CW from inlet (No.2 outlet 90˚CW from inlet) With no.1 outlet 90˚CW from inlet DA- No.2 outlet 135˚CCW from inlet (No.2 outlet opposite inlet) DB- NO.2 outlet 45˚CCW from inlet (NO.2 outlet 90˚CCW from inlet) DC- No.2 outlet 45˚CW from inlet (No.2 outlet inline with inlet) DD- No.2 outlet 135˚CW from inlet (No.2 outlet 90˚CW from inlet)	10
	IVP(Q)31	17, 21, 25, 30, 32, 35, 38, 42	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14			1	86		10
	IVP(Q)32	17, 21, 25, 30, 32, 35, 38, 42	10, 12, 14, 15, 17, 19, 21, 25			1	86		10
	IVP(Q)41	30, 35, 38, 42, 50, 60, 67, 75	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14			1	86		10
	IVP(Q)42	30, 35, 38, 42, 50, 60, 67, 75	10, 12, 14, 15, 17, 19, 21, 25			1	86		10
	IVP(Q)43	30, 35, 38, 42, 50, 60, 67, 75	17, 21, 25, 30, 32, 35, 38, 42			1	86		10

★Rated capacity in USgpm at 1200 r/min and 6.9 bar (100psi).

※MAX. CONTINUOUS PRESSURES(DOUBLE PUMP)

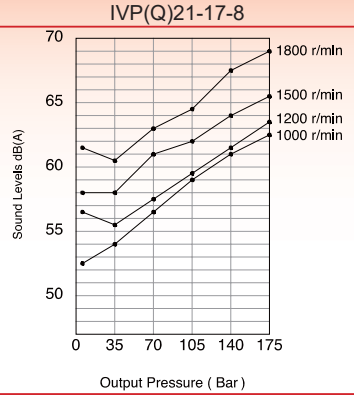
Frame size	Shaft end pump (No.1 outlet)			Cover end pump (No.2 outlet)			Max. speed r/min	Min. speed r/min
	●Code	Geometric displ. cm³/r	Max. Pressure bar	●Code	Geometric displ. cm³/r	Max.Pressure bar		
IVP(Q)21	10	32.5	▶172 F3=138 F11=157	2	7.5	▶138 F3=138 F11=138	▶1800 F3=1200 F11=1500	600
	12	38.3						
	14	43.3		3	10.2			
	15	46.7						
	17	52.5		4	12.8	▶207 F3=138 F11=157		
	19	59.2						
	21	65.0		5	16.7			
	25	78.6						
IVP(Q)31	17	53.3	▶172 F3=138 F11=157	6	19.2			
	21	66.7						
	25	79.2		7	22.9			
	30	95.0						
	32	100		8	26.2			
	35	109						
	38	118		10	31.0			
	42	134						
IVP(Q)41	30	96.0	▶172 F3=138 F11=157	11	35.0			
	35	109						
	38	128						
	42	134		12	37.9	▶157 F3=138 F11=138		
	50	156						
	60	189						
	67	210		14	44.2	▶138 F3=138 F11=138		
	75	236						
IVP(Q)32	17	53.3	▶172 F3=138 F11=157	10	32.5	▶172 F3=138 F11=157	▶1800 F3=1200 F11=1500	600
	21	66.7						
	25	79.2		12	38.3			
	30	95.0						
	32	100		14	43.3			
	35	109						
	38	118		15	46.7			
	42	134						
IVP(Q)42	30	96.0	▶172 F3=138 F11=157	17	52.5			
	35	109						
	38	128		19	59.2			
	42	134						
	50	156		21	65.0			
	60	189						
	67	210		25	78.6			
	75	236						
IVP(Q)43	30	96.0	▶172 F3=138 F11=157	17	53.3	▶172 F3=138 F11=157	▶1800 F3=1200 F11=1500	600
	35	109		21	66.7			
	38	128		25	79.2			
	42	134		30	95.0			
	50	156		32	100			
	60	189		35	109			
	67	210		38	118			
	75	236		42	134			

●Rated capacity in USgpm at 1200 r/min and 6.9bar.

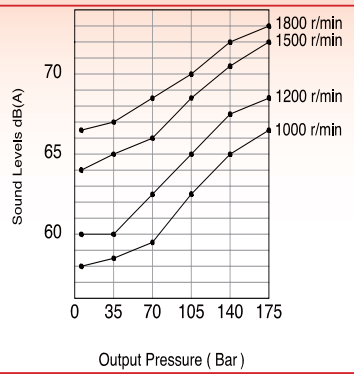
▶A transient (peak) pressure 10% over the max. continuous pressure rating for 0.5 seconds or less duration is allowed.

※NOISE LEVEL(SINGLE PUMP)

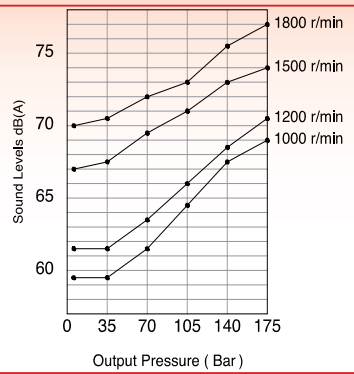
IVP(Q)21-17-8



IVP32-35-17



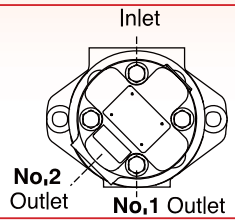
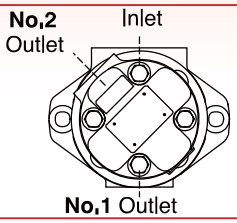
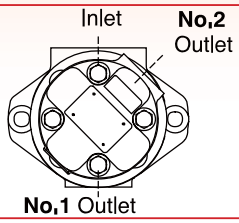
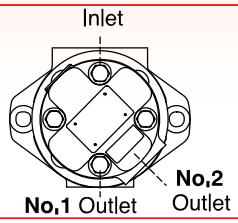
IVP43-50-35

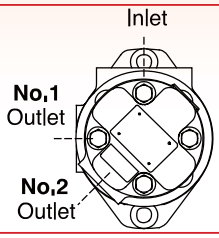
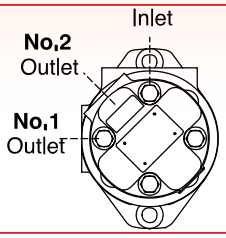
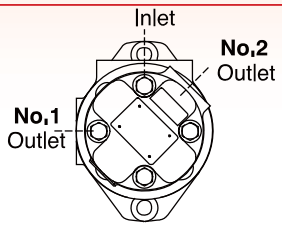
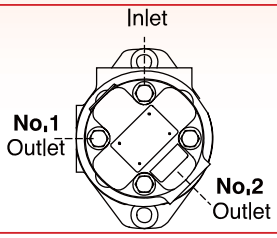


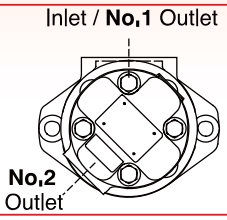
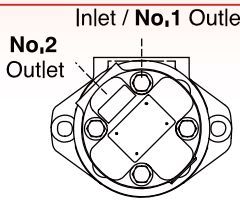
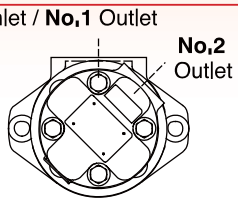
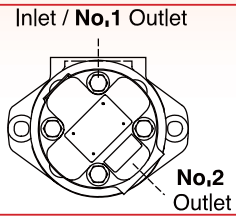
F

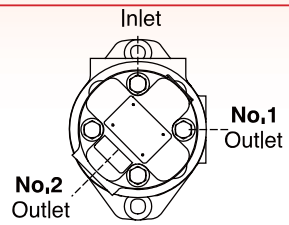
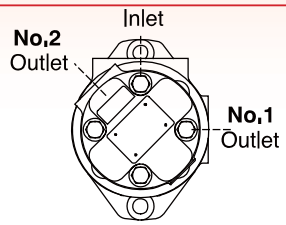
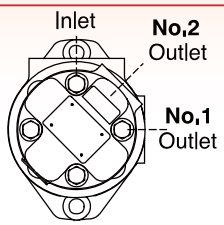
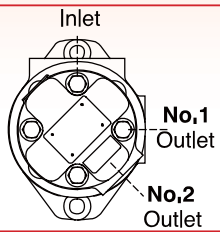
F

※PORT ORIENTATION: VIEWED FROM COVER END OF PUMP(ALL SERIES EXCEPT IVPQ43)

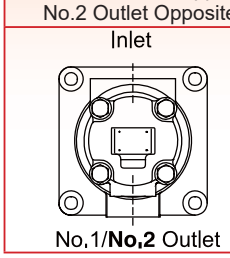
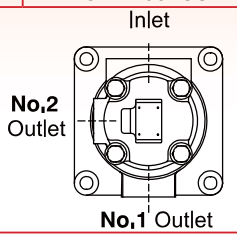
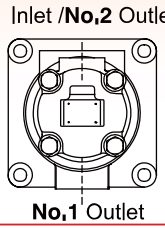
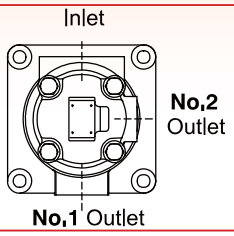
AA	AB	AC	AD
With No.1 Outlet Opposite Inlet No.2 Outlet 135˚ CCW From Inlet	With No.1 Outlet Opposite Inlet No.2 Outlet 45˚ CCW From Inlet	With No.1 Outlet Opposite Inlet No.2 Outlet 45˚ CW From Inlet	With No.1 Outlet Opposite Inlet No.2 Outlet 135˚ CW From Inlet
			

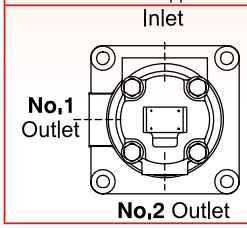
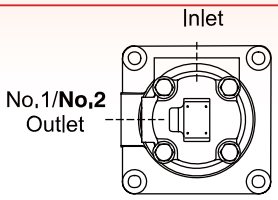
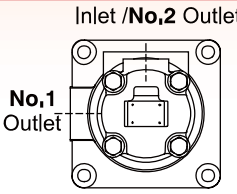
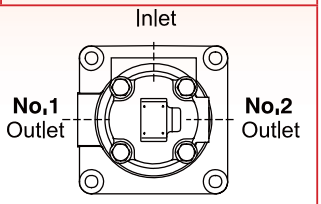
BA	BB	BC	BD
With No.1 Outlet 90˚ CCW From Inlet No.2 Outlet 135˚ CCW From Inlet	With No.1 Outlet 90˚ CCW From Inlet No.2 Outlet 45˚ CCW From Inlet	With No.1 Outlet 90˚ CCW From Inlet No.2 Outlet 45˚ CW From Inlet	With No.1 Outlet 90˚ CCW From Inlet No.2 Outlet 135˚ CW From Inlet
			

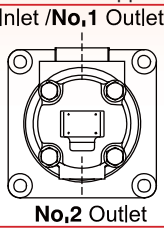
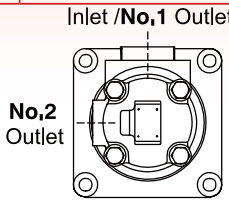
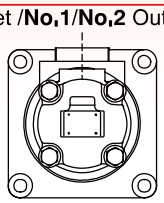
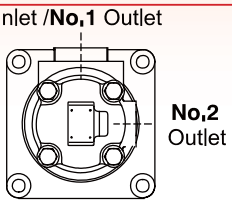
CA	CB	CC	CD
With No.1 Outlet Inline With Inlet No.2 Outlet 135˚ CCW From Inlet	With No.1 Outlet Inline With Inlet No.2 Outlet 45˚ CCW From Inlet	With No.1 Outlet Inline With Inlet No.2 Outlet 45˚ CW From Inlet	With No.1 Outlet Inline With Inlet No.2 Outlet 135˚ CW From Inlet
			

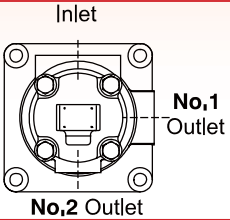
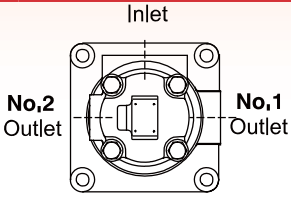
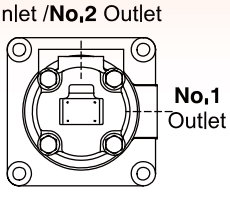
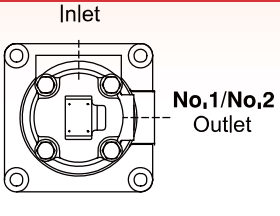
DA	DB	DC	DD
With No.1 Outlet 90˚ CW From Inlet No.2 Outlet 135˚ CCW From Inlet	With No.1 Outlet 90˚ CW From Inlet No.2 Outlet 45˚ CCW From Inlet	With No.1 Outlet 90˚ CW From Inlet No.2 Outlet 45˚ CW From Inlet	With No.1 Outlet 90˚CW From Inlet No.2 Outlet 135˚ CW From Inlet
			

※PORT ORIENTATION: VIEWED FROM COVER END OF PUMP(IVPQ43 SERIES)

AA	AB	AC	AD
With No.1 Outlet Opposite Inlet No.2 Outlet Opposite Inlet	With No.1 Outlet Opposite Inlet No.2 Outlet 90˚ CCW From Inlet	With No.1 Outlet Opposite Inlet No.2 Outlet Inline With Inlet	With No.1 Outlet Opposite Inlet No.2 Outlet 90˚ CW From Inlet
			

BA	BB	BC	BD
With No.1 Outlet 90˚ CCW From Inlet No.2 Outlet Opposite Inlet	With No.1 Outlet 90˚ CCW From Inlet No.2 Outlet 90 CCW From Inlet	With No.1 Outlet 90˚ CCW From Inlet No.2 Outlet Inline With Inlet	With No.1 Outlet 90˚ CCW From Inlet No.2 Outlet 90 CW From Inlet
			

CA	CB	CC	CD
With No.1 Outlet Inline With Inlet No.2 Outlet Opposite Inlet	With No.1 Outlet Inline With Inlet No.2 Outlet 90˚ CCW From Inlet	With No.1 Outlet Inline With Inlet No.2 Outlet Inline With Inlet	With No.1 Outlet Inline With Inlet No.2 Outlet 90˚ CW From Inlet
			

DA	DB	DC	DD
With No.1 Outlet 90˚ CW From Inlet No.2 Outlet Opposite Inlet	With No.1 Outlet 90˚ CW From Inlet No.2 Outlet 90 CCW From Inlet	With No.1 Outlet 90˚ CW From Inlet No.2 Outlet Inline With Inlet	With No.1 Outlet 90˚ CW From Inlet No.2 Outlet 90˚ CW From Inlet
			

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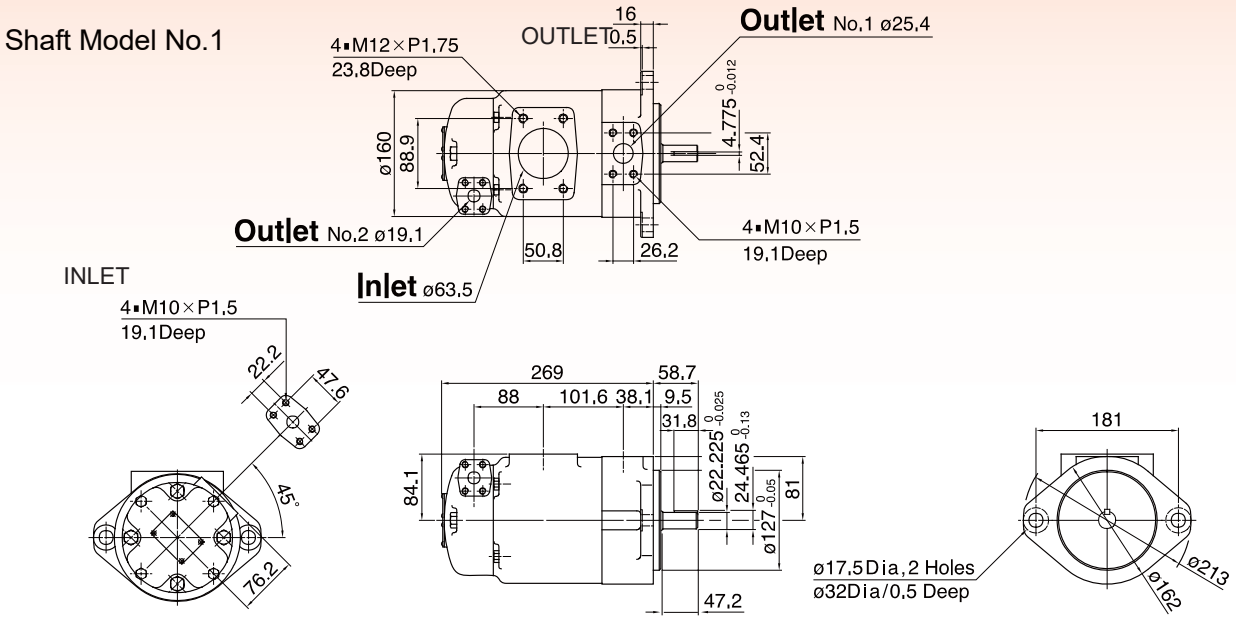
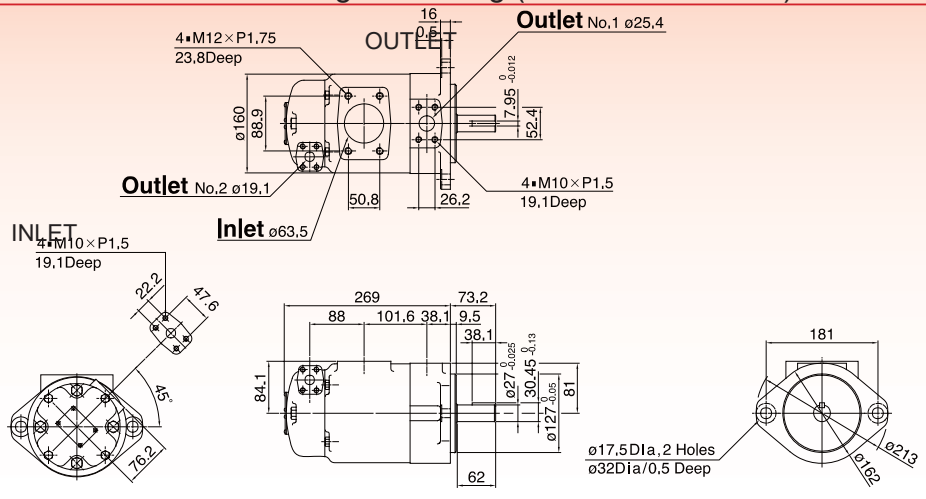
【DIMENSIONS】

IVP21 Flange Mounting (Shaft Model No.1)

Shaft Model No.1

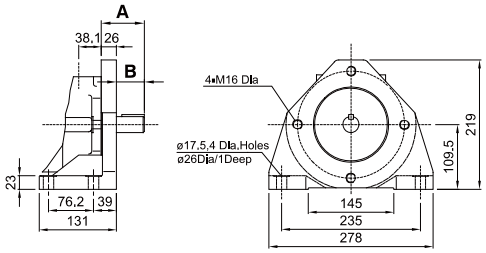


IVP21 Flange Mounting (Shaft Model No.86)



IVP21 Foot Mounting
Shaft Model No.1/No.86

IVP21 DIMENSION		
Shaft Model	A	B
No.1	58.7	32.7
No.86	73.2	47.2



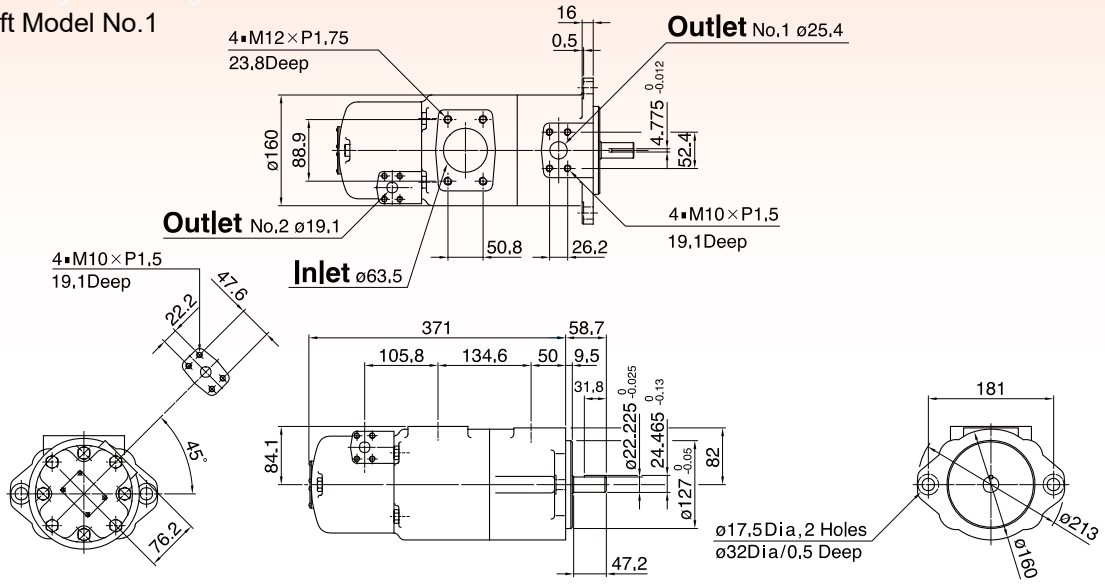
For other dimensions, refer to "Flange Mounting" type

F

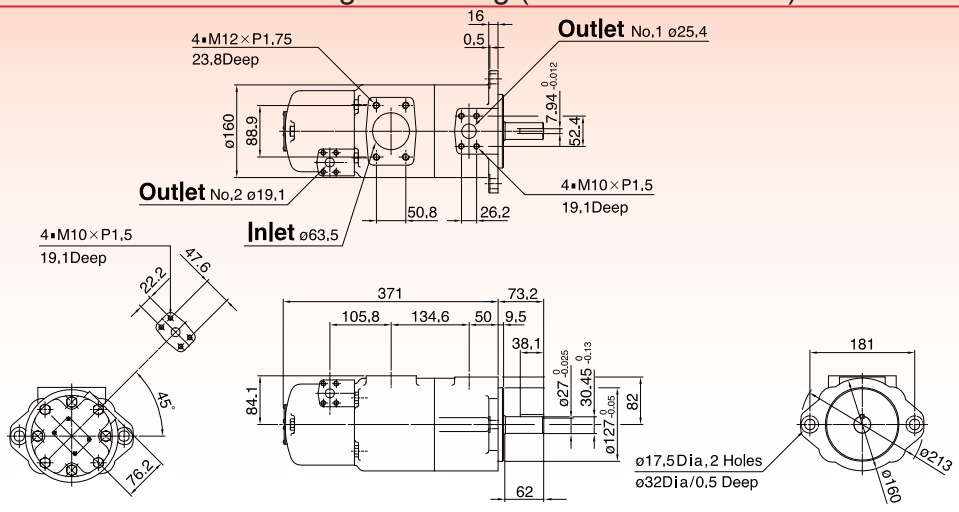
【DIMENSIONS】

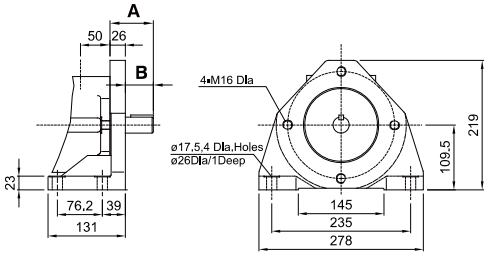
IVPQ21 Flange Mounting (Shaft Model No.1)

IVPQ21 Flange Mounting
Shaft Model No.1



IVPQ21 Flange Mounting (Shaft Model No.86)





IVPQ21 Foot Mounting
Shaft Model No.1/No.86

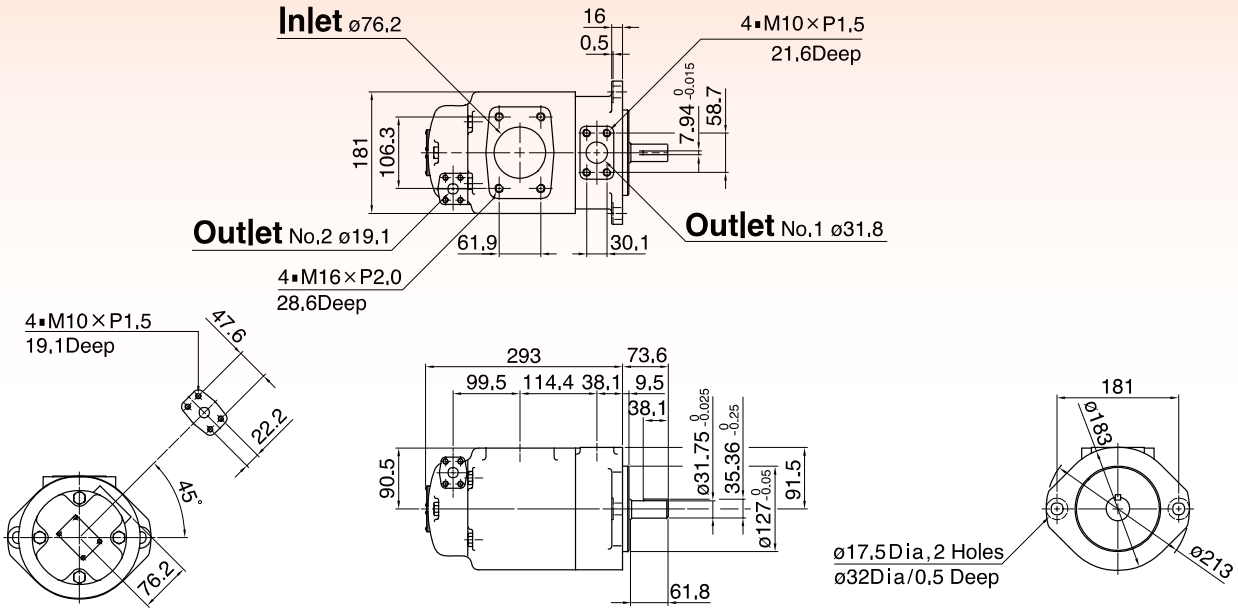
IVPQ21 DIMENSION		
Shaft Model	A	B
No.1	58.7	32.7
No.86	73.2	47.2

For other dimensions, refer to "Flange Mounting" type

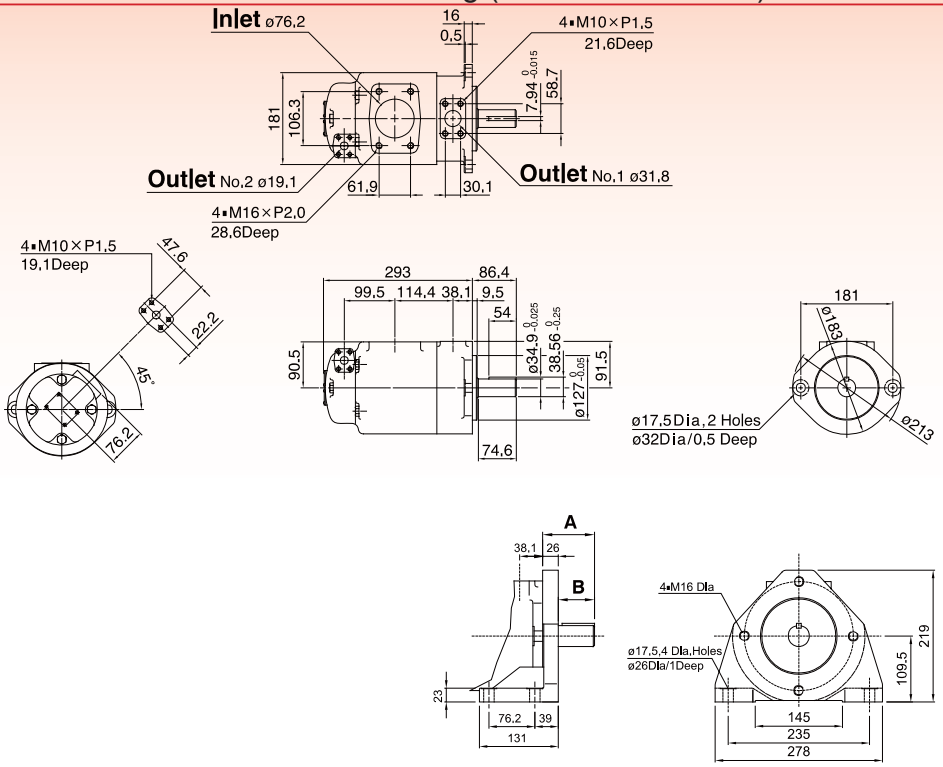
F

[DIMENSIONS]

IVP31 Flange Mounting (Shaft Model No.1)



IVP31 Foot Mounting (Shaft Model No.86)

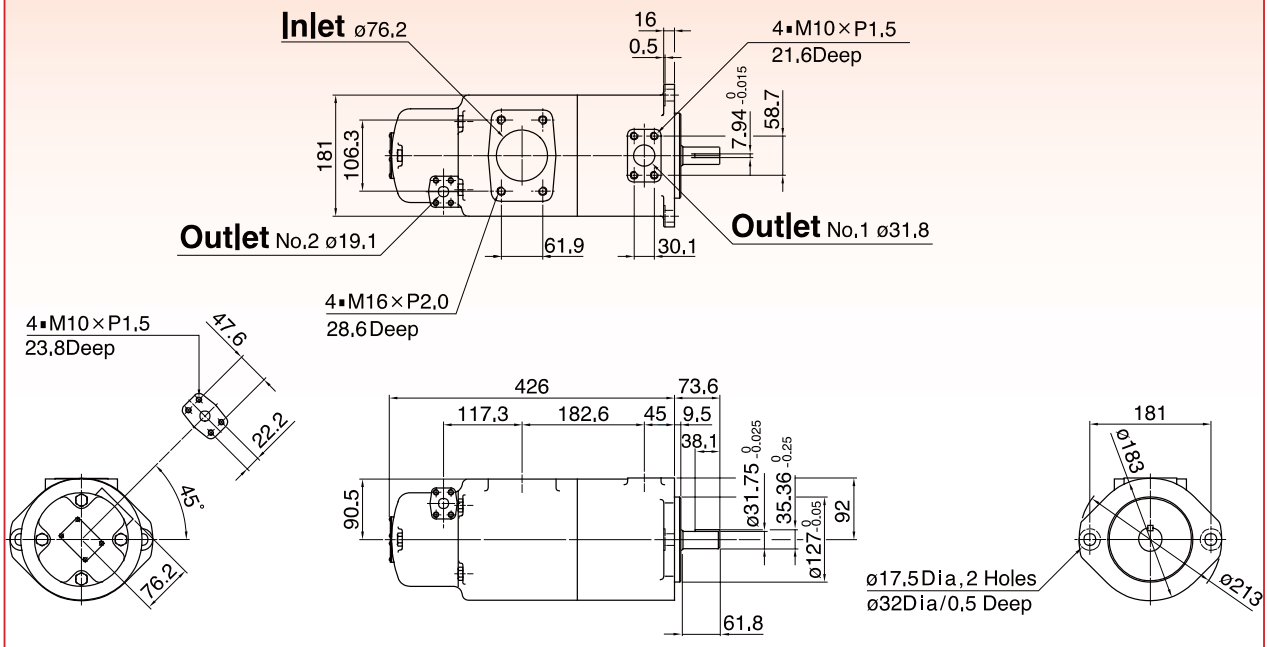


For other dimensions, refer to "Flange Mounting" type

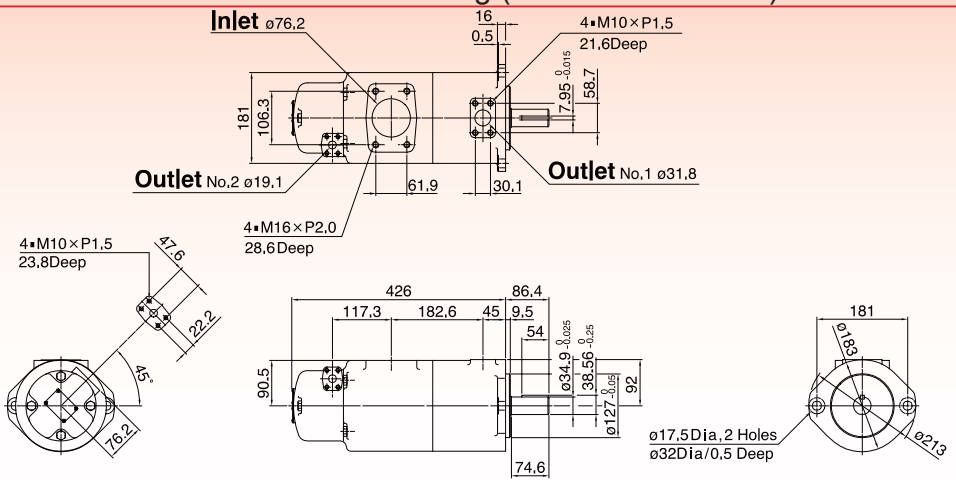
F

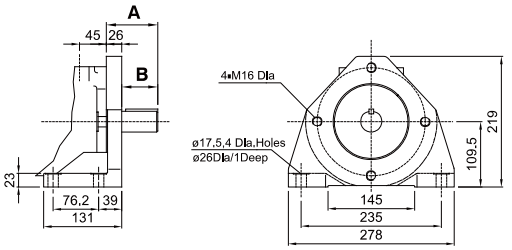
【DIMENSIONS】

IVPQ31 Flange Mounting (Shaft Model No.1)



IVPQ31 Foot Mounting (Shaft Model No.86)





IVPQ31 Foot Mounting
Shaft Model No.1/No.86

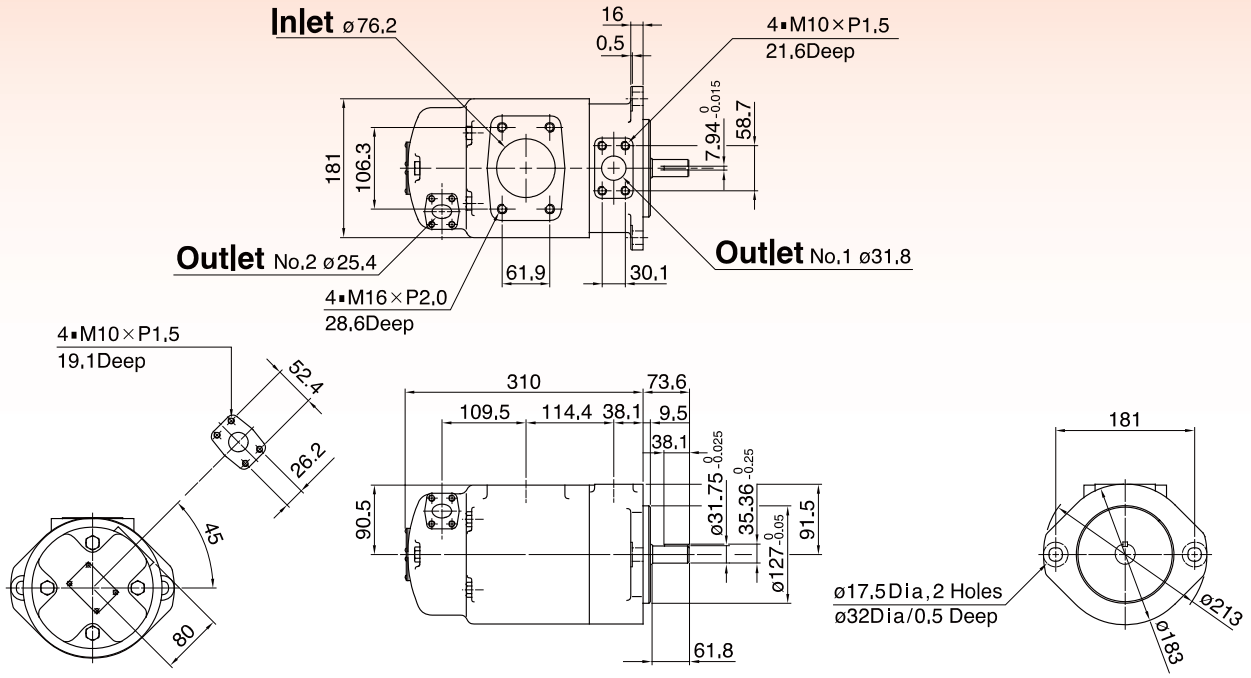
IVPQ31 DIMENSION		
Shaft Model	A	B
No.1	73.6	47.6
No.86	86.4	60.4

For other dimensions, refer to "Flange Mounting" type

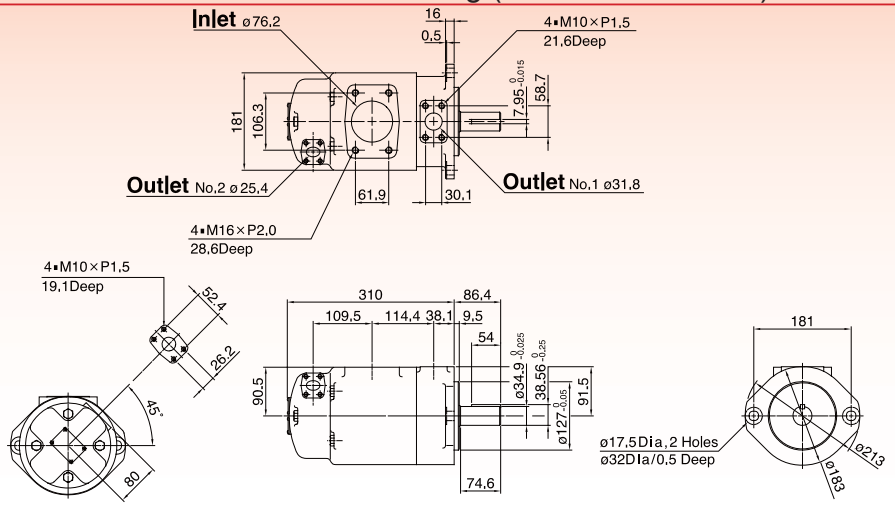
F

【DIMENSIONS】

IVP32 Flange Mounting (Shaft Model No.1)

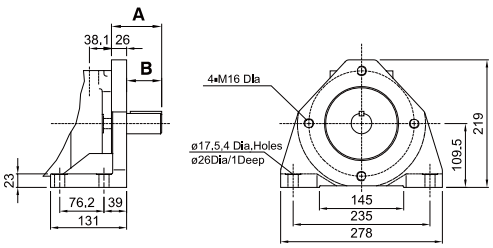


IVP32 Foot Mounting (Shaft Model No.86)



IVP32 Foot Mounting
Shaft Model No.1/No.86

IVP32 DIMENSION		
Shaft Model	A	B
No.1	73.6	47.6
No.86	86.4	60.4

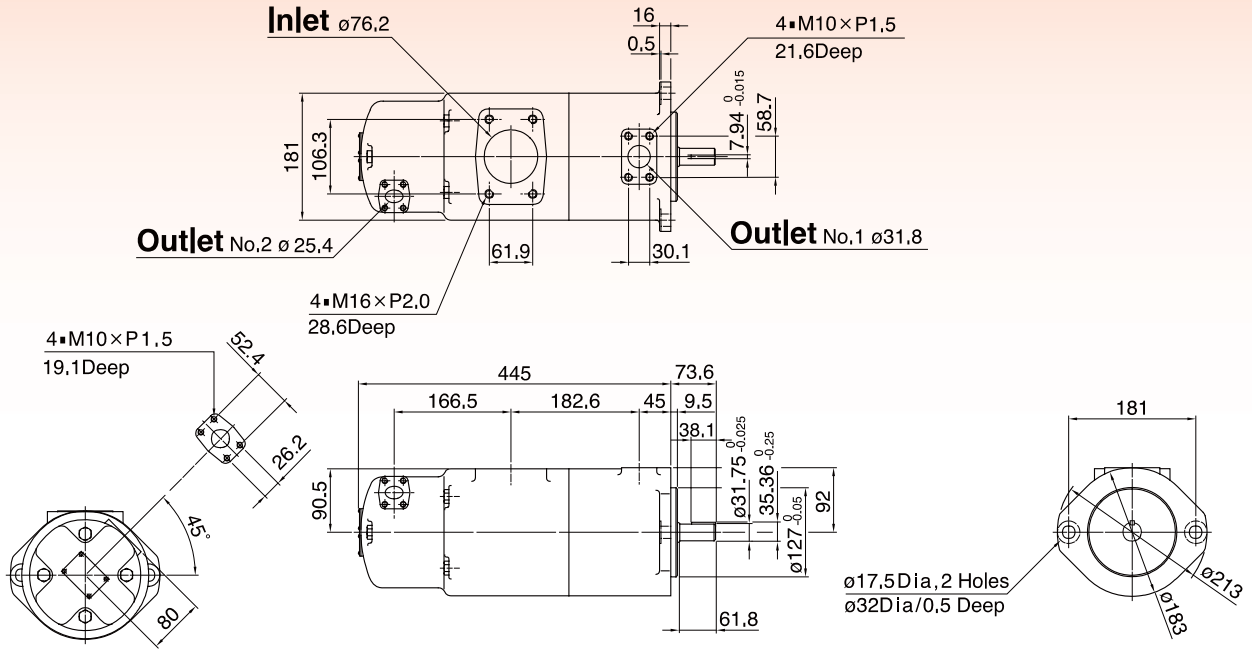


For other dimensions, refer to "Flange Mounting" type

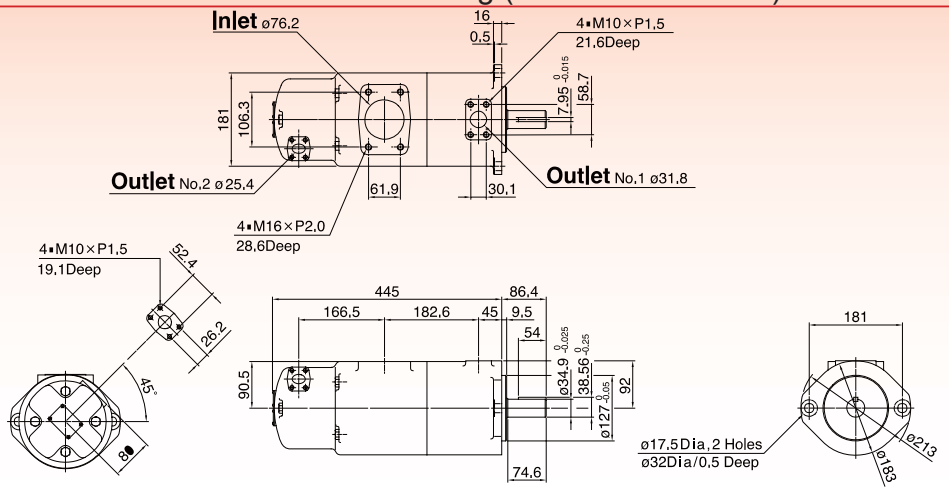
F

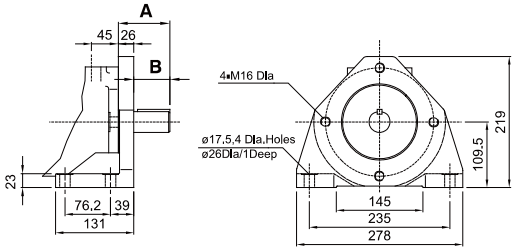
【DIMENSIONS】

IVPQ32 Flange Mounting (Shaft Model No.1)



IVPQ32 Foot Mounting (Shaft Model No.86)





IVPQ32 Foot Mounting
Shaft Model No.1/No.86

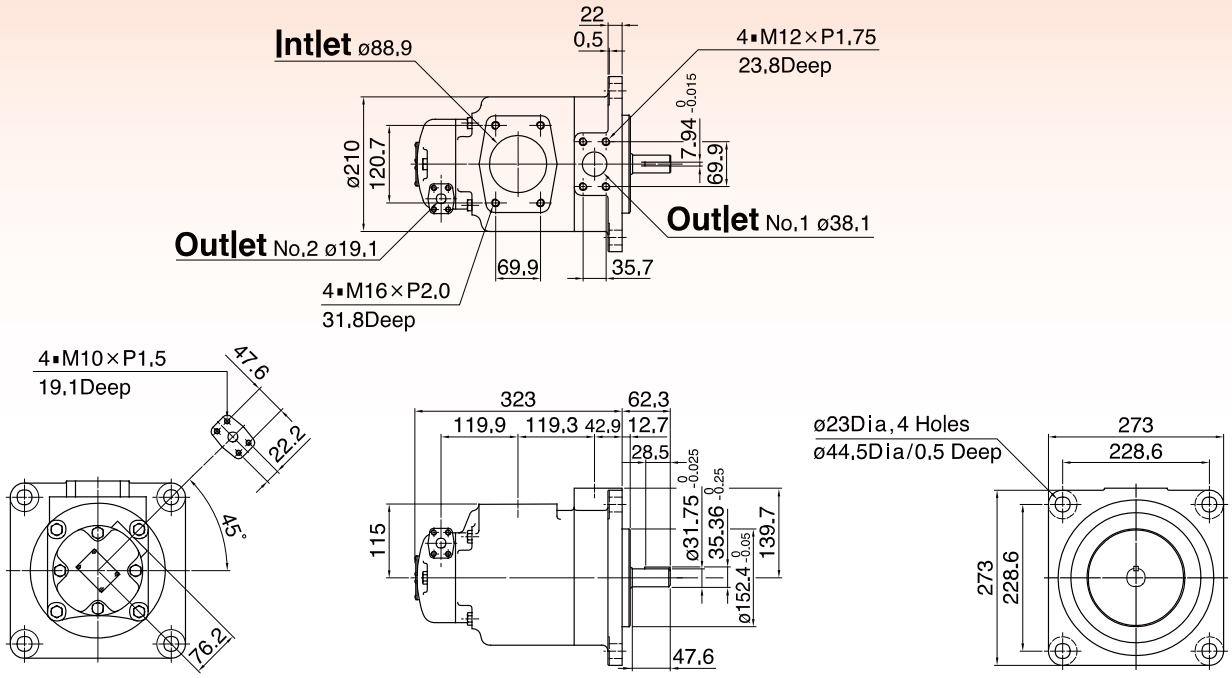
IVPQ32 DIMENSION		
Shaft Model	A	B
No.1	73.6	47.6
No.86	86.4	60.4

For other dimensions, refer to "Flange Mounting" type

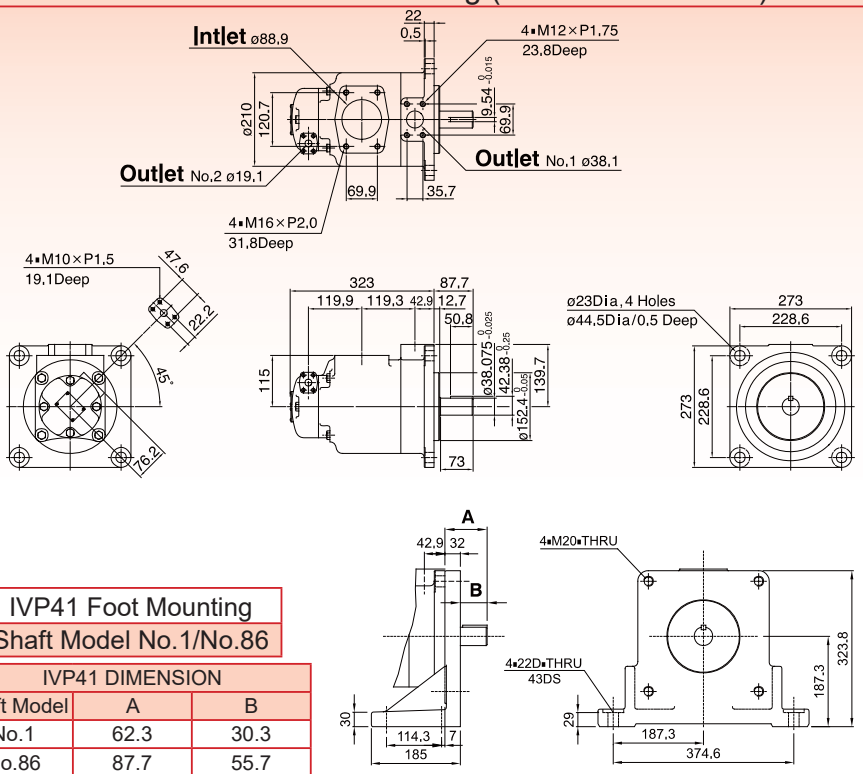
F

【DIMENSIONS】

IVP41 Flange Mounting (Shaft Model No.1)



IVP41 Foot Mounting (Shaft Model No.86)



IVP41 Foot Mounting
Shaft Model No.1/No.86

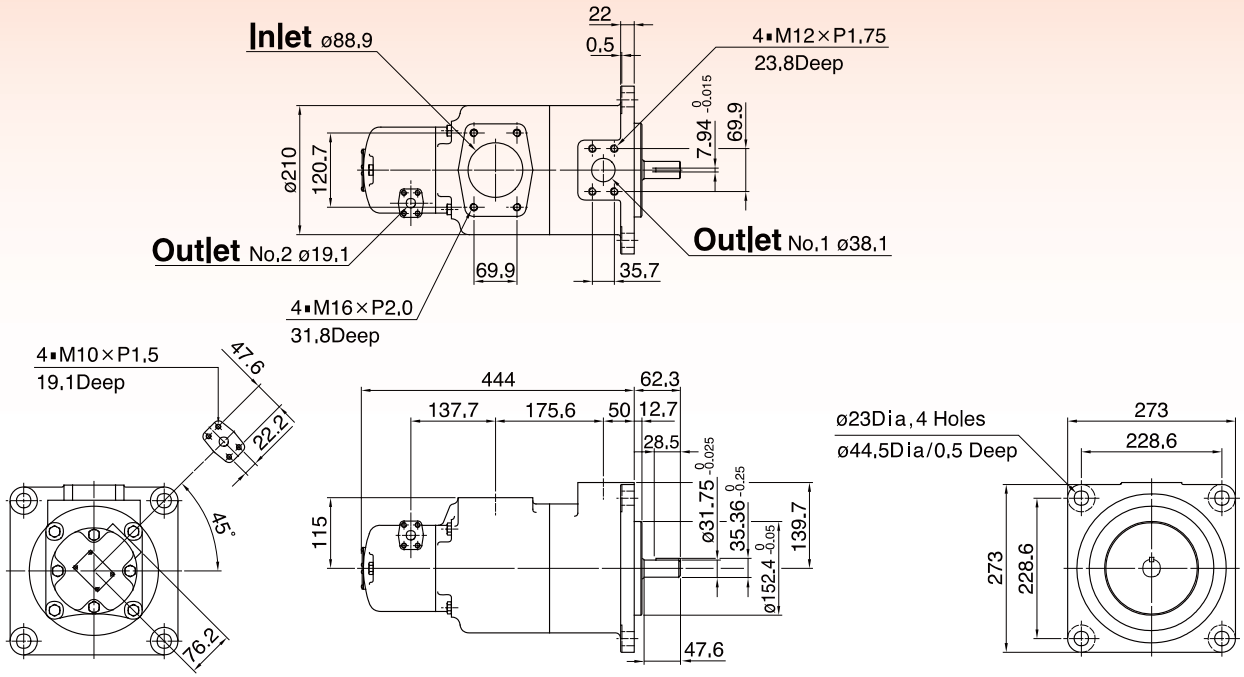
IVP41 DIMENSION		
Shaft Model	A	B
No.1	62.3	30.3
No.86	87.7	55.7

For other dimensions, refer to "Flange Mounting" type

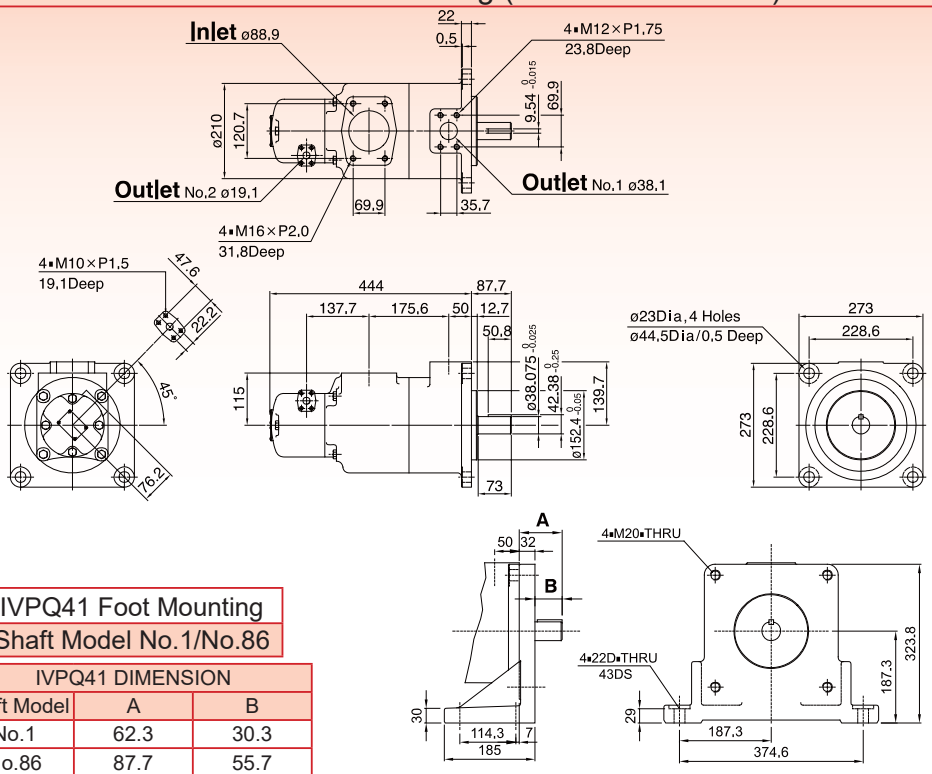
F

【DIMENSIONS】

IVPQ41 Flange Mounting (Shaft Model No.1)



IVPQ41 Foot Mounting (Shaft Model No.86)



IVPQ41 Foot Mounting
Shaft Model No.1/No.86

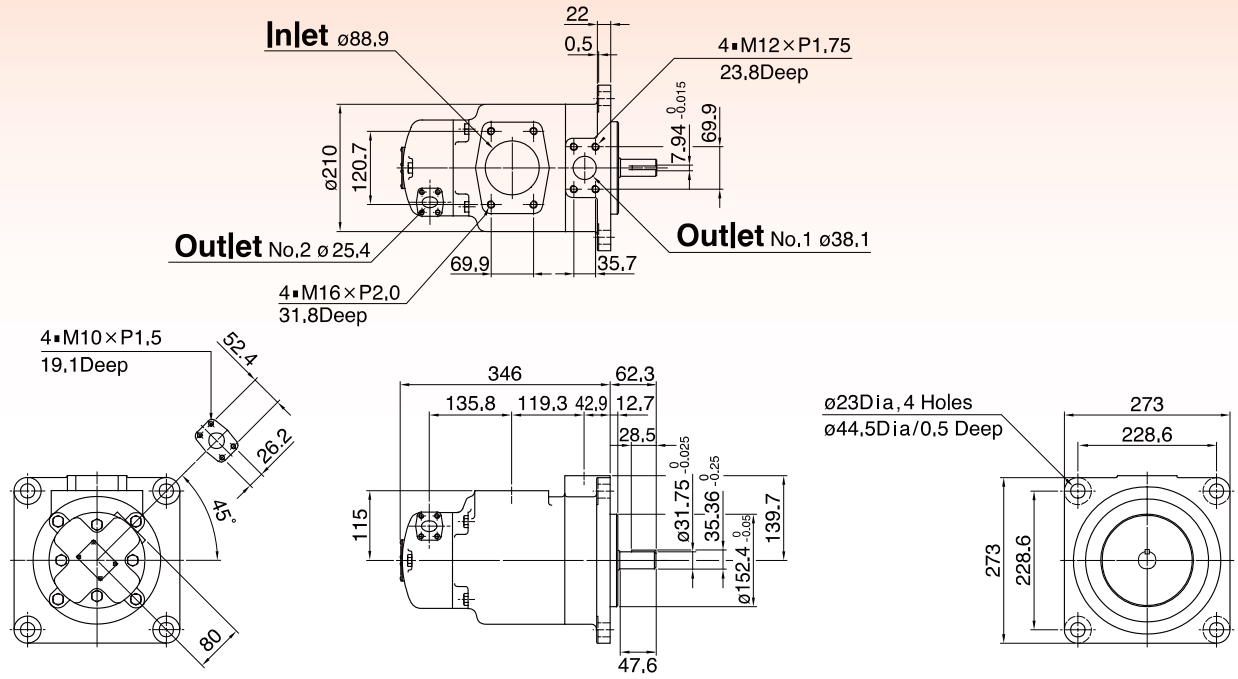
IVPQ41 DIMENSION		
Shaft Model	A	B
No.1	62.3	30.3
No.86	87.7	55.7

For other dimensions, refer to "Flange Mounting" type

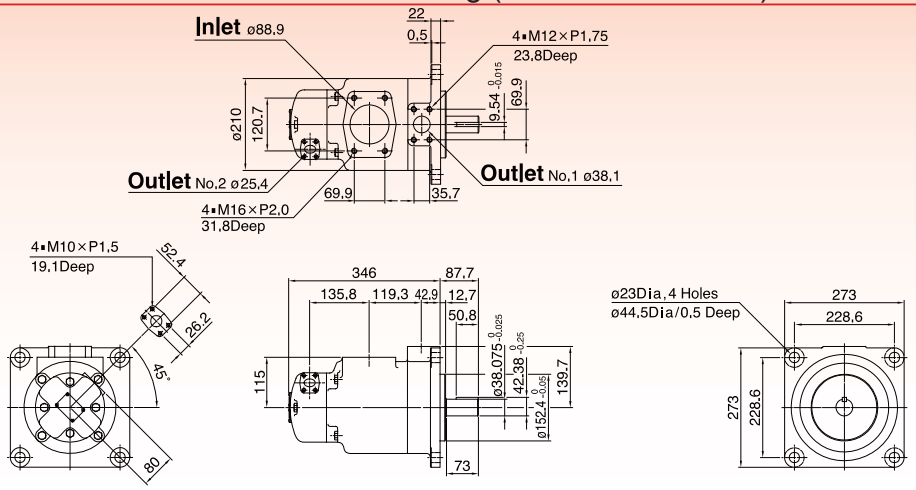
F

【DIMENSIONS】

IVP42 Flange Mounting (Shaft Model No.1)

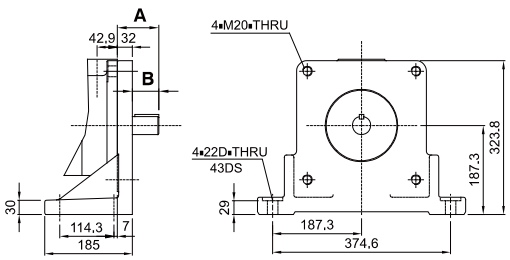


IVP42 Foot Mounting (Shaft Model No.86)



IVP42 Foot Mounting
Shaft Model No.1/No.86

IVP42 DIMENSION		
Shaft Model	A	B
No.1	62.3	30.3
No.86	87.7	55.7

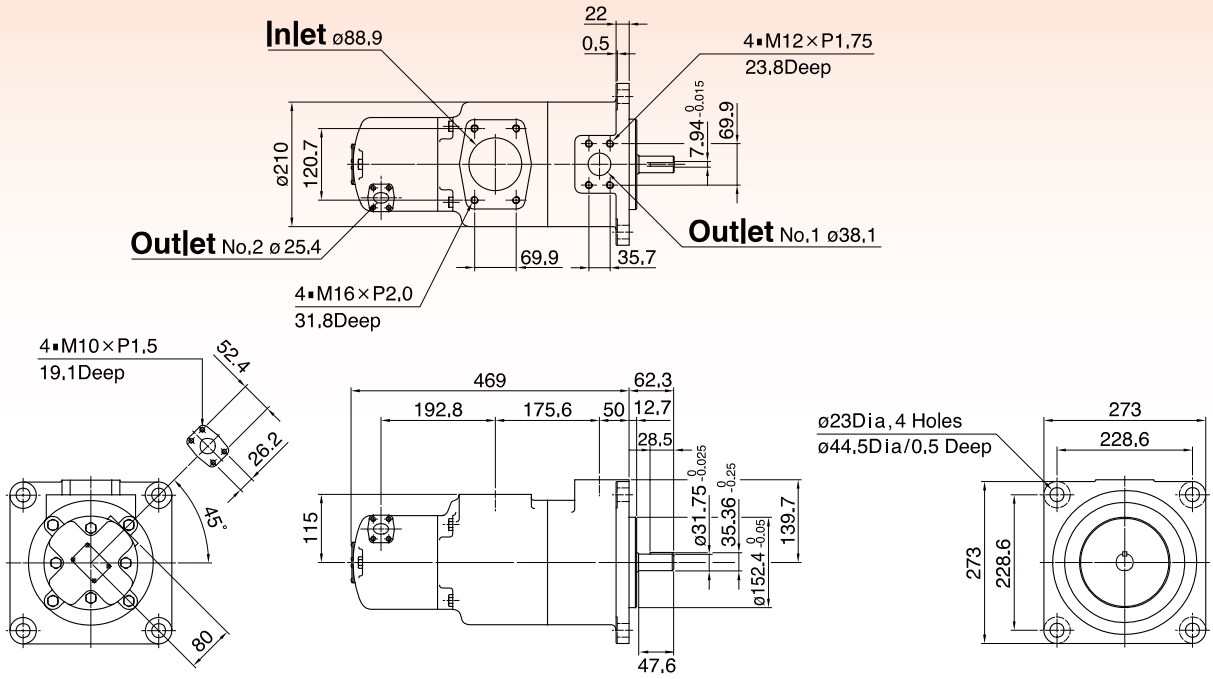


For other dimensions, refer to "Flange Mounting" type

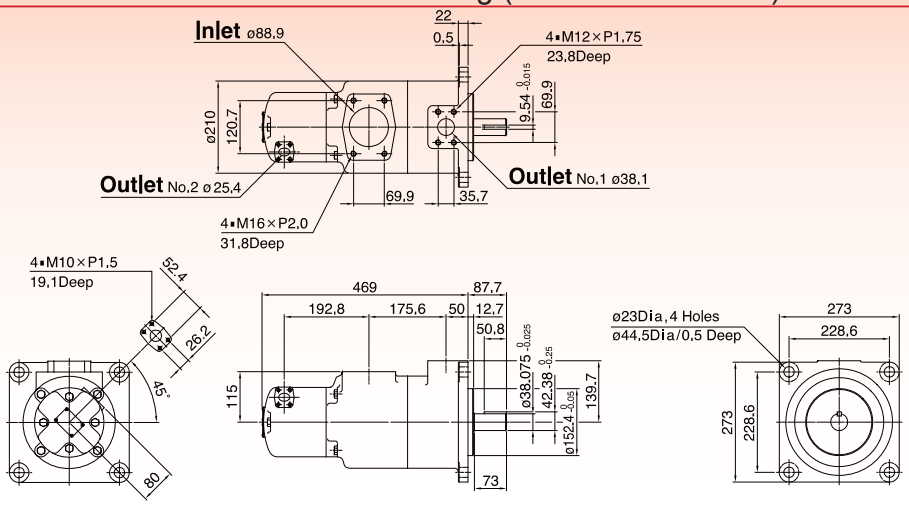
F

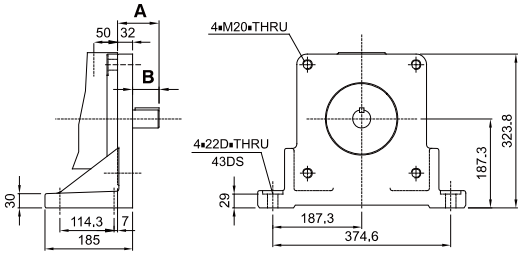
[DIMENSIONS]

IVPQ42 Flange Mounting (Shaft Model No.1)



IVPQ42 Foot Mounting (Shaft Model No.86)





IVPQ42 Foot Mounting
Shaft Model No.1/No.86

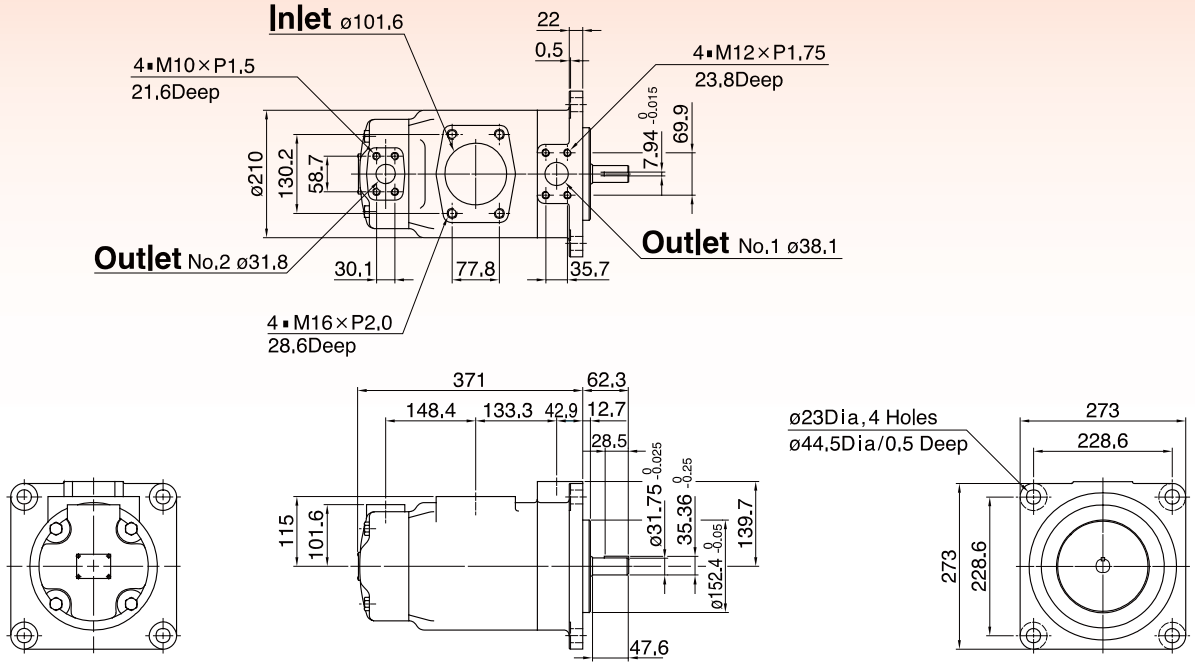
IVPQ42 DIMENSION		
Shaft Model	A	B
No.1	62.3	30.3
No.86	87.7	55.7

For other dimensions, refer to "Flange Mounting" type

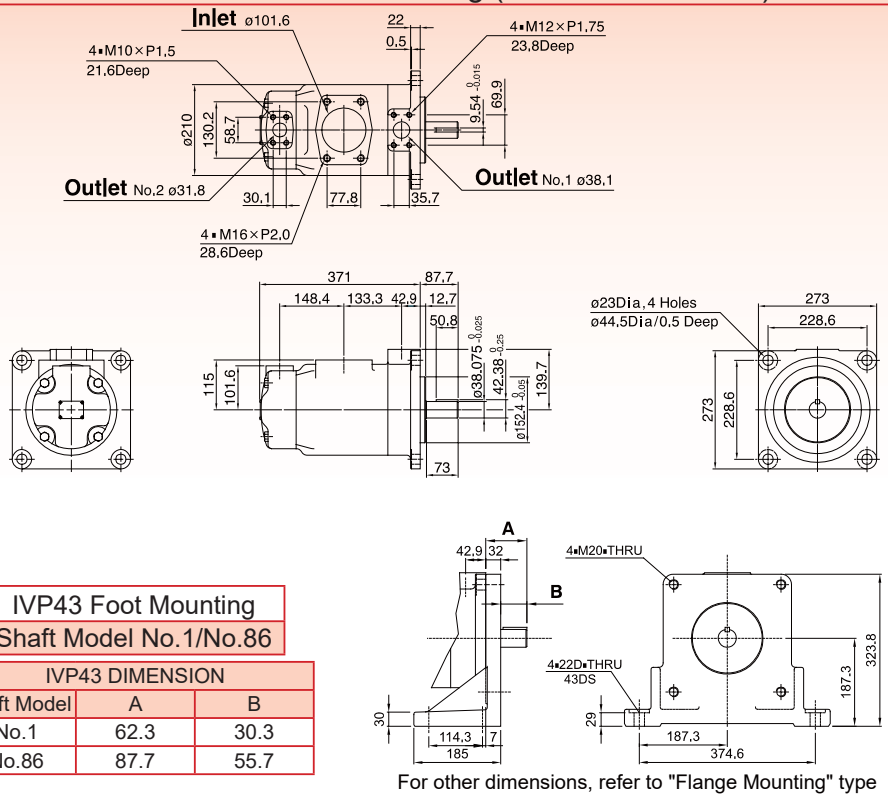
F

【DIMENSIONS】

IVP43 Flange Mounting (Shaft Model No.1)



IVP43 Foot Mounting (Shaft Model No.86)



IVP43 Foot Mounting
Shaft Model No.1/No.86

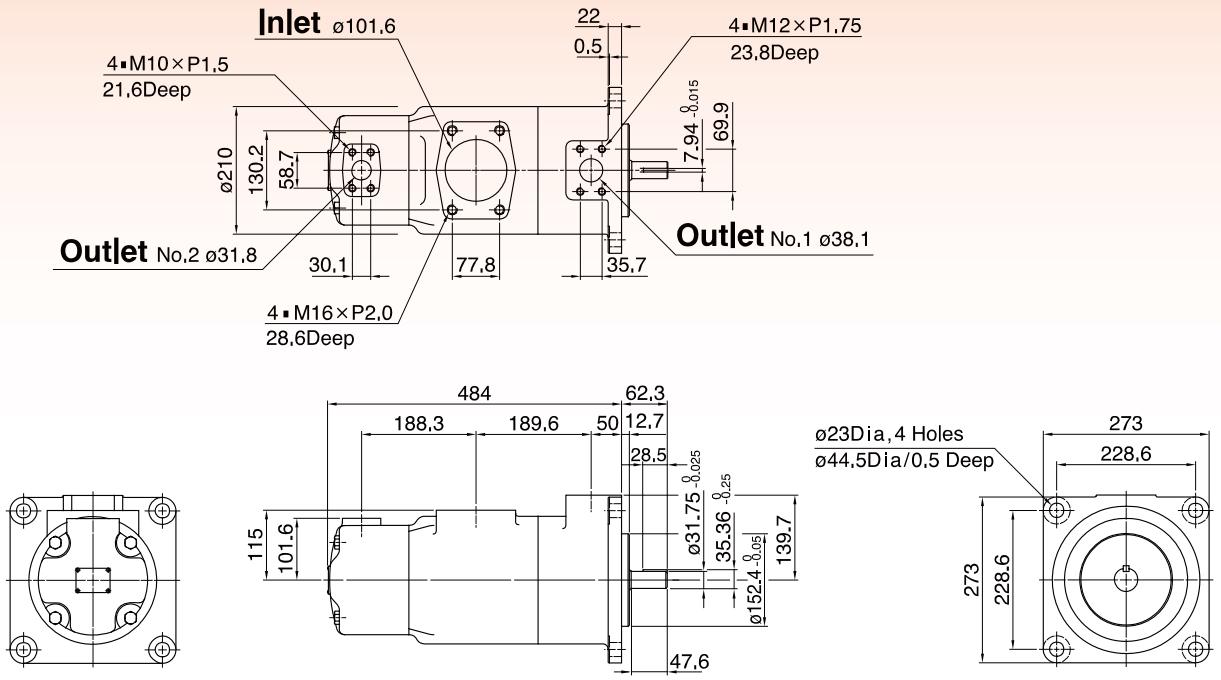
IVP43 DIMENSION		
Shaft Model	A	B
No.1	62.3	30.3
No.86	87.7	55.7

For other dimensions, refer to "Flange Mounting" type

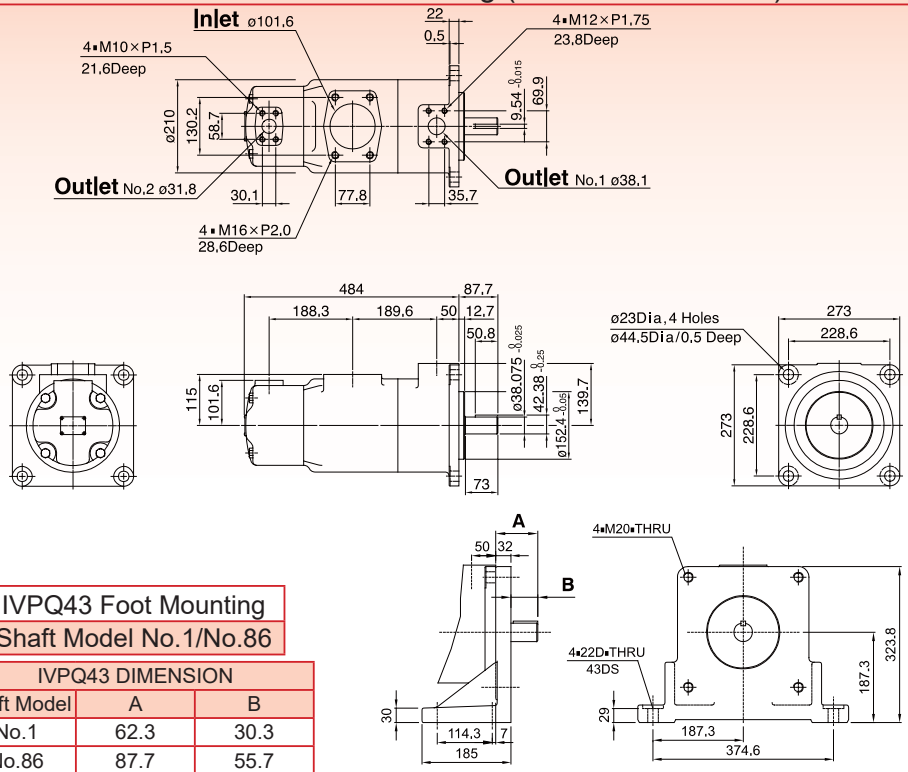
F

【DIMENSIONS】

IVPQ43 Flange Mounting (Shaft Model No.1)



IVPQ43 Foot Mounting (Shaft Model No.86)



IVPQ43 Foot Mounting
Shaft Model No.1/No.86

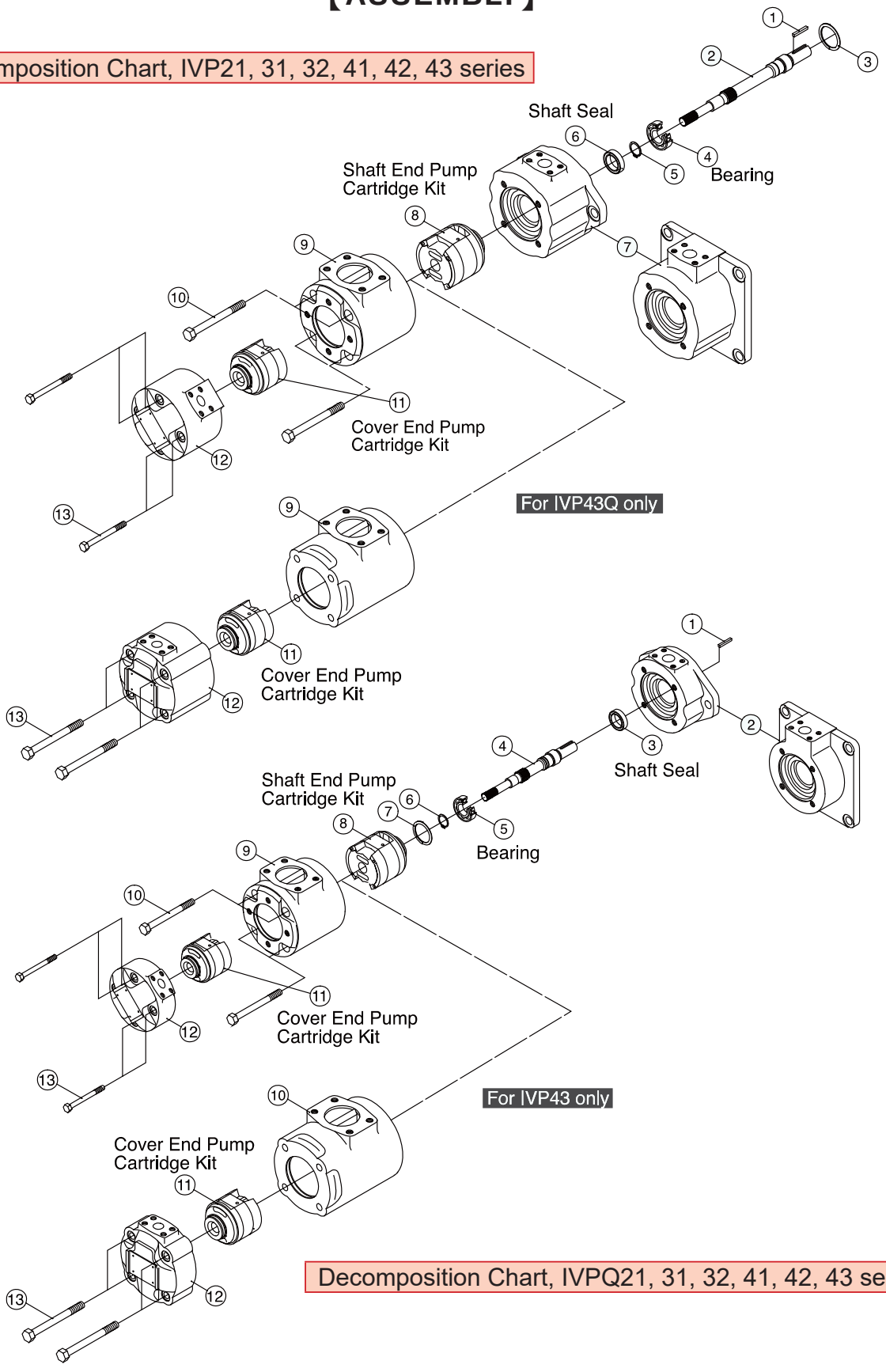
IVPQ43 DIMENSION		
Shaft Model	A	B
No.1	62.3	30.3
No.86	87.7	55.7

For other dimensions, refer to "Flange Mounting" type

F

【ASSEMBLY】

Decomposition Chart, IVP21, 31, 32, 41, 42, 43 series



Decomposition Chart, IVPQ21, 31, 32, 41, 42, 43 series

※IVP(Q) DOUBLE PUMPS- SHAFT SEAL & BEARING

Frame size	Shaft Seal	Bearing
IVP21	TBY 29.36x42.82x7.9	6205
IVP31	TBY 36.5x50.8x7.9	6306
IVP32	TBY 36.5x50.8x7.9	6306
IVP41	TBY 41.28x60.32x9.5	6307
IVP42	TBY 41.28x60.32x9.5	6307
IVP43	TBY 41.28x60.32x9.5	6307
IVPQ21	TBY 24.59x44.5x7.9	6205zz
IVPQ31	TBY 29.36x42.82x7.9	6306zz
IVPQ32	TBY 29.36x42.82x7.9	6306zz
IVPQ41	TBY 34.93x57.15x7.9	6307zz
IVPQ42	TBY 34.93x57.15x7.9	6307zz
IVPQ43	TBY 34.93x57.15x7.9	6307zz

F

※IVP(Q) DOUBLE PUMPS-PERFORMANCE CHARACTERISTICS

Frame size	Performance Characteristics	
	Shaft end pump (No.1 outlet)	Cover end pump (No.2 outlet)
IVP(Q)21	Data same as IVP(Q)2 Series	Data same as IVP(Q)1 Series
IVP(Q)31	Data same as IVP(Q)3 Series	
IVP(Q)41	Data same as IVP(Q)4 Series	
IVP(Q)32	Data same as IVP(Q)3 Series	Data same as IVP(Q)2 Series
IVP(Q)42	Data same as IVP(Q)4 Series	
IVP(Q)43	Data same as IVP(Q)4 Series	Data same as IVP(Q)3 Series

※IVP(Q) DOUBLE PUMPS- CARTRIDGE KIT MODEL CODE

(F)	CK-♦IVP(Q)21	(17)S	(12)C	R	10
Prefix,fluid compatibility	Cartridge Kit Model	Geometric displacement Cartridge Kit ●Code	Geometric displacement Cartridge Kit ●Code	Rotation	Design
Omit- Using antiwear oil or phosphate ester fluid. F11- Using water glycol fluid. F3- Using water-in-oil emulsions.	CK-IVP(Q)21	10, 12, 14, 15, 17, 19, 21, 25	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14,	Viewed from shaft end of pump R- Right hand for clockwise L- Left hand for counterclockwise	10
	CK-IVP(Q)31	17, 21, 25, 30, 32, 35, 38, 42	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14,		10
	CK-IVP(Q)32	17, 21, 25, 30, 32, 35, 38, 42	10, 12, 14, 15, 17, 19, 21, 25		10
	CK-IVP(Q)41	30, 35, 38, 42, 50, 60, 67, 75	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14,		10
	CK-IVP(Q)42	30, 35, 38, 42, 50, 60, 67, 75	10, 12, 14, 15, 17, 19, 21, 25		10
	CK-IVP(Q)43	30, 35, 38, 42, 50, 60, 67, 75	17, 21, 25, 30, 32, 35, 38, 42		10

●Rated capacity in USgpm at 1200 r/min and 6.9bar.

►Is the model for frame size

Example : 1. CK-IVP21-10S-R-10, Ordering code for shaft end pump cartridge kit.
2. CK-IVP21-10C-R-10, Ordering code for cover end pump cartridge kit.

※CARTRIDGE KIT WEIGHT

Cartridge Kit Model	shaft end pump Cartridge Kit Weight (Kg)	cover end pump Cartridge Kit Weight (Kg)
CK-IVP(Q)21	3.8	2.5
CK-IVP(Q)31	3.8	2.5
CK-IVP(Q)32	6.5	3.8
CK-IVP(Q)41	10.2	2.5
CK-IVP(Q)42	10.2	3.8
CK-IVP(Q)43	10.2	6.5

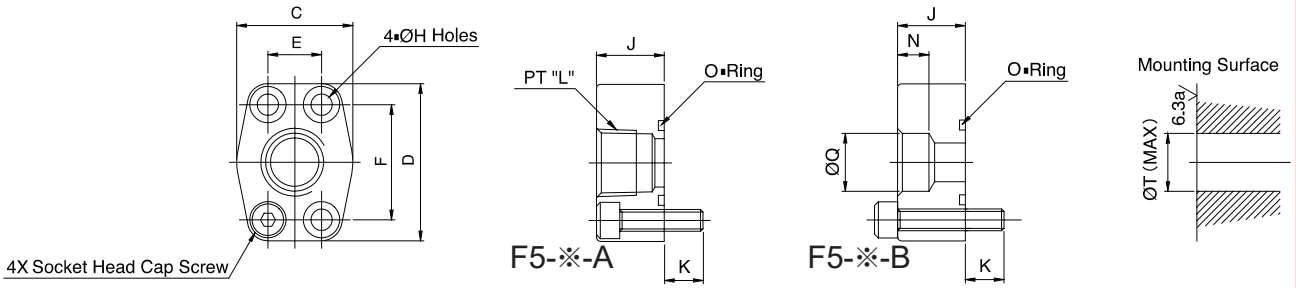
※MAX. INPUT TORQUE

Frame size	(Max. input torque) Nm (kgf-m)
IVP(Q)21	320(32)
IVP(Q)31	610(61)
IVP(Q)32	610(61)
IVP(Q)41	820(82)
IVP(Q)42	820(82)
IVP(Q)43	820(82)

F

※IVP(Q) F5 SERIES PIPE FLANGE KITS:

These flange mounting surface mesurements are based upon: SAE 4 Bolt Sprit Flanges.



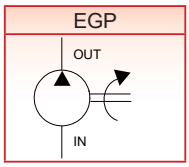
Model	Piping size	Dimensions(m.m.)											O-Ring	Socket Head Cap Screw	Max. Operating Pressure bar	Mass Kg	Tightening Torque	
		C	D	E	F	H	J	K	L	N	Q	T					Recommendation	Tolerance
F5-04-A	1/2	40	54	17.5	38.1	8.8	28	15	1/2	---	---	13	P22	M8x35	268	0.5	35Nm (3.6kgf)	±10%
F5-04-B								12	---	11	22.2			M8x40				
F5-06-A	3/4	48	65	22.2	47.6	11	28	17	3/4	---	---	19	G30	M10x35	268	0.7	68.5Nm (7.0kgf)	
F5-06-B									---	12	27.7			M10x45				
F5-08-A	1	55	70	26.2	52.4	11	28	17	1	---	---	26	G35	M10x35	268	0.9		
F5-08-B									---	14	34.5			M10x45				
F5-10-A	1 1/4	64	80	30.2	58.7	11	30	18	1 1/4	---	---	32	G40	M10x35	268	1.2	118Nm (12kgf)	
F5-10-B								20	---	16	43.2			M10x45				
F5-12-A	1 1/2	72	94	35.7	69.9	13.5	30	18	1 1/2	---	---	38	G50	M12x40	214	1.5		
F5-12-B								20	---	18	49.1			M12x50				
F5-16-A	2	85	102	42.9	77.8	13.5	30	18	2	---	---	51	G65	M12x40	179	1.7		
F5-16-B								20	---	20	61.1			M12x50				
F5-20-A	2 1/2	102	114	50.8	88.9	13.5	38	19	2 1/2	---	---	63	G75	M12x45	179	2.0		
F5-20-B								17	---	22	77.1			M12x55				
F5-24-A	3	116	135	61.9	106.4	17.5	53	17	3	---	---	76	G85	M16x70	35.7	2.7	287Nm (29.2kgf)	
F5-24-B							38		---	25	90.0			M16x55				
F5-28-A	3 1/2	134	153	69.9	120.7	17.5	53	17	3 1/2	---	---	88	G100	M16x70	35.7	3.4		
F5-28-B							38		---	28	102.8			M16x55				
F5-32-A	4	150	162	77.8	130.2	17.5	53	17	4	---	---	101	G115	M16x70	35.7	3.7		
F5-32-B							38		---	28	115.5			M16x55				

※MODEL NUMBER DESIGNATION(DOUBLE PUMP)

F	F5	06	A	10
Type of Hydraulic Fliuds F : For use with phosphate Ester Fliuds	Series No.	Flange Size	Type of Connection A : Threaded Connection B : For Pipe Soket Welding	Design Number

【EGP-05A】

※GRAPHIC SYMBOL



Gear pumps are made from high strength aluminum alloy body, highprecision gear, Float bushigng and DU bearing to provide simple structure, lightweight, high efficiency and low noise. It's used in the hydarulic system of truck, Construetion machinery, lifter and transport machinery, mine machinery and agriculture machinery.

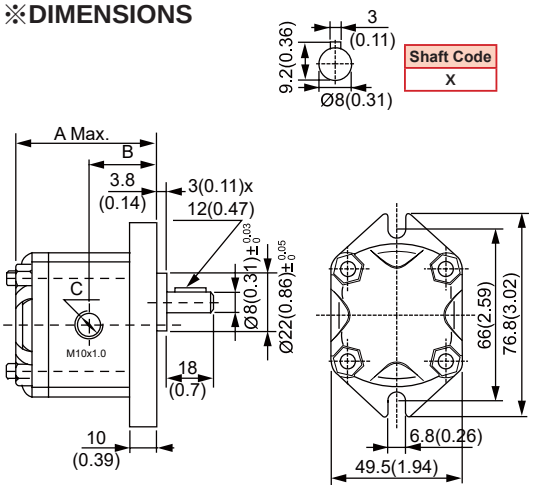
※MODEL NUMBER DESIGNATION

EGP-	05A-	F-	08-	R-	X-	10
Series No.	Series No. (c.c./rev) 05A: 0.35~1.13	Mounting F: Flange Type L: Foot Type	Displacement (c.c./rev) 03, 05, 08, 11	Rotation (View from Shaft End) R: Clockwise L: Counter-Clockwise	Shaft Type X: Straight Shaft	Design No.

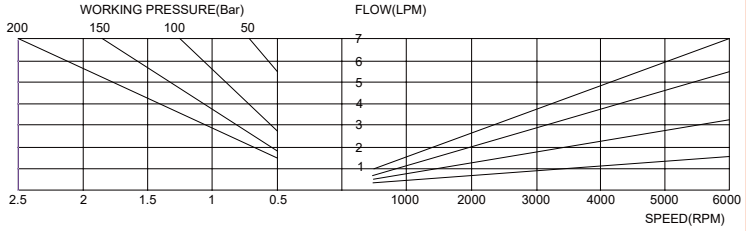
※SPECIFICATION

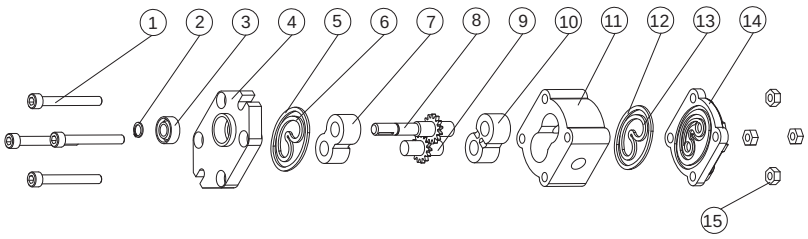
Model	Displacement (c.c/rev)	Pressure MPa(PSI)		Speed (RPM)			Port Size (Rc/PT/BSPT)		A (m.m./Inch)	B (m.m./Inch)	Weight (kg)
		Rated	Max.	Rated	Max.	Min.	Inlet	Outlet			
EGP-05A-*-03	0.35	210(3000)	250(3500)	1800	3500	800	1/8"	1/8"	52(2.04)	25(0.98)	0.40
EGP-05A-*-05	0.56						1/8"	1/8"	54(2.12)	26(1.02)	0.42
EGP-05A-*-08	0.85						1/4"	1/4"	56(2.20)	27(1.06)	0.43
EGP-05A-*-11	1.13						1/4"	1/4"	58(2.28)	28(1.10)	0.44

※DIMENSIONS



※PERFORMANCE CURVE





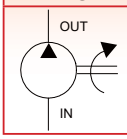
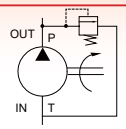
Item No.	Description	Q'ty
1	Bolts	4
2	Retaining Ring	1
3	Shaft Seal	1
4	Front Cover	1
5	O-Ring	1
6	Bush Lobe Seal	1
7	Bearing	1
8	Driving Gear	1
9	Driving Gear	1
10	Bearing	1
11	Housing	1
12	O-Ring	1
13	Bush Lobe Seal	1
14	Rear Cover	1
15	Nut	4

F

【EGP-1A, PR2】

F

※GRAPHIC SYMBOL

EGP	PR2
	

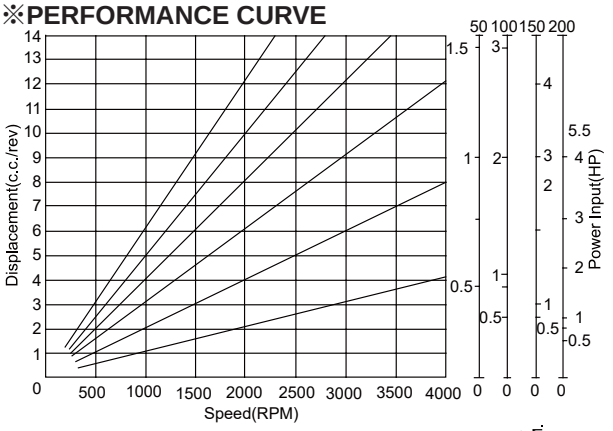
※MODEL NUMBER DESIGNATION

EGP-	1A-	F-	08-	R-	X-	2B-	10
Series No. **EGP**: Gear Pump only **PR2**: Gear Pump with Relief Valve	Series No. (c.c./rev) 1A: 0.5~7.8	Mounting F: Flange Type L: Foot Type	Displacement (c.c./rev) 05, 08, 1, 2, 2.6, 3, 4, 5, 6, 8	Rotation (View from Shaft End) R: Clockwise L: Counter-Clockwise	Shaft Type X: Straight Shaft Y: Spline Shaft	Flange Mounting Type 2B: SAE 2-Bolt 4BD: DIN 4-Bolt 4BE: European 4-Bolt	Design No.

※SPECIFICATION

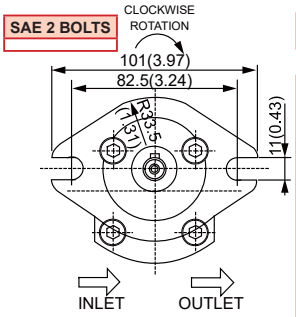
Model	Displacement (c.c/rev)	Pressure MPa(PSI)		Speed (RPM)			Weight (kg)
		Rated	Max.	Rated	Max.	Min.	
EGP-1A-F-05*	0.5	210 (3000)	250 (3500)	1800	4500	1000	1.0
EGP-1A-F-08*	0.8					600	1.05
EGP-1A-F-1*	1.0					1000	1.0
EGP-1A-F-2*	2.0					600	1.05
EGP-1A-F-2.6*	2.6					600	1.15
EGP-1A-F-3*	3.0					600	1.15
EGP-1A-F-4*	4.0				4000	600	1.18
EGP-1A-F-5*	5.0				3200	600	1.2
EGP-1A-F-6*	6.0				3200	600	1.3
EGP-1A-F-8*	7.8				3200	600	1.4

※PERFORMANCE CURVE

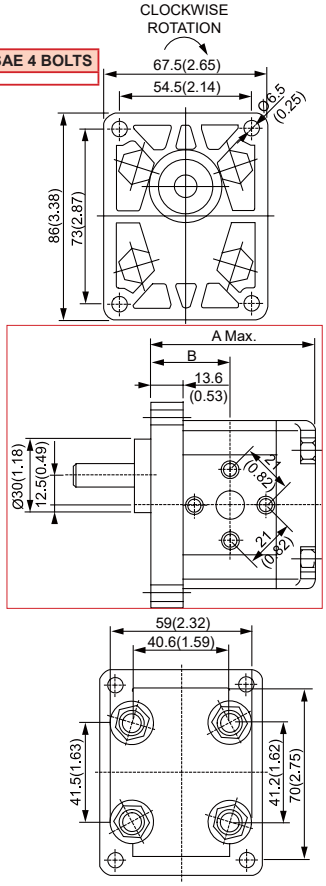


※DIMENSIONS

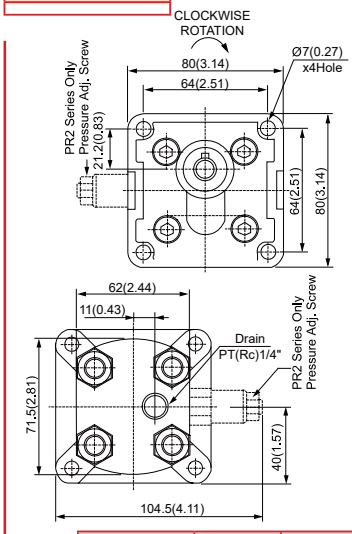
SAE 2 BOLTS

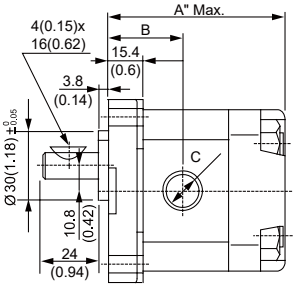


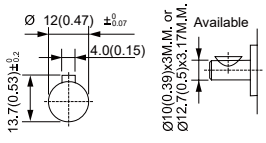
SAE 4 BOLTS



EUROPEAN 4 BOLTS





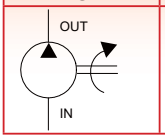
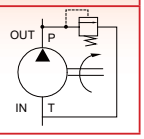


Std. Shaft Code	Shaft Code	Shaft Code
X1, Ø12	X2, Ø10	X3, Ø12.7

Model	A m.m.(Inch)	B m.m.(Inch)	C PT(Rc)	D PT(Rc)	A" m.m.(Inch)
EGP-1A-F-08*	67.5(2.65)	32.5(1.28)	3/8"	3/8"	75.5(2.96)
EGP-1A-F-1*	69.5(2.73)	33.5(1.32)	3/8"	3/8"	77.5(3.04)
EGP-1A-F-2*	72(2.83)	34.8(1.37)	3/8"	3/8"	80.1(3.15)
EGP-1A-F-3*	77.5(3.04)	37.5(1.47)	3/8"	3/8"	85.5(3.36)
EGP-1A-F-4*	79.5(3.12)	38.5(1.51)	3/8"	3/8"	87.5(3.44)
EGP-1A-F-5*	83.5(3.28)	40.5(1.59)	3/8"	3/8"	91.5(3.59)
EGP-1A-F-6*	87.5(3.44)	42.5(1.67)	3/8"	3/8"	95.5(3.75)
EGP-1A-F-8*	93.5(3.67)	45.5(1.79)	1/2"	3/8"	101.5(3.99)

【EGP-2A, PR1】

※GRAPHIC SYMBOL

EGP	PR1
	

Gear pumps are made from high strength aluminum alloy body, highprecision gear, Float bushigng and DU bearing to provide simple structure, lightweight, high efficiency and low noise. It's used in the hydarulic system of truck, Construetion machinery, lifter and transport machinery, mine machinery and agriculture machinery.

※MODEL NUMBER DESIGNATION

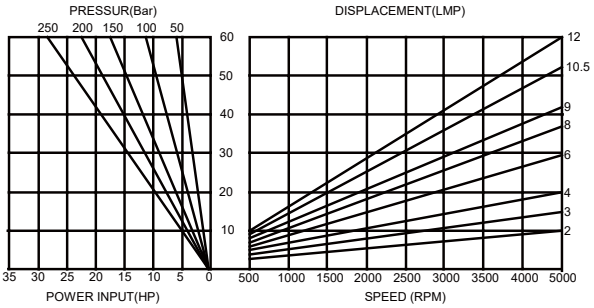
EGP-	2A-	F-	8-	(8-)	R-	X-	4BJ-	10
Series No. **EGP**: Gear Pump only **PR1**: Gear Pump with Relief Valve	Series No. 2~12 (c.c./rev) 2A: Single Pump 22A: Double Pump	Mounting F: Flange Type L: Foot Type	Displacement (c.c./rev) 2, 2.5, 3, 4, 5, 6, 8, 9, 11, 12	Displacement (c.c./rev) 2, 2.5, 3, 4, 5, 6, 8, 9, 11, 12	Rotation (View from Shaft End) R: Clockwise L: Counter-Clockwise	Shaft Type X: Straight Shaft Y: Spline Shaft	Flange Mounting Type 4BJ: JIS 4-Bolt	Design No.

F

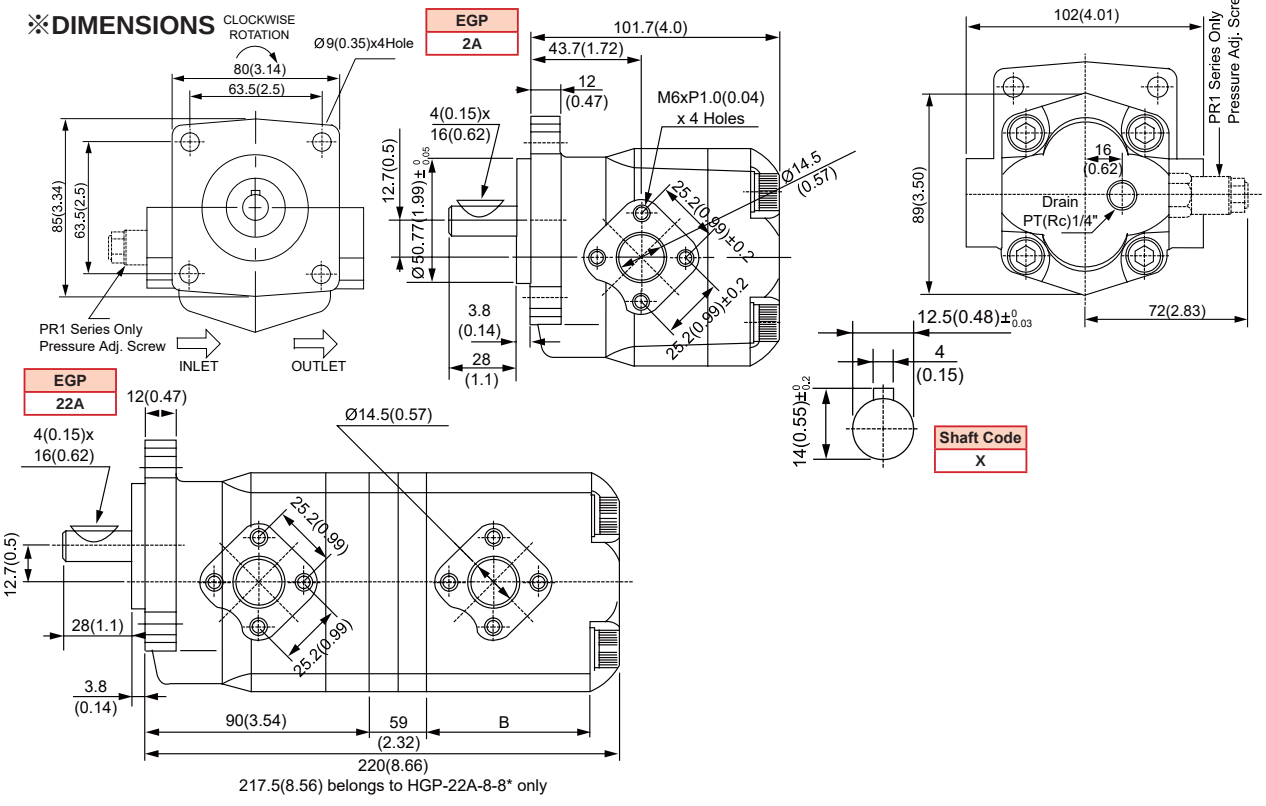
※SPECIFICATION

Model	Displacement (c.c/rev)	Pressure MPa(PSI)		Speed (RPM)			Weight (kg)
		Rated	Max.	Rated	Max.	Min.	
EGP-2A-F-2*	2	210 (3000)	250 (3500)	1800	5000	900	1.69
EGP-2A-F-2.5*	2.5				5000	850	1.70
EGP-2A-F-3*	3				5000	850	1.70
EGP-2A-F-4*	4				4500	800	1.71
EGP-2A-F-5*	5				3500	700	1.71
EGP-2A-F-6*	6				3500	700	1.72
EGP-2A-F-8*	7.5				3000	600	1.74
EGP-2A-F-9*	9				2500	550	1.74
EGP-2A-F-11*	10.5				2000	500	1.74
EGP-2A-F-12*	12	175(2500)	210(3000)		2000	500	1.76

※PERFORMANCE CURVE



※DIMENSIONS

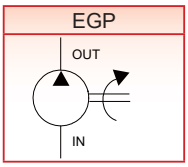


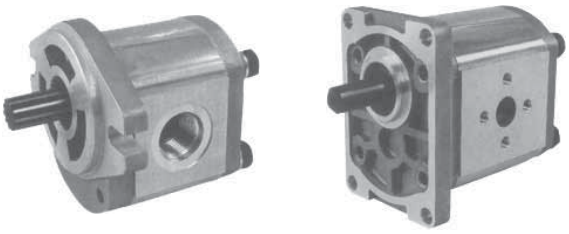
217.5(8.56) belongs to HGP-22A-8-8* only

F

【EGP-3A】

※GRAPHIC SYMBOL





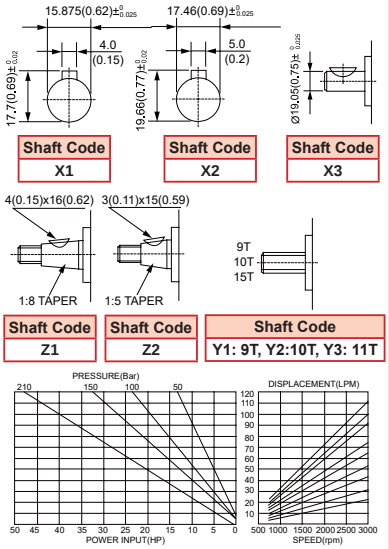
※MODEL NUMBER DESIGNATION

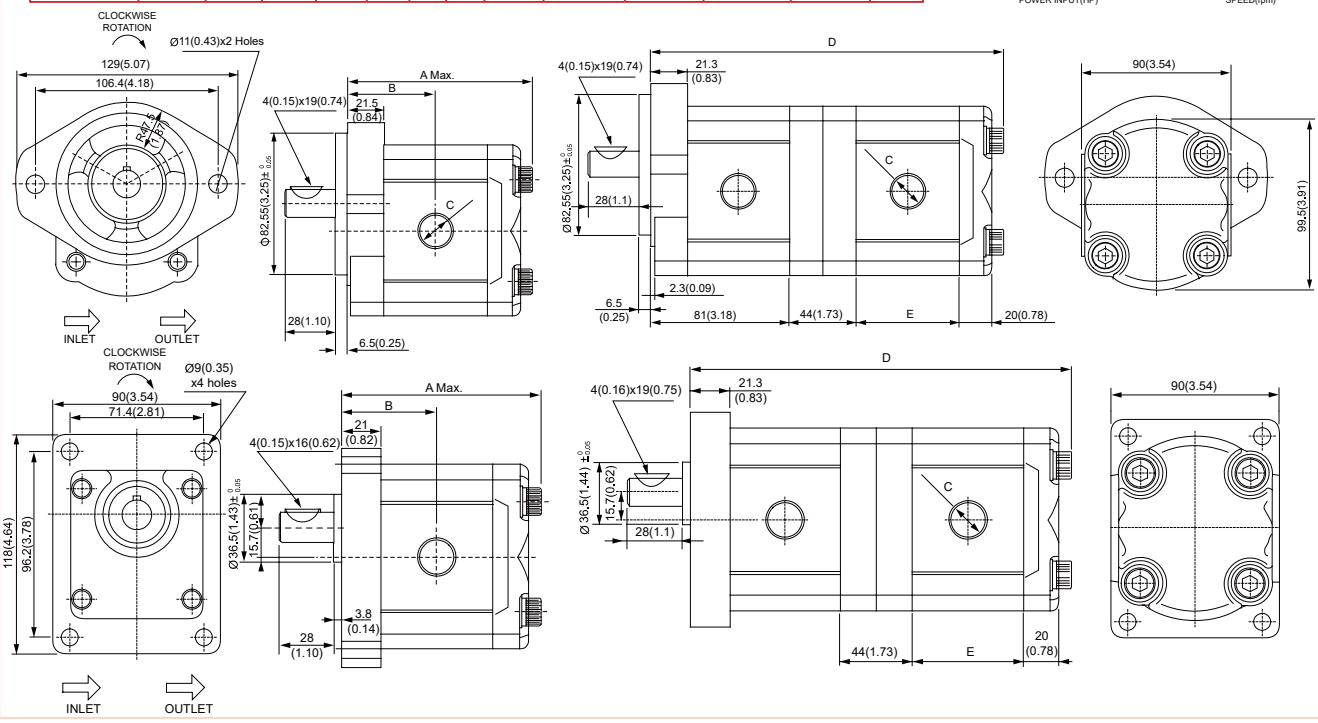
EGP-	3A-	F-	13-	(13)-	R-	X1-	2B-	(T)-	10
Series No.	Series No. 2~35 (c.c./rev) 3A: Single Pump 33A: Double Pump	Mounting F: Flange Type L: Foot Type	Displacement (c.c./rev) 2, 3, 4, 6, 8, 11, 13, 14, 17, 19, 23, 25, 28, 30, 33, 35	Displacement (c.c./rev) 2, 3, 4, 6, 8, 11, 13, 14, 17, 19, 23, 25, 28, 30, 33, 35	Rotation (View from Shaft End) R: Clockwise L: Counter-Clockwise	Shaft Type X: Straight Shaft Y: Spline Shaft Z: Taper Shaft	Flange Mounting Type 2B: SAE 2-Bolt 4BD: DIN 4-Bolt 4BE: European 4 Bolt	Inlet/Outlet Port Omit: Thread F: Flange	Design No.

※SPECIFICATION

Model	Disp. (c.c/rev)	Pressure MPa(PSI)		Speed (RPM)			Port Size (Rc/PT/ BSPT)		A m.m. / Inch	B m.m. / Inch	D m.m. / Inch	E m.m. / Inch	Wgt. (kg)
		Rated	Max.	Rated	Max.	Min.	Inlet	Outlet					
3(3)A-*-2(2)	2	210 (3000)	250 (3500)	1800	4000	700	3/4"	1/2"	97.4(3.83)	46.7(1.84)	186.8(7.34)	45.4(1.78)	2.19
3(3)A-*-3(3)	3								99(3.90)	47.5(1.87)	190(7.46)	47(1.85)	2.23
3(3)A-*-4(4)	4								101(3.98)	48.5(1.91)	194(7.62)	49(1.92)	2.29
3(3)A-*-6(6)	6								105(4.13)	50(1.97)	201(7.89)	52(2.04)	2.37
3(3)A-*-8(8)	8.4				3500				109(4.29)	51.5(2.03)	208(8.17)	55(2.16)	2.45
3(3)A-*-11(11)	11				3000	600			113(4.45)	54(2.13)	217(8.52)	60(2.36)	2.60
3(3)A-*-13(13)	13								117(4.61)	56(2.20)	225(8.84)	64(2.51)	2.70
3(3)A-*-14(14)	14.3					500			119(4.69)	57(2.24)	229(8.99)	66(2.59)	2.76
3(3)A-*-17(17)	16.5								123(4.84)	59(2.32)	237(9.31)	70(2.75)	2.87
3(3)A-*-19(19)	19.2								127(5.00)	61(2.40)	245(9.62)	74(2.91)	2.99
3(3)A-*-23(23)	23								134(5.28)	65(2.56)	259(10.17)	81(3.18)	3.19
3(3)A-*-25(25)	25	175 (2500)	210 (3000)		2800		1"	3/4"	137(5.39)	66(2.60)	265(10.41)	84(3.30)	3.24
3(3)A-*-28(28)	28				2500				141(5.55)	68(2.68)	273(10.72)	88(3.46)	3.35
3(3)A-*-30(30)	30								145(5.71)	70(2.76)	281(11.03)	92(3.61)	3.45
3(3)A-*-33(33)	33	140 (2000)	175 (2500)	1200					150(5.91)	73(2.87)	292(11.47)	98(3.85)	3.60
3(3)A-*-35(35)	35	125 (1750)	140 (2000)						154(6.06)	75(2.95)	300(11.78)	102(4.01)	3.71

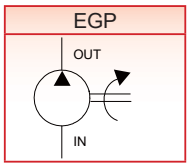
※DIMENSIONS





【EGP-4A】

※GRAPHIC SYMBOL



Gear pumps are made from high strength aluminum alloy body, highprecision gear, Float bushigng and DU bearing to provide simple structure, lightweight, high efficiency and low noise. It's used in the hydarulic system of truck, Construetion machinery, lifter and transport machinery, mine machinery and agriculture machinery.

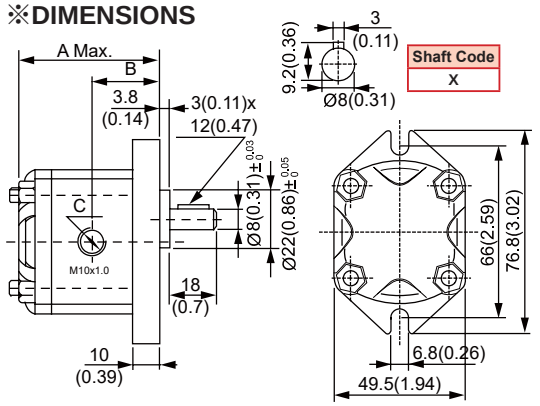
※MODEL NUMBER DESIGNATION

EGP-	4A-	F-	44-	R-	X-	10
Series No.	Series No. 22~90 (c.c./rev) 4A: Single Pump 44A: Double Pump	Mounting F: Flange Type L: Foot Type	Displacement (c.c./rev) 22, 26.5, 33.5, 38, 44, 50, 55, 63, 75, 90	Rotation (View from Shaft End) R: Clockwise L: Counter-Clockwise	Shaft Type X: Straight Shaft	Design No.

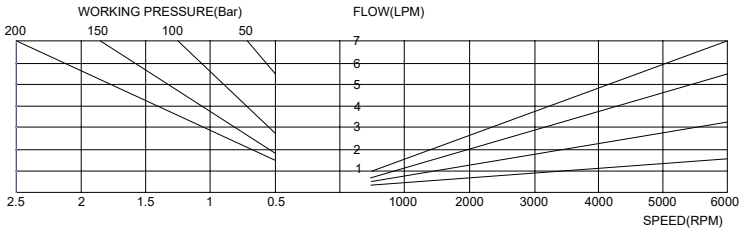
※SPECIFICATION

Model	Displacement (c.c/rev)	Pressure MPa(PSI)		Speed (RPM)			Port Size (Rc/PT/BSPT)		A (m.m./Inch)	B (m.m./Inch)	Weight (kg)
		Rated	Max.	Rated	Max.	Min.	Inlet	Outlet			
EGP-4A-*-22	22.0			1800	3500	800	1/8"	1/8"	52(2.04)	25(0.98)	0.40
EGP-4A-*-26.5	26.5						1/8"	1/8"	54(2.12)	26(1.02)	0.42
EGP-4A-*-33.5	33.5						1/4"	1/4"	56(2.20)	27(1.06)	0.43
EGP-4A-*-38	38.0						1/4"	1/4"	58(2.28)	28(1.10)	0.44
EGP-4A-*-44	44.0										
EGP-4A-*-50	50.0										
EGP-4A-*-55	55.0										
EGP-4A-*-63	63.0										
EGP-4A-*-75	75.0										
EGP-4A-*-90	90.0										

※DIMENSIONS



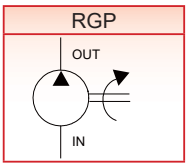
※PERFORMANCE CURVE



F

【RGP-F4】

※GRAPHIC SYMBOL



※MODEL NUMBER DESIGNATION

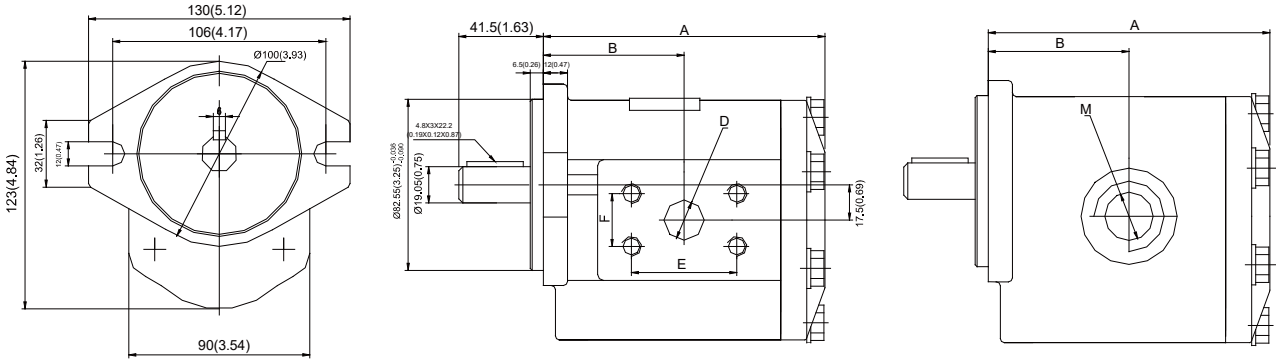
RGP	F4	10	R	(F)
Series No.	Series No. (c.c./rev) F1. 0.6~8.0 F2. 1.3~8.0 F3. 4~30 F4.10~40	Displacement (c.c/rev) 06~40	Rotation (View From Shaft End) R:Clockwise L:Counter-Clockwise	In/Outlet Port Omit: Thread F: Flange

►Item With "()" may be omitted!!

※SPECIFICATION

Model	Displacement (c.c/rev)	Pressure MPa(PSI)		Speed (RPM)		Filter Precision (um)	Oil Temperature (ºC)	Volumetrice Efficiency (%)	Input Power (Kw)	Weight (kg)
		Rated	Max.	Max.	Min.					
F410	10.0	20 (2800)	25 (3500)	3000	500	≦25	-20~80	≥93	8.2	3.3
F416	16.0								13.1	3.5
F425	25.0								20.4	3.8
F427	27.0								21.3	3.9
F430	30.0								24.1	4.0
F432	32.0								26.1	4.1
F440	40.0								32.7	4.3

※DIMENSIONS



Model	A mm/inch	B mm/inch	Port Thd.(PT/Rc)		Flange Inlet			Flange Outlet		
			Inlet	Outlet	D	E	F	D	E	F
F410	108(4.25)	53.5(2.11)	3/4"	1/2"	23(0.91)	47.6(1.87)	22.2(0.87)	20(0.79)	47.6(1.87)	22.2(0.87)
F416	114(4.49)	56.5(2.22)								
F425	124(4.88)	62(2.44)								
F427	126(4.96)	62.5(2.46)	1"	3/4"	26(1.02)	52.4(2.06)	26.2(1.03)			
F430	131(5.16)	65(2.56)								
F432	133(5.24)	65(2.56)								
F440	142(5.59)	70(2.76)								

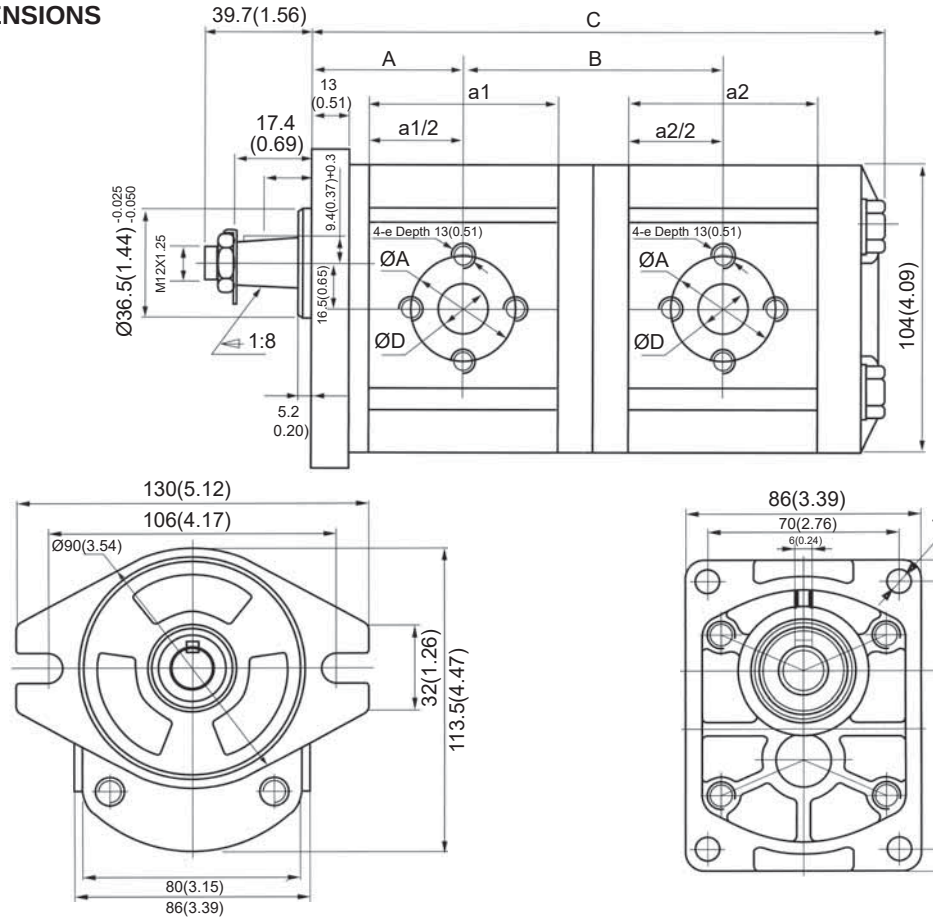
【RGP-F33】

※MODEL NUMBER DESIGNATION

RGPD	F33	06/06	R	(B)	(D)	(F)
Series No.	Series No. (c.c./rev)	Displacement (c.c/rev) 06~40	Rotation (View From Shaft End) R:Clockwise L:Counter-Clockwise	Shaft Type Omit: Ø 15.88 Square Key B: Ø19.05 Square Key S9: SAE 9 Splined Key S11: SAE 11 Splined Key	Mounting Flange Omit: SAE 2 Bolt D: DIN 4 Bolt	In/Outlet Port Omit: Thread F: Flange

►Item With "()" may be omitted!!

※DIMENSIONS

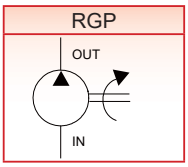


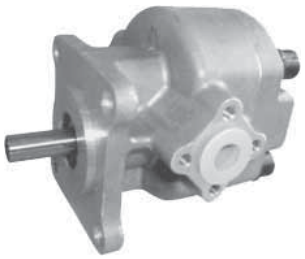
Model	A mm/inch	B mm/inch	C mm/inch
RGP-F33-*/*-R	19(0.75)+a1/2	26(1.02)+a1/2+a2/2	68.5(2.70)+a1+a2

Discharge (cc/rev)	a1, a2	Flange Inlet			Flange Outlet		
		D	E	F	D	E	F
4	52()2.05	13(0.51)	30(1.18)	M6	13(0.51)	30(1.18)	M6
6	54(2.13)						
8	57.5(2.26)						
10	60(2.36)	20(0.79)	40(1.57)	M8			
12	64(2.52)						
14	66(2.60)						
16	70(2.76)						
20	76(2.99)						
25	84(3.31)	22(0.87)					

【RGP-2A】

※GRAPHIC SYMBOL





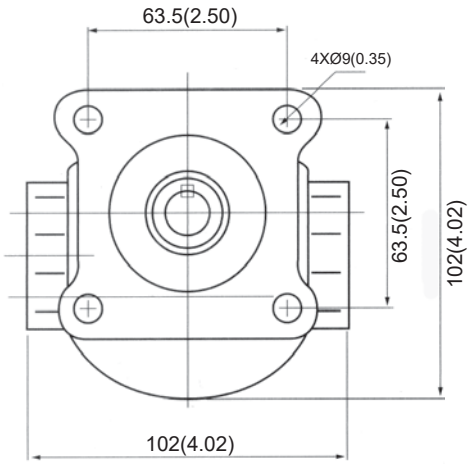
※MODEL NUMBER DESIGNATION

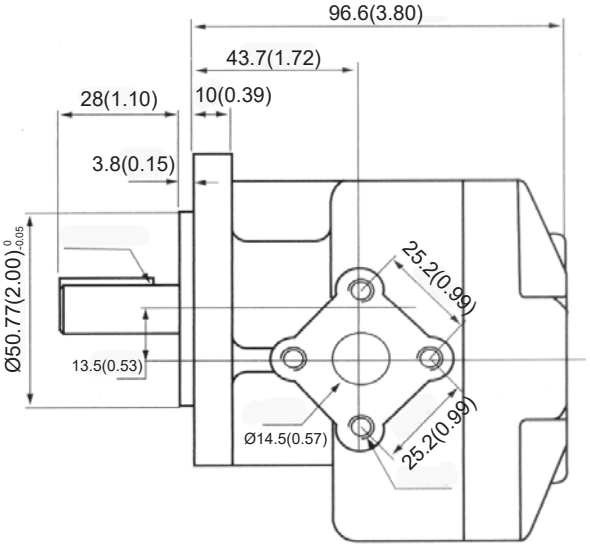
RGP	2A	02	R
Series No.	Series No.	Displacement (c.c/rev) 2~12	Rotation (View From Shaft End) R:Clockwise L:Counter-Clockwise

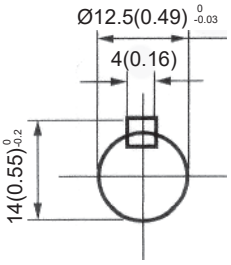
※SPECIFICATION

Model	Displacement (c.c/rev)	Pressure MPa(PSI)		Speed (RPM)		Filter Precision (um)	Oil Temperature (°C)	Volumetrice Efficiency (%)	Weight (kg)
		Rated	Max.	Max.	Min.				
2A-02	2.0	21 (3000)	25 (3500)	5000	850	≦25	-20~80	≥93	1.55
2A-03	3.0								1.56
2A-04	4.0			3000	600				1.58
2A-05	5.0								1.60
2A-06	6.0								1.60
2A-08	8.0								1.65
2A-09	9.0	17.5 (2500)	21 (3000)	2000	500				1.65
2A-11	11.0								1.70
2A-12	12.0								1.70

※DIMENSIONS







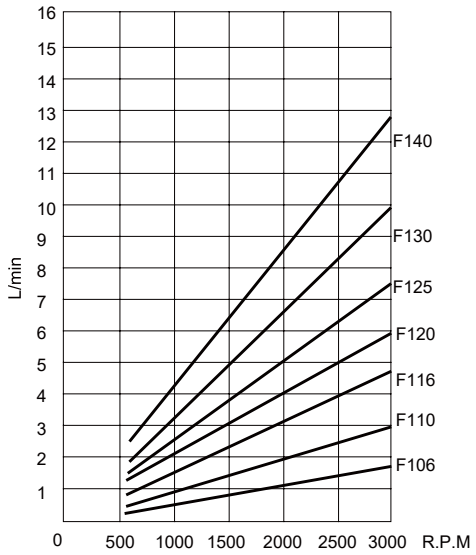
F

※PERFORMANCE CURVE

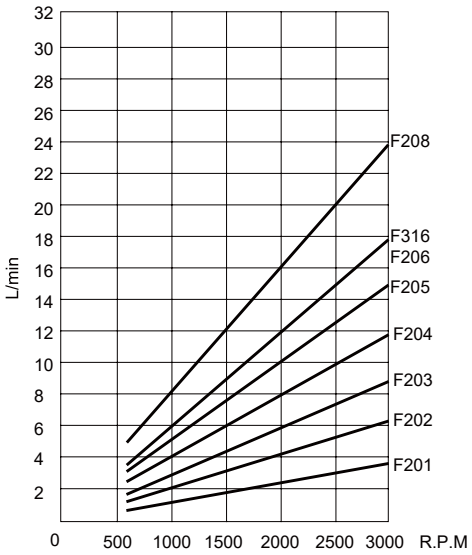
Displacement 0.6 ~ 4.2 c.c. /rev
Performance curve test condition: Temperature 50℃

■ FLOW RATE CURVE

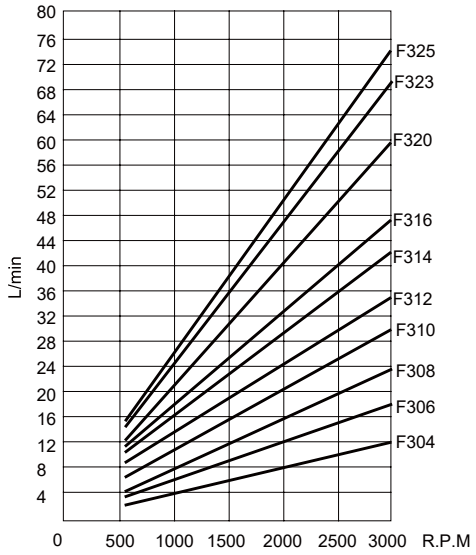
F1 SERIES



F2 SERIES



F3 SERIES



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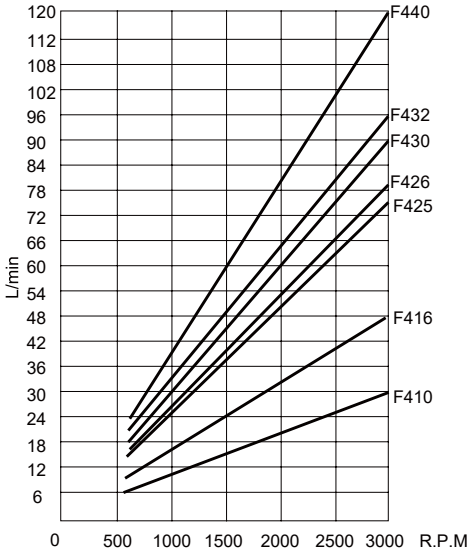
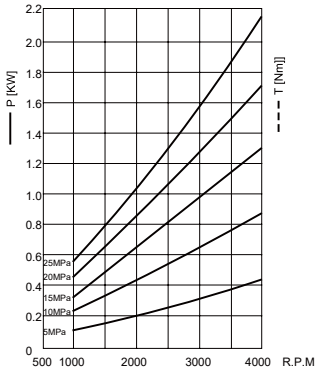


※DIRVE POWER CURVE, DRIVE TORQUE CURVE

F110



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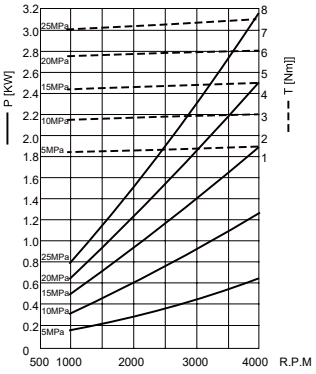

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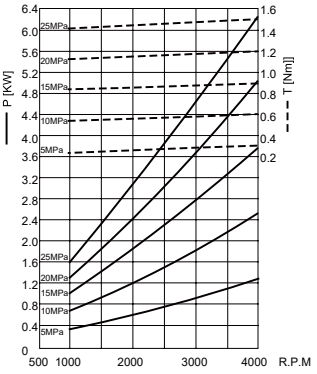

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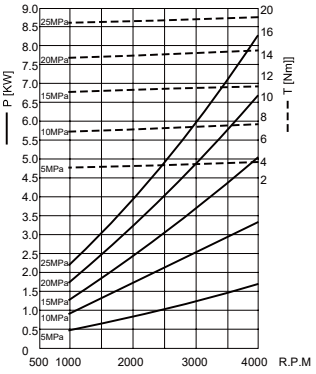

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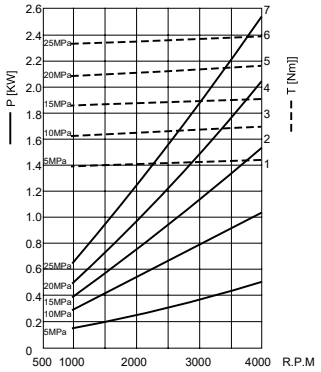
※DIRVE POWER CURVE, DRIVE TORQUE CURVE

F201



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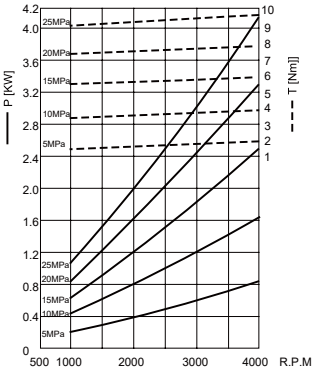

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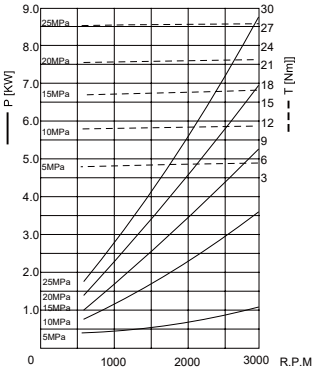

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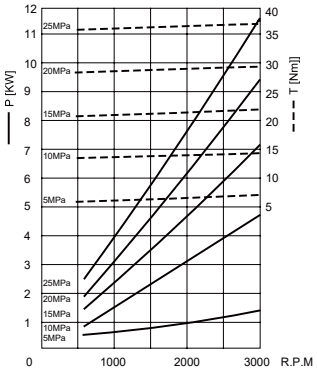

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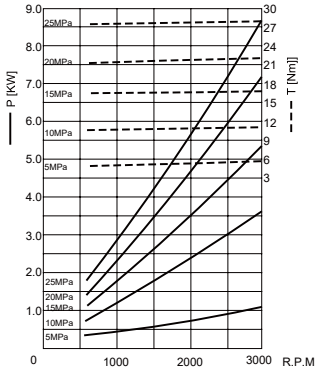

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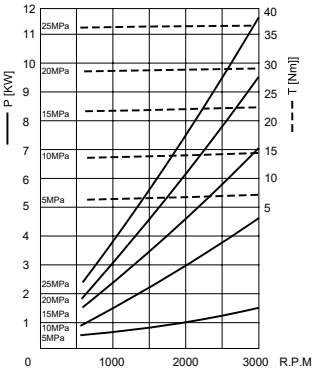

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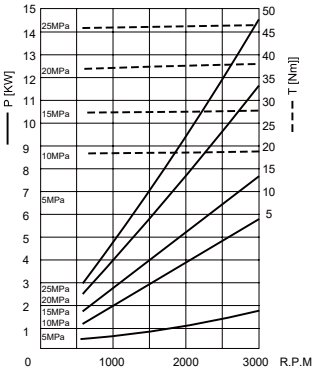

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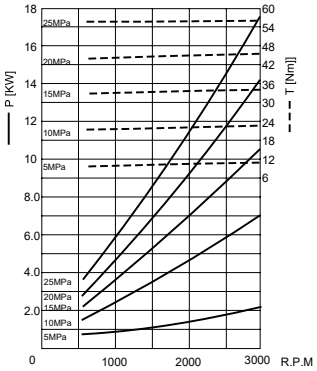

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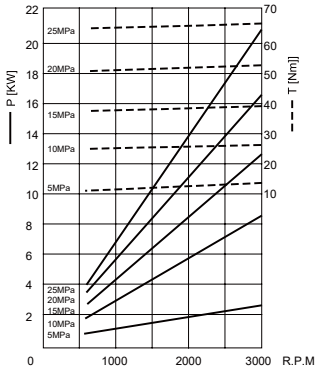

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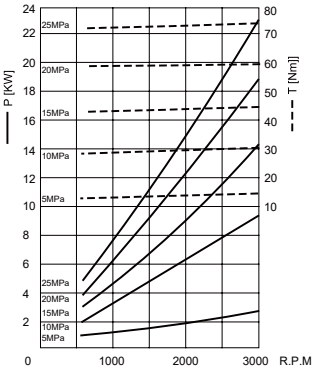

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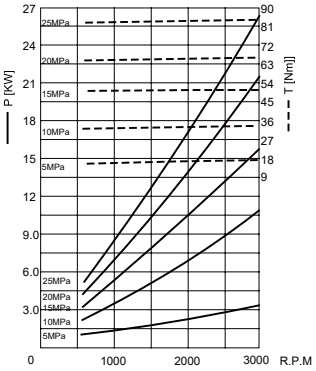

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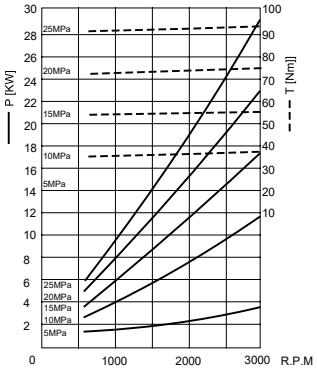

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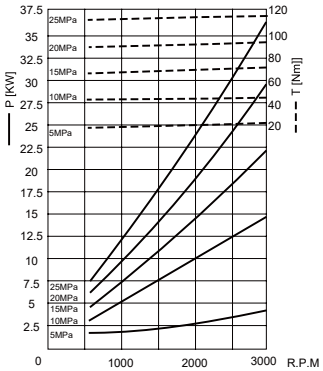

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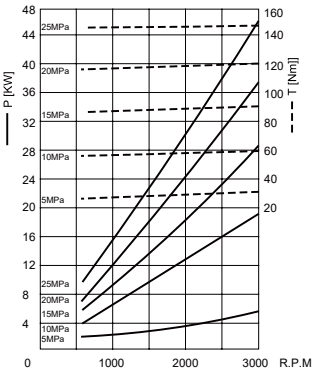

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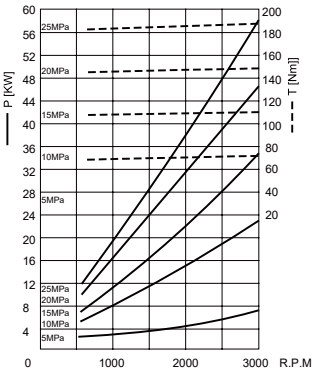


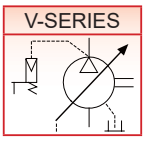
【V-SERIES】

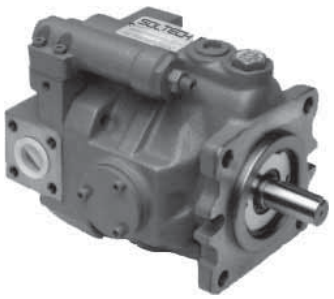
※FEATURE

1. Combining special internal designs and strict engineering disciplines has reduced noise level to new lows in whole pressure zones.
2. Depending on variety of application needs multiple optional unique control methods are available. It does not only reduce a number of unnecessary hoses, pipes and control valves but also increase efficiency and save horsepower, and cost.
3. Less capacity reservoirs can be selected and applied because of performances of low pressure loss and less head generation.
4. Wide application ranges: it is very suitable for machine tools, plastic injection molding machines, forging machines and other industrial machines etc..
5. Mounting flanges are made to SAE A or B 2-bolt (V15, 18, 23, 38 types) and SAE-C 2 & 4-bolt (V50, V70 types).

※GRAPHIC SYMBOL

V-SERIES





F

※SPECIFICATION

Model	Max. Pressure bar(PSI)	Displacement cc/rev(in³/rev)	Displacement Under Unloading Conditions ℓpm(USgpm)		Pressure Adj. Range bar(PSI)	Input Speed Range (rpm)		Weight kg(lb)
			1500rpm	1800rpm		Min	Max	
V-15A	250(3500)	15(0.90)	22.5(5.78)	27.0(7.05)	1: 8~70(115~1000) 2: 15~140(210~2000) 3: 20~210(280~3000) 4. 20~250(280~3500)	500	1800	13(28.6)
V-18A		17.8(1.09)	26.7(7.05)	32.0(8.45)				13(28.6)
V-23A		23.0(1.40)	35.4(9.11)	41.4(10.94)				22.0(48.4)
V-25A	210(3000)	25.0(1.52)	37.5(9.66)	45.0(11.60)				22.0(48.4)
V-38A	250(3500)	37.8(2.31)	56.7(14.98)	68.0(17.96)				26.0(57.2)
V-42A	210(3000)	42.0(2.56)	63.0(16.23)	76.0(19.58)				26.0(57.2)
V-50A		51.5(3.14)	77.2(20.37)	92.7(24.49)				55.0(121.0)
V-70A		69.7(4.25)	104.5(27.60)	125.4(33.13)				56.0(123.2)
V-15A-15A	15/15	15/15	22.5/22.5	27/27				28.5(62.7)
V-23A-23A	23/23	23/23	35.4/35.4	41.4/41.4				46.5(102.3)
V-15A-38A	15/37.8	15/37.8	22.5/56.7	27/68				41.5(91.3)
V-38A-38A	37.8/37.8	37.8/37.8	56.7/56.7	68/68				54.5(119.4)
V-15A-70A	15/69.7	15/69.7	22.5/104.5	27/125.4				71.5(157.3)
V38A-70A	37.8/69.7	37.8/69.7	56.7/104.5	68/125.4				84.5(185.9)

※MODEL NUMBER DESIGNATION

V-	38-	A-	4-	R-	B-	S-	(90)
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ

Ⅰ: Series No.

Ⅱ: Displacement cc/rev(in³/rev)
15(0.9), 18(1.1), 23(1.4), 25(1.5)
38(2.3), 42(2.6)50(3.1), 70(4.3)

Ⅲ: Control Type
A : Pressure Compensator Control
B : Multi-stage Flow & Single-stage Pressure Compensator Control
C : 2-stage Pressure & Flow Control Type
C G : 2-stage Pressure & Flow Control Type
D : Solenoid Controlled Pressure Compensating Type With Unloading Device
D G : Pressure Compensator with Unloading Type
E : Dual Pressure Control
E G : Dual & Remote Pressure Control
F : 2 Flow-2 Pressure p.c by Solenoid Operated Valve
F G : 2 Flow-2 Pressure p.c by Solenoid Remoted Valve
G : Remoted Pressure Compensator Control
G J : Proportional Pressure Compensator
H : Power matching Control
H L : Load-sensing Compensator
H J : Load-sensing Proportional Elector Pallor Relief Valve
H K : Proportional Electro-hydraulic Load sensing Type
H Q : Proportional Flow Control Load sensing Type

Ⅳ: Pressure Compensating Range bar(PSI)
1. 8~70(115~1000)
2. 15~140(210~2000)
3. 20~210(280~3000)
4. 20~250(280~3500)

Ⅴ: Shaft Rotation(View from Shaft End)
R: Clockwise(CW)
L: Counter-Clockwise(CCW)

Ⅵ: Direction of Pipe Connections
Omit: Side port
B: Axial(Rear) Port
B2: 4 Connections for Axial(Rear) Port

Ⅶ: Shaft Type
Omit: Straight Key
S: Splined, SAE.J498b

Code	Type	No. of Teeth	Pitch
S	V15 V18	13	16/32 D.P.
S1		9	
S2		11	
S	V23, V25, V38, V42	13	16/32 D.P.
S1		15	
S2		13 Lengthening	
S	V50, V70	14	12/24 D.P.
S1		17	

Ⅷ: Thread Type
10: PT(Rc)
40: BSPP, PF(G)
90: NPT

F

※CAUTION

● Fluid Recommendations

1. In case hydraulic presure is under 70 bar, use hydraulic oil which is corresponding to ISO VG32-60 in viscosity grade or wear resisting hydraulic oil.
2. In case hydraulic pressure is over 70 bar, use wear resisting hydraulic oil which is corresponding to ISO VG32-68 in viscosity grad.

● Viscosity and Operating Temperature

1. Oil viscosity ranging from 15 cSt to 400 cSt and oil temperature from 0°C to 60°C are recommended.

● Installation and Mounting

1. Electricity between the driving shaft and pump shaft should be under 0.05 TIF, and operate the pump in such a way that the pump shaft is not subjected to orthogonal force. If centering between the driving shaft and pump shaft is incorrect, the bearing and oil seat may be damaged. noise and vibration may occur, which cause trouble with the pump.
2. Avoid driving the pump in the lateral direction by belt, chain or gears.(This may cause noise and damage the bearing.)
3. The pump can be operated with its shaft mounted perpendicularly.

● Piping Work

1. use parallel thread pipe joints for the suction inlet and discharge outlet. Do not use taper thread piping joints or air may intrude or abnormal noise be produced.
2. In case where steel pipes are used, lay the piping with care so as not to put force on the pump.
3. Electricity of a pump being forced by piping may cause serious trouble with noise.

● Drain Piping

1. Lay the drain piping independently not joined with other return lines. In such a way that the pump internal pressure is under 0.35 bar.
2. Lay the oil return piping under the oil level of the tank and as far as possible from suction piping.(Refer to under table)

● Start-Up

1. Before starting the pump, fill the pump case with hydraulic oil using the drain charging port on the pump body.
2. Do not operate the pump at full speed right away. Instead, turn the moter input switch on and off several times so as to extract air from the piping, then operate it continuously.
   At the start, be sure to reduce the pressure or operate it unloaded.

● Shaft Rotation

1. Shaft rotation is clockwise viewed from teh end of pump shaft. In case revolution is required, indicate it by Model No.

● Suction Pressure

1. Adjust suction pressure to within -16.7kPa(125mmHg.)
   high suction pressure may cause cavitation, damage of parts, noise and vibratior
2. which greatly shorten the life of pumps.

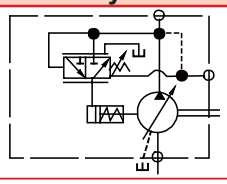
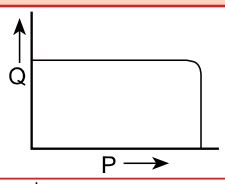
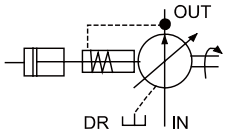
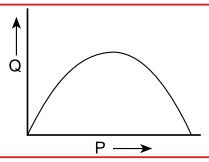
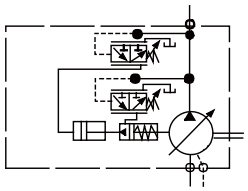
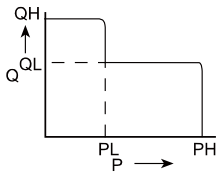
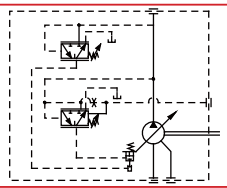
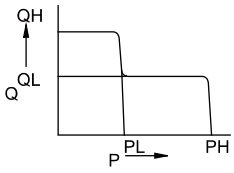
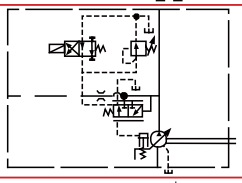
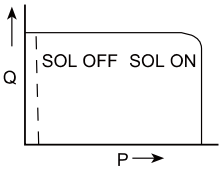
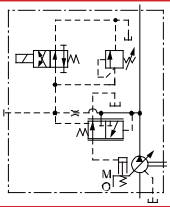
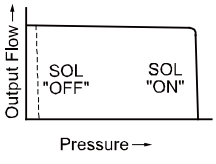
● Filtration

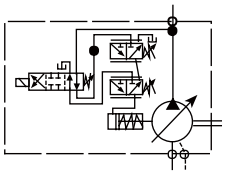
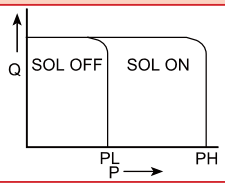
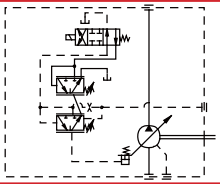
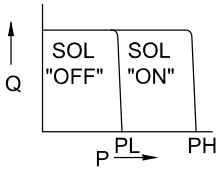
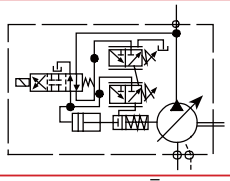
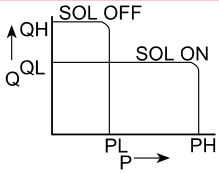
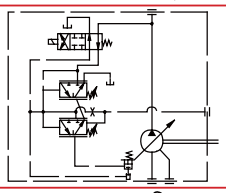
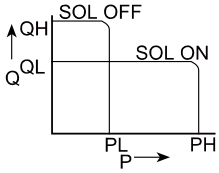
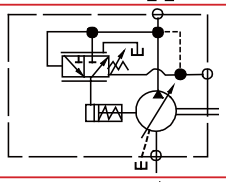
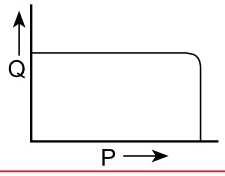
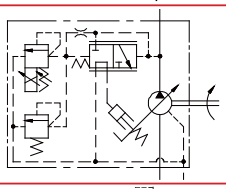
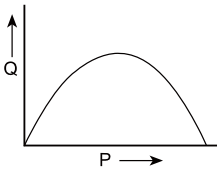
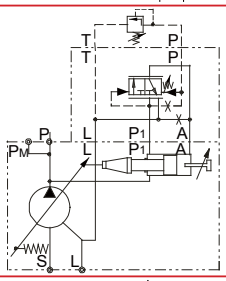
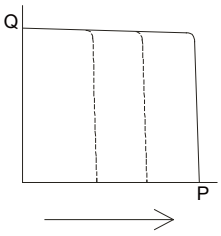
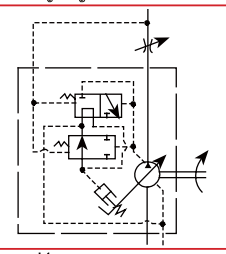
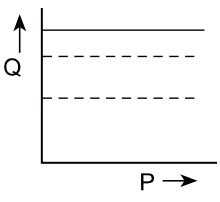
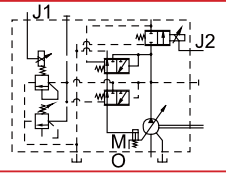
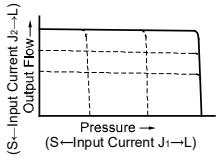
1. Deterioration of the hydraulic oil may cause trouble with the pump and shorten its life. Carefully control the quality of the oil so as to maintain the deterioration of the oil within Grade NAS9.
2. Be sure to attach a suction filter of 150 mesh to the suction side and a line filter of 25 to the return line of the discharge side.

● Max. Working Pressure

1. Operation period at maximum working pressure should be under 10% of one cycle and the retaining period should be under 6 seconds.

※CONTROL TYPE

Type	JIS Symbol	Characteristic	Feature
A			**● Pressure Compensator Control** 1. When the pressure reaches the value set with the compensator, the flow is reduced automatically and the set pressure is maintained. 2. The pressure and flow are controlled manually.
B			**● Mulit-Stage Flow & Single -Stage Pressure Ctrl. Type (With Cylinder)** 1. Flow could be Adjusted from 0 to Max. and pressure can be maintained steady. 2. Absorbing impact and vibration which are caused by up and down motion of aculator. It's suitable for lifting equipment and etc.
C			**● 2 Stage Pressure & Flow Control Type** 1. Low consumption electric moter can be selected to save energy because of functions of high flow at low pressure and low flow at high pressure 2. When pressure increase and reach preset pressure "PH", flow is reduced to "QL" 3. Pressure "PH", "PL", and flow "QH", "QL" can be adjusted optionally. 4. It's applied to aculators requiring long unloaded or short loaded strokes. Speedy and horsepower efficient.
CG			**● 2 Stage Remote Pressure & Flow Control Type** 1. Similar to "C" type control. 2. Pressure setting could be controlled by remoter controller. 3. When combined with proportional pressure valves, pressure setting could be electronic controlled.
D			**● Solenoid Control Pressure Compensating Type With Unloading Device.** 1. Same as "A" type and unloading function added. 2. It's applied to systems requiring long term unloading operation. 3. When solenoid is turned off, pump operation under unloading conditions to keeps less noise and heat generation.
DG			**● Solenoid Control Pressure Compensating Type With Unloading & Remote Device.** 1. Same as "C" type function. 2. The pressure and the range can be adjusted remotely by being integrating remote pressure control valve. 3. Proportional Electro-Hydraulic pressure control can be applied with SOLTECH proportional valve.

Type	JIS Symbol	Characteristic	Feature
E			● **Dual Pressure Control** 1. High and low pressure can be controlled by switching direction of solenoid control valves. 2. This type is applied to aculator requiring 2-stage pressure with single speed. 3. One of "PL" and "PH" relief valves can be optionally be high pressure.
EG			● Dual and Remote Pressure Control 1. Similar to to "E" type control. 2. Pressure setting could be controlled by remoter controller. 3. When combined with proportional pressure valves, pressure setting could be electronic controlled.
F			● **2 Flow, 2 Pressure Control by Solenoid Operated Vavles** 1. Actuators can be shafted slowly(high pressure & low flow) or quickly(high flow & low pressure) by switching direction of solenoid valve. 2. Pressure "PL", "PH" and flow "QL", "QH" could be adjusted manually. 3. This type is applied to actuator need operation to shaft speed from high to low or low to high.
FG			● **2 Flow, 2 Pressure Control by Solenoid Operated Vavles & Remote Valve** 1. Same as function of "F" type. 2. The Pressure and the range can be adjusted remotely by integrating remote pressure control valve. 3. Proportional Electro-Hydraulic pressure control can be applied with SOLTECH proportional control valve.
G			● **Remote Pressure Compensating Type** 1. Same as "A" type. 2. Pressure can be adjusted remotely by integrating remote pressure control valve.
GJ			● **Proportional Pressure With NG6 Interface** 1. Same as "GM" type and proportional valve added. 2. The proportional valve is installed on the NG6 interface to reach Porportional Electro-Hydraulic control to save energy.
GM			● **Remote Pressure Compensator(without Pilot valve)** 1. GM control with a NG6 interface, supply an installation for pilot valve to prove the operating pressure. The pressure setting can be set directly from the control panel of the machine. 2. The remote pressure compensator responds faster and offer more stable pressure. 3. The adjustment can also be manual or proportional pressure control.
HL			● **Load Sensing Compensator** 1. The type will let the the pump deliver a constant flow rate to the circuit by providing an adjustable ΔP across the customers orfice or valve. An idea energy conservation system can be configurated by combining the proportional directional control. 2. When setting pressure value, the sensing flow feedback function can reach to low oil heat generation and saving energy.
HK			● **Proportional Electro-Hydraulic Load Sensing Type** 1. This is an energy-saving type control which regulates the pump flow and load pressure to be at absolute minimum necessary level to operate the actuator. 2. Pump flow rate and cut-off pressure are controlled proportional to the input current to the control device on the pump and the input current is regurated by the specific amplifier.

F

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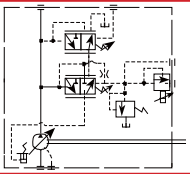
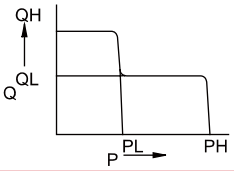
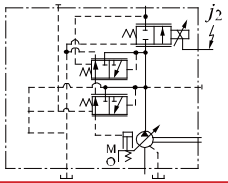
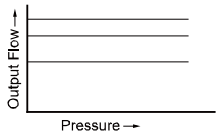
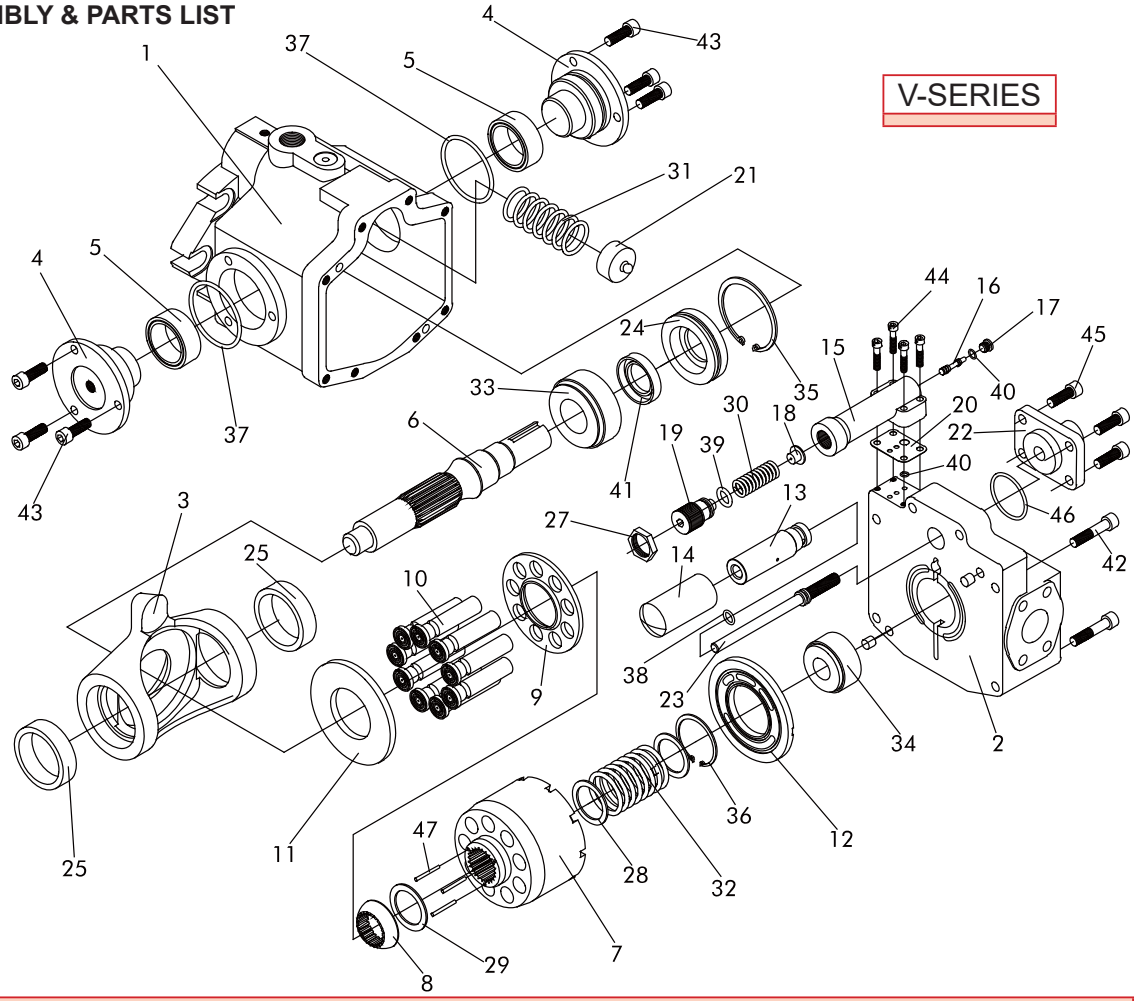
Type	JIS Symbol	Characteristic	Feature
HJ			● **Load Sensing & Proportional Elector-Hydraulic Pilot Relief Valve** 1. Same as type "HL" and proportional pressure function added. 2. Supplied with Proportional Electro-Hydraulic Pilot Relief Valve can reach to horse-saving and energy-saving.
HQ			● **Load Sensing Proportional Flow Control** 1. Same as type "HL" and proportional flow function added. The proportional flow control allows the adjustment of the pumps 2. output flow with an electrical input signal. Supplied and adjusted the displacement by the electronic control module.

※ASSEMBLY & PARTS LIST



PARTS LIST

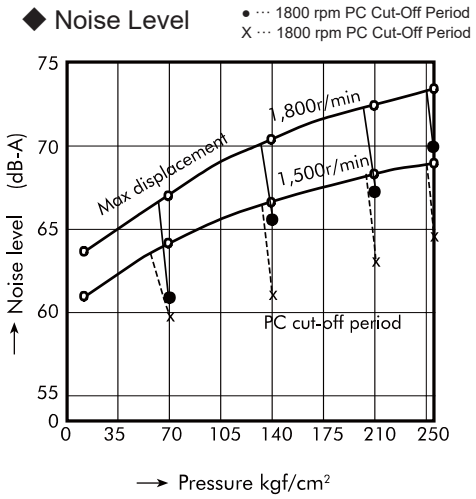
NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION
1	Pump Body	13	Sleeve Piston	25	Sleeve(Swash Plate)	37	O-Ring
2	End Cover	14	Servo Piston Sleeve	26	Bolt	38	O-Ring
3	Swash Plate	15	Pressure Compensator	27	Lock Nut	39	O-Ring
4	Swash Shaft	16	Compensator Spool	28	Washer(Cylinder)	40	O-Ring
5	Sleeve, (Swash Plate)	17	Port Plug	29	Washer(Cylinder)	41	Shaft Seal
6	Shaft	18	Spring Seat	30	Control Spring	42	Bolt(End Cover)
7	Cylinder Block	19	Screw	31	Servo Spring	43	Bolt(Side Cover)
8	Cylinder Block Holder	20	Gasket	32	Retainer Spring	44	Bolt(Compensator)
9	Slipper Retainer	21	Servo Spring Seat	33	Bearing(Needle Bearing)	45	Bolt(Flow Control)
10	Piston and Slipper, Crimped	22	Cover(Flow Control)	34	Bearing(Ball Bearing)	46	O-ring
11	Slipper Plate	23	Flow Adjusting Screw	35	Snap Ring	47	PIN(Cylinder Block)
12	Valve Plate	24	Pilot Cover	36	Snap Ring for Bore	48	

※PERFORMANCE CHARACTERISTICS

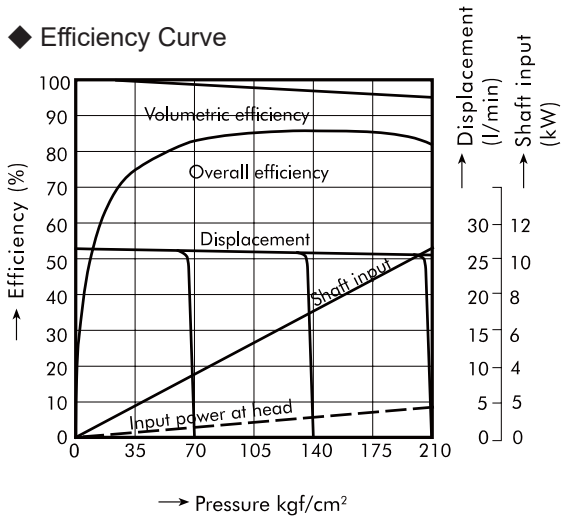
V-15-SERIES

◆ Contitions:
Drive Speed: 1800 rmp
Fluid Temperature: 50°C(122°F)
Hydraulic Oil: ISO VG32

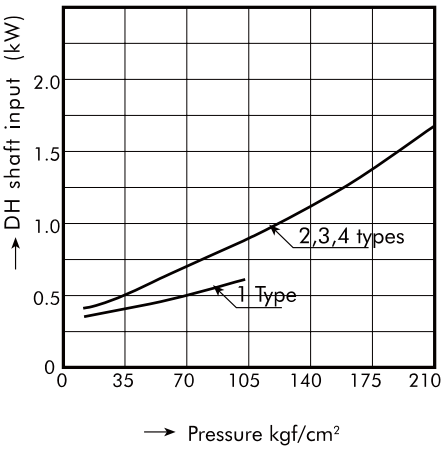
◆ Noise Level



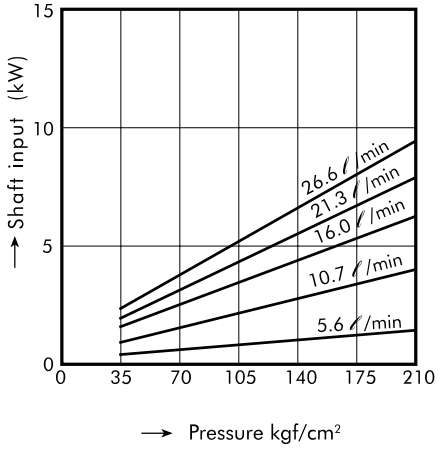
◆ Efficiency Curve



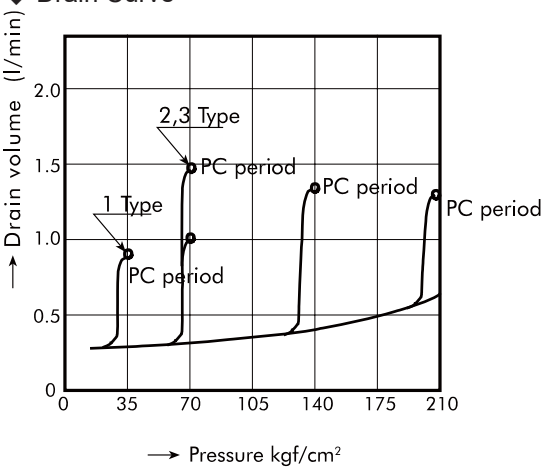
◆ Input Power at Full Cut-Off



◆ Input Power Curves



◆ Drain Curve

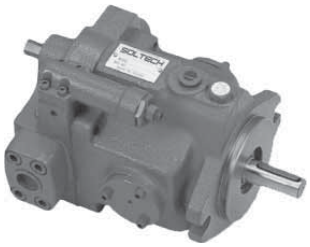


F

F

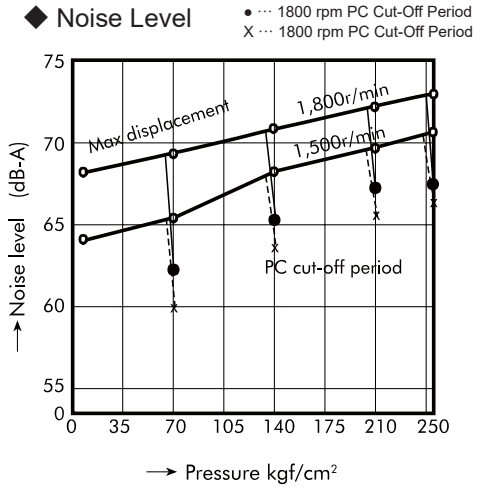
※PERFORMANCE CHARACTERISTICS

V-23-SERIES

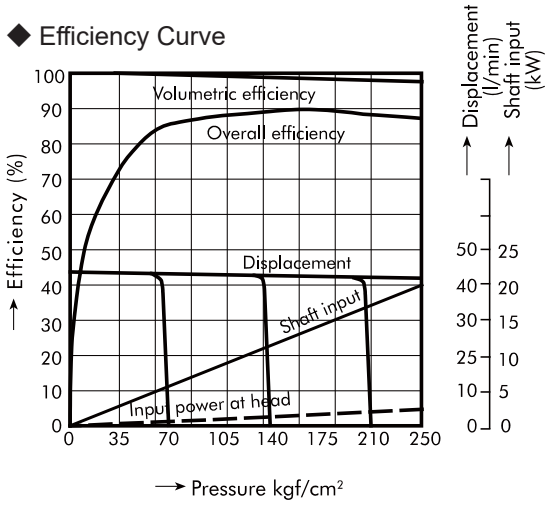


◆ Contitions:
Drive Speed: 1800 rmp
Fluid Temperature: 50°C(122°F)
Hydraulic Oil: ISO VG32

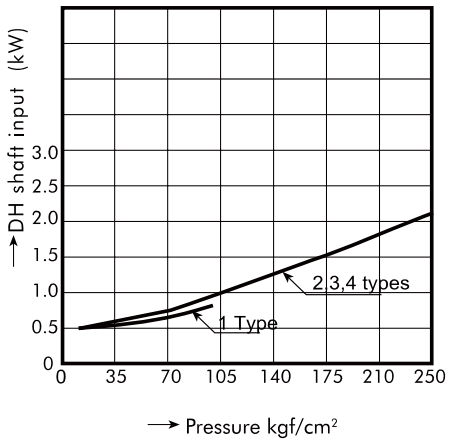
◆ Noise Level



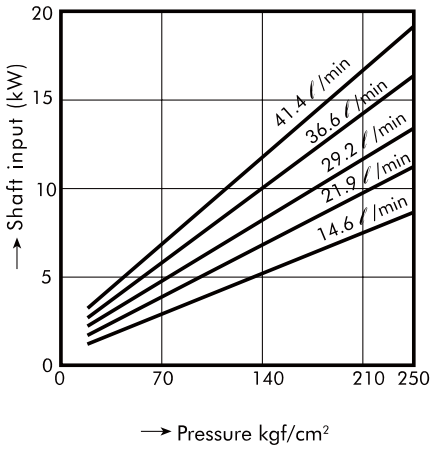
◆ Efficiency Curve



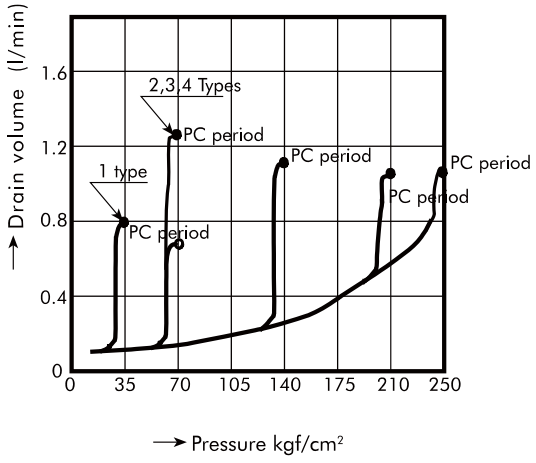
◆ Input Power at Full Cut-Off



◆ Input Power Curves



◆ Drain Curve

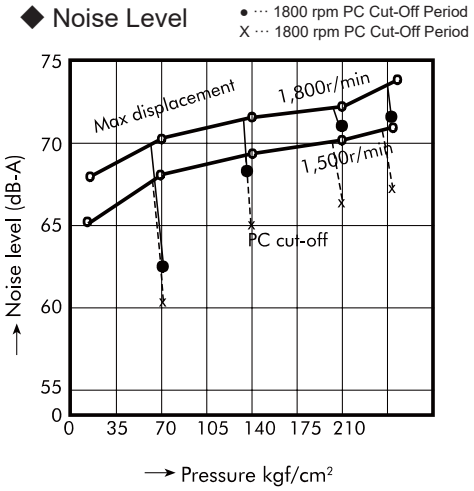


※PERFORMANCE CHARACTERISTICS

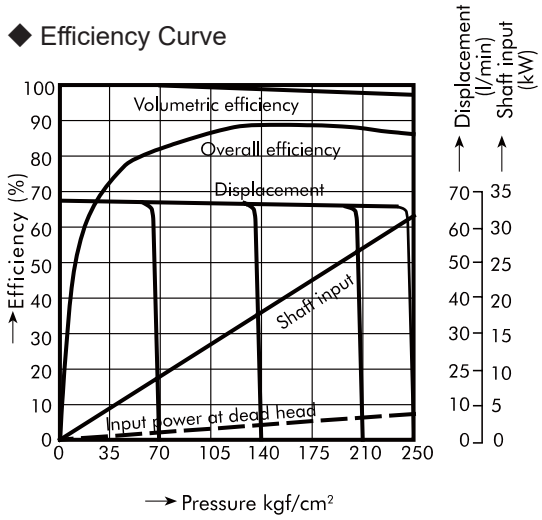
V-38-SERIES

◆ Contitions:
Drive Speed: 1800 rmp
Fluid Temperature: 50°C(122°F)
Hydraulic Oil: ISO VG32

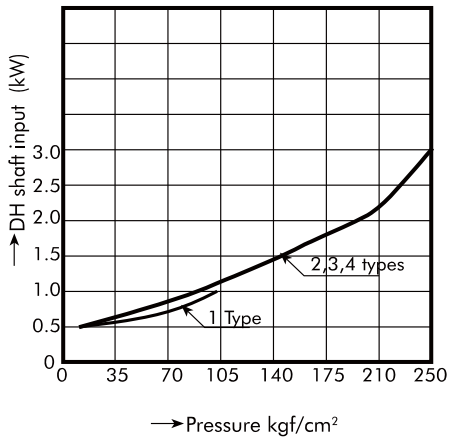
◆ Noise Level



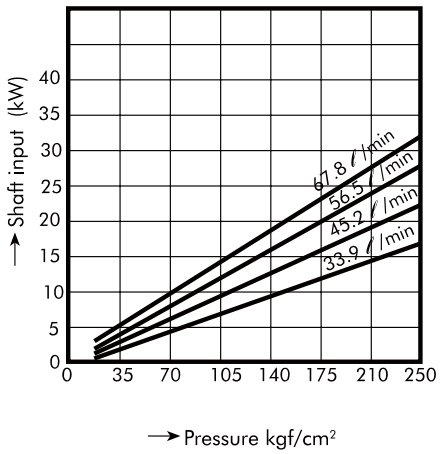
◆ Efficiency Curve



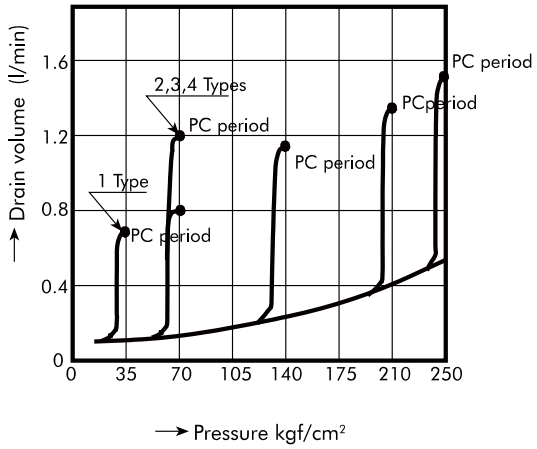
◆ Input Power at Full Cut-Off



◆ Input Power Curves



◆ Drain Curve



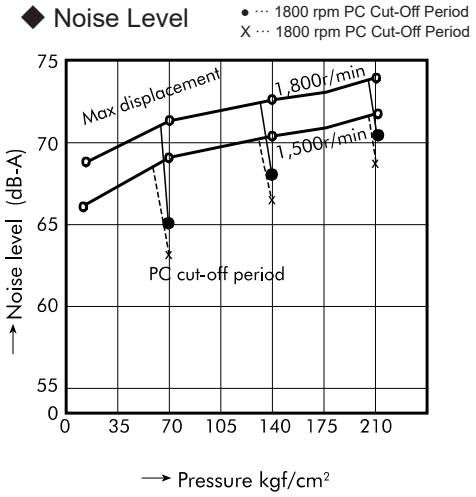
F

※PERFORMANCE CHARACTERISTICS

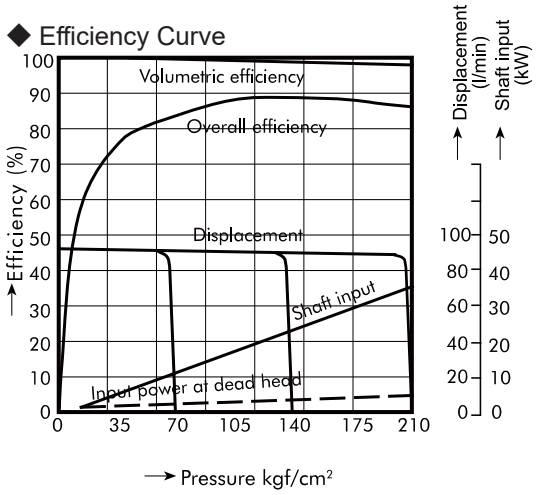
V-50-SERIES

◆ Contitions:
Drive Speed: 1800 rmp
Fluid Temperature: 50°C(122°F)
Hydraulic Oil: ISO VG32

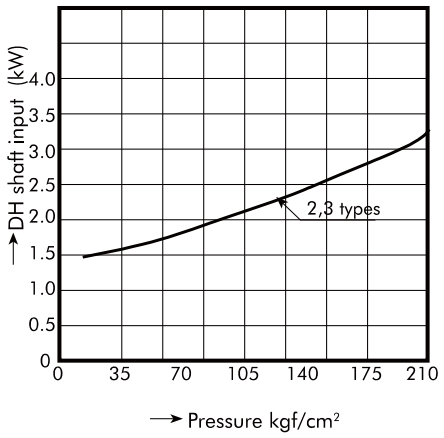
◆ Noise Level



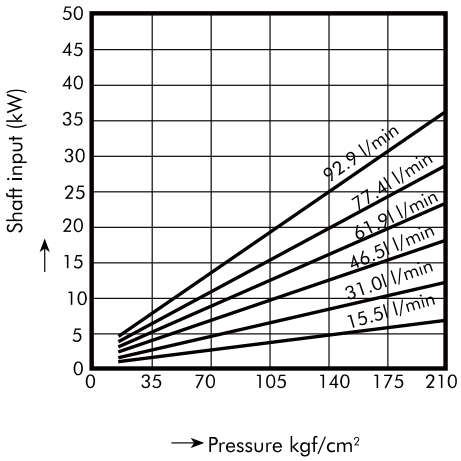
◆ Efficiency Curve



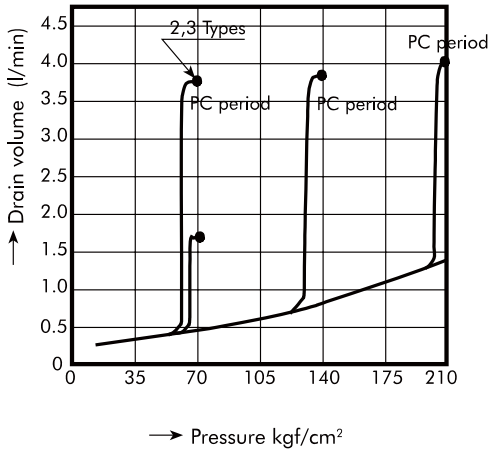
◆ Input Power at Full Cut-Off



◆ Input Power Curves



◆ Drain Curve

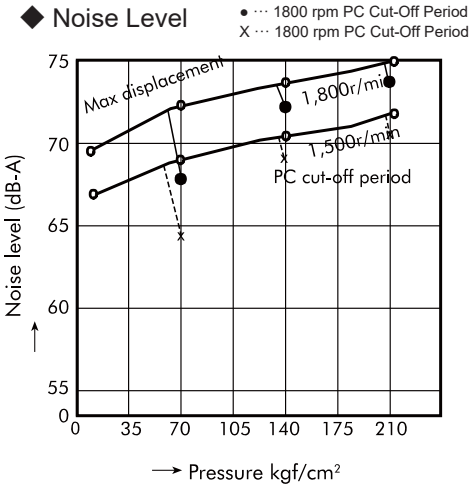


※PERFORMANCE CHARACTERISTICS

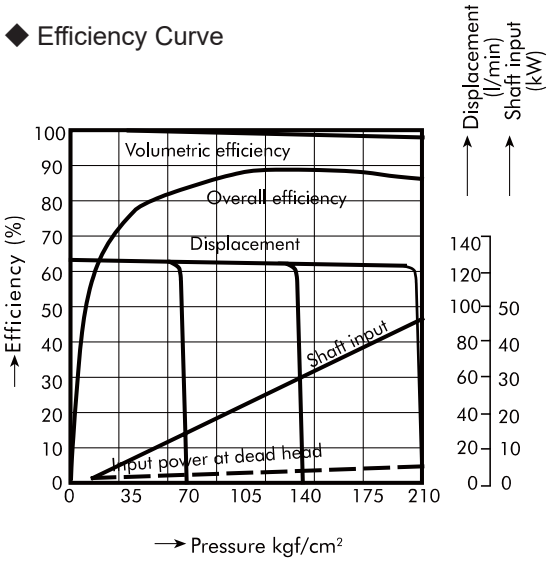
V-70-SERIES

◆ Contitions:
Drive Speed: 1800 rmp
Fluid Temperature: 50°C(122°F)
Hydraulic Oil: ISO VG32

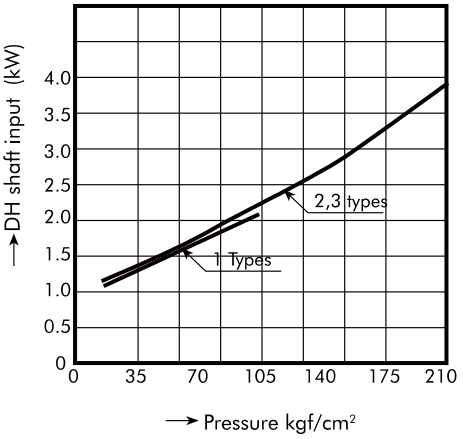
◆ Noise Level



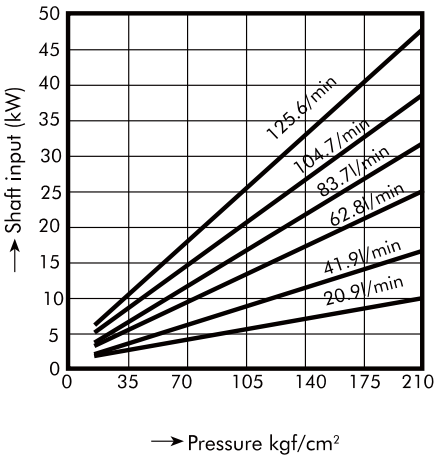
◆ Efficiency Curve



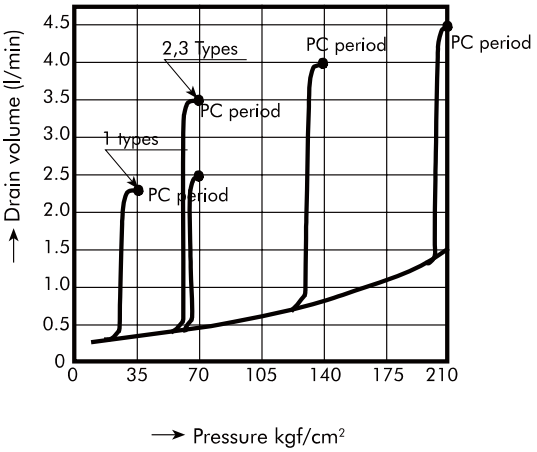
◆ Input Power at Full Cut-Off



◆ Input Power Curves



◆ Drain Curve

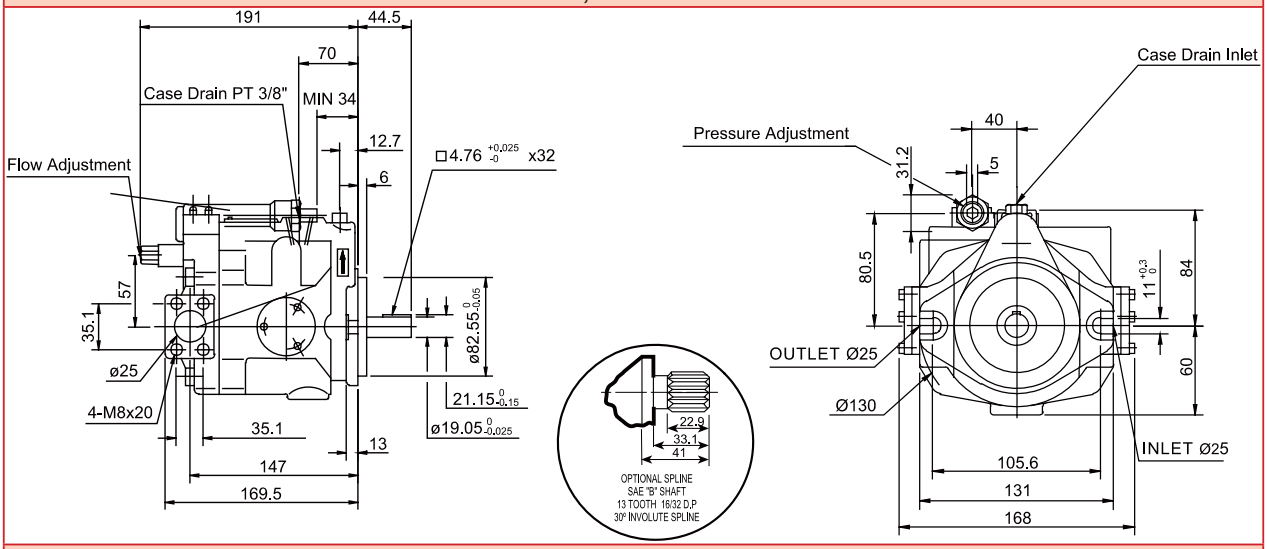


F

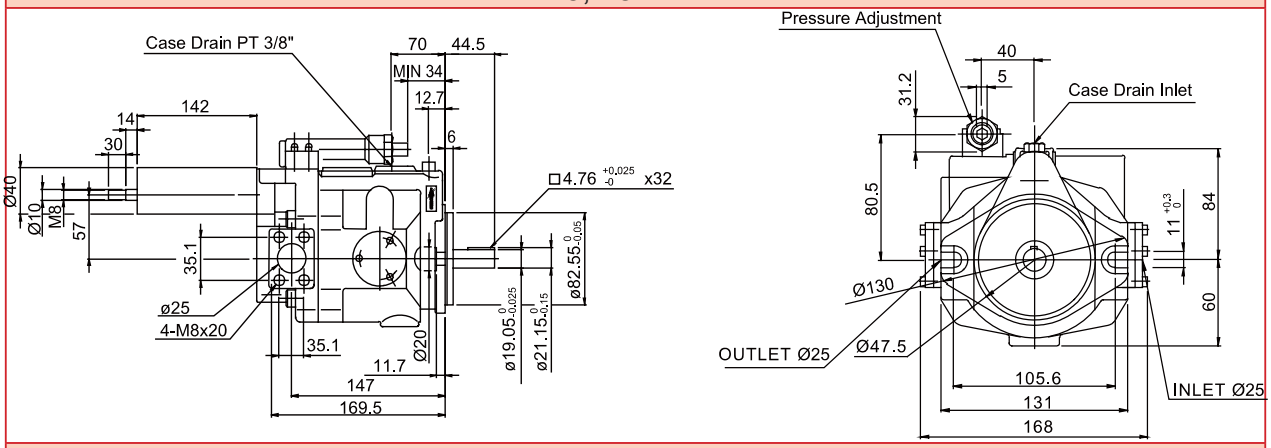
F

[DIMENSIONS]

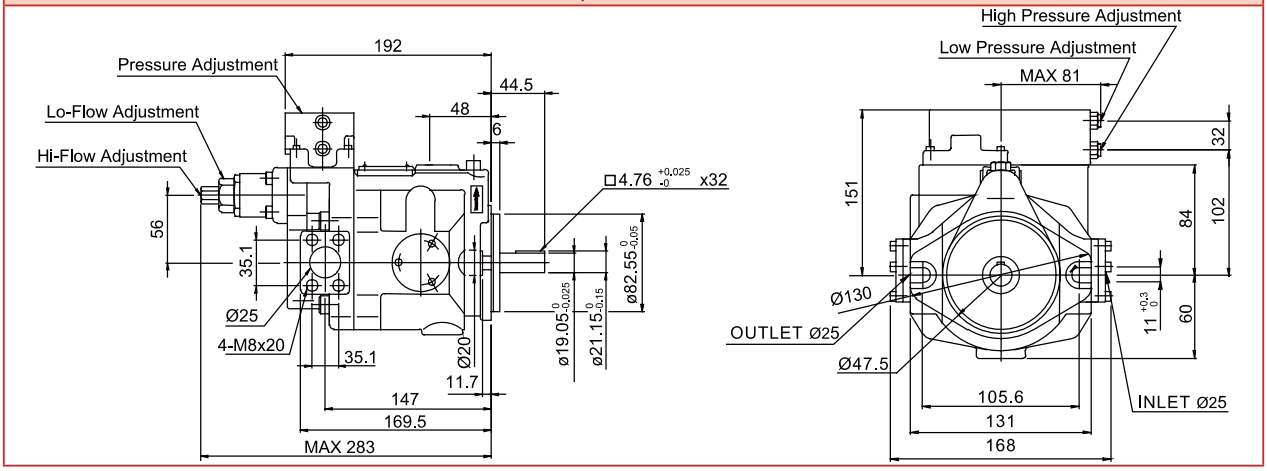
V-15, 18 A TYPE



V-15, 18 B TYPE



V-15, 18 C TYPE



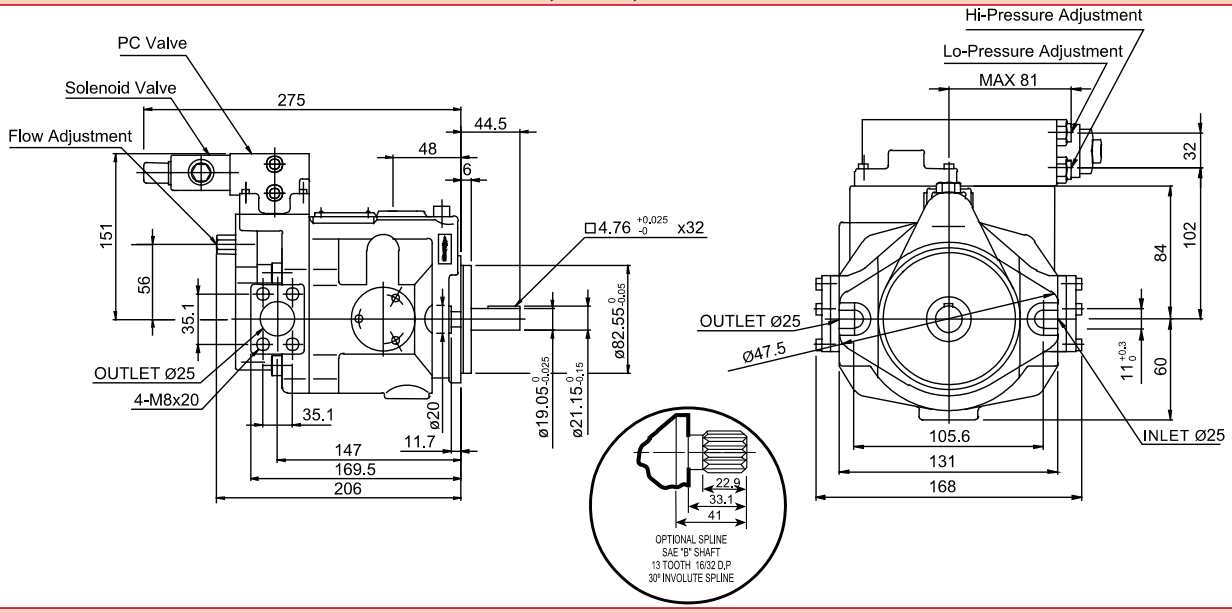
Mounting Surface: SAE "A" 2-Bolts

UNIT: M.M.(INCH)

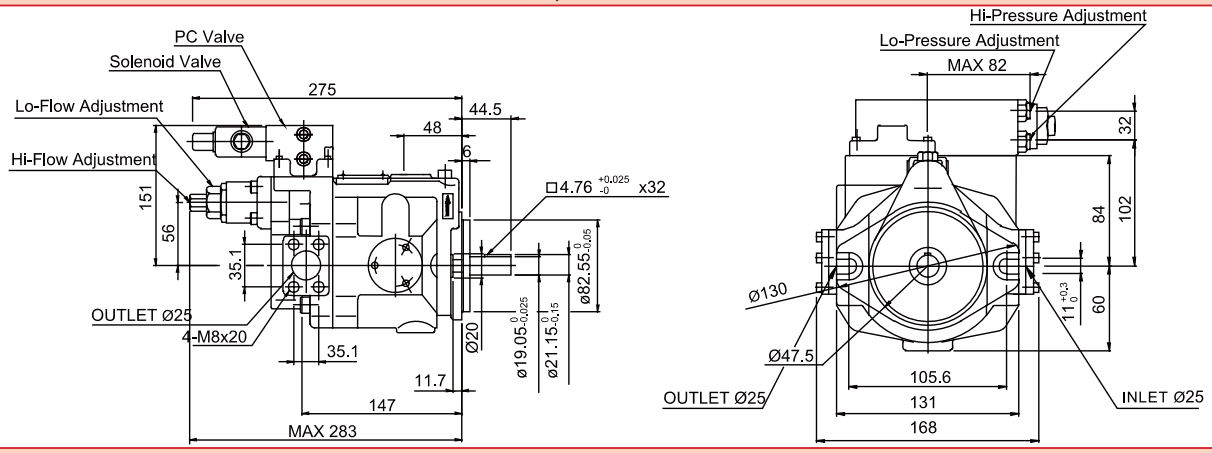
F

[DIMENSIONS]

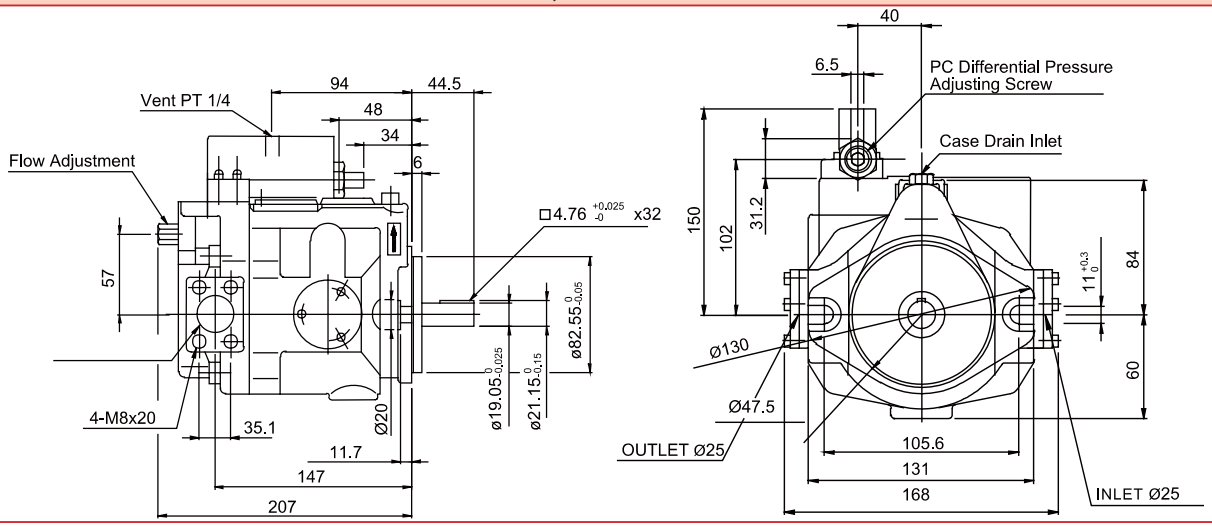
V-15, 18 D,E TYPE



V-15, 18 F TYPE



V-15, 18 G TYPE



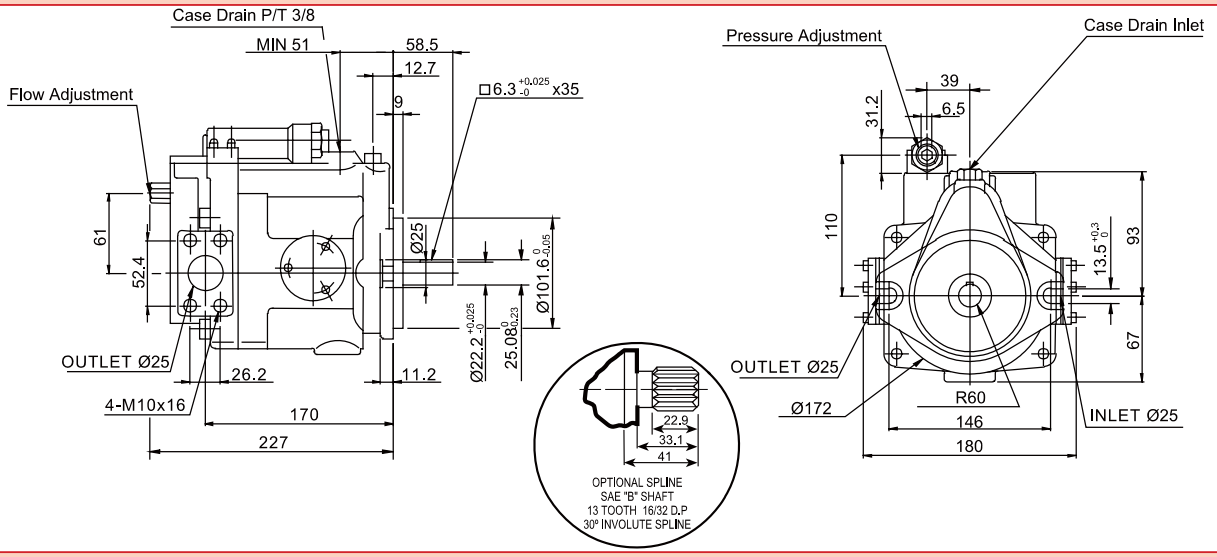
Mounting Surface: SAE "A" 2-Bolts

UNIT: M.M.(INCH)

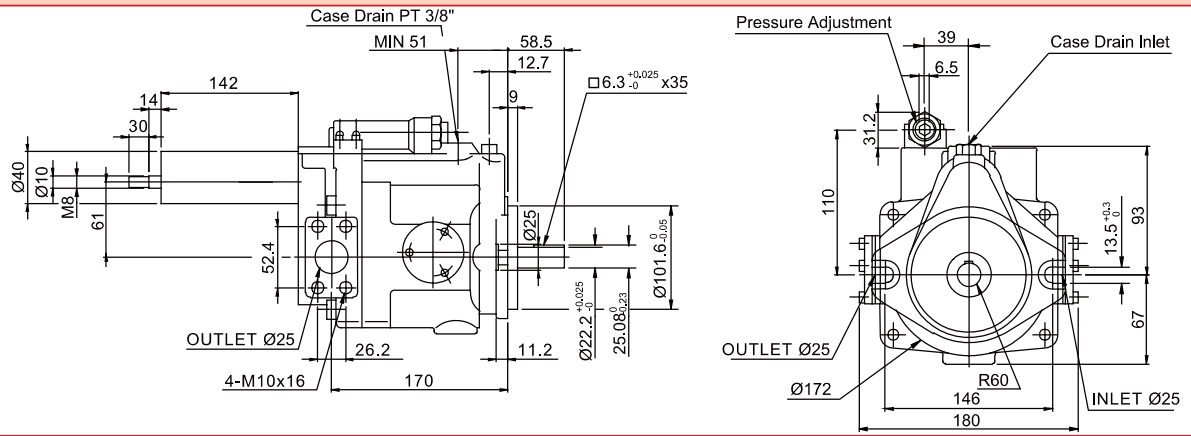
F

【DIMENSIONS】

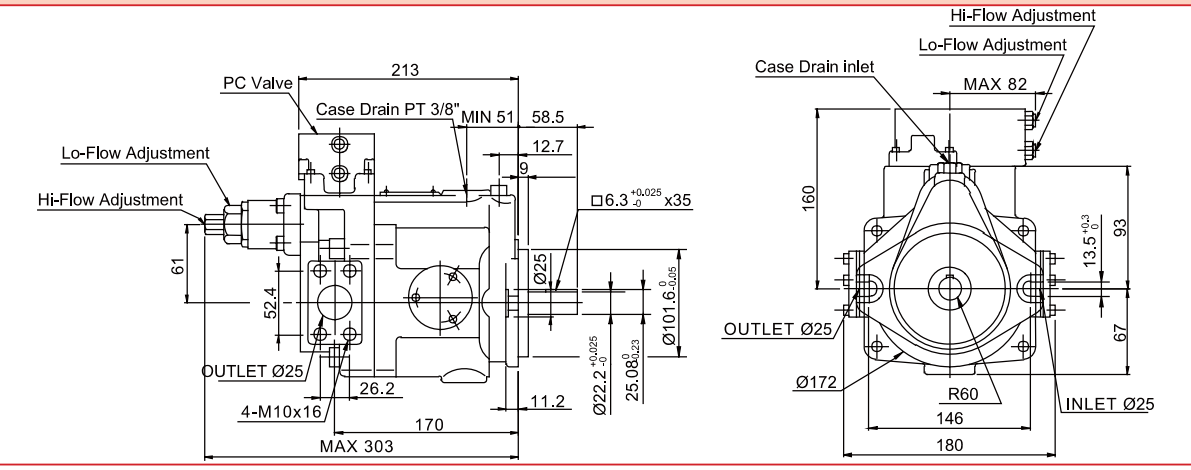
V-23 A TYPE



V-23 B TYPE



V-23 C TYPE



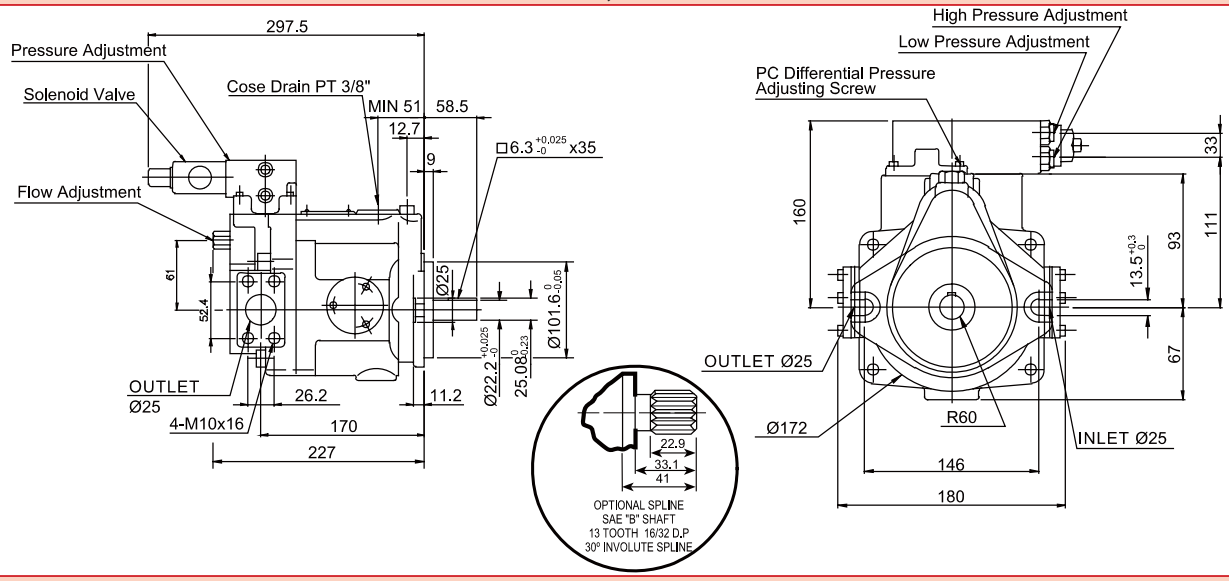
Mounting Surface: SAE "A" 2-Bolts

UNIT: M.M.(INCH)

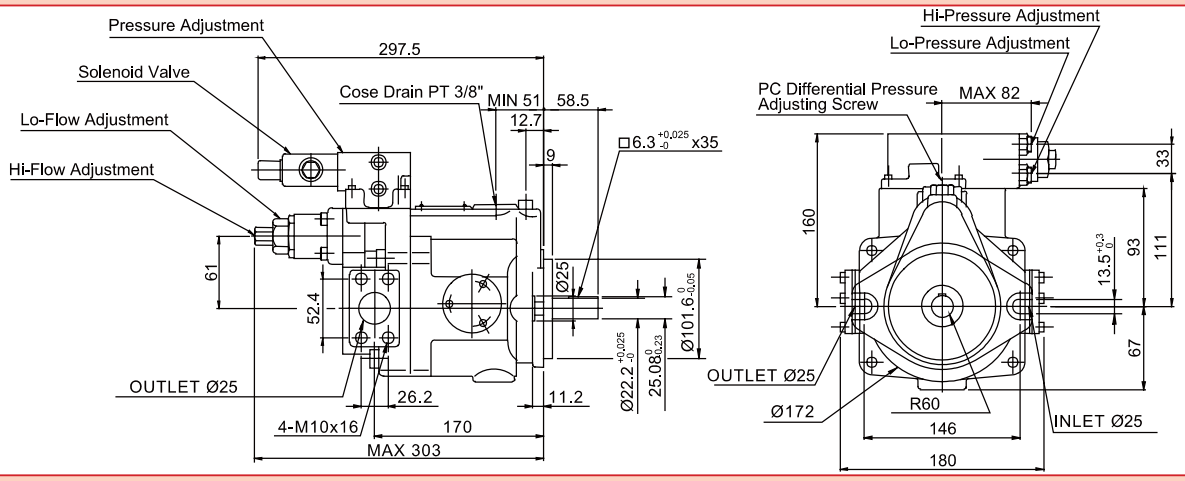
F

[DIMENSIONS]

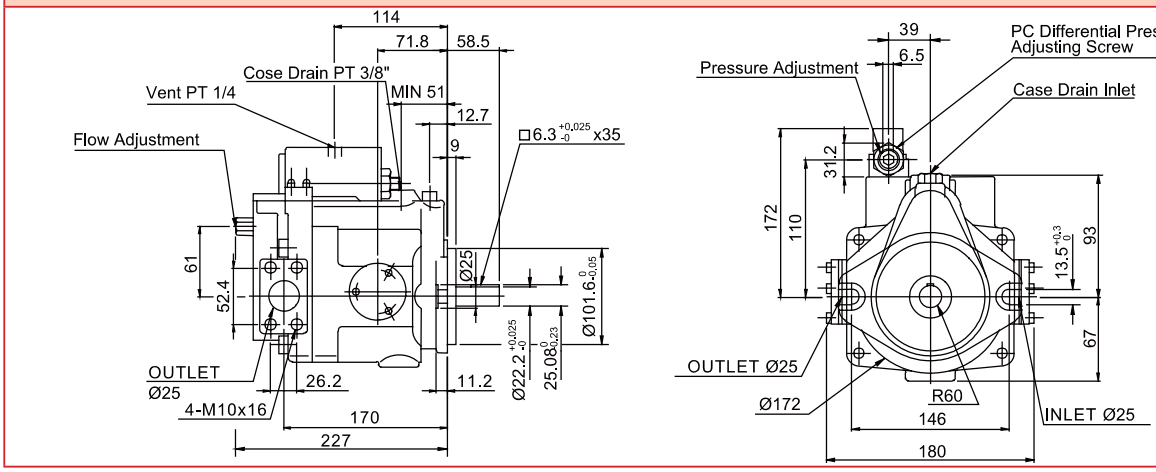
V-23 D,E TYPE



V-23 F TYPE



V-23 G TYPE



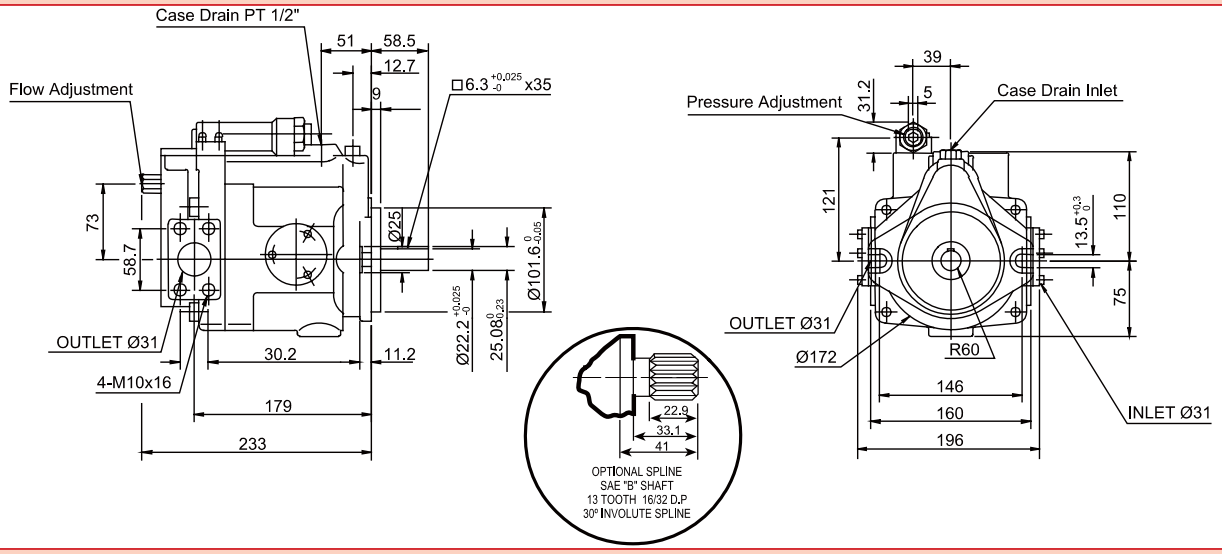
Mounting Surface: SAE "A" 2-Bolts

UNIT: M.M.(INCH)

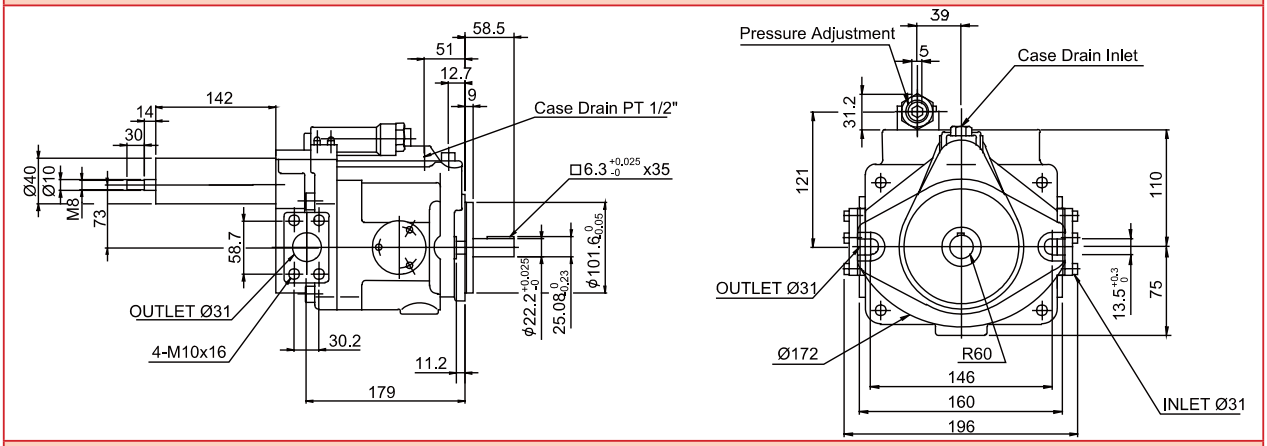
F

【DIMENSIONS】

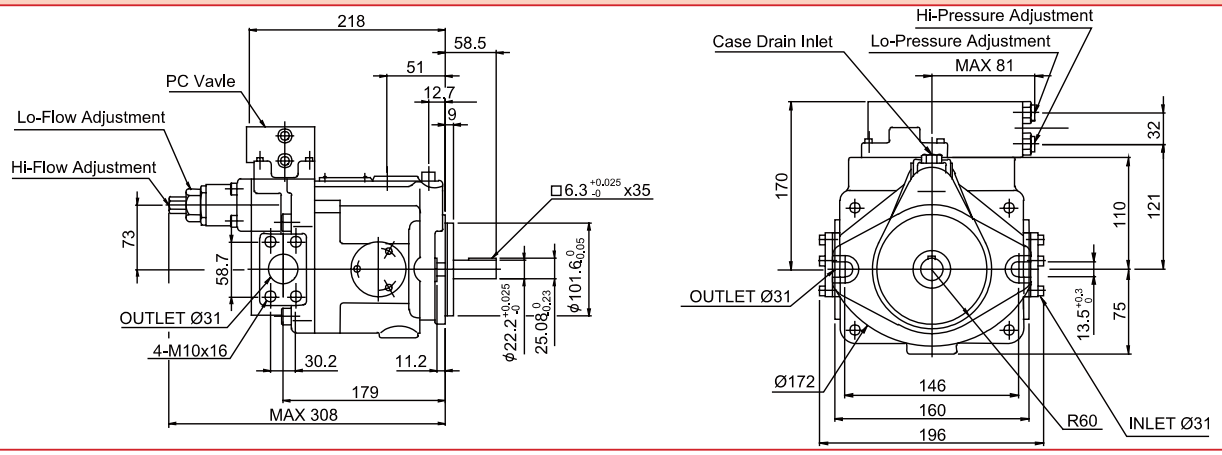
V-38 A TYPE



V-38 B TYPE



V-38 C TYPE

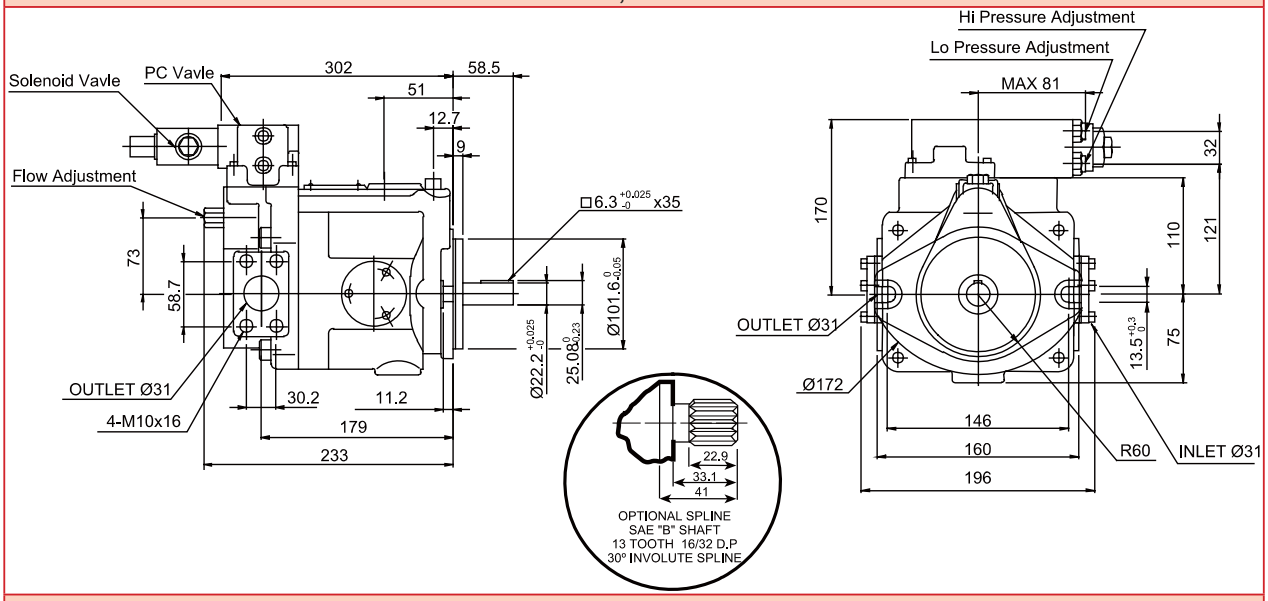


Mounting Surface: SAE "A" 2-Bolts

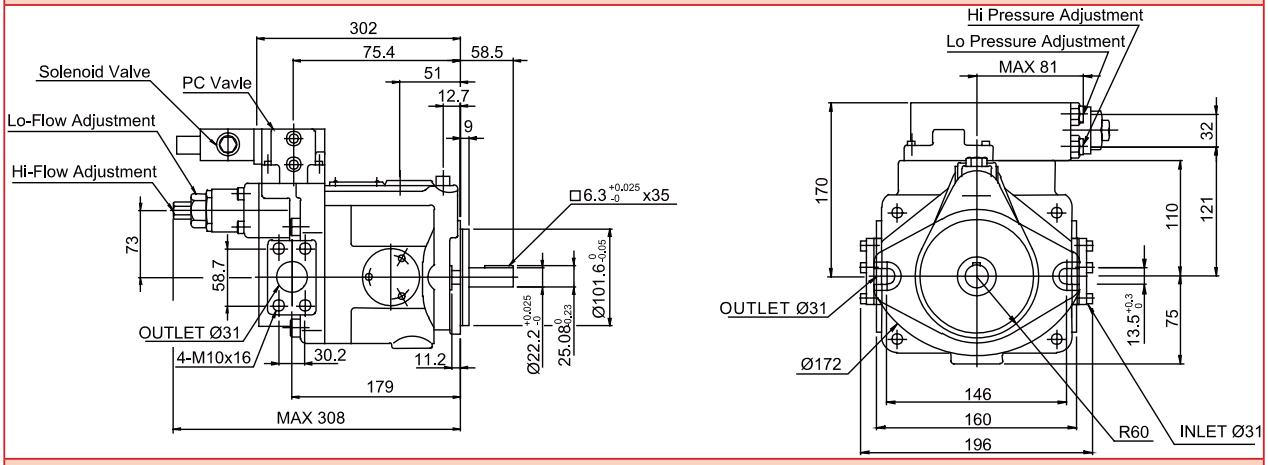
UNIT: M.M.(INCH)

【DIMENSIONS】

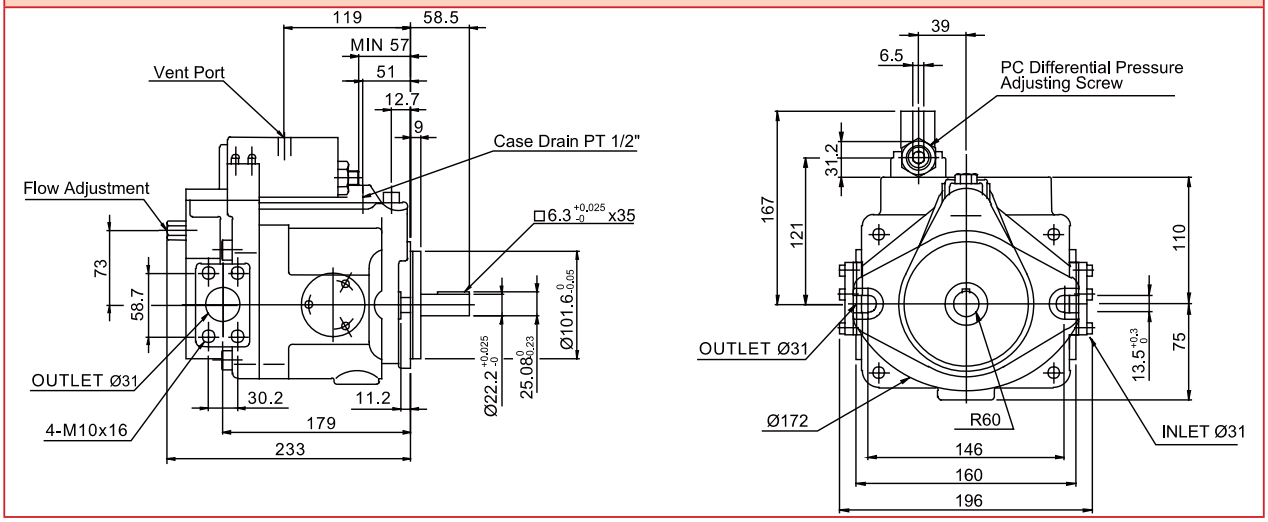
V-38 D, E TYPE



V-38 F TYPE



V-38 G TYPE



Mounting Surface: SAE "A" 2-Bolts

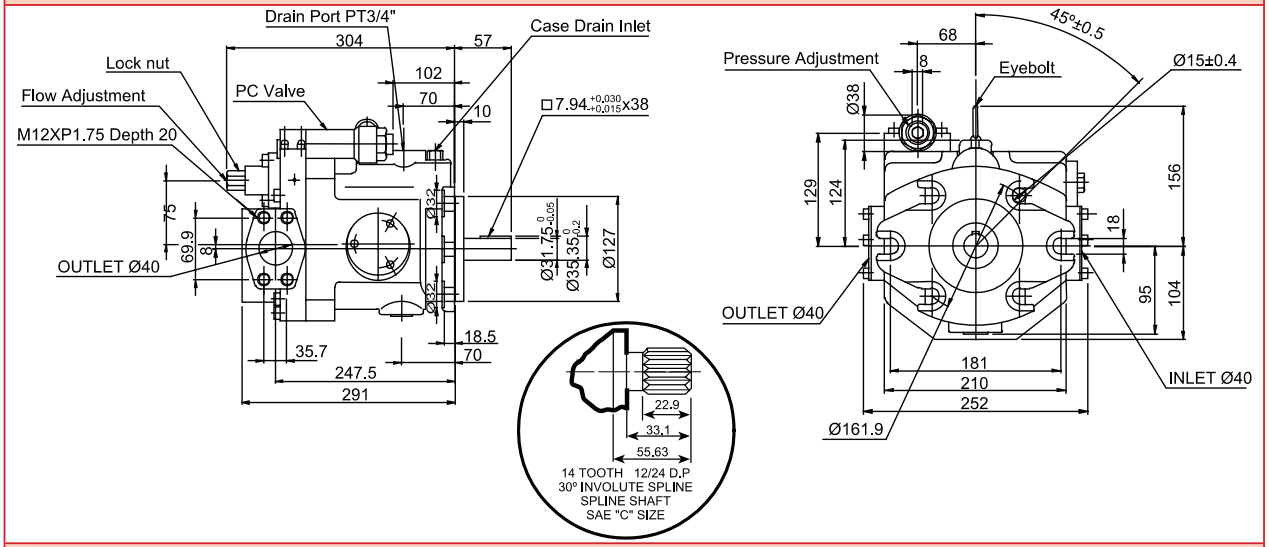
UNIT: M.M.(INCH)

F

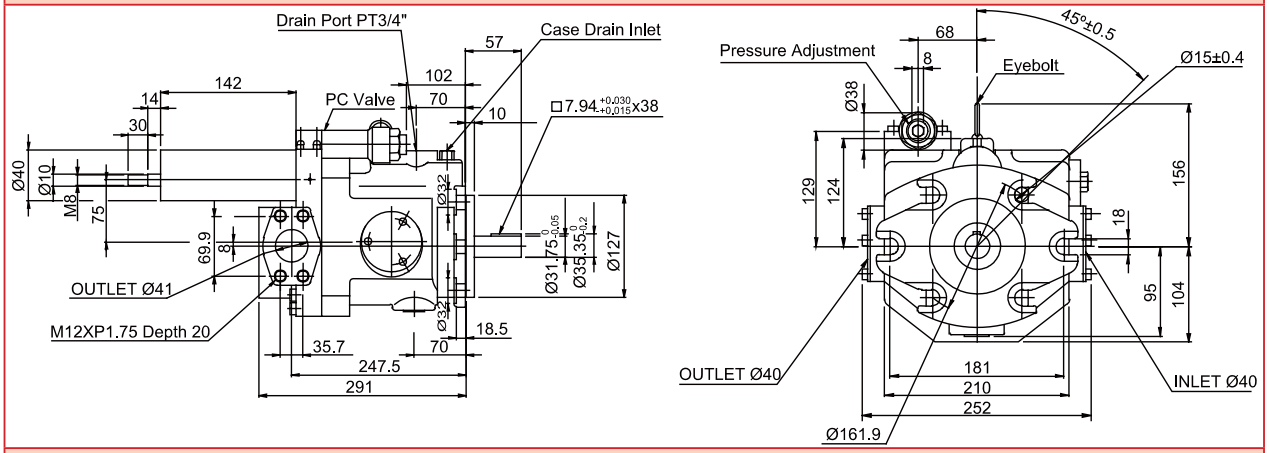
F

【DIMENSIONS】

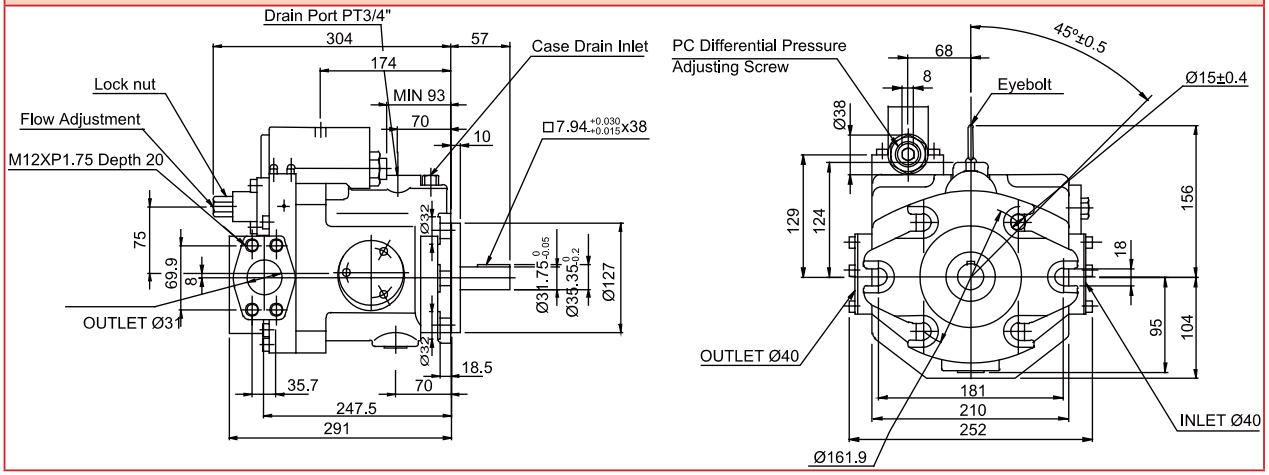
V-50 A TYPE



V-50 B TYPE



V-50 G TYPE



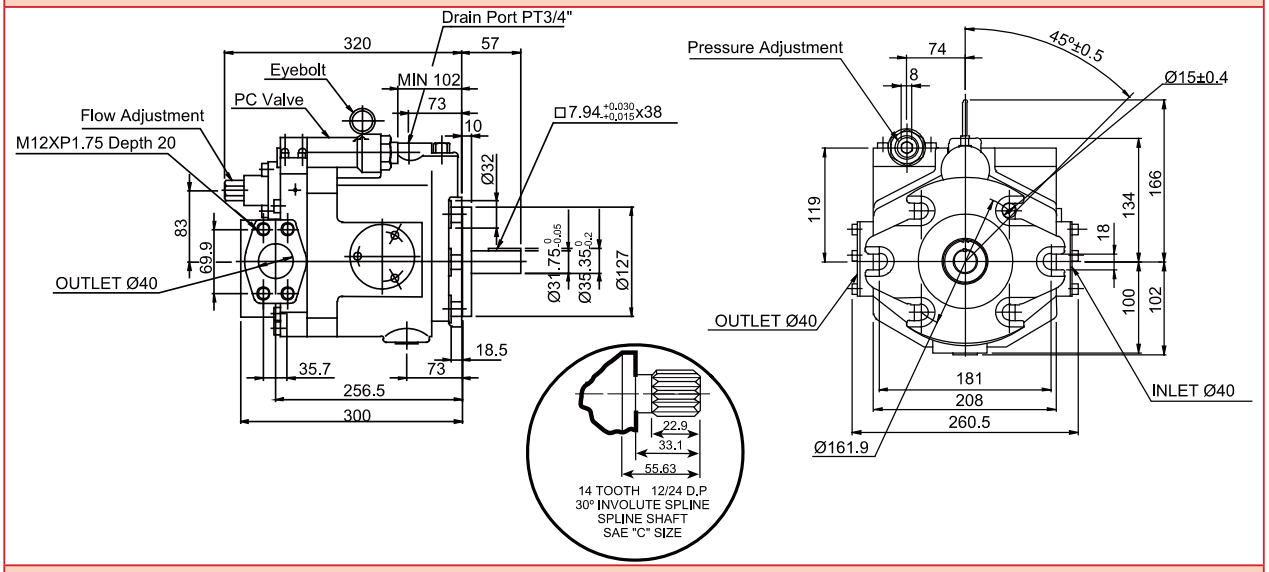
Mounting Surface: SAE "A" 2-Bolts

UNIT: M.M.(INCH)

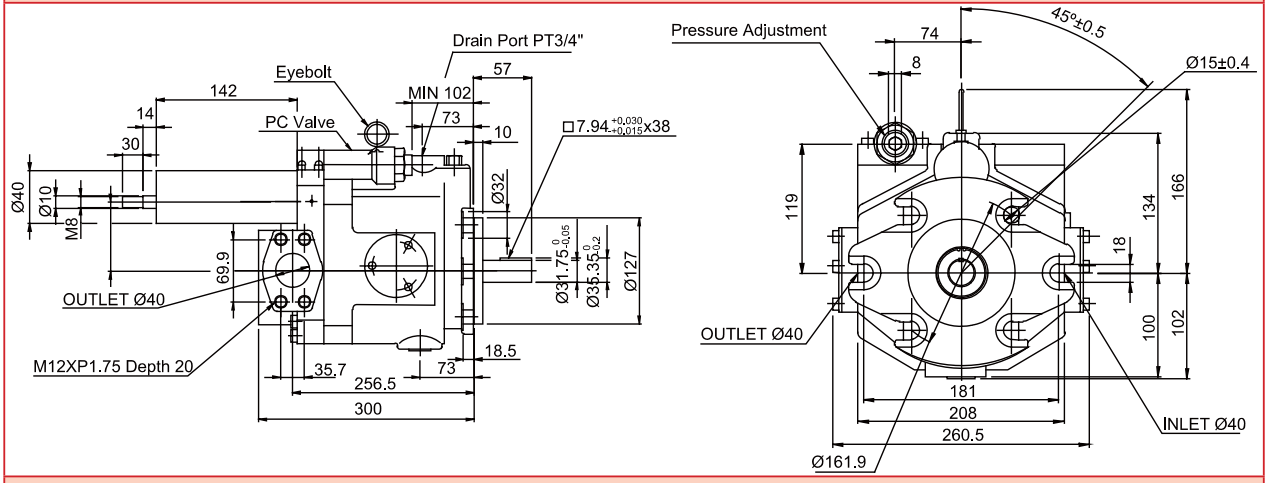
F

【DIMENSIONS】

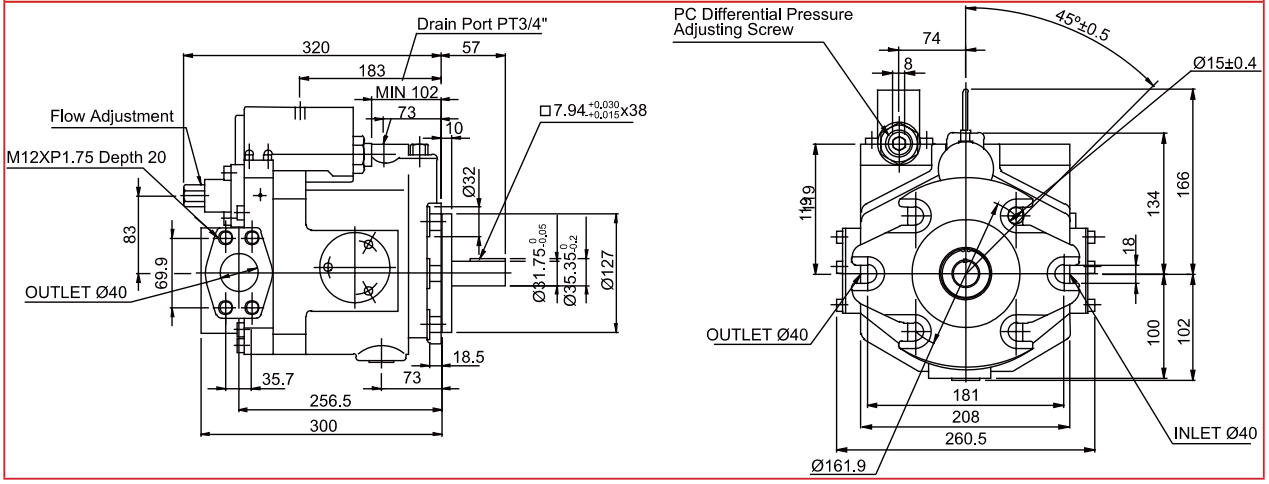
V-70 A TYPE



V-70 B TYPE



V-70 G TYPE



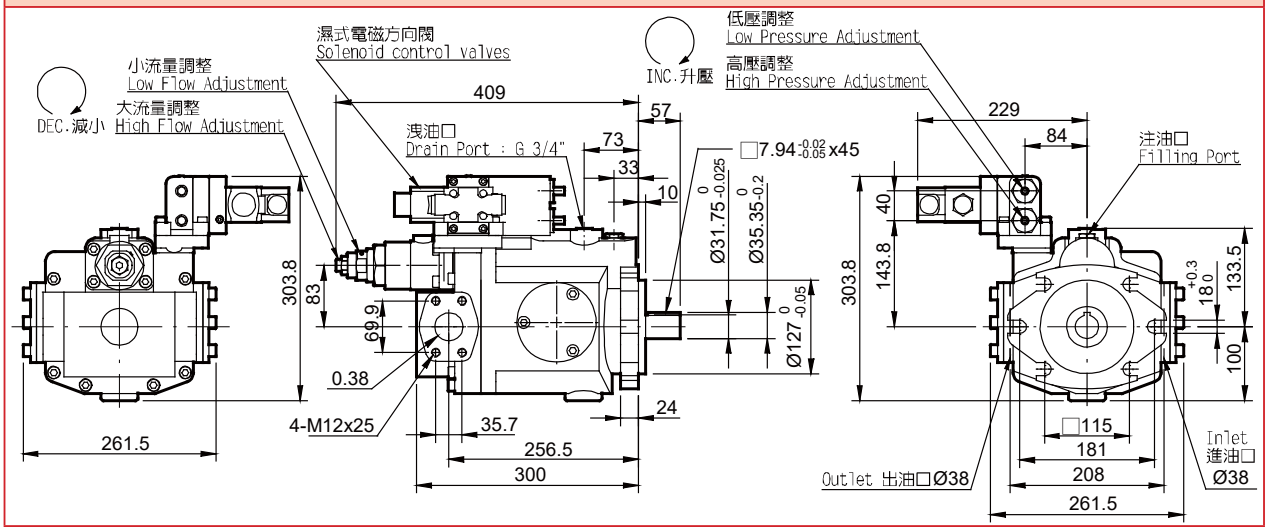
Mounting Surface: SAE "A" 2-Bolts

UNIT: M.M.(INCH)

F

【DIMENSIONS】

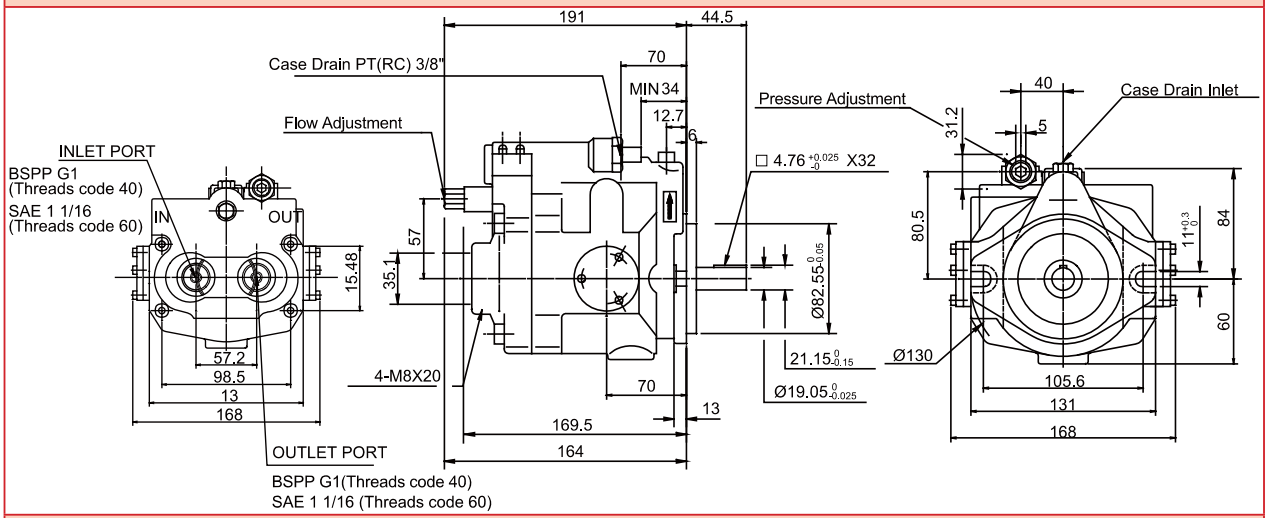
V-70 F TYPE



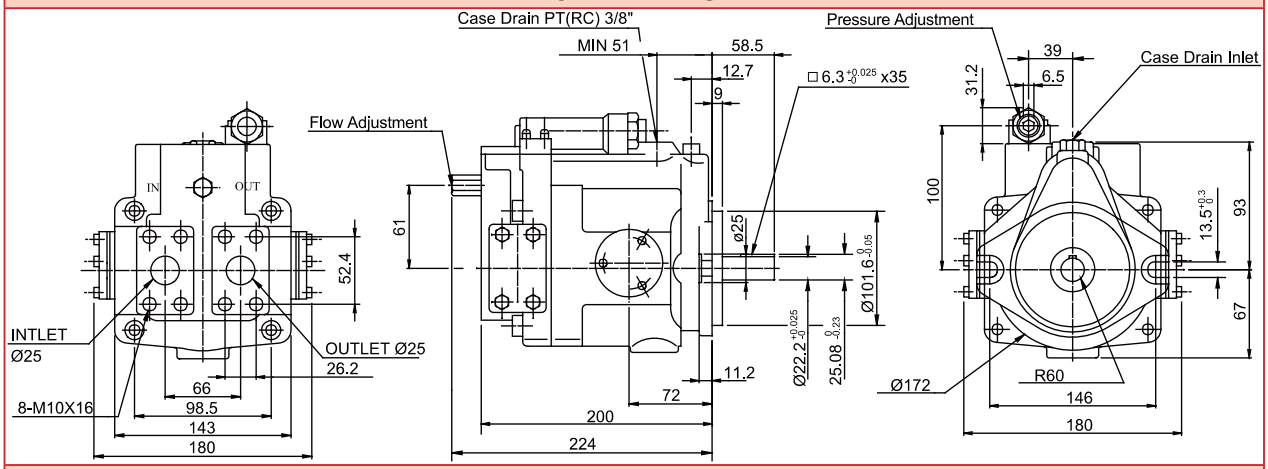
UNIT: M.M.(INCH)

【DIMENSIONS】

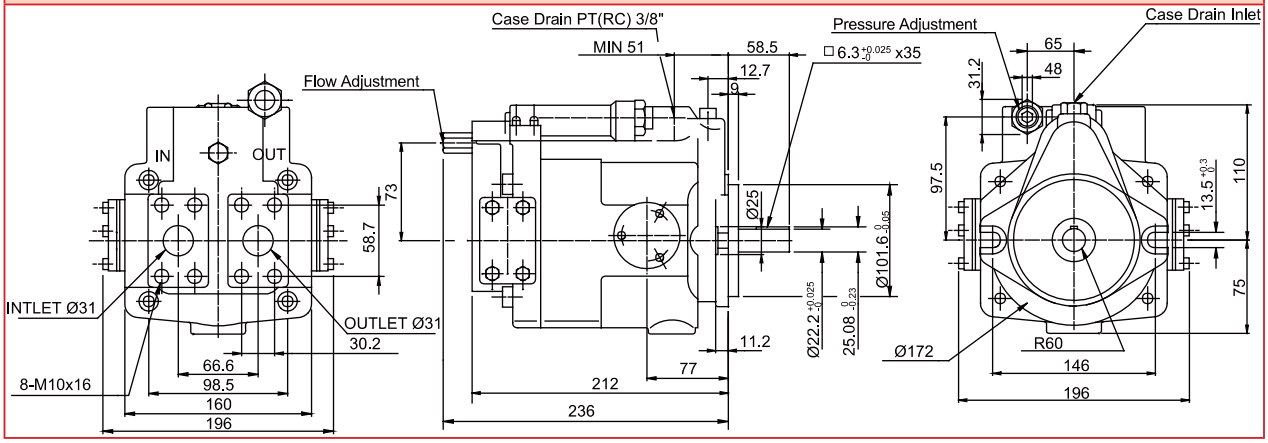
V-15/18-AXIAL PORT



V-23-AXIAL PORT



V-38-AXIAL PORT



Mounting Surface: AXIAL PORT

UNIT: M.M.(INCH)

F

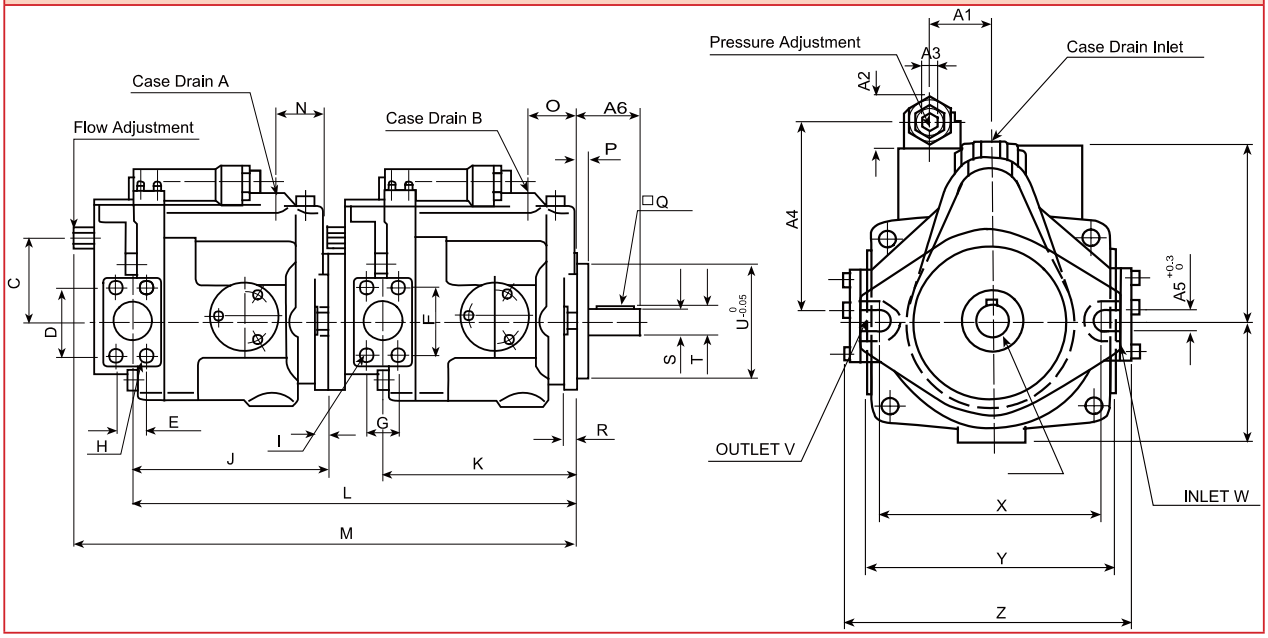
F

【V-SERIES DOUBLE PISTON PUMP】

Model	V15+15	V23+23	V15+38	V23+38	V38+38	V15+70	V23+70	V38+70
A	3/8-PT	3/8-PT	3/8-PT	3/8-PT	1/2-PT	3/8-PT	3/8-PT	1/2-PT
B	3/8-PT	3/8-PT	1/2-PT	1/2-PT	1/2-PT	3/4-PT	3/4-PT	3/4-PT
C	57	61	57	61	73	57	61	73
D	35.1	52.4	35.1	52.4	58.7	35.1	52.4	58.7
E	35.1	26.2	35.1	26.2	30.2	35.1	26.2	30.2
F	35.1	52.4	58.7	58.7	58.7	69.9	69.9	69.9
G	35.1	26.2	30.2	30.2	30.2	35.7	35.7	35.7
H	M8X20	M10X16	M8X20	M10X16	M10X16	M8X20	M10X16	M10X16
I	M8X20	M10X16	M10X16	M10X16	M10X16	M12X20	M12X20	M12X20
J	147	170	147	170	170	147	170	179
K	147	170	179	179	179	256.5	256.5	256.5
L	335	393	373	404	413	447	470	479
M	381	443	419	454	465	493	520	531
N	34	51	34	34	51	34	51	51
O	34	51	51	51	51	73	73	73
P	6	9	9	9	9	10	10	10
Q	4.76X32	6.5X35	6.5X35	6.5X35	3.5X35	7.94X38	7.94X38	7.94X38
R	13	13	13	13	13	18.5	18.5	18.5
S	ø19.05	ø22.22	ø22.22	ø22.22	ø22.22	ø31.75	ø31.75	ø31.75
T	21.15	25.08	25.08	25.08	25.08	35.35	35.35	35.35
U	ø82.55	ø101.6	ø101.6	ø101.6	ø101.6	ø127	ø127	ø127
V	ø24	ø25	ø31	ø31	ø31	ø40	ø40	ø40
W	ø24	ø25	ø31	ø31	ø31	ø40	ø40	ø40
X	106	146	146	146	146	181	181	181
Y	131	145.5	160	160	160	208	208	208
Z	168	180	196	196	196	260.5	260.5	260.5
AA	40	39	39	39	39	74	74	74
AB	31.2	31.2	31.2	31.2	31.2	40	40	40
AC	5	5	5	5	5	8	8	8
AD	80.5	110	121	121	121	119	119	119
AE	11	16.5	16.5	16.5	16.5	18	18	18
AF	44.5	58.5	58.5	58.5	58.5	57	57	57

【DIMENSIONS】

V-SERIES DOUBLE PUMP



UNIT: M.M.(INCH)

【AR-SERIES】

※FEATURE

1 . For the control section, a unique cartridge structure is incorporated.

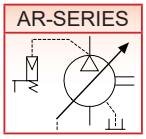
2 . The internal sliding surfaces, made of a wear resistant, seizure proof material, have been surfaced treated.

3 . As the main internal parts, such as the cylinder blocks and piston assemblies are used, are from the AR16 and AR22 pumps, the reliability is well-known and outstanding.

4 . A specially designed semi-cylindrical swash plate bearing structure, effectively reduces vibration and noise, whilst being more compact.

5 . The Housing is a compact and light mass design.

※GRAPHIC SYMBOL



F

※SPECIFICATION

Model	Max. Pressure bar(PSI)	Displacement cc/rev(in³/rev)	Shaft Speed (rmp)		Pressure Adj. Range bar(PSI)	Weight kg(lb)
			Max.	Min.		
AR-16	163(2320)	15.8(0.97)	1800	600	B:12~70(174~1015) C:12~210(174~3045)	9.8(21.6)
AR-22		22.2(1.36)				9.8(21.6)

※MODEL NUMBER DESIGNATION

AR-	16-	F-	R-	01-	C-	(S)-	(90)
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ

Ⅰ: Series No.

Ⅱ: Displacement cc/rev(in³/rev)
- 16: 15.8(0.97)
- 22: 22.2(1.36)

Ⅲ: Mounting
- F: Flange Mounting

Ⅳ: Direciton of Rotation(View from Shaft End)
- R: Clockwise(CW)
- L: Counter-Clockwise(CCW)

Ⅴ: Control Type
- 0 1 : Pressure Compensator Control
- D : Solenoid Controlled Pressure Compensating Type With Unloading Device
- E : Dual Pressure Control
- G : Remoted Pressure Compensator Control
- H L : Load-sensing Compensator

Ⅵ: Pressure Compensating Range bar(PSI)
- B. 12~70(174~1015)
- C. 12~210(174~3045)

Ⅶ: Port Position
- None: Axial Port
- S: Side Port

Ⅷ: Design No. Port & Shaft Option
- None: PT(Rc) Flange Kits, Straight Key
- 80: PF(G) Flange Kits, Straight Key
- 90: NPT Flange Kits, Straight Key
- 30: PT(Rc) Flange Kits, SAE B(13 Tooth)
- 3080: PF(G) Flange Kits, SAE B(13 Tooth)
- 3090: NPT Flange Kits, SAE B(13 Tooth)

※INSTRUCTION

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°C (32 to 140°F), 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 over contamination of the operating oil which can otherwise lead to breakdowns and shorten the life of the unit. Please maintain the degree of contamination within NAS Grade 10. The suction port must be equipped with at least a 100 μm (150 mesh) reservoir type filter and the return line must have a line filter of under 10 μm.

3. Mounting

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

4. 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 (14.5 PSI) and surge pressure of less than 0.5 MPa (72.5 PSI). Length of piping should be less than 1 m (3.3 ft.), and the pipe end should be submerged in oil. In case AR16 and AR22 pump, a screw-in torque of fitting is 40 to 50 Nm (354 to 443 IN.1bs.). Do not apply bending and thrust torque to the fitting.

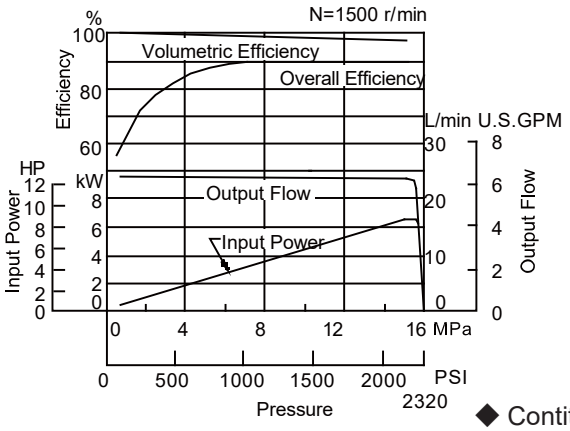
5. Starting

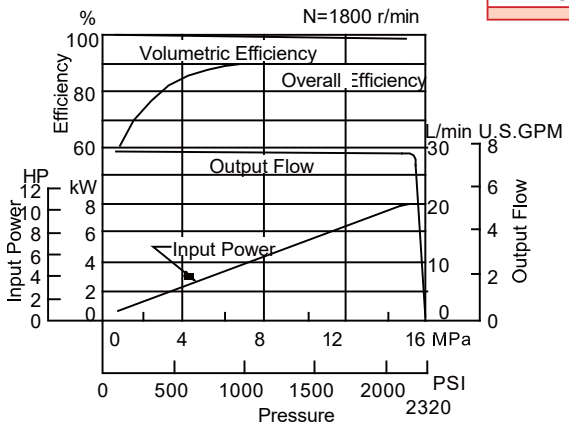
Before first staring, fill pump case with clean operating oil via the fill port. In order to avoid air blockage when first starting, adjust the control valves so that the discharged oil from the pump is returned direct to the tank or the actuator moves in a free load.

AR16

F

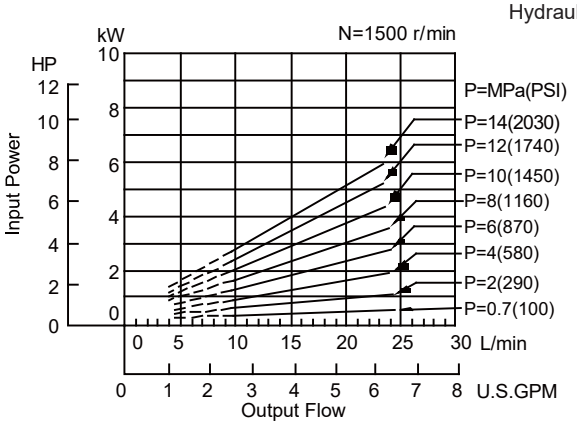
※PERFORMANCE CHARACTERISTICS CURVE

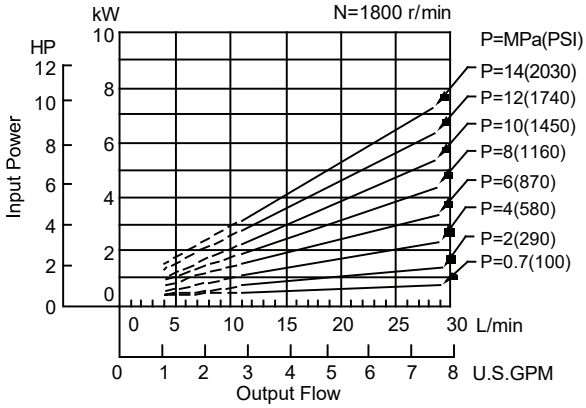




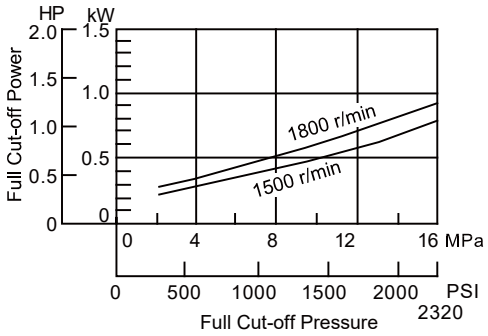
◆ Contitions:
Vsicosity 20 mm²/s(100SSU)
Fluid Temperature: 50°C(122°F)
Hydraulic Oil: ISO VG32

◆ Input Power

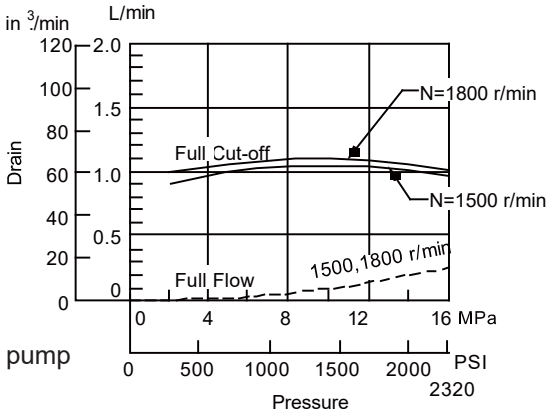




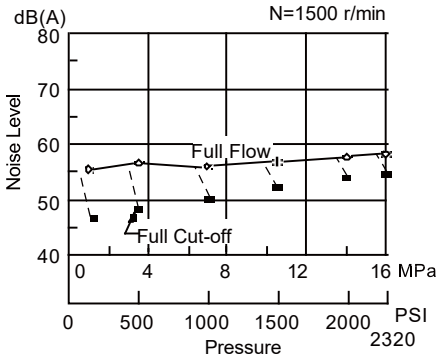
◆ Full Cut-off Power

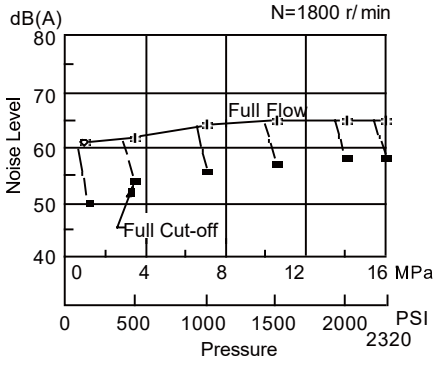


◆ Drain Curve



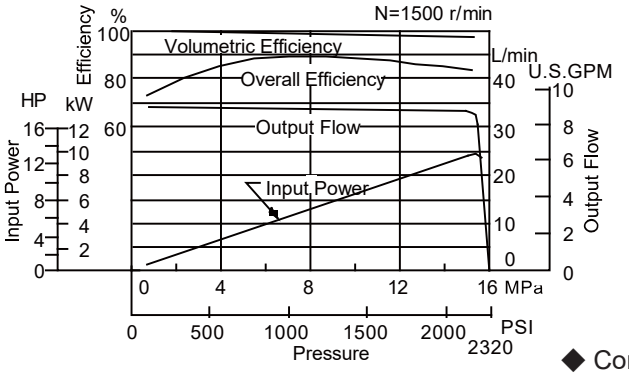
◆ Noise Level [One metre (3.3 ft.) horizontally away from pump head cover]

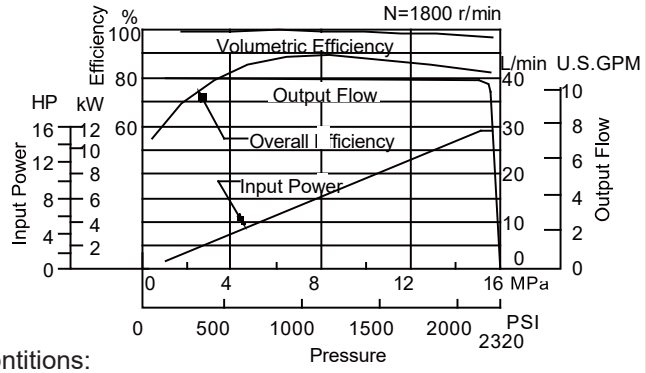




※PERFORMANCE CHARACTERISTICS CURVE

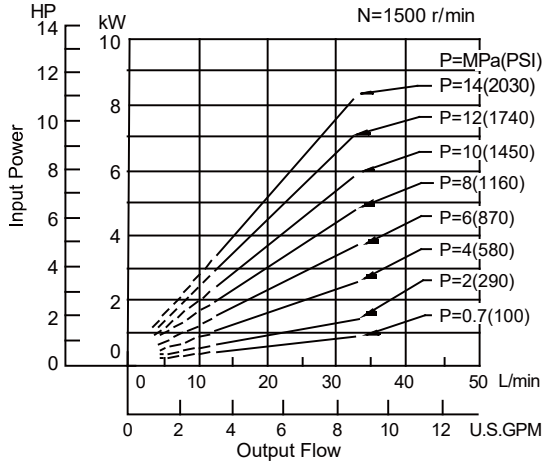
AR22

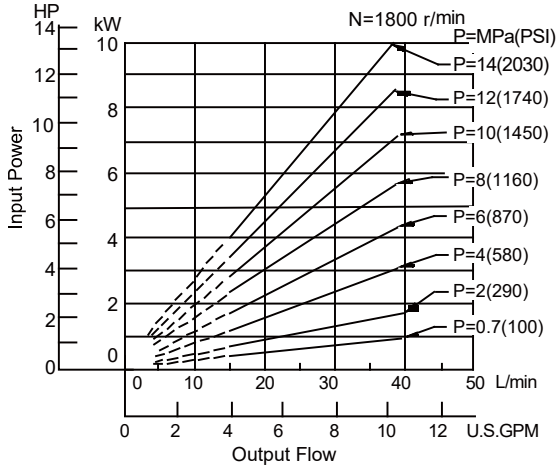




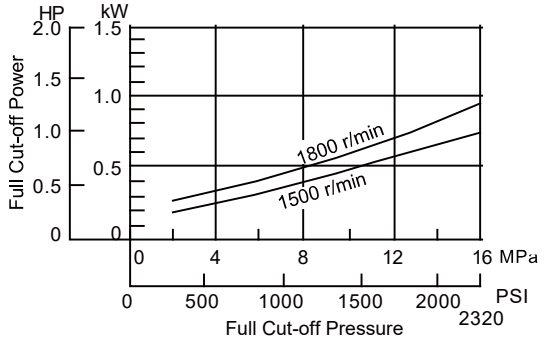
◆ Contitions:
Vsicosity 20 mm²/s(100SSU), Fluid Temperature: 50°C(122°F)
Hydraulic Oil: ISO VG32

◆ Input Power

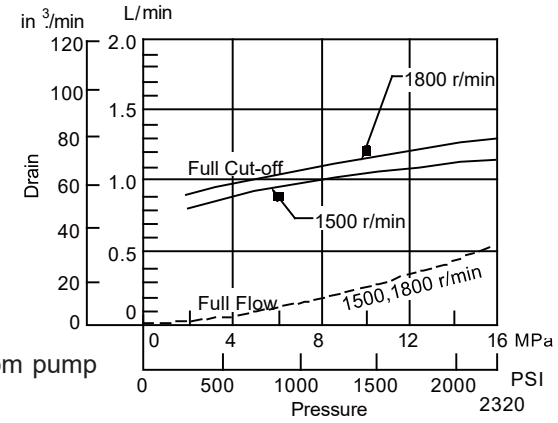




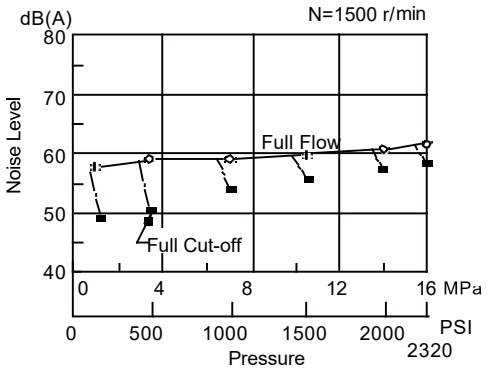
◆ Full Cut-off Power

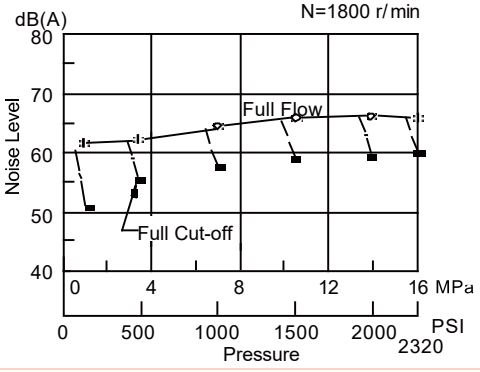


◆ Drain Curve



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





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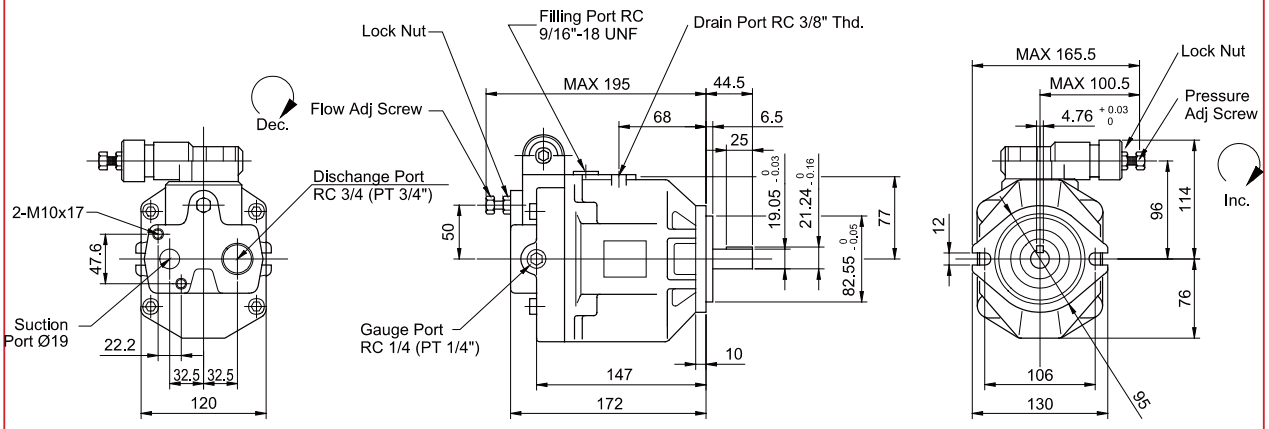
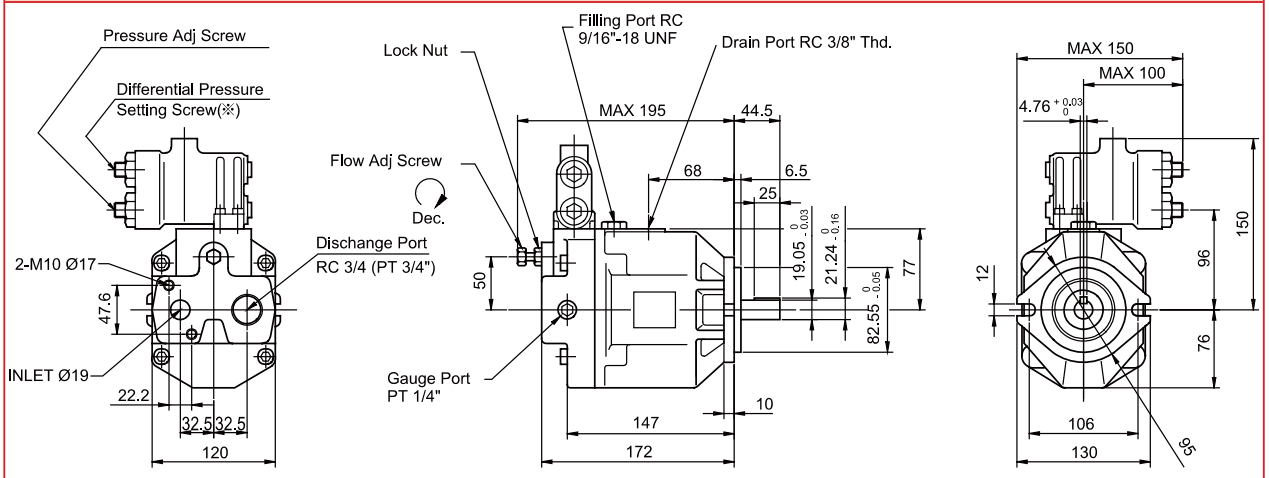
【DIMENSIONS】

A16/22 01 TYPE

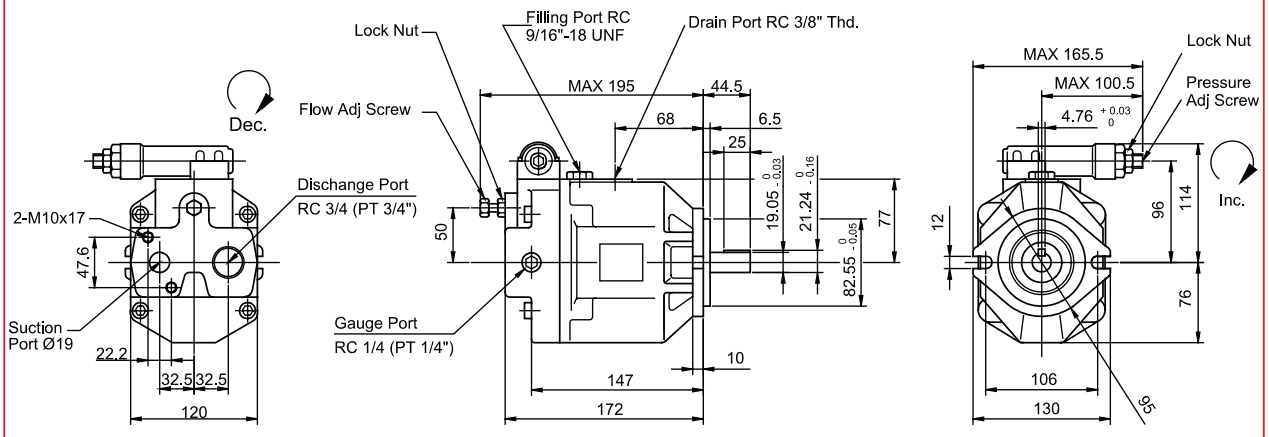
Standard Type:



A16/22 G TYPE



A16/22 HL TYPE



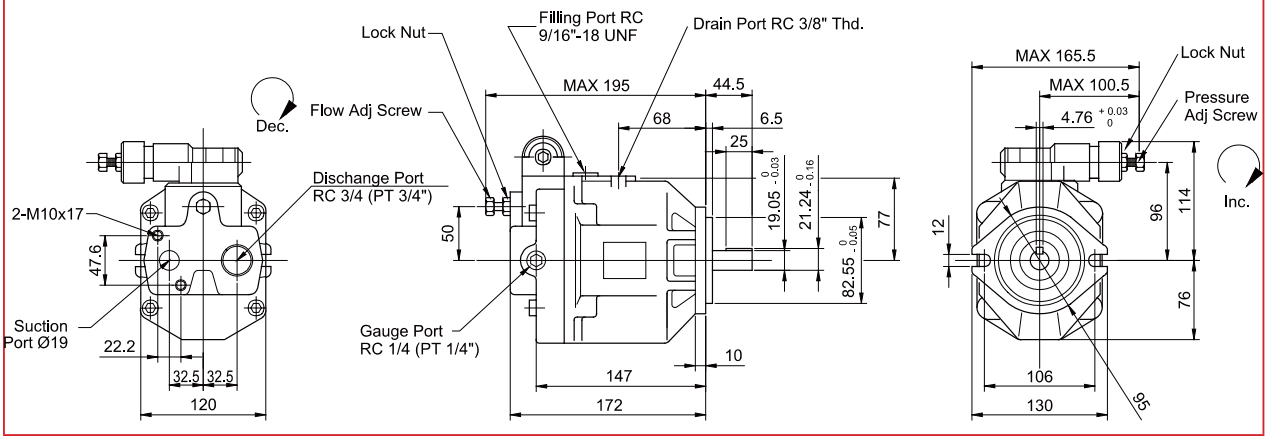
UNIT: M.M.(INCH)

F

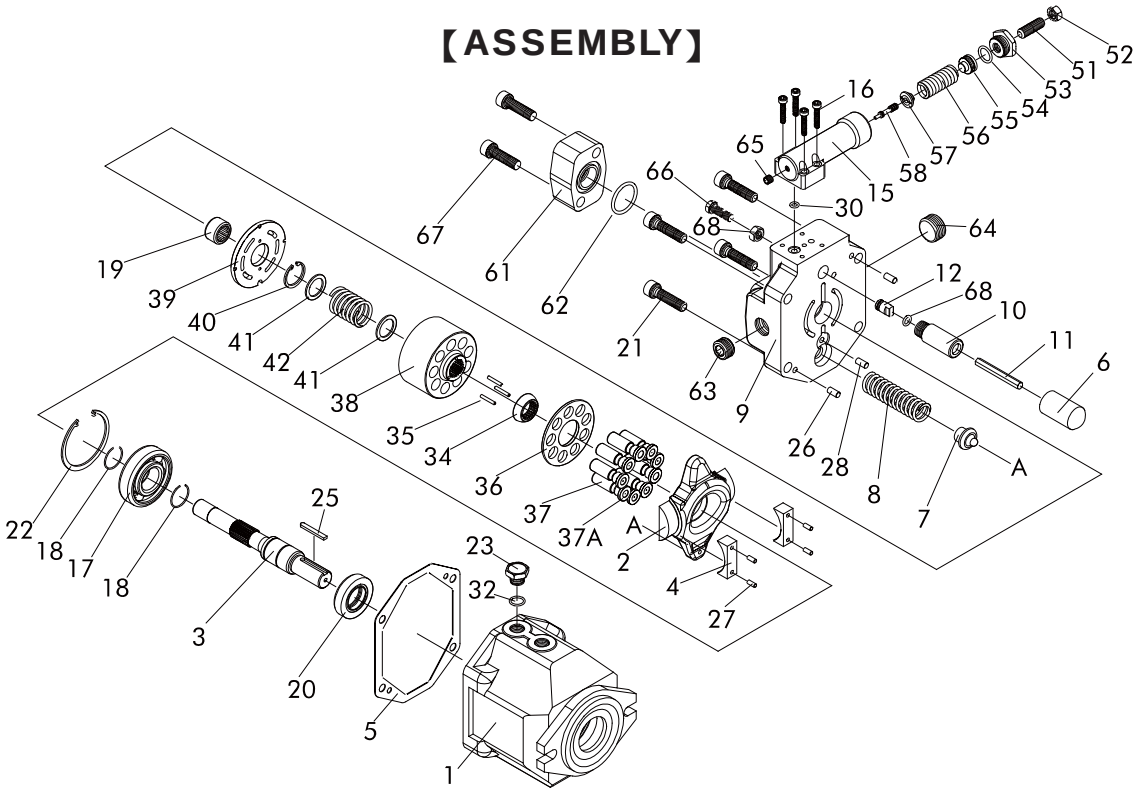
[DIMENSIONS]

A16/22 HL TYPE- SIDE PORT

Standard Type:



[ASSEMBLY]



PARTS LIST

NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION
1	Pump Body	16	Screw M5x25	32	O-Ring	54	O-Ring P14 70°
2	Swash Plate	17	Bearing 6350	34	Cylinder Block Holder	55	Spring Seat
3	Shaft	18	Snap Ring 1-1/2"	35	Pin Cylinder Block	56	Pressre Spring
4	Swash Plate Seats	19	Bearing 1715	36	Slipper Retainer	57	Spring Seat
5	Gasket	20	Shaft Seal	37	Piston and Slipper	58	Compenstator Spool
6	Servo Piston Sleeve	21	Screw M10x40	38	Cylinder Block	61	Flange
7	Spring Seat	22	Snap Ring R62	39	Swash Plate	62	O-Ring
8	Spring	23	Plug Filling Port	40	Snap Ring R28	63	Plug Gauge Port 1/4"
9	End Cover	25	Paralle l Shaft Key	41	Washer	64	Plug Side Port 3/4"
10	Sleeve Position	26	Lock Pin-Body	42	Retainer Spring	65	Plug NPT 1/16"
11	Flow Adj. Rod	27	Lock Pin-Swash Plate Seat	51	Hex Bolt M10x30	66	Screw M8x35
12	Flow Control Spool	28	Pin	52	Nut M10	67	Screw M10x35
15	Pressure Compensator	30	O-Ring p7	53	Screw Cap	68	Nut M8

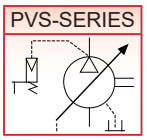
【PVS-SERIES】

※FEATURE

1 . Half-cylindrical swash plate for low noise and low pulsation Depending on variety of application needs multiple optional

2. Rich set of options to enable highly efficient, energy-saving equipment.

※GRAPHIC SYMBOL



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※SPECIFICATION

Model	Volume cm³/rev.	Delivery at no load ℓ/min				Pressure adj. range Mpa (kgf/cm²)	Max setting pressure Mpa (kgf/cm²)	Drive speed min⁻¹		Mass kg
		1000 min⁻¹	1200 min⁻¹	1500 min⁻¹	1800 min⁻¹			Min	Max	
PVS-08-A-0-F-R-01	8.0	8.0	9.6	12.0	14.4	2~4 (20~40)	25 (255)	500	2000	9
PVS-08-A-1 -F-R-01						2~7 (20~73)				
PVS-08-A-2 -F-R-01						3~14 (30~145)				
PVS-08-A-3 -F-R-01						3~21 (30~215)				
PVS-16-A-0-F-R-01	16.5	16.5	19.8	24.7	29.7	2~4 (20~40)				12
PVS-16-A-1-F-R-01						2~7 (20~73)				
PVS-16-A-2-F-R-01						3~14 (30~145)				
PVS-16-A-3-F-R-01						3~21 (30~215)				
PVS-22-A-0-F-R-01	22.0	22.0	26.4	33.0	39.6	2~4 (20~40)				12
PVS-22-A-1-F-R-01						2~7 (20~73)				
PVS-22-A-2-F-R-01						3~14 (30~145)				
PVS-22-A-3-F-R-01						3~21 (30~215)				
PVS-36-A-0-F-R-01	36.0	36.0	43.2	54.0	64.8	2~4 (20~40)				23
PVS-36-A-1-F-R-01						2~7 (20~73)				
PVS-36-A-2-F-R-01						3~14 (30~145)				
PVS-36-A-3-F-R-01						3~21 (30~215)				
PVS-46-A-0-F-R-01	46.0	46.0	55.2	69.0	82.8	2~4 (20~40)				23
PVS-46-A-1-F-R-01						2~7 (20~73)				
PVS-46-A-2-F-R-01						3~14 (30~145)				
PVS-46-A-3-F-R-01						3~21 (30~215)				
PVS-70-A-0-F-R-01	70.0	70.0	84.0	105.0	126.0	2~7 (20~73)	28 (286)		1800	41
PVS-70-A-3-F-R-01						3~21 (30~215)				
PVS-70-A-4-F-R-01						3~28 (30~286)				
PVS-100-A-0-F-R-01	100.0	100.0	120.0	150.0	180.0	2~7 (20~73)				60
PVS-100-A-3-F-R-01						3~21 (30~215)				
PVS-100-A-4-F-R-01						3~28 (30~286)				

※MODEL NUMBER DESIGNATION

PVS-	08-	A-	4-	F-	R-	S-	01
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ

Ⅰ: Series No.

Ⅱ: Displacement cc/rev(in³/rev)
08(0.49), 16(0.98), 22(1.34)
36(2.2), 46(2.81), 70(4.27), 100(6.10)

Ⅲ: Control Type
A : Pressure Compensator Control
B : Remote pressure control type
C : Two pressure-two flow control type
D : 2-stage Pressure & Flow Control Type
E : Two pressure cut-off control type
H L : Load sensing control type

Ⅳ: Pressure Compensating Range bar
0: 1~4 Mpa (10~40 kgf/cm²)
1: 2~7 Mpa (20~73 kgf/cm²)
2: 3~14 Mpa (30~145 kgf/cm²)
3: 3~21 Mpa (30~215 kgf/cm²)
4: 3~28 Mpa (30~286 kgf/cm²)

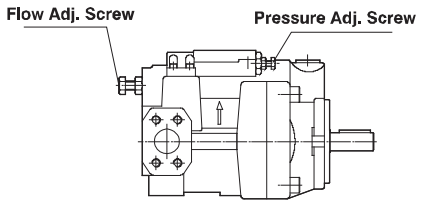
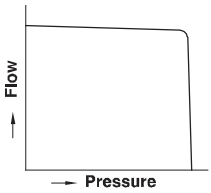
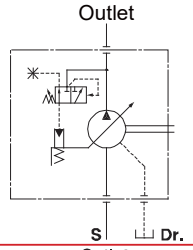
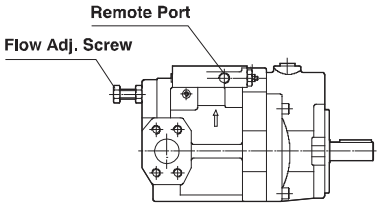
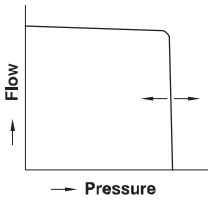
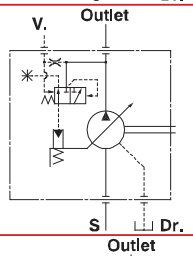
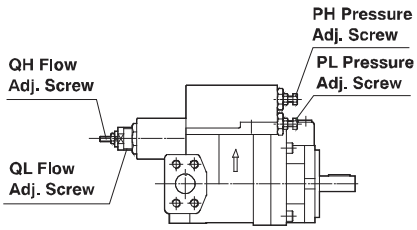
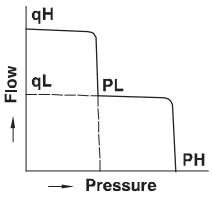
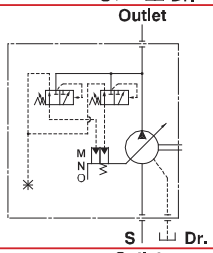
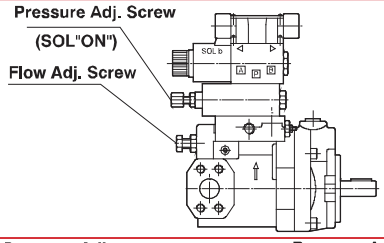
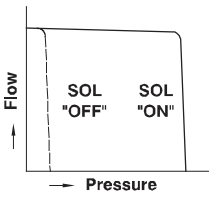
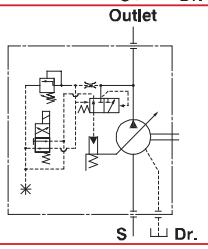
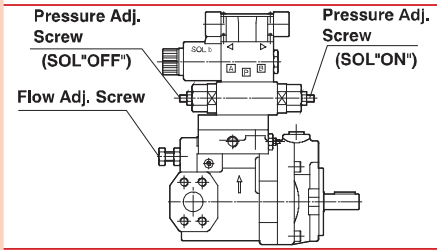
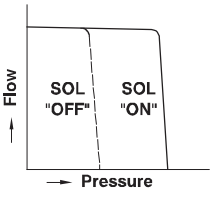
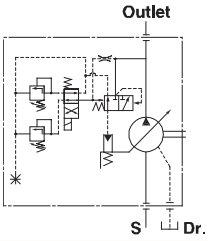
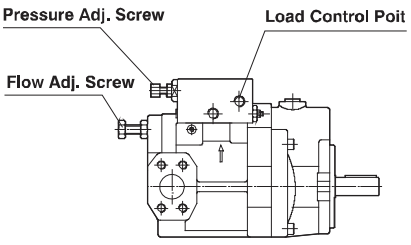
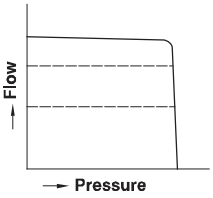
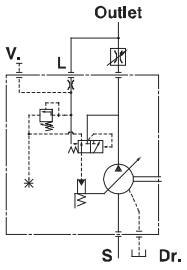
Ⅴ: Mounting
F: Flange Mounting
L: Foot Mounting

Ⅵ: Shaft Rotation(View from Shaft End)
R: Clockwise(CW)
L: Counter-Clockwise(CCW)

Ⅶ: Shaft Options
S: SAE Spline
K: Keyed

Ⅷ: Design No.

※CONTROL TYPE

Type	External View	Characteristic	Hydraulic Circuit	Description
A				**Pressure Compensating Type (Manual)** • When the pressure reaches the value set with the compensator, the flow is reduced automatically and the set pressure is maintained. • The pressure and flow are controlled manually.
B				**Remote Pressure Control Type** • The pressure can be controlled according to the pilot pressure. • The flow can be controlled manually.
C				**Two Pressure-Two Flow Control Type** • By means of the sequence valve, two stage flow rate can be obtained and each flow rate has the different pressure eventually enabling energy savings.
D				**Solenoid Cut-Off Control Type** • An unloading solenoid valve is used to minimize the lost energy when the pump output is not required. • Heat generated is very small.
E				**Two Pressure Cut-Off Control Type** • By means of "ON" "OFF" control of solenoid valves, two different pressure compensating types can be obtained.
HL				**Load Sensing Control** • The "HL" compensator is used for load sensing circuits and is a true load sensor. This is the "B" compensator with a pin in the compensator spool. The pin prevents pilot flow from entering the circuit which will eliminate creeping of the load. • The "HL" compensator will let the pump deliver a constant flow rate to the circuit by providing an adjustable ΔP across the customers orifice or valve. The pump will operate at 17.2~27.5 bar (250-400 psi) above "Load pressure".

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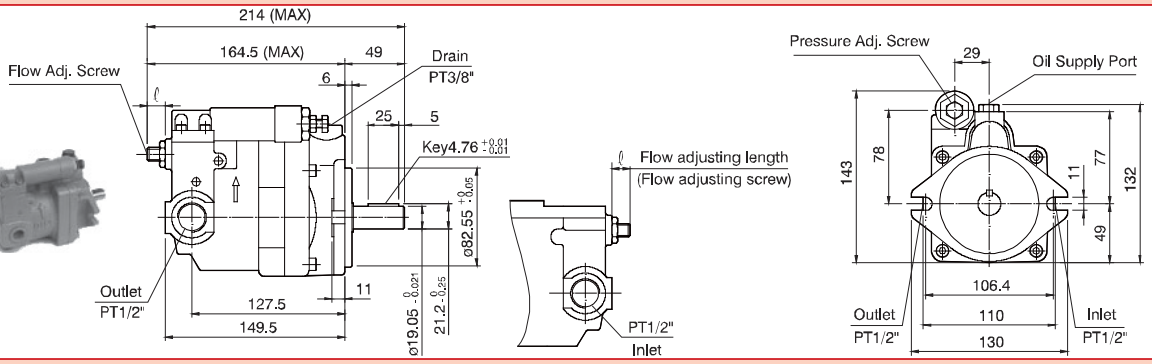
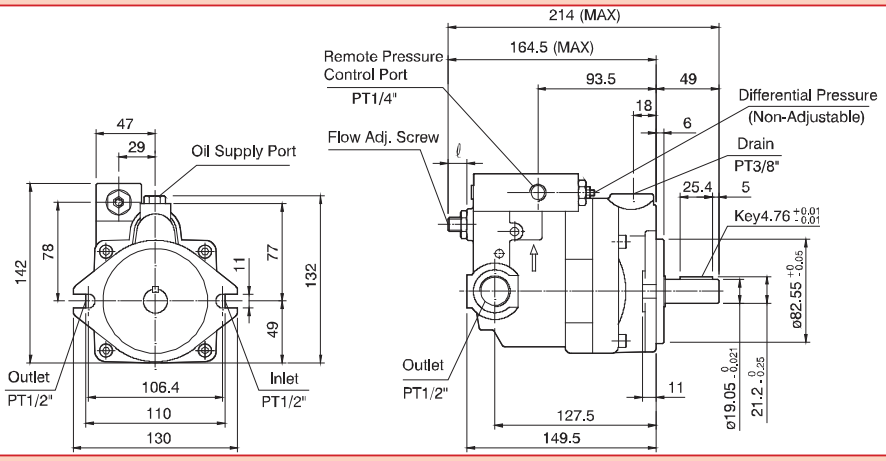
[DIMENSIONS]

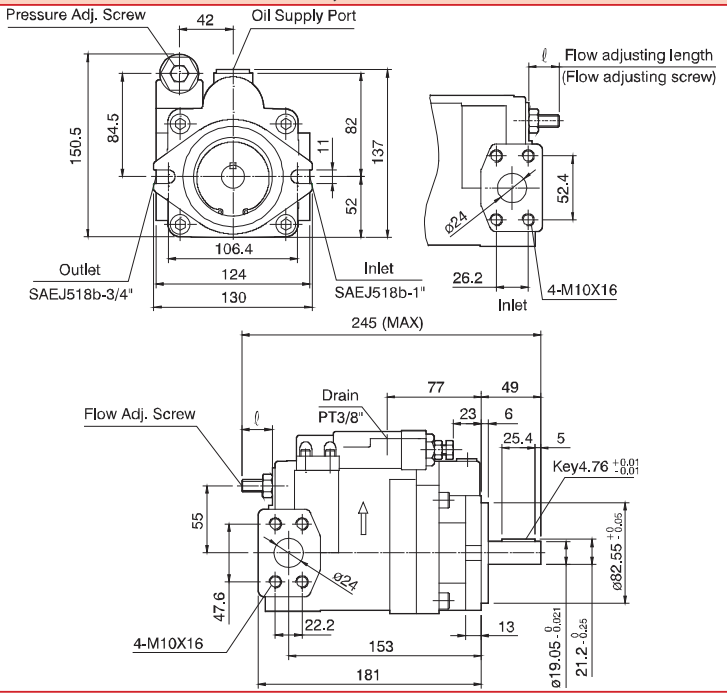
PVS-08 A TYPE



PVS-08 B TYPE

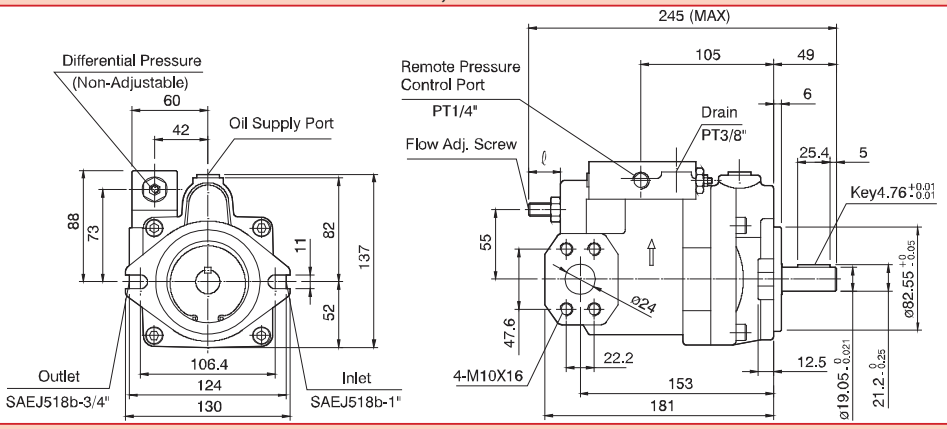


PVS-16, 22 A TYPE

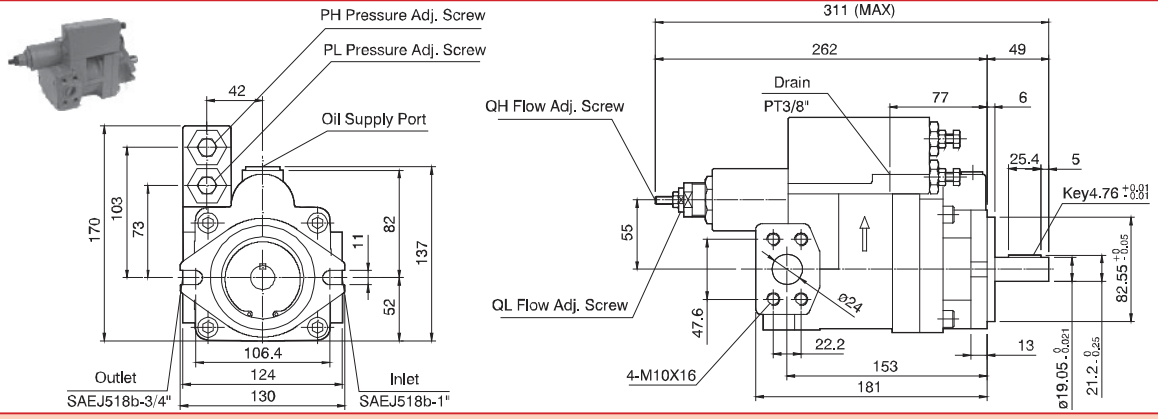


[DIMENSIONS]

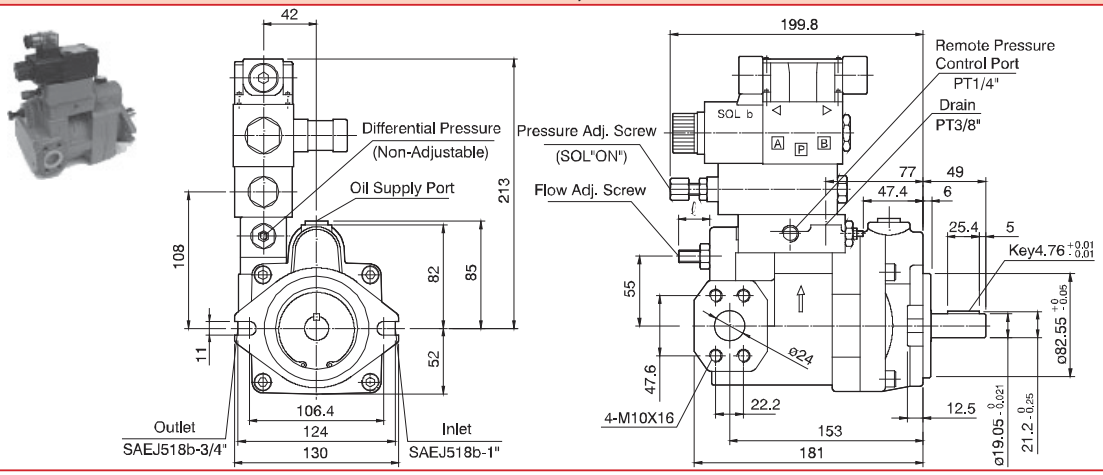
PVS-16, 22 B TYPE



PVS-16, 22 C TYPE



PVS-16, 22 D TYPE



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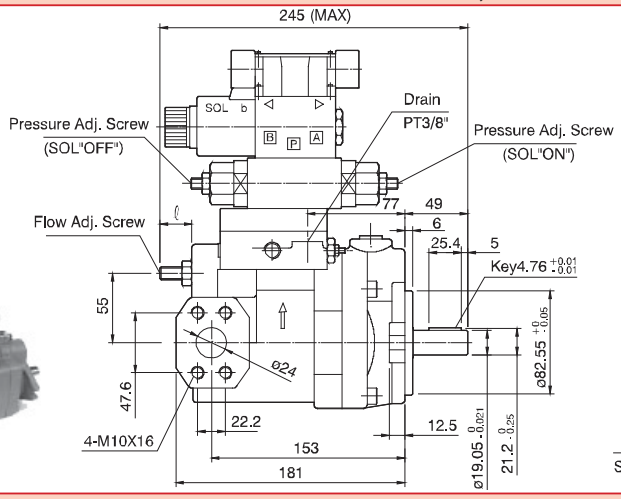
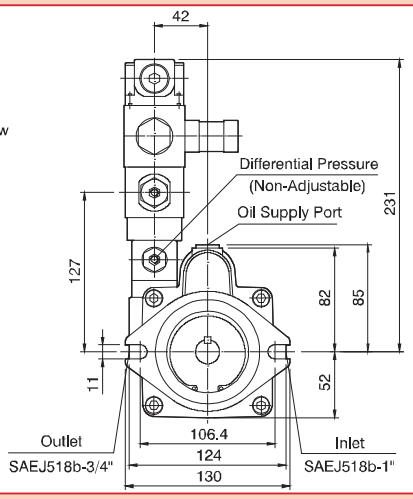
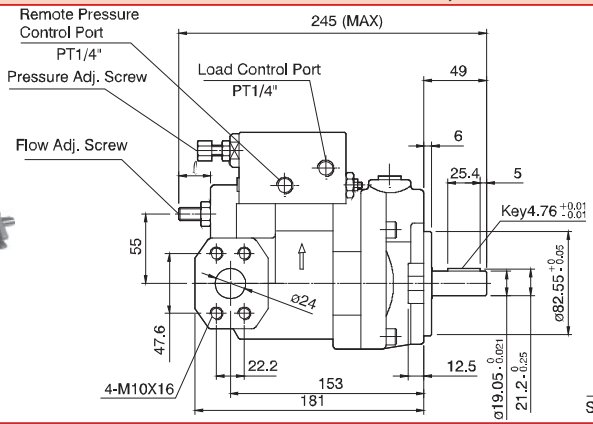
【DIMENSIONS】

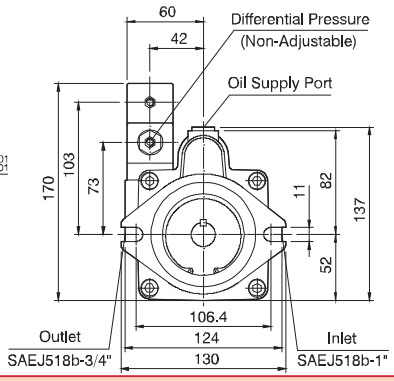
PVS-16, 22 E TYPE



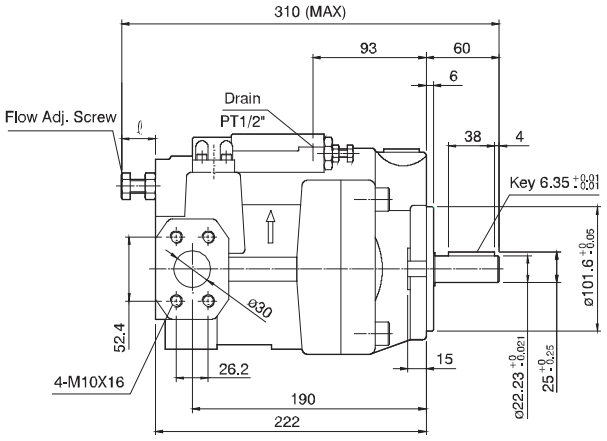


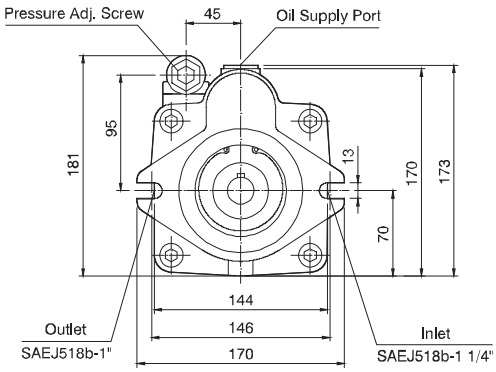
PVS-16, 22 HL TYPE

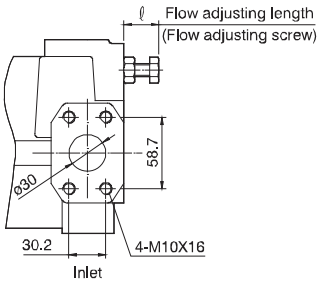




PVS-36, 46 A TYPE

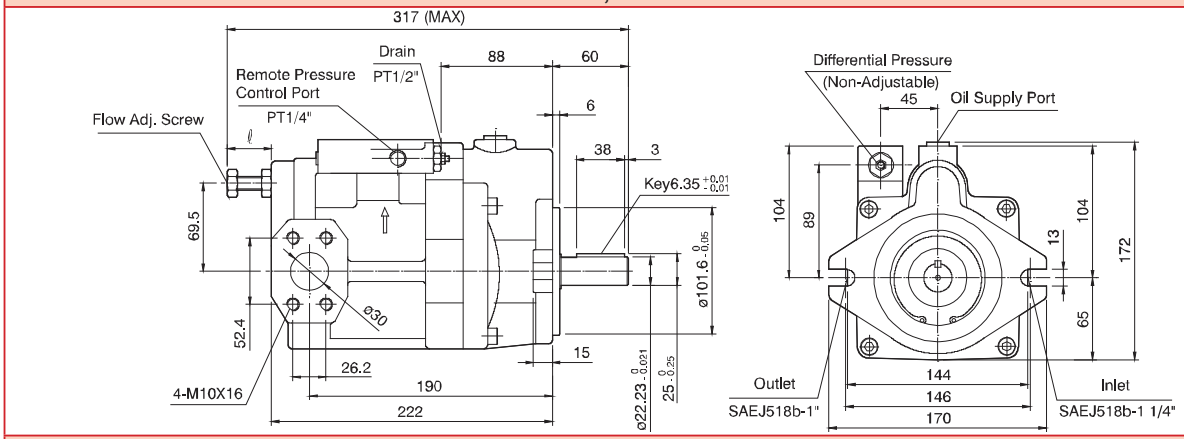




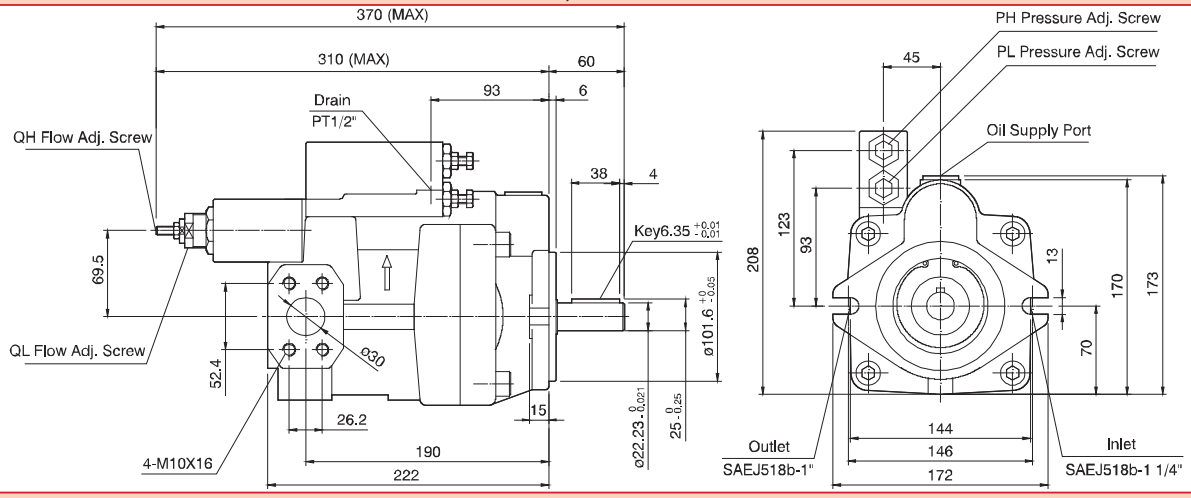


【DIMENSIONS】

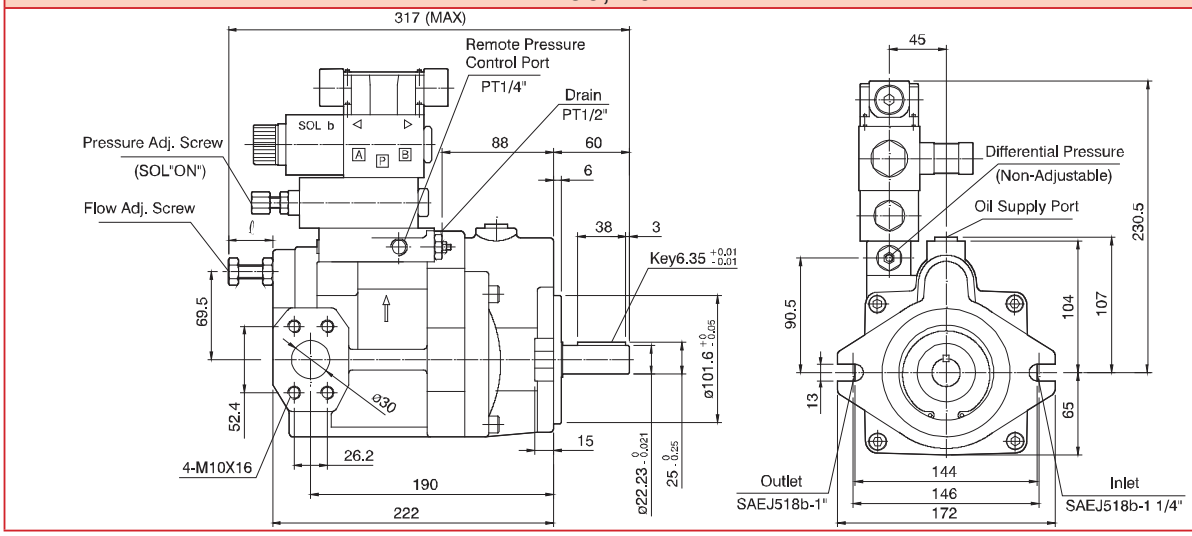
PVS-36, 46 B TYPE



PVS-36, 46 C TYPE



PVS-36, 46 D TYPE



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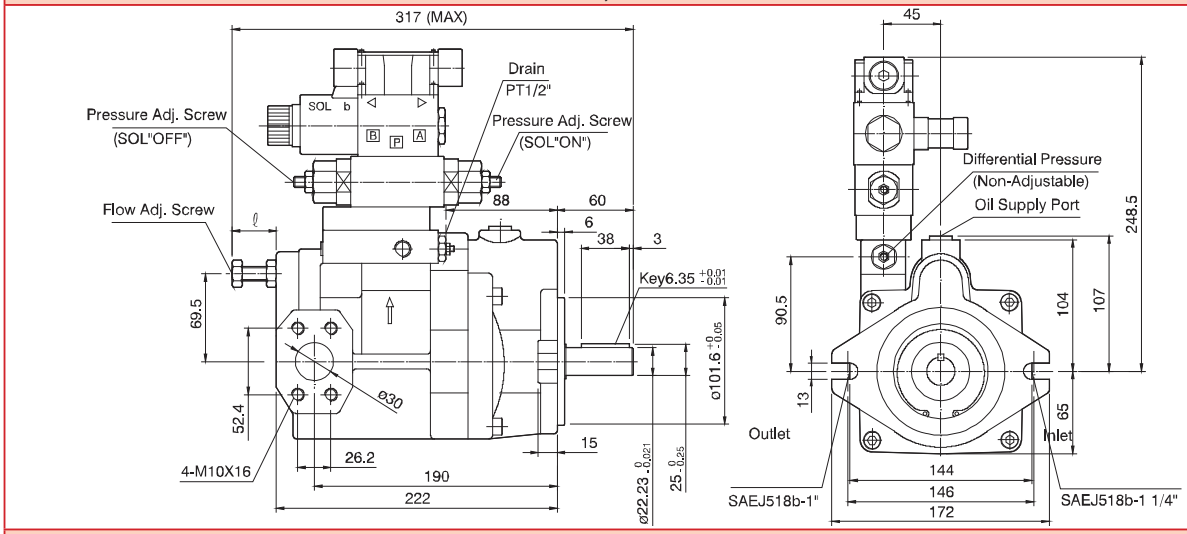
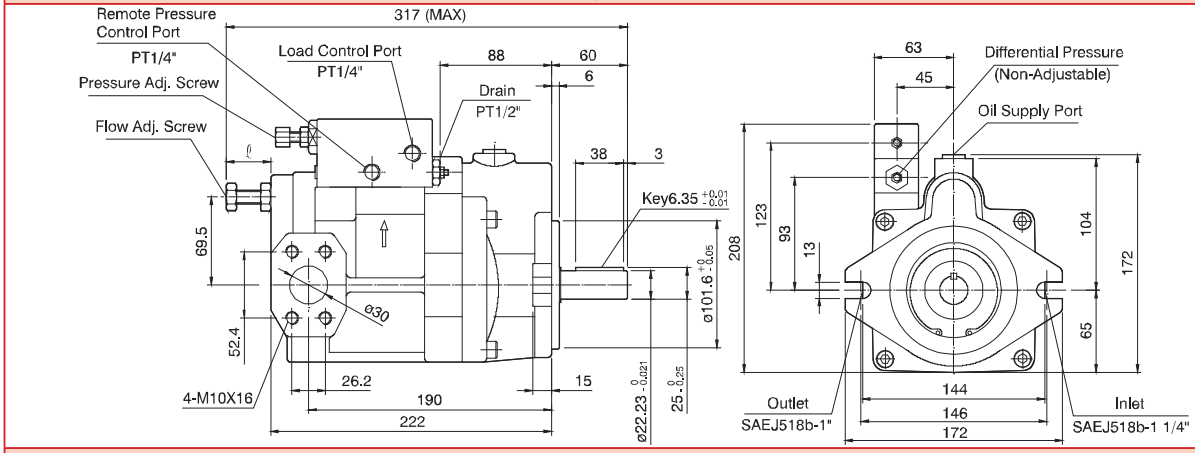
[DIMENSIONS]

PVS-36, 46 E TYPE



PVS-36, 46 HL TYPE



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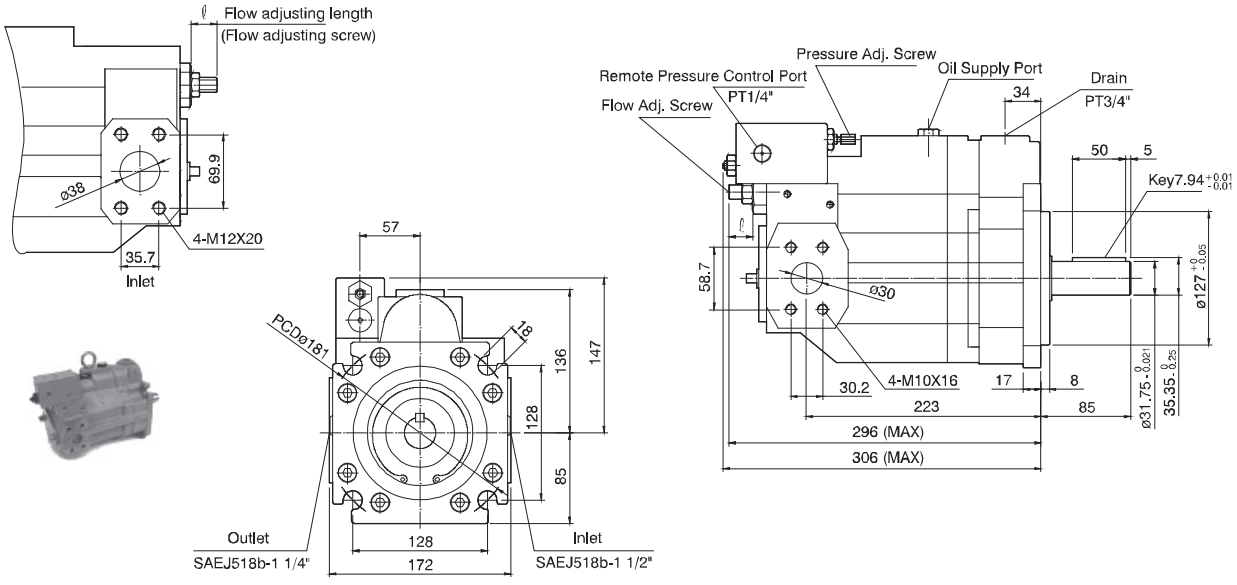

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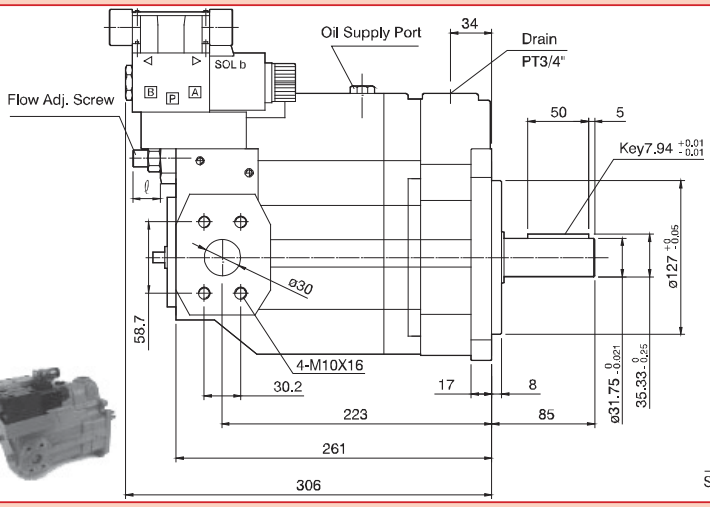
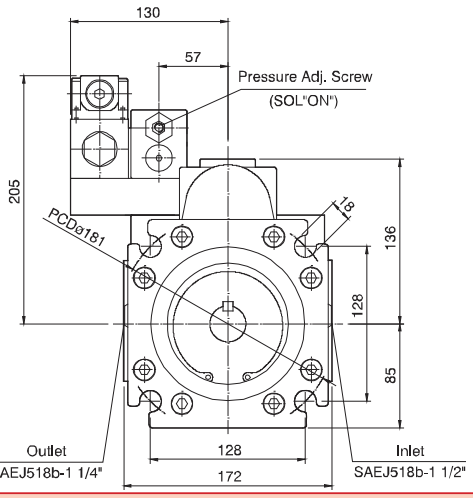
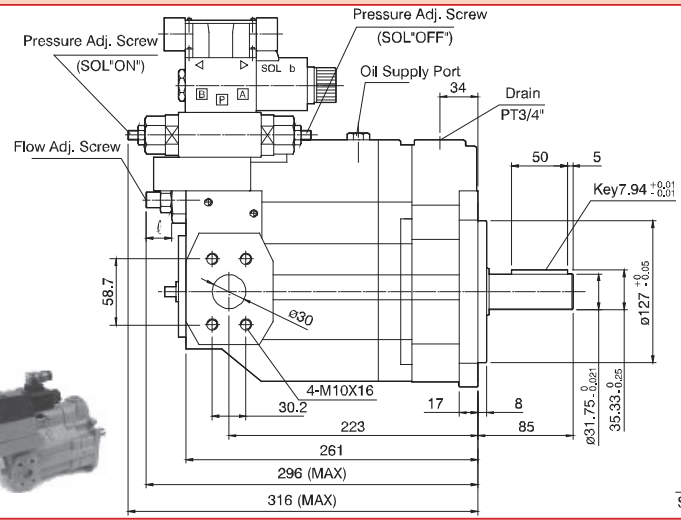
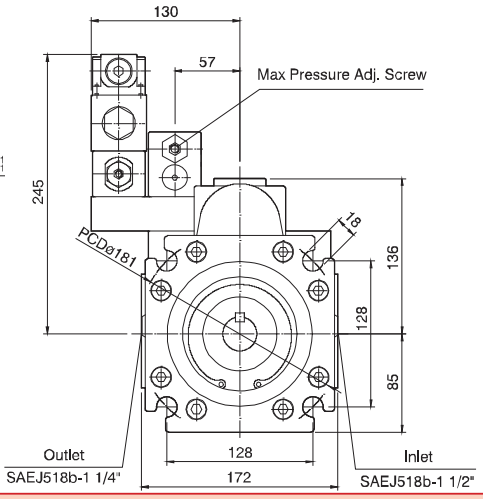


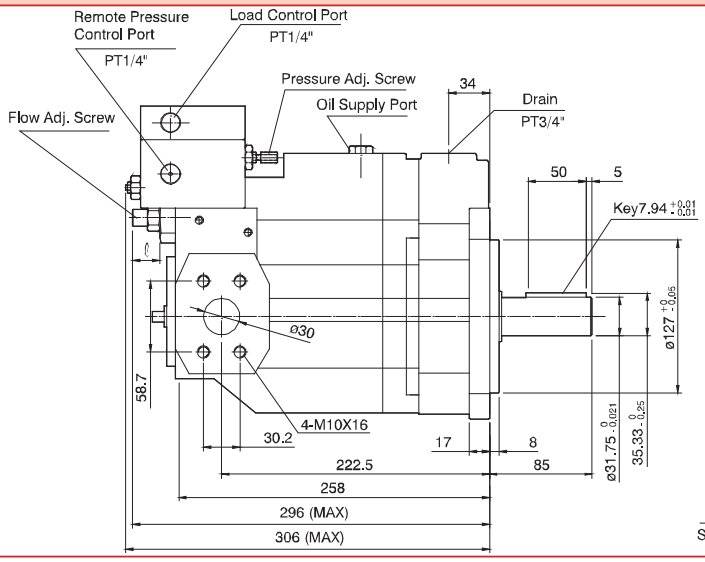


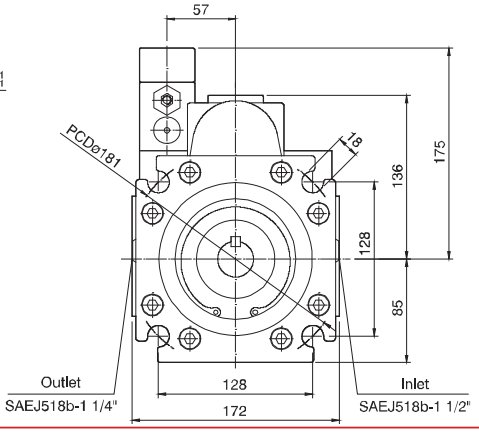
PVS-70 E TYPE





PVS-70 HL TYPE





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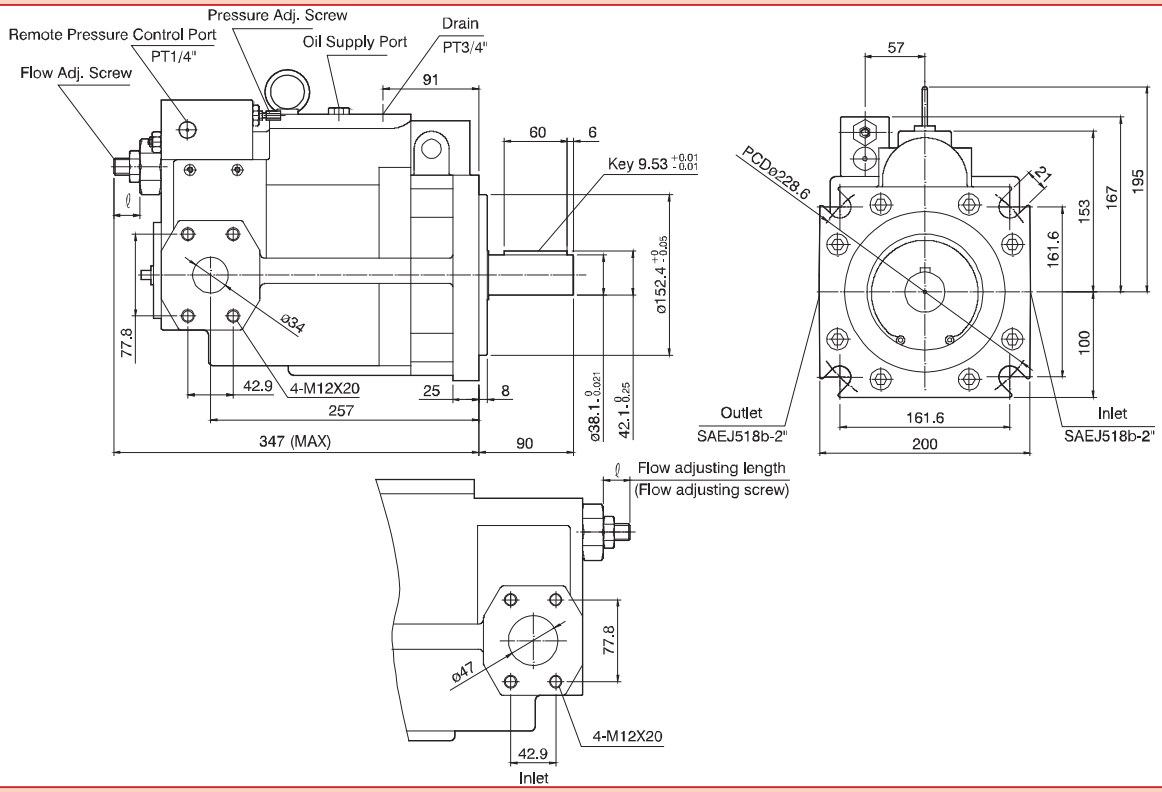
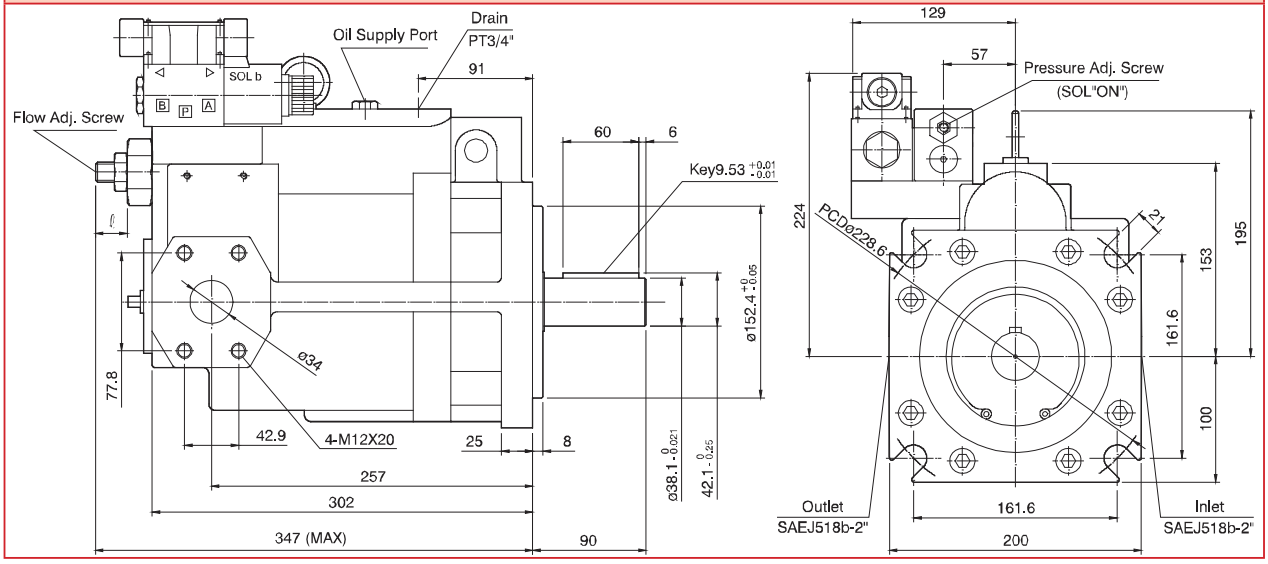
【DIMENSIONS】

PVS-100 A TYPE



PVS-100 D TYPE



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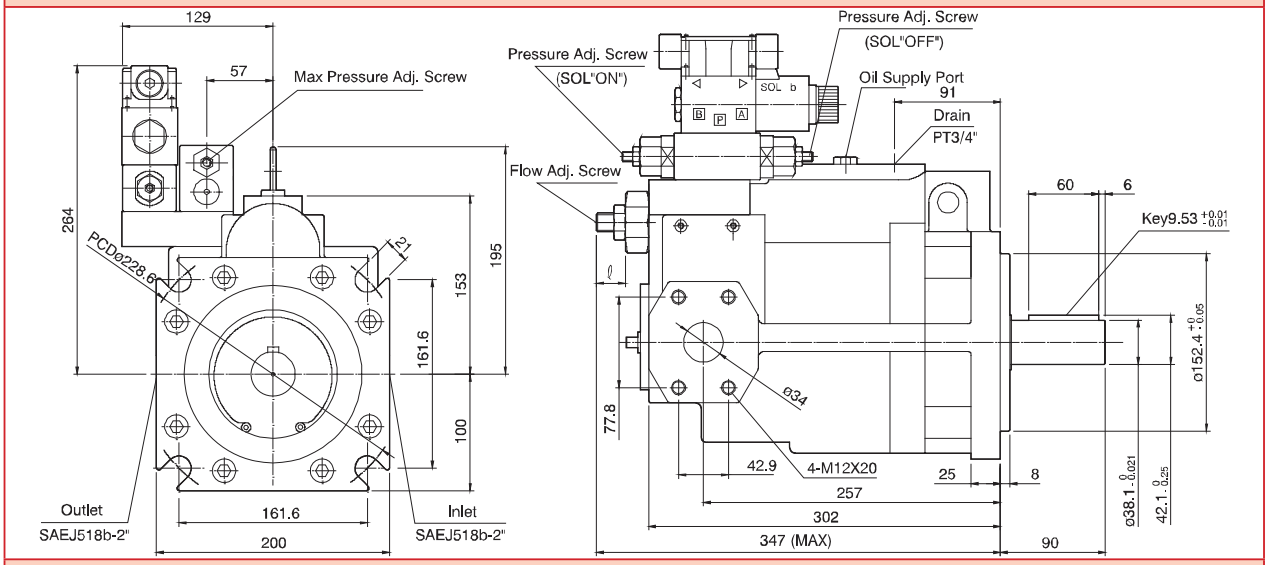
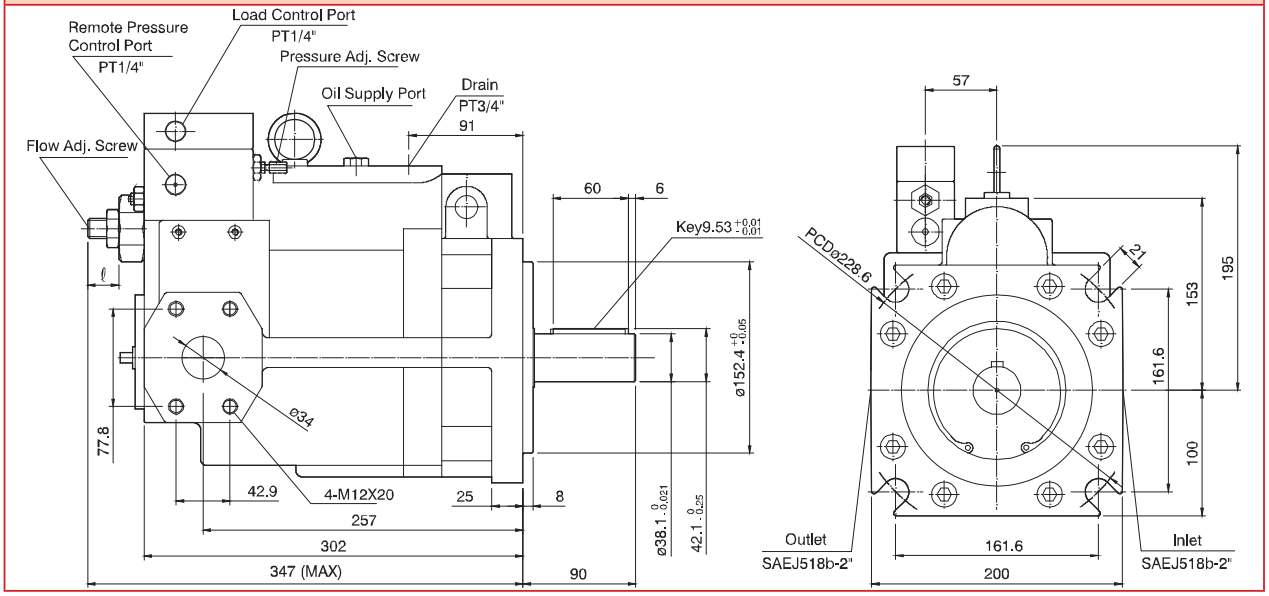
PVS-100 E TYPE



PVS-100 HL TYPE



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【PVS-TANDEM】

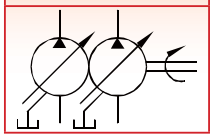
※FEATURE

1 . Half-cylindrical swash plate for low noise and low pulsation Depending on variety of application needs multiple optional

2. Rich set of options to enable highly efficient, energy-saving equipment.

※GRAPHIC SYMBOL

PVS-SERIES



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※COMBINATION REFERENCE

Shaft End Pump / Cover End Pump	PVS-16	PVS-22	PVS-36	PVS-46	PVS-70	PVS-100
PVS-08	♠	♠	♠	♠	♠	♠
PVS-16	♠	♠	♠	♠	♠	♠
PVS-22		♠	♠	♠	♠	♠
PVS-36					♠	♠
PVS-46					♠	♠

※MODEL NUMBER DESIGNATION

Shaft end pump model							Cover end pump model				
PVS-	16-	A-	4-	F-	R-	2A+	PVS-	08-	A-	4-	S
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ

Ⅰ : Series No.

Ⅱ : Displacement cc/rev(in³/rev)
08(0.49), 16(0.98), 22(1.34)
36(2.2), 46(2.81), 70(4.27), 100(6.10)

Ⅲ : Control Type
A : Pressure Compensator Control
B : Remote pressure control type
C : Two pressure-two flow control type
D : 2-stage Pressure & Flow Control Type
E : Two pressure cut-off control type
H L : Load sensing control type

Ⅳ : Pressure Compensating Range bar
1 : 2~7 Mpa (20~73 kgf/cm²)
2 : 3~14 Mpa (30~145 kgf/cm²)
3 : 3~21 Mpa (30~215 kgf/cm²)

Ⅴ : Mounting
F: Flange Mounting

Ⅵ : Shaft Rotation(View from Shaft End)
R: Clockwise(CW)
L: Counter-Clockwise(CCW)

Ⅶ : Shaft Options
2A: SAE A Ø82.55
2B: SAE B Ø101.6
(PVS-70+PVS-36/46
PVS-100+PVS-3646)

Ⅰ : Series No.

Ⅱ : Displacement cc/rev(in³/rev)
08(0.49), 16(0.98), 22(1.34)
36(2.2), 46(2.81), 70(4.27), 100(6.10)

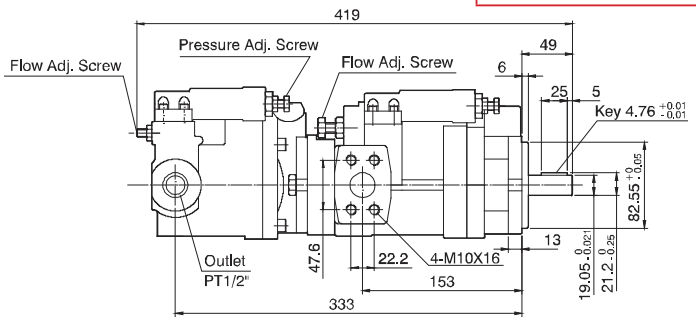
Ⅲ : Control Type
A : Pressure Compensator Control
B : Remote pressure control type
C : Two pressure-two flow control type
D : 2-stage Pressure & Flow Control Type
E : Two pressure cut-off control type
H L : Load sensing control type

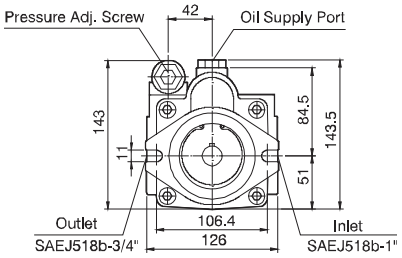
Ⅳ : Pressure Compensating Range bar
1 : 2~7 Mpa (20~73 kgf/cm²)
2 : 3~14 Mpa (30~145 kgf/cm²)
3 : 3~21 Mpa (30~215 kgf/cm²)

Ⅴ : Type of Shaft
S: SAE Spline
K: Cylindric, key
(PP70+P36/46, PP100+P36/46)

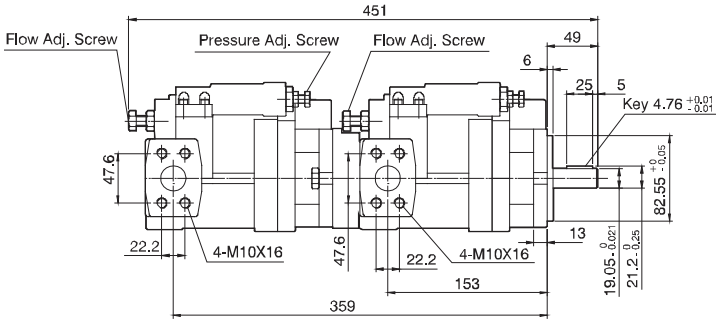
※DIMENSIONS

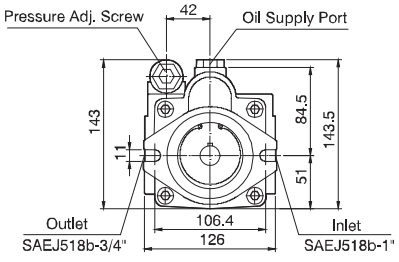
PVS-16/22-A*-F-R-2A+PVS-08-A*-S





PVS-16/22-A*-F-R-2A+PVS-16/22-A*-S





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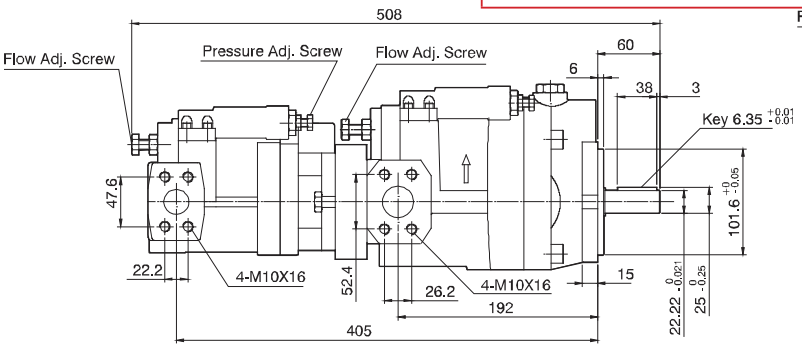
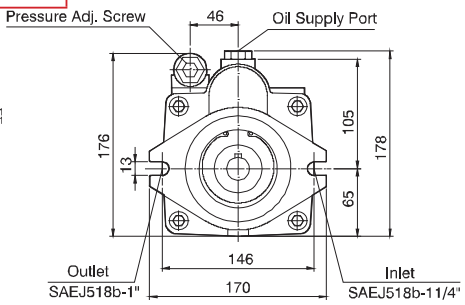
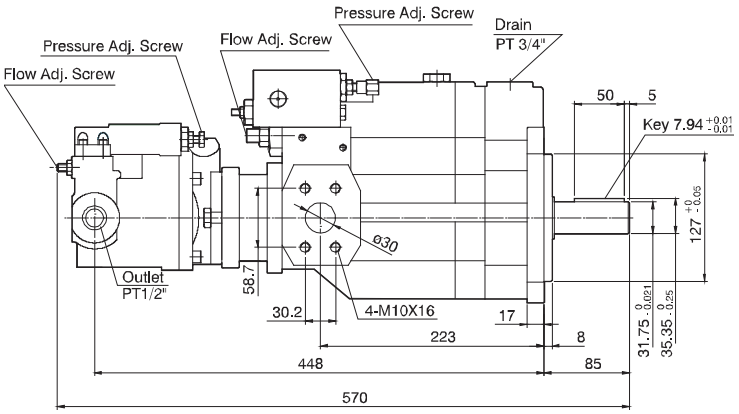
※DIMENSIONS

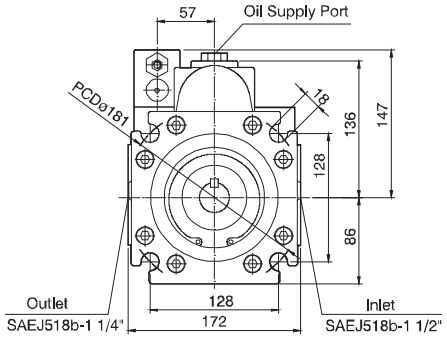
PVS-36/46-A*-F-R-2A+PVS-16/22-A*-S





PVS-70-A*-F-R-2A+PVS-08-A*-S





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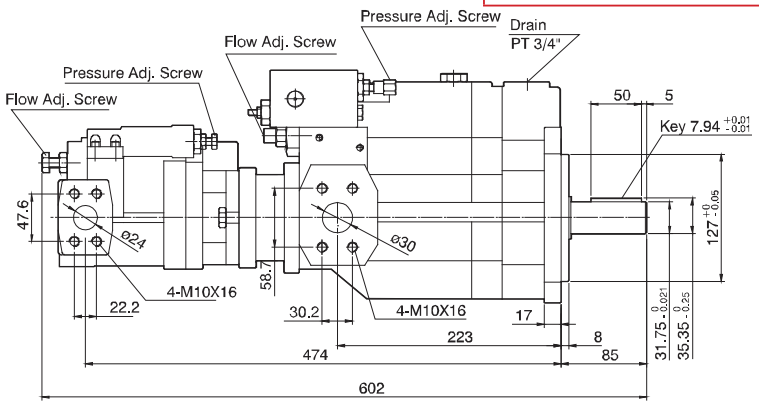
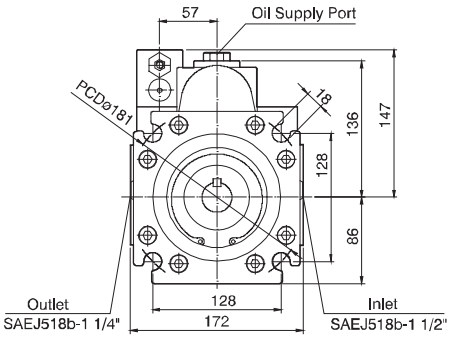
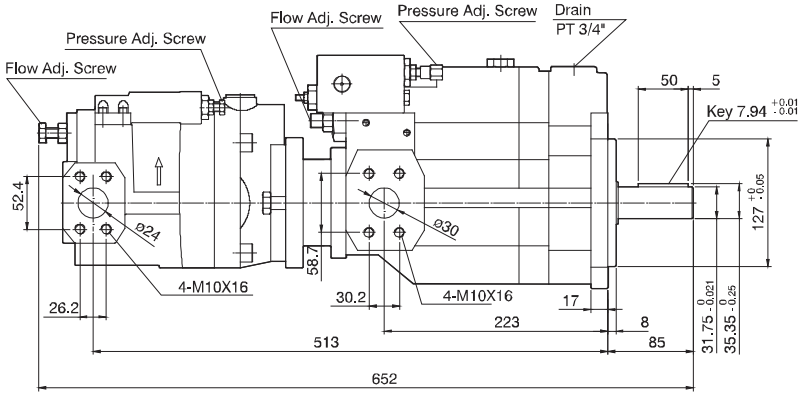
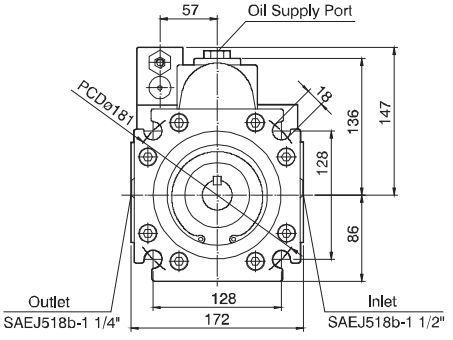




PVS-70-A*-F-R-2B+PVS-36/46-A*-K





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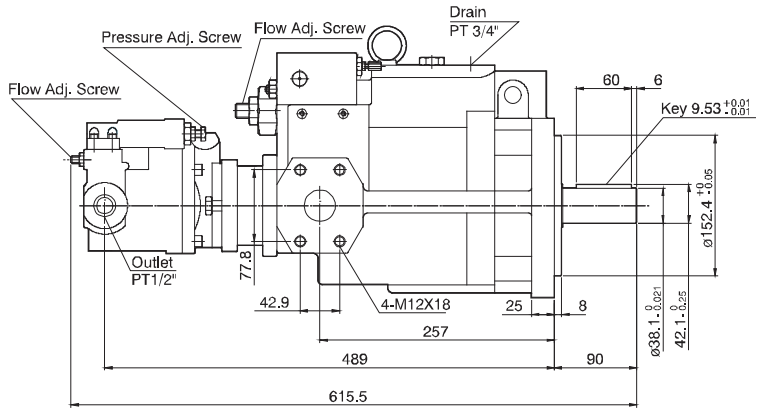
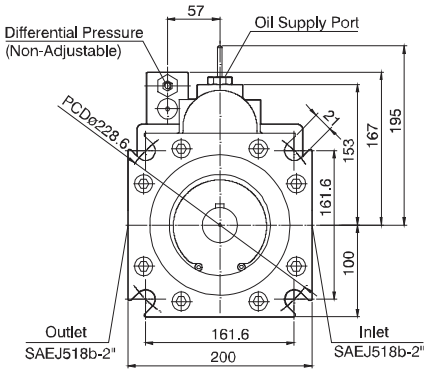
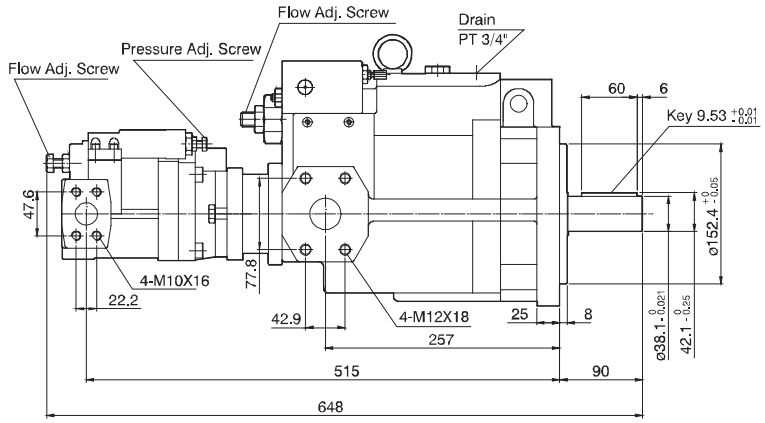
※DIMENSIONS

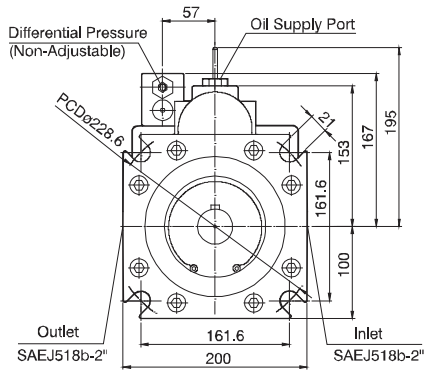
PVS-100-A*-F-R-2A+PVS-08-A*-S



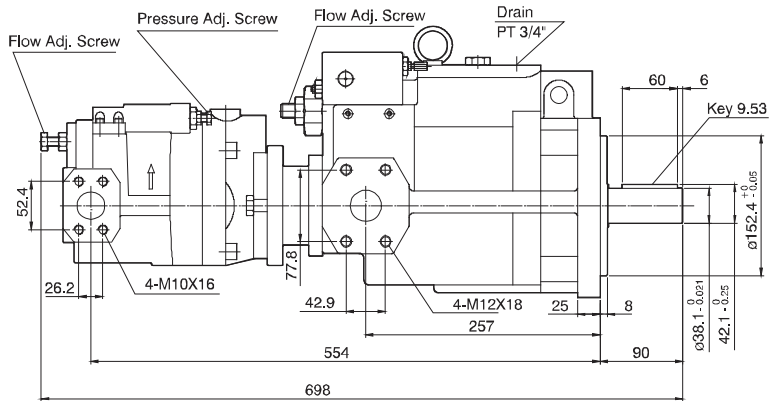


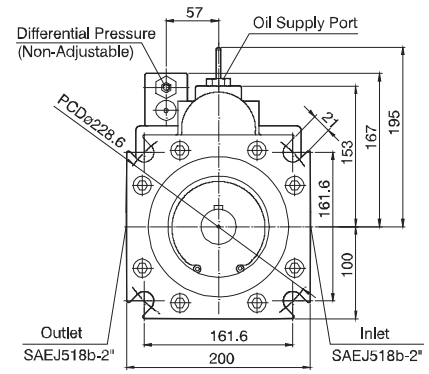
PVS-100-A*-F-R-2A+PVS-16/22-A*-S





PVS-100-A*-F-R-2B+PVS-36/46-A*-K



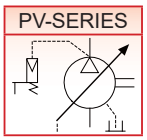


【PV-SERIES】

※FEATURE

1 . **New** type of swash plate and large servo piston with strong bias spring achieves fast response, reduce the noise due to active decompression of system at down stroke.
2 . **Nine** piston and new precompression technology (precompression filter volume) result in unbeaten low outlet flow pulsation. Complete compensator program.
3 . **Rigid** and FEM-optimized body design for lowest noise level.
4 . **Thru** drive for 100% nominal torque.
5 . **Pump** combinations (multiple pumps) of same size and model and mounting interface for basically all metric or SAE mounting

PV-SERIES



※QUICK REFERENCE DATA CHART

Model	Displacement		Pump Delivery (7 Bar) 100 PSI						Input house power at (345 Bar) 5000 PSI		Approx. Noise Levels Db(A) Full Flow and 1500 RPM			Operating Speed		Weight	
			1200 RPM		1500 RPM		1800 RPM		1500 RPM	1800 RPM	70 bar	207 bar	343 bar	(RPM)		KG	lb
	cc/rev	In³/rev	LPM	U.S.GPM	LPM	U.S.GPM	LPM	U.S.GPM	KW(HP)	KW(HP)	(1KSI)	(3KSI)	(5KSI)	Max.	Min.		
PV016	16	0.98	19.2	5.1	24.0	6.3	28.8	7.6	15.5(20.8)	18.5(24.8)							
PV020	20	1.2	24.0	6.3	30.0	7.9	36.0	9.5	19.5(26.1)	23.4(31.4)	56	60	68	2750		19	41.8
PV023	23	1.4	27.6	7.3	34.5	9.1	41.4	10.9	22.5(30.2)	25.1(33.6)							
PV032	32	1.9	38.4	10.1	48.0	12.7	57.6	15.2	31.0(41.6)	35.1(47.1)							
PV040	40	2.4	48.0	12.7	60.0	15.9	72.0	19.0	39.0(52.3)	46.5(62.3)	59	62	69	2400		30	66
PV046	46	2.8	55.2	14.6	69.0	18.2	82.8	21.9	45.0(60.3)	50.2(67.3)							
PV063	63	3.8	75.6	20.0	94.5	25.0	113.4	30.0	61.5(82.4)	70.1(94.0)				2100	300		
PV071	71	4.3	85.8	22.7	107.0	28.3	128.7	34.0	70.0(93.8)	80.0(107.2)	66	70	74	2100		60	132
PV080	80	4.8	96.0	25.4	120.0	31.7	144.0	38.0	78.0(104.6)	89.2(119.6)				2000			
PV092	92	5.6	110.4	29.2	138.0	36.5	165.6	43.8	89.5(120)	136.8(183.4)				1900			
PV140	140	8.5	168	44.4	210.0	55.5	252.1	66.6	136.0(182.3)	149.4(200.3)	70	74	76	2200		90	198
PV180	180	11.0	216	57.1	270.0	71.3	324.0	85.6	175.0(235.0)	210.0(282.0)	71	75	77	2200			
PV270	270	16.5	324	85.6	405.0	107.0	486.0	128.4	263.0(353.0)	298.0(400.0)	77	79	81	1800		172	378.4

※GENERAL INSTALLATION INFORMATION

1. Fluid recommendations
Premium quality hydraulic mineral oil fluids are recommended,like H-LP oils to DIN 51524, part 2. The viscosity range should be 25 to 50 mm^2/s(cst) at 50 °C. Operating temperatures -10 to +70 °C. For other fluids such as phosphoric acid esters or for, other operating conditions, consult us for assistance.

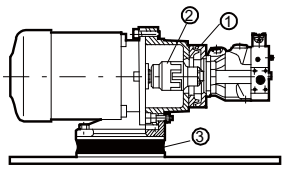
2.Seals
NBR (Nitrile) seals are used for operation with hydraulic fluids baseed on mineral oil. For synthetic, as perhaps phosphoric acid esters, Fluorocarbon seals are required. Consult us for ssistance.

3.Filtration
For maximum pump and system component functionability and life, the system should be protected from contamination by effective filtration, Fluid cleanness should be in accordance with ISO classification ISO 4406. The quality of filter elements should be in accordance with ISO standards.
(1)Minimun requirement for filtration rate x (mm): General hydraulic systems for satisfactory operation: Class 19/15, to ISO 4406 X=25μ m(ß 10 ≥ 75) to ISO4572
(2)Hydraulic systems with maxmized component life and functionability: Class 16/13, to ISO 4406 X=10μ m(ß 10 ≥ 75) to ISO4572. It is recommended to use return line or pressure filters. The use of suction filters should be avoided, especially with fast response pumps. Bypass filtration is a good choice for best filter efficiency.

4. Installation and mounting
Horizontal mounting: Outlet port side or top. Inlet port side or bottom, drain port always uppermost. Vertical mounting : Shaft pointing upwards. Install pump and suction line in such a way that the maximum inlet vacuum never exceeds 0.8 bar absolute. The inlet line should be as short and as straight as possible. A short suction line cut to 45° is recommended when the pump is mounted inside the reservoir, to improve the inlet conditions. All connections to be leadfree, as air in the suction line will cause cavitations, noise , and damage to the pump.

5. Shaft rotation ad alignment
Pump and motor shafts must be aligned within 0.25mm T.I.R. maximum. A floating coupling must be used.Bellhousings and couplings can be ordered from us. Please follow the coupling manufacturer's installation instructions. Consult us for assistance on radial load type drives.

6.Start up
Prior to start up, the pump case must be filled with hydraulic fluid (use case drain port). Initial start up should be at zero pressure with an open circuit to enable the pump to prime. Pressure should only be increased once the pump has been fully primed. **Attention: Check motor rotation direction and Operating noise of pumps.** The normal operating noise of a pump and consequently the operating noise of the entire hydraulic system is largely determined by where and how the pump is mounted and how it is connected to the down stream hydraulic system. Also size, style and installation of the hydraulic tubing have major influence on the overall noise emitted by a hydraulic system. Noise reductin measures Flexible elements help to prevent pump body vibration being transmitted to other construction elements, where possible amplification may occur. Such elements can be:
(1)Bell housing with elastic dampening flange with vulcanized labyrinth
(2)Floating and flexible coupling
(3)Damping rails
(4)Orsilent blocks for mounting the electric motor or the foot mounting flange
(5)Flexible tube connections (compensators) or hoses on inlet, outlet and drain port of the pump.
(6)Exclusive use of gas tight tube fittings for inlet connections to avoid ingression of air causing cavitations and excessive noise.



7.Drain line
The drain line must lead directly to the reservoir without restriction. The drain line must not be connected to any other return line. The end of the drain line must be below the lowest fluid lvel in the reservoir and as far away as possible from the pump inlet line. this ensures that the pump does not empty itself when not in operation and that hot aireated oil will not be recirculated. For the same reason, when the pump is mounted inside the reservoir, the drain line should be arranged in such a way that a siphon is created. This ensures that the according to the port size and a straight low pressure fitting with maximized bore should be used.

	PV016~PV023	PV032-PV-046	PV063~PV092	PV140~PV180	PV270
Size of pipe joints	3/8"(Ø8.5 or more)	1/2"(Ø12 or more)	3/4"(Ø16 or more)	1"(Ø19 or more)	1-1/4"(22 or more)
I.D. of pipes	Ø12 or more	Ø15 or more	Ø19 or more	Ø25 or more	Ø32 or more
Length of Drain	Under 1 M				

F

※MODEL NUMBER DESIGNATION

PV-	063-	A(2)-	R-	M-	1-	A-	(A25)-	(V)-	10
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ

Ⅰ: Axial piston pump variable displacement high pressure version

Ⅱ: Displacement cc/rev(in³/rev)
16(0.98), 20(1.2), 23(1.4), 32(1.9), 40(2.4), 46(2.8), 63(3.8), 71(4.3)
80(4.8), 92(5.6), 140(8.5), 180(10.9), 270(16.5)

Ⅲ: Control Type
A 2 : 10~140 Bar, Shaft + Lock Nut, Standard Pressure compensator
A 3 : 40~210 Bar, Shaft + Lock Nut, Standard Pressure compensator
A 4 : 70~350 Bar, Shaft + Lock Nut, Standard Pressure compensator
G T : Remote Pressure compensator
G P : Remote Pressure compensator allows a pilot valve & Load-sensing compensator
G A : Remote Pressure compensator allows a pilot valve
G M : Remote Pressure compensator allows a pilot valve
G J : Layer Proportional pressure compensator
G B : 2 pressure electrical selection
G R : Electrical unloading
G C : 2 pressure+ electrical unloading
H L : Load-sensing compensator
H M : Load-sensing compensator
H A : 2-vavle load-sensing compensator
H J : 2-vavle load-sensing compensator
H K : Proportional electro-hydraulic load sensing type
H Q : Load-sensing & Proportional flow control
PA□: Horse power compensator
PH□: Horse power compensator,pilot flow external for load-sensing
PM□: Horse power compensator,pilot flow internal pressur epilot valve included
PL□: Horse power compensator, Load-sensing compensator
PG□: Horse power compensator,pilot flow internal

Code	Horse	PV016~	PV032~	PV063~	PV140	PV180	PV270
A	3KW	V					
B	4KW	V					
C	5.5KW	V	V				
D	7.5KW	V	V				
E	11KW	V	V	V			
F	15KW		V	V			
G	18.5KW		V	V	V		
H	22KW		V	V	V	V	
I	30KW		V	V	V	V	
J	37KW			V	V	V	V
K	45KW			V	V	V	V
L	55KW				V	V	V
M	75KW					V	V
N	90KW					V	V
O	110KW						V
P	132KW						V

Ⅳ: Shaft Rotation(View from Shaft End)
R: Clockwise(CW)
L: Counter-Clockwise(CCW)

Ⅴ: Mounting
M(Standard): ISO3019/2 Cylindric, key, Metric
K: ISO3019/2 Splined,DIN5480, Metric
N: ISO3019/1 Cylindric, key, Inch
D: ISO3019/1 Splined, SAE, Inch

Ⅵ: Threads
1(Standard): BSPP, Metric
2: PT/RC, Pipe Taps
3: UNF, UNC
4: NPT, Inch
7: ISO 6149, UNC

Ⅶ: Through drive & 2nd pump(Refer to next page)

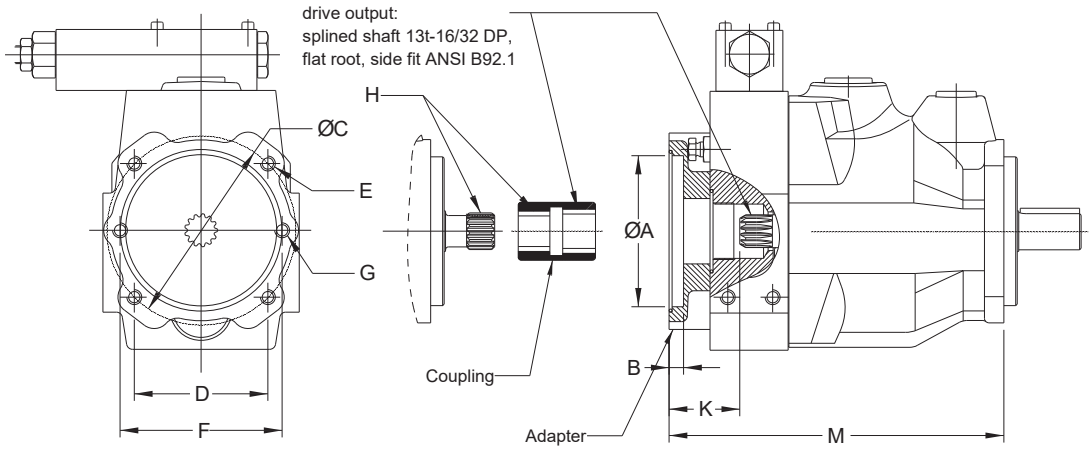
Code		
A	Single Pump	
B	Prepare for through drive, no adapter	
Code	Prepare for through drive, with adapter	
C	Inch.	SAE AA, ø2" (ø50.8mm)
D		SAE A, ø3-1/4"(ø82.55mm)
E		SAE B, ø4"(ø101.6mm)
F		SAE C, ø5"(ø127mm)
G		SAE D, ø6"(ø152.4mm)
H		SAE E, ø6.5"(165.1mm)
I	Metric	ø63
J		ø80
K		ø100
L		ø125
M		ø160
N		ø200

Ⅷ: Voltage
None: (Standard)
A15: AC 110V/50HZ
A16: AC 110V/60HZ
A24: AC 240V/50HZ
A25: AC 220V/50HZ
A26: AC 220V/60HZ
D1: DC 12V
D2: DC 24V

Ⅸ: Seals
Omit(Standard): NBR
V: FPM
E: Ethylen -propylen

Ⅹ: Design Number

Sale						Thru drive & 2nd pump						
Code	PV016~PV023	PV032~PV046	PV063~PV092	PV140~PV180	PV270	øA	øC	D	E	F	G	H
C	V				V	ø2" (ø50.8mm)	---	---	---	3.25" (82.55mm)	5/16"-18	9T 20/40 DP
D	V	V	V	V	V	ø3-1/4" (ø82.55mm)	---	---	---	4.188" (106.3mm)	3/8"-16	9T 16/32 DP
E	V	V	V	V	V	ø4" (ø101.6mm)	---	3.536" (89.8mm)	1/2"-13	5.75" (146.05mm)	1/2"-13	13T 16/32 DP 15T 16/32 DP
F		V	V	V	V	ø5" (ø127mm)	---	4.508" (114.5mm)	1/2"-13	7.125" (180.98mm)	5/8"-11	14T 12/24 DP
G			V	V	V	ø6" (ø152.4mm)	---	6.364" (161.6mm)	5/8"-11	9" (228.6mm)	5/8"-11	13T 8/16 DP 15T 8/16 DP
H					V	ø6.5" (ø165.1mm)	---	8.839" (224.5mm)	3/4"-10	---	---	15T 8/16 DP
I	V	V	V			ø63	ø85	---	M8	100	M8	---
J	V	V	V	V	V	ø80	ø103	---	M8	109	M10	---
K	V	V	V	V	V	ø100	ø125	---	M10	140	M12	W25×1.5×15×8f
L		V	V	V	V	ø125	ø160	---	M12	180	M16	W32×1.5×20×8f
M			V	V	V	ø160	ø200	---	M16	224	M20	W40×1.5×25×8f W50×2×24×9g
N					V	ø200	ø250	---	M20	---	---	W60×2×28×9g



The max. transferable torque in Nm for the different shafts options are(Nm):

Shaft code	PV016~PV023	PV023~PV046	PV063~PV092	PV140~PV180	PV270
M	300	550	1320	2000	2000
K	300	610	1218	2680	2680
N	300	570	1150	1900	2850
D	405	675	1400	2650	3980

Important notice

The max. allowable torque of the individual shaft most not be exceeded. For 2-pump combinations there is no problem because PV series offers 100% thru torque. For 3-pump combinations (and more) the limit torque could be reached or exceeded.
Therefore it is necessary to calculate the torque factor and compare it with the allowed torque limit factor in the table.

Require: calculated torque factor < torque limit factor

To make the necessary calculations easier and more user friendly it is not required to calculate actual torque requirements in Nm and compare them with the shaft limitations. The table on the right shows limit factors that include material specification, safety factors and conversion factors.

The total torque factor is represented by the sum of the individual torque factors of all pumps in the complete pump combination.

Total torque factor of the combination= sum of individual torque factors of all pumps

The torque factor of each individual pump is calculated by multiplying max. operating pressure p of the pump (in bar) with the max. displacement Vg of the pump (in cm³/rev)

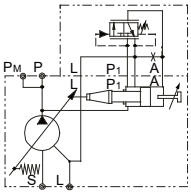
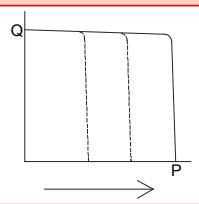
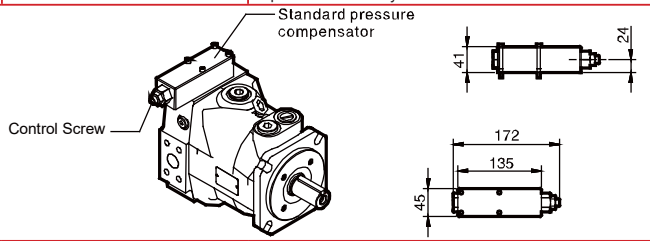
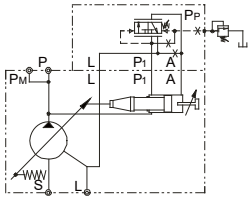
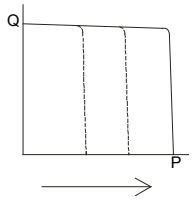
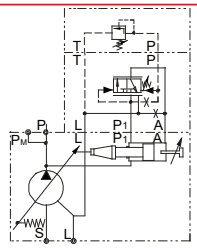
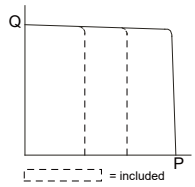
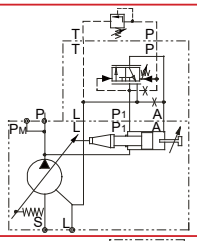
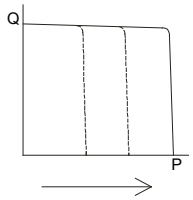
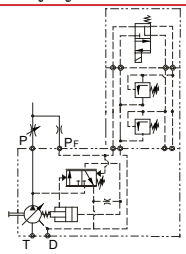
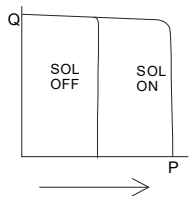
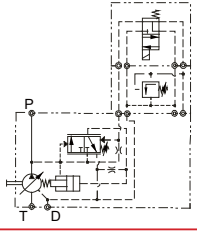
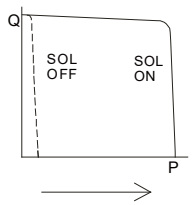
Torque factor of any pump=p×Vg (pressure in bar × displacement in cm³/rev)

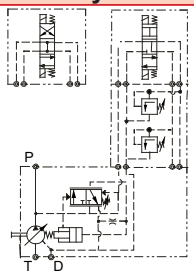
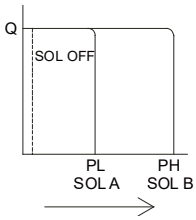
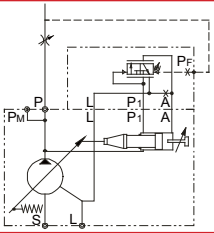
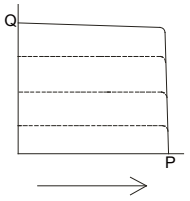
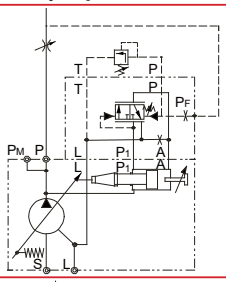
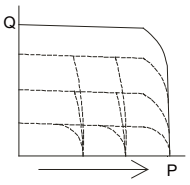
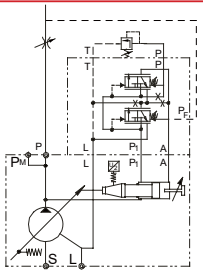
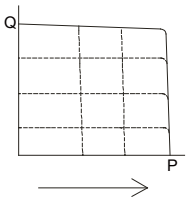
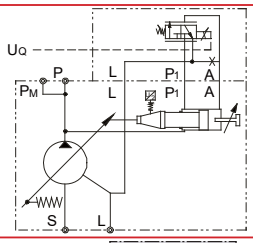
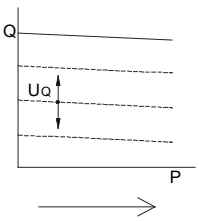
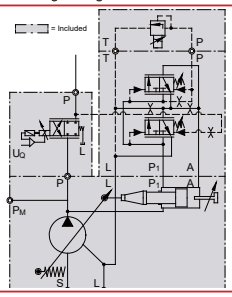
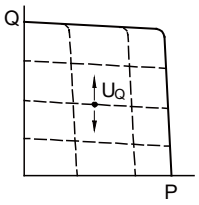
Torque limit factor:

Shaft code	PV016~PV023	PV023~PV046	PV063~PV092	PV140~PV180	PV270
M	17700	32680	77280	118400	119000
K	17700	36380	72450	158760	159700
N	17700	33810	67620	113400	170100
D	20130	40250	83720	157500	236250

F

※COMPENSATOR

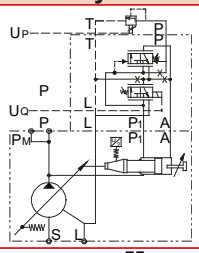
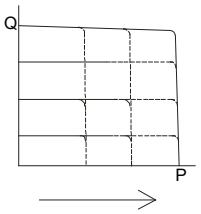
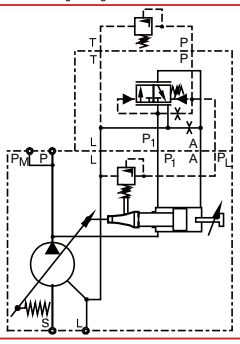
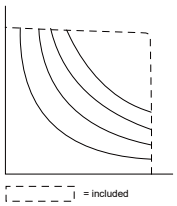
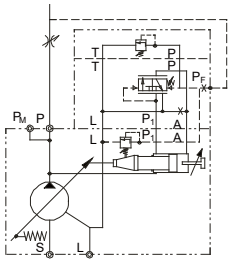
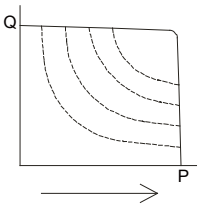
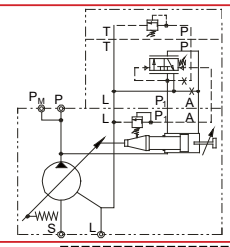
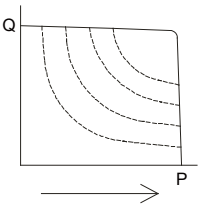
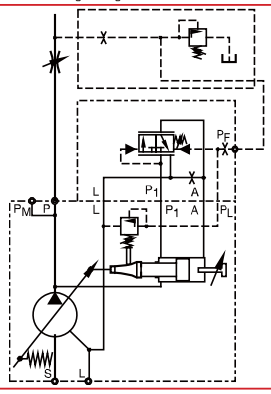
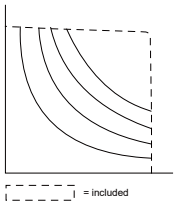
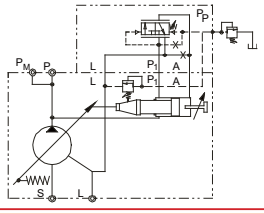
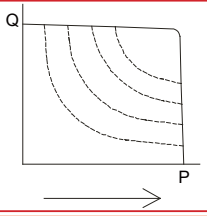
Type	JIS Symbol	Characteristic	Feature
A			**● Standard Pressure Compensator** The standard pressure compensator adjusts the pump displacement according to the actual need of the system in order to keep the pressure constant. As long as the system pressure at outlet port P is lower than the set pressure (set as spring preload of the compensator spring) the working port A of the compensator valve is connected to the case drain and the piston area is unloaded. Bias spring and system pressure on the annulus area keep the pump at full displacement. When the system pressure reaches the set pressure the compensator valve spool connects port P1 to A and builds up a pressure at the servo piston resulting in a down stroking of the pump. The displacement of the pump is controlled in order to match the flow requirement of the system.
			
GT			**● Remote Pressure Compensator** While at the standard pressure compensator the pressure is set directly at the compensator spring, the setting of the remote pressure compensator can be achieved by any suitable pilot pressure valve connected to pilot port PP . The pilot flow supply is internal through the valve spool. The pilot flow is 1-1.5 l/min. The pilot valve can be installed remote from the pump in some distance. That allows pressure setting e.g. from the control panel of the machine. The remote pressure compensator typically responds faster and more precisely than the standard pressure compensator and is able to solve instability problems that may occur with a standard pressure compensator in critical applications. The pressure pilot valve can also be electronically controlled (proportional pressure valve) or combined with a directional control valve for low pressure standby operation.
GA			**● Remote Pressure Compensator Allows a Pilot Valve**
GM			**● Remote Pressure Compensator Allows a Pilot Valve** Version GM of the remote pressure compensator provides on its top side an interface NG6, DIN24340 (CETOP 03 at RP35H, NFPA D03). This interface allows a direct mounting of a pilot valve. Beside manual or electrohydraulic operated valves it is also possible to mount complete multiple pressure circuits directly on the compensator body. YEOSHE offers a variety of these compensator accessories ready to install. All remote pressure compensator have a factory setting of 15 bar differential pressure. With this setting, the controlled pressure at the pump outlet is higher than the pressure controlled by the pilot valve.
GB			**● 2 Pressure Electrical Selection** PV pump with fast response remote pressure control, relief valve with 2 pressure stages, electrical pressure selection, nitrile seals, spindle adjustment, 24 VDC solenoid, plug to DIN 46350 accessories fitted. Usable for horsepower control and proportional volume control, too.
GR			**● Electrical Unloading** PV pump with fast response remote pressure control, relief valve with 2 pressure stages, electrical pressure selection, nitrile seals, spindle adjustment, 24 VDC solenoid, plug to DIN 46350 accessories fitted. Usable for horsepower control and proportional volume control, too.

Type	JIS Symbol	Characteristic	Feature
GC			**● 2 Pressure + Electrical Unloading** PV pump with fast response remote pressure control, relief valve with 2 pressure stages, electrical pressure selection, nitrile seals, spindle adjustment, 24 VDC solenoid, plug to DIN 46350 accessories fitted. Usable for horsepower control and proportional volume control, too.
HL			**● Load-Sensing Compensator** The load-sensing compensator has an external pilot pressure supply. Factory setting for the differential pressure is 10 bar. The input signal to the compensator is the differential pressure at a main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow, because the compensator keeps the pressure drop at the main stream resistor constant. A variable input speed or a varying load (-pressure) has consequently no influence on the output flow of the pump and speed of the actuator. By adding a pilot orifice (ψ0.8mm)and a pressure pilot valve pressure compensation can be added to the flow control function. See the circuit diagram below, left.
HM			**● Load-Sensing Compensator** Shown above is load sensing compensator code HM with an NG6 interface on top of the control valve. That allows direct mounting of a pilot valve for pressure compensation. This version includes the pilot orifice. Due to the interaction of flow and pressure compensation this package has not the “ideal” control characteristic. The deviation is caused by the pilot valves characteristic.
HJ			**● 2-Vavle Load-Sensing Compensator** If a more accurate pressure compensation is required, the 2-valve load-sensing compensator code HJ can be used. The circuit diagram of this version is shown left. Here the interaction of the two control functions is avoided by using two separate control valves for flow and pressure compensation. The 2-valve compensator is equipped with an interface NG6 on the compensators top side.
FV			**● Proportionable displacement control** The proportional displacement control allows the adjustment of the pumps output flow with an electrical input signal. The electronic control compares permanently input command and actual displacement and powers the proportional solenoid of the control valve. A deviation from the commanded displacement leads to a modulation of the input current to the solenoid. The control valve then changes the control pressure (port A) unit the correct displacement is adjusted. Version FV of the proportional control does not provide a pressure compensation. The hydraulic circuit must be protected by a pressure relief valve.
FR			**● Proportional pressure, proportional displacement with flow compensation** In version FR an additional pressure compensator valve can override the electrohydraulic displacement control. That adds pressure compensation to this control. The compensator valve has an NG6/D03 interface on top to mount a pressure pilot valve. When using a proportional pressure pilot valve an electro-hydraulic p/Q-control can be realized. The electronic driver modules are tuned for the valve types DSAE1007P07KLAF or RE06M35W2NXP to give best performance. The electronic control module PQ0*-P.. (see opposite page) contains, beside the displacement control unit, also the driver electronics for the a.m. proportional pressure valves.

F

F

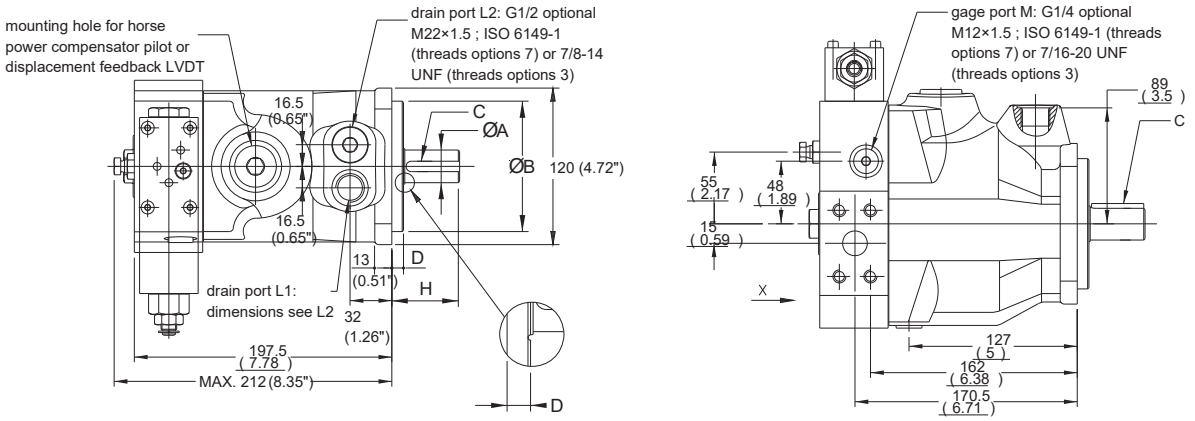
※COMPENSATOR

Type	JIS Symbol	Characteristic	Feature
FG			**Proportionable displacement control with pressure control** With ordering code FG the proportional pressure pilot valve and a pressure transducer (SOLTECH SCP 8181 CE) are included with the pump control. In combination with control module PQ0*-Q.. a closed loop pressure control of the pump outlet pressure is available. Module PQ0*-L.. offers an electronic horse power limiter in addition to the closed loop pressure control. SOLTECH variable displacement pumps have a large servo piston. That leads to a extremely robust and stable pump control. On the other hand that requires high control flows (up to >100 l/min). SOLTECH has therefore chosen the 2-valve-p/Q-control concept, because in this case a hydraulic mechanical compensator valve takes care of the pressure compensation of the pump. That allows a very fast pressure compensation and makes this the control unsensitive to fluid contamination. We see the 2-valve-concept as a contribution to system and pressure control safet
PA□			● **Horse power compensator**
PH□			● **Horse power compensator pilot flow external for load-sensing** The hydraulic-mechanical horse power compensator consists of a modified remote pressure compensator (Code PG*-PM*) or of a modified load-sensing compensator (Code PH*) and a pilot valve. This pilot valve is integrated into the pump and is adjusted by a cam sleeve. The cam sleeve has a contour that is designed and machined for the individual displacement and the nominal horse power setting. At a large displacement the opening pressure (given by the cam sleeve diameter) is lower than at small displacements. This makes the pump compensate along a constant horse power (torque) curve. For all nominal powers of standard electrical motors SOLTECH offers a dedicated cam sleeve. The exchange of this cam sleeve (e.g.: to change horse power setting) can easily be done without disassembly of the pump. On top of that an adjustment of the horse power setting can be done within certain limits by adjustment the preload of the pilot control cartridge spring. That allows an adjustment of a constant horse power setting for other than the nominal speeds (1500 min-1) or for other horse power.
PM□			● **Horse power compensator pilot flow internal pressure pilot valve included** Same as PH
PL□			● **Horse power compensator, Load-sensing compensator**
PG□			● **Horse power compensator pilot flow internal** Same as PH

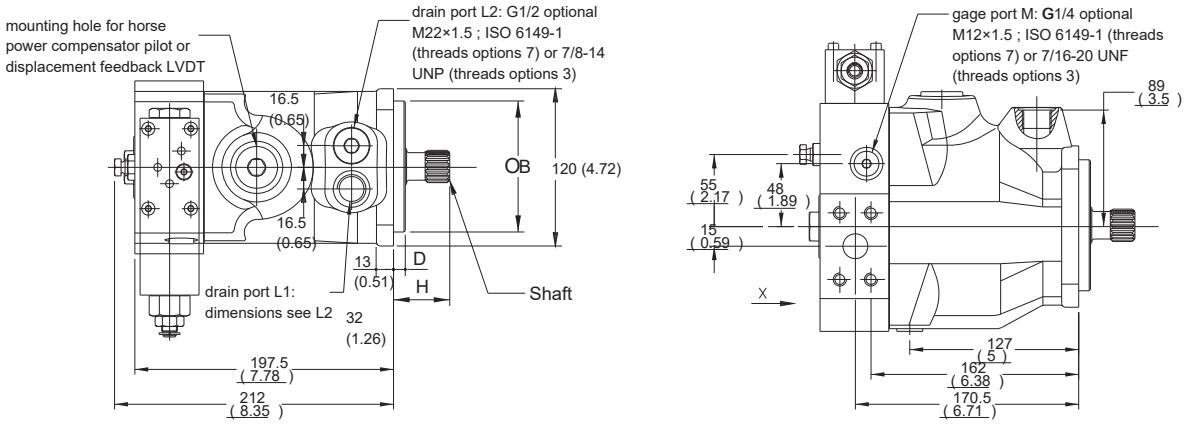
※DIMENSIONS

PV016~PV023

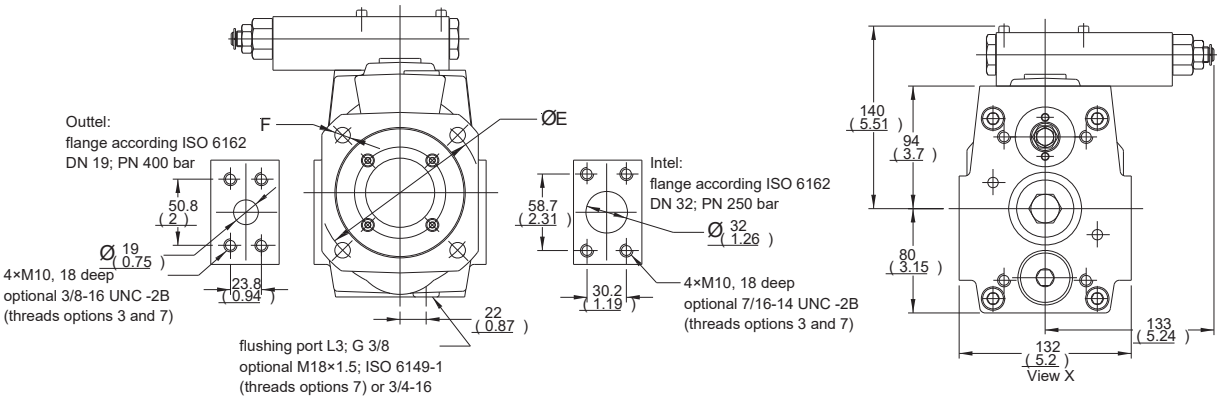
M.M.(INCHES)



Mounting Type	øA	øB	C	D	øE	F	H
M	25	ø100 h8	8x7x40	9	125	12	52
N	25.4(1")	101.6(4")	6.35x6.35x40(1/4")	9.4(0.37")	127(5")	12(0.47")	50(1.97")



Mounting Type	Shaft	øB	D	øE	F	H
K	Splined W25x1.5x15x8f DIN 5480	100 h8	9	125	12	43
D	Splined 15T 16/32 DP, flat root, side fit ANSI B92.1	101.6(4")	9.4(0.37")	127(5")	12(0.47")	46(1.81")



Shown with standard pressure compensator

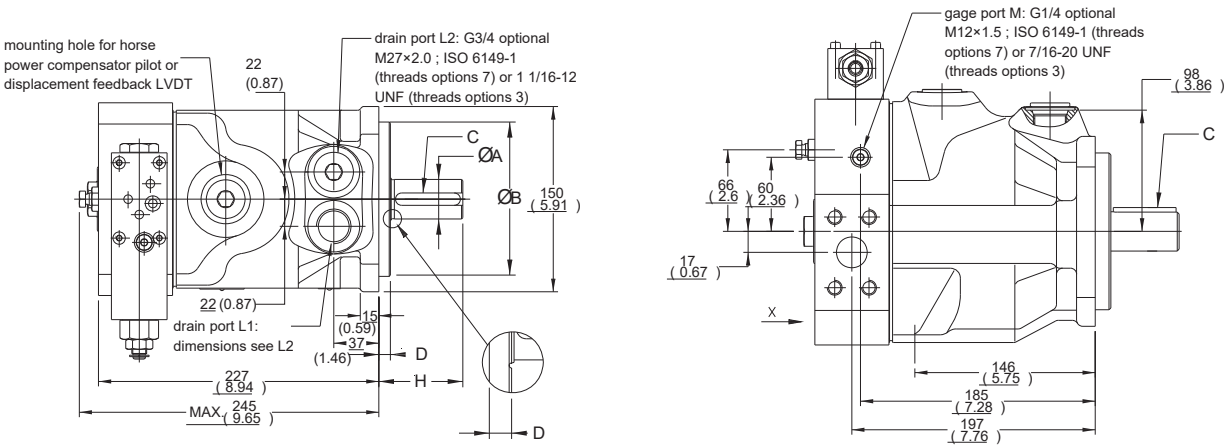
F

F

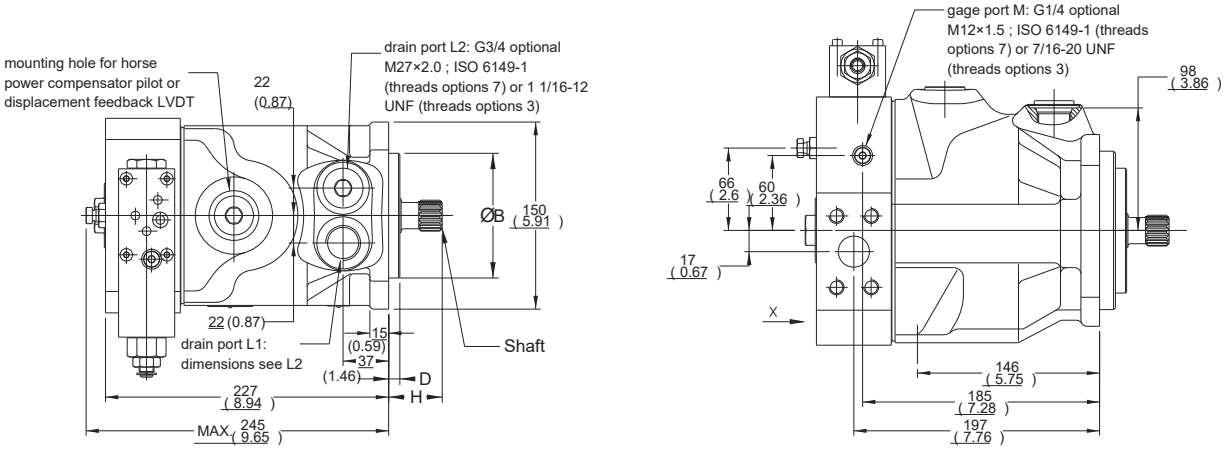
※DIMENSIONS

PV032~PV046

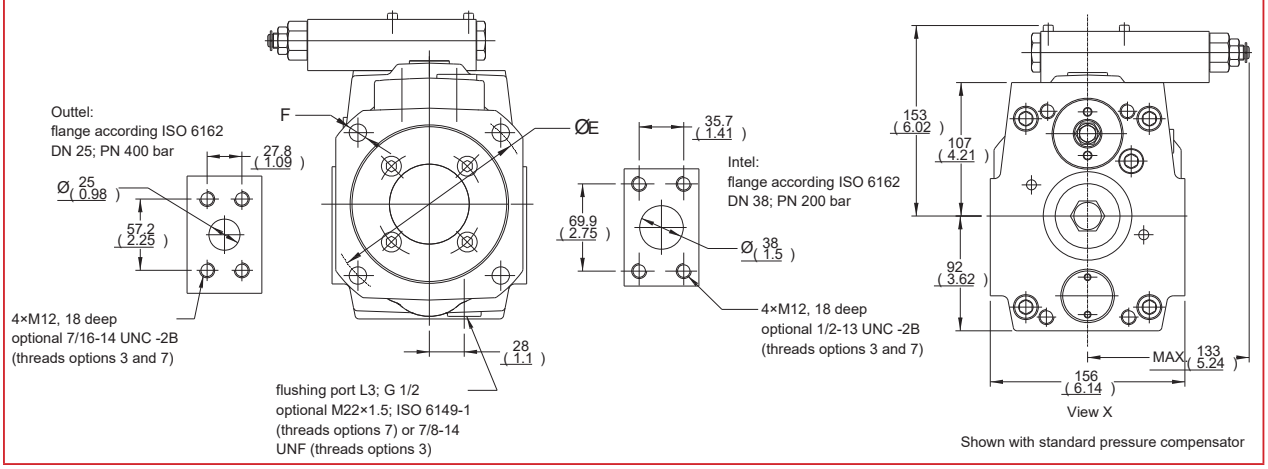
M.M.(INCHES)



Mounting Type	øA	øB	C	D	øE	F	H
M	32	125 h8	10x8x56	9	160	14	68
N	31.75(1.25")	127(5")	7.94x7.94x56(5/16")	12.7 (0.5")	161.93 (6.38")	14 (0.55")	68 (2.68")



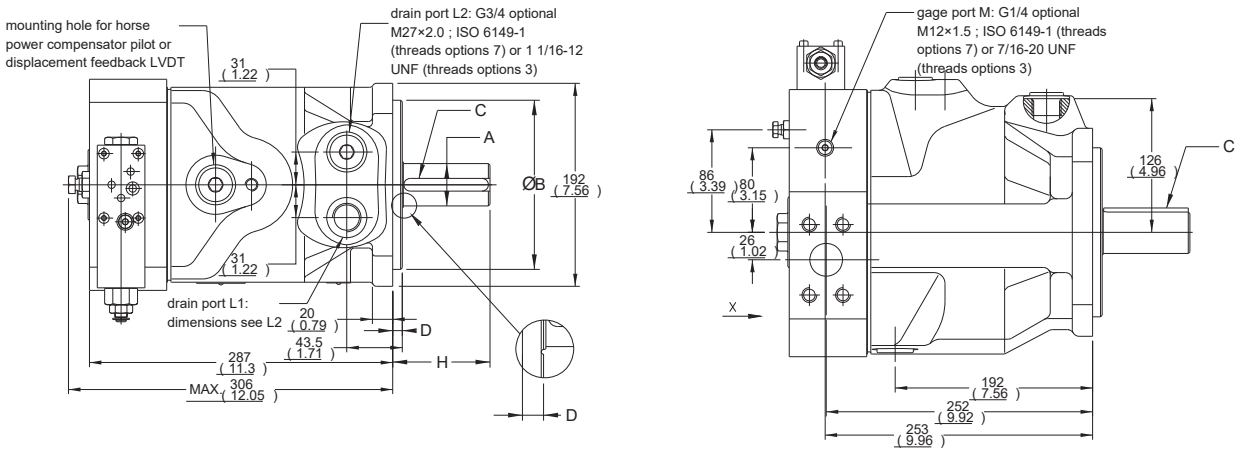
Mounting Type	Shaft	øB	D	øE	F	H
K	Splined W32x1.5x20x8f DIN 5480	100 h8	9	125	12	43
D	Splined 14T 12/24 DP, flat root, side fit ANSI B92.1	127(5")	12.7 (0.5")	161.93 (6.38")	14 (0.55")	56 (2.31")



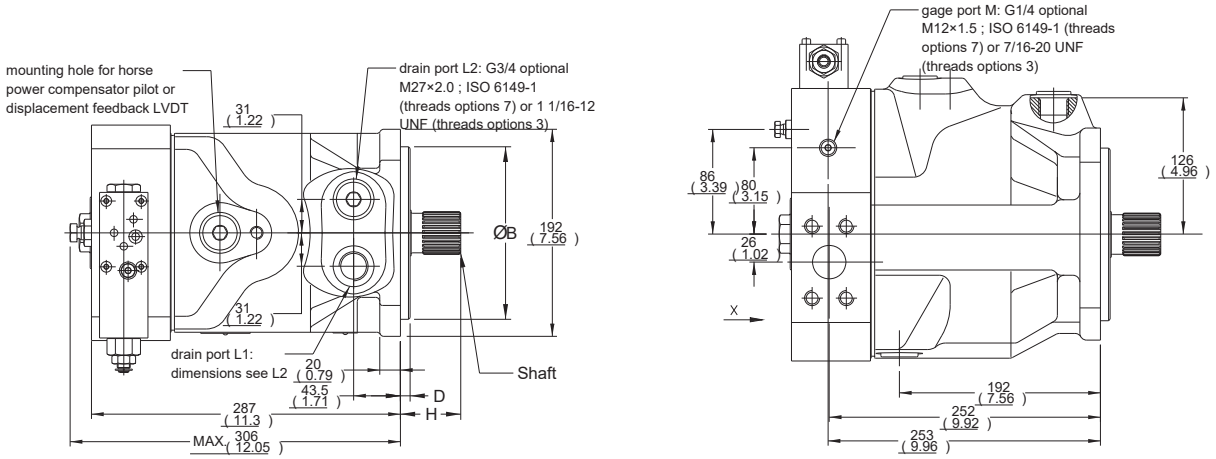
※DIMENSIONS

PV063~PV092

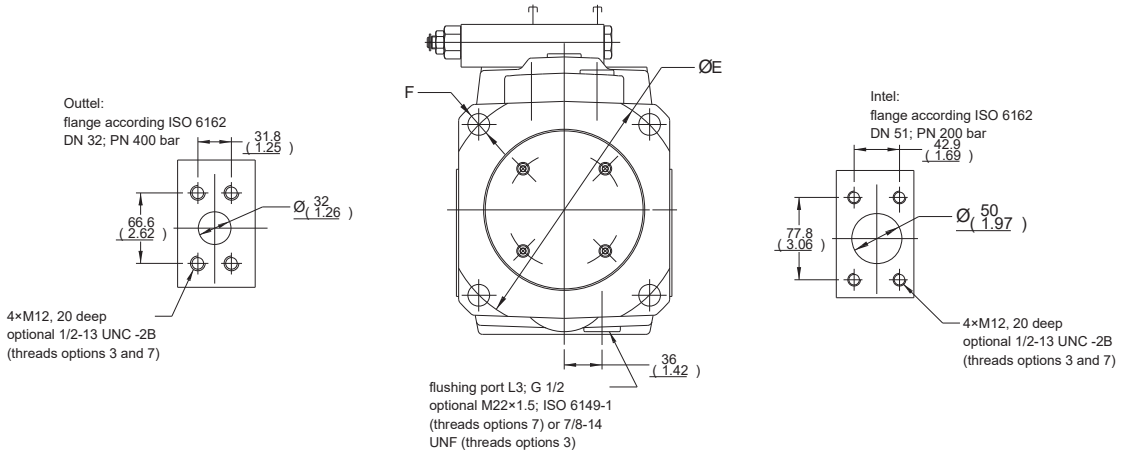
M.M.(INCHES)



Mounting Type	øA	øB	C	D	øE	F	H
M	40	160 h8	12x8x80	9	200	18	92
N	44.45(1.75")	152.4(6")	11.11x11.11x80 (7/16")	12.7 (0.5")	228.6 (9")	20.6 (0.81")	90 (3.54")



Mounting Type	Shaft	øB	D	øE	F	H
K	Splined W40x1.5x25x8f DIN 5480	160 h8	9	200	18	56
D	Splined 13T 8/16 DP, flat root, side fit ANSI B92.1	152.4(6")	12.7 (0.5")	228.6 (9")	20.6 (0.81")	75 (2.95")



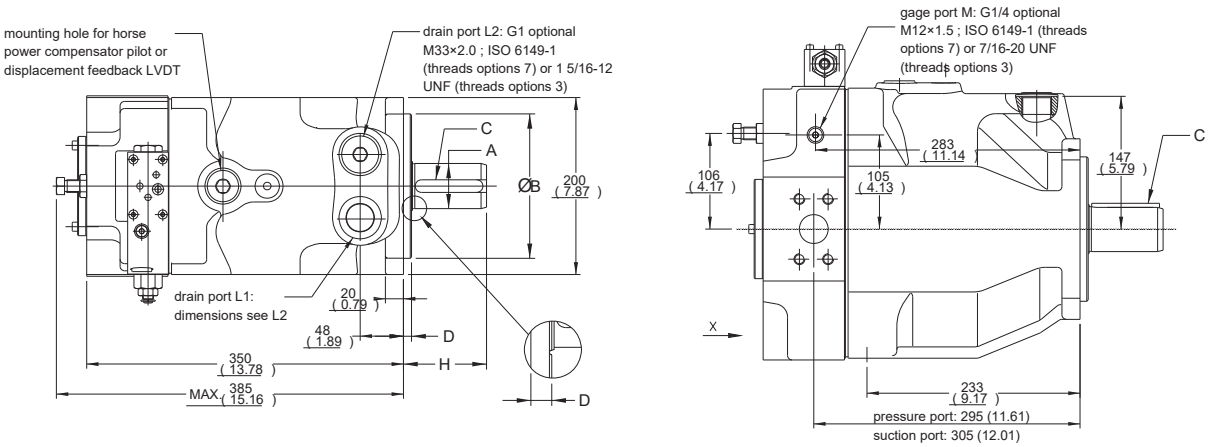
F

F

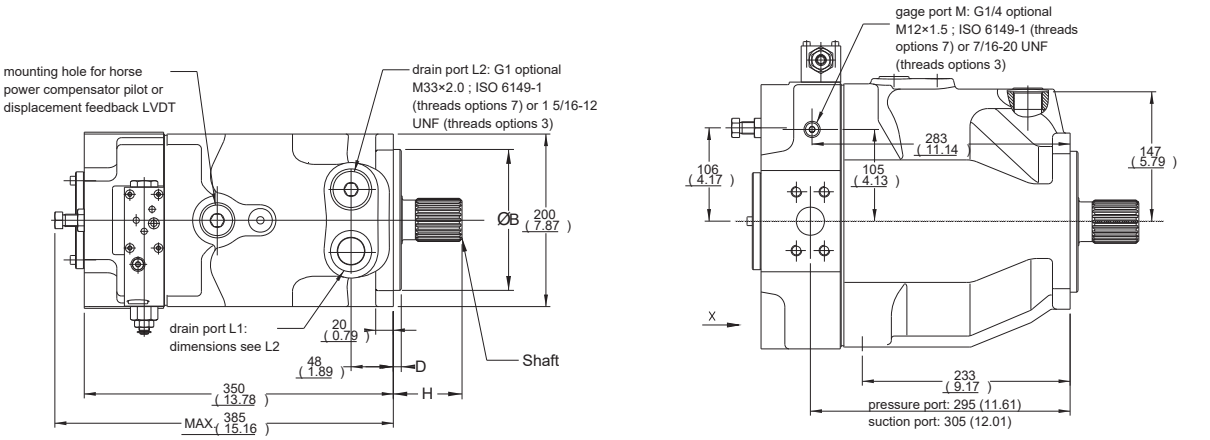
※DIMENSIONS

PV140~PV180

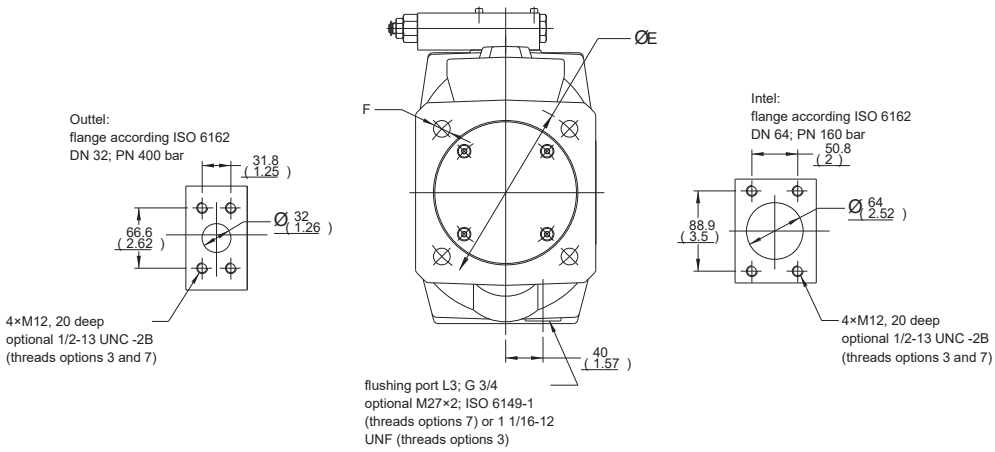
M.M.(INCHES)



Mounting Type	øA	øB	C	D	øE	F	H
M	50	160 h8	14x9x75	9	200	18	92
N	50.8(2")	152.4(6")	12.7x12.7x75(1/2")	12.7 (0.5")	228.6 (9")	20.6 (0.81")	99.4 (3.91")



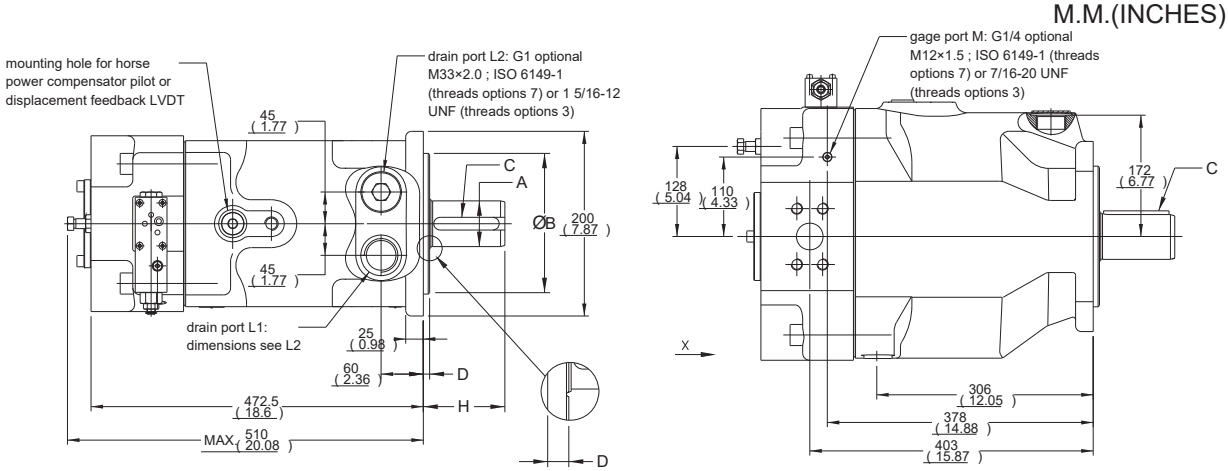
Mounting Type	Shaft	øB	D	øE	F	H
K	Splined W50x2x24x8f DIN 5480	160 h8	9	200	18	78
D	Splined 13T 8/16 DP, flat root, side fit ANSI B92.1	152.4(6")	12.7 (0.5")	228.6 (9")	20.6 (0.81")	88 (3.46")



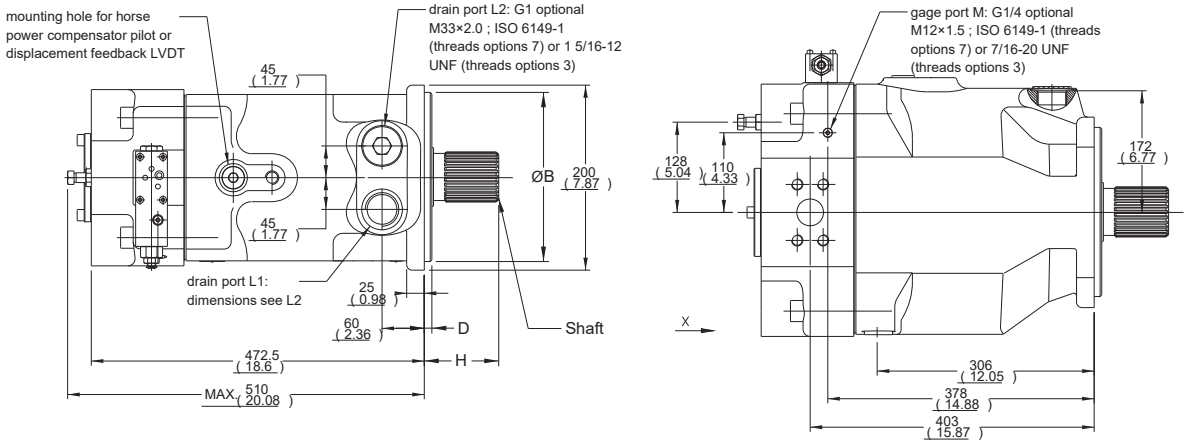
※DIMENSIONS

PV270

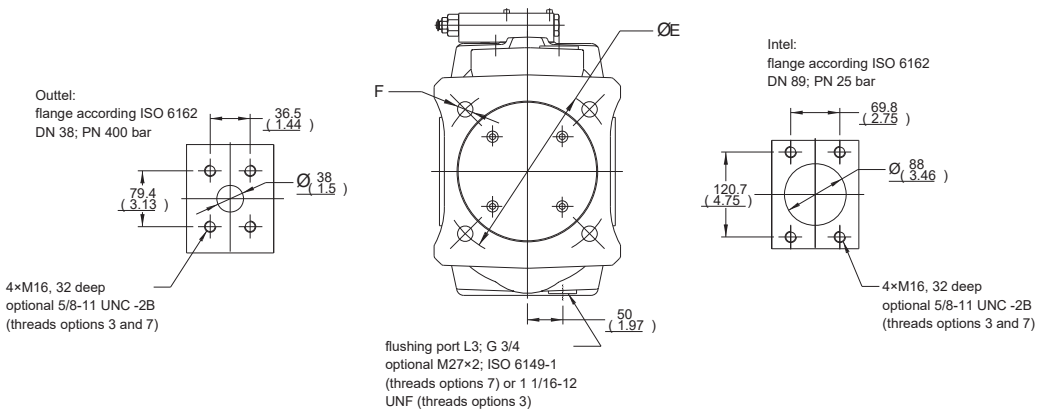
M.M.(INCHES)



Mounting Type	øA	øB	C	D	øE	F	H
M	65	200 h8	18x11x98	9	250	22	115
N	50.8(2")	165.1(6.5")	12.7x12.7x75(1/2")	15.9 (0.37")	317.5 (12.5")	20.6 (0.81")	97.5 (3.84")

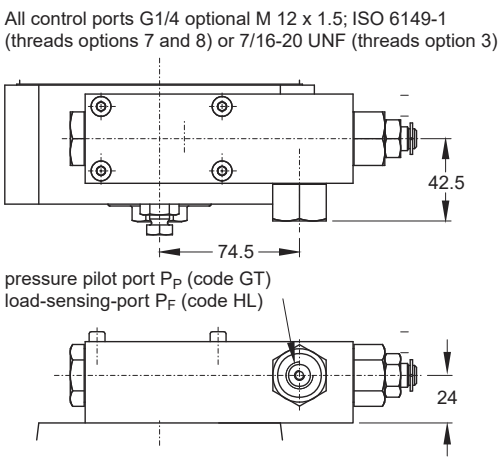


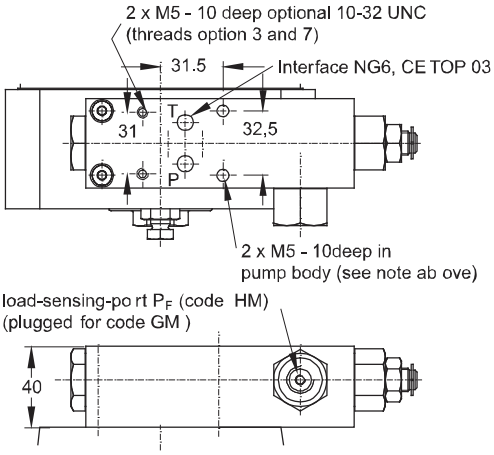
Mounting Type	Shaft	øB	D	øE	F	H
K	Splined W60x2x28x8f DIN 5480	200 h8	9	250	22	80
D	Splined 15T 8/16 DP, flat root, side fit ANSI B92.1	165.1(6.5")	15.9 (0.37")	317.5 (12.5")	20.6 (0.81")	88 (3.46")

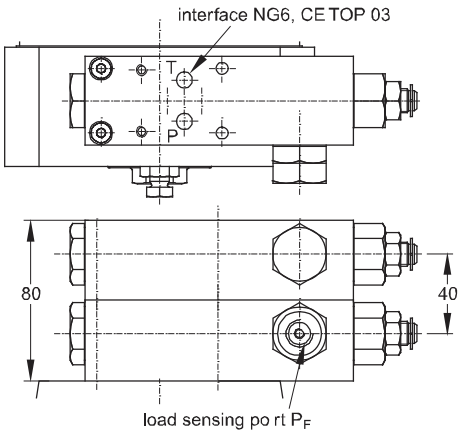


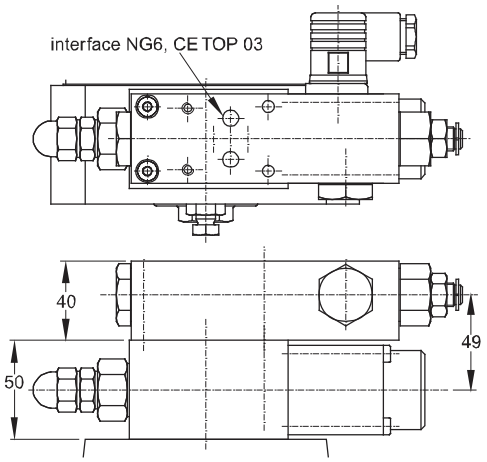
F

※COMPENSATORS DIMENSIONS

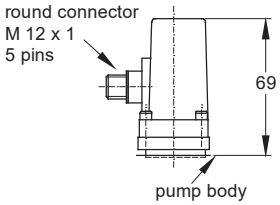




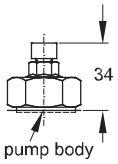




LVDT for proportional compensator

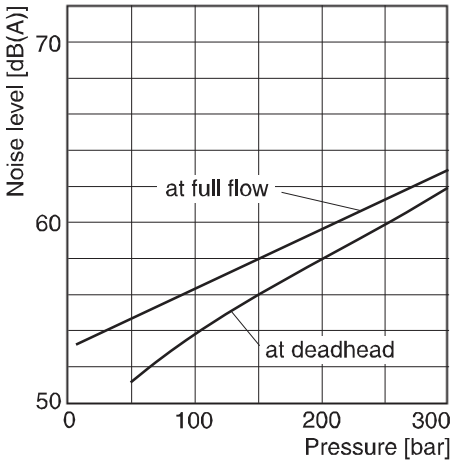


Pilot valve for horse power compensator

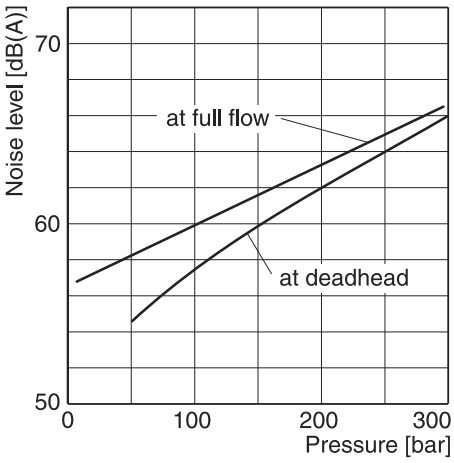


※NOISE LEVEL

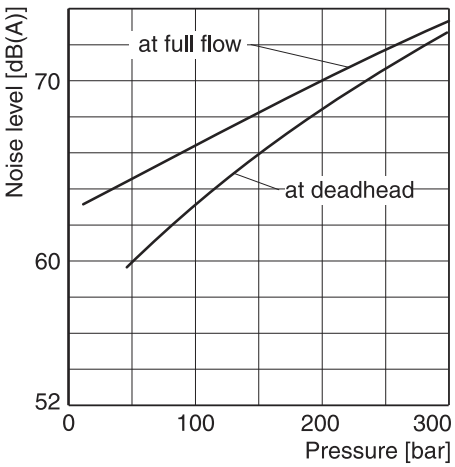
PV016~023



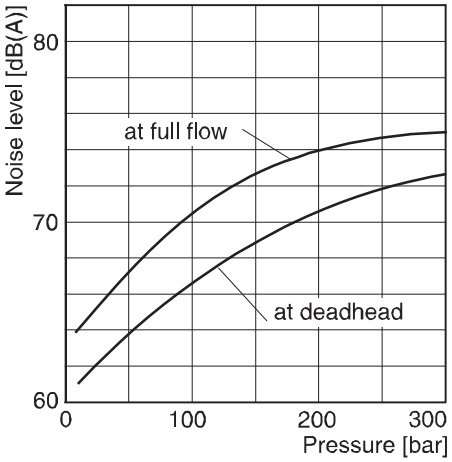
PV032~046



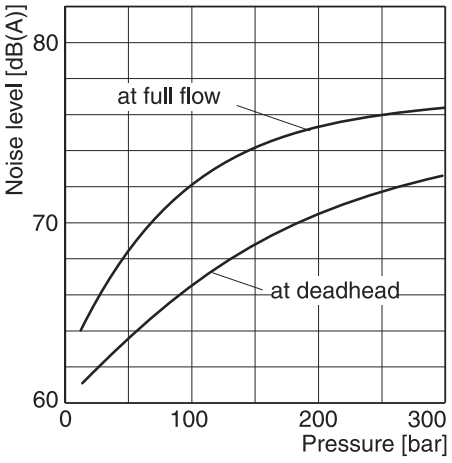
PV063~092



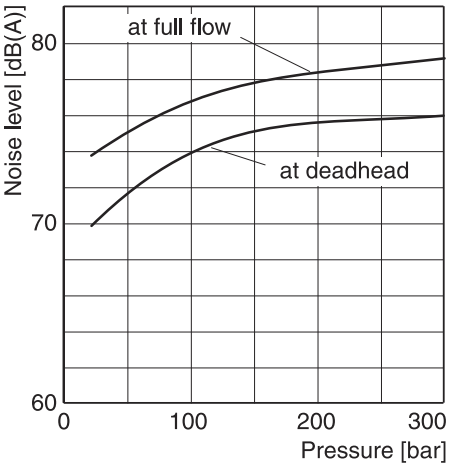
PV140



PV180



PV270

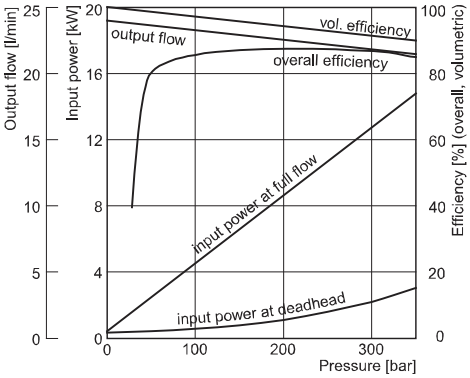


F

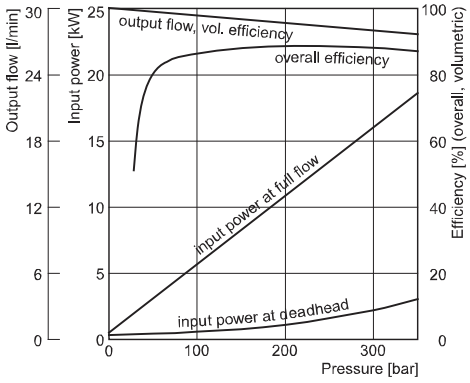
F

※EFFICIENCY, POWER CONSUMPTION

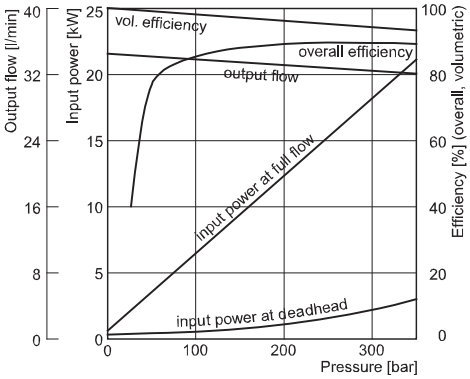
PV016



PV020

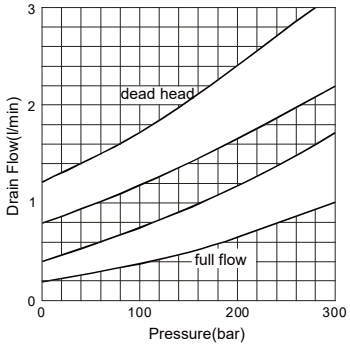


PV023

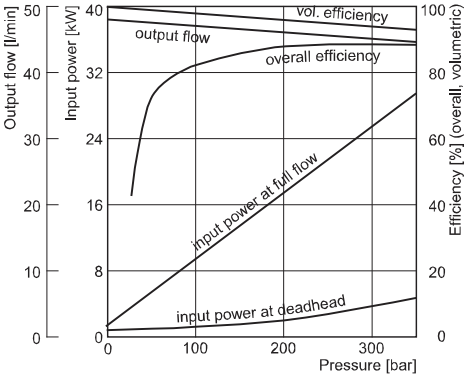


■ Case drain flows

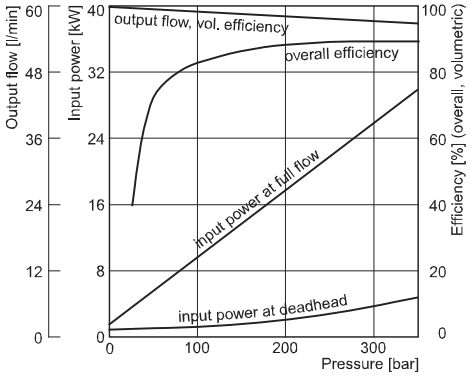
PV016~023



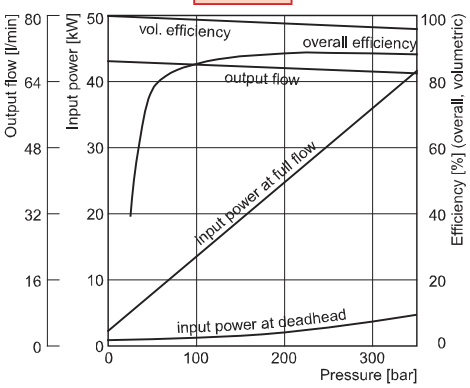
PV032



PV040

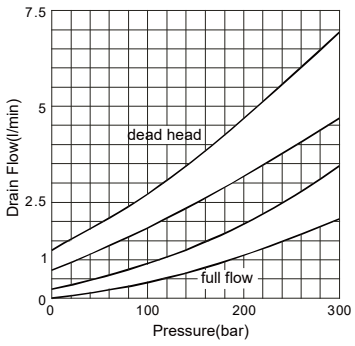


PV046



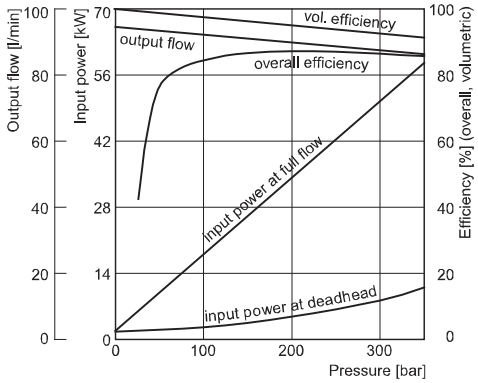
■ Case drain flows

PV032~046

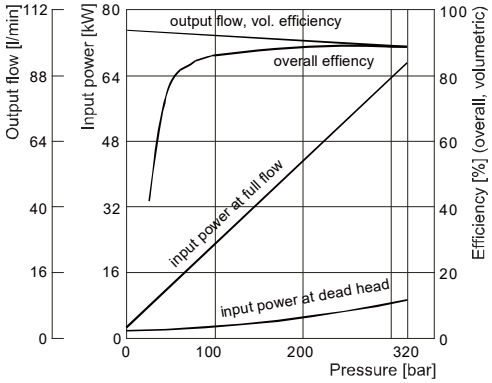


※EFFICIENCY, POWER CONSUMPTION

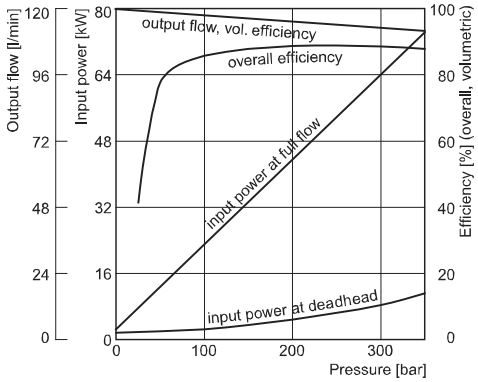
PV063



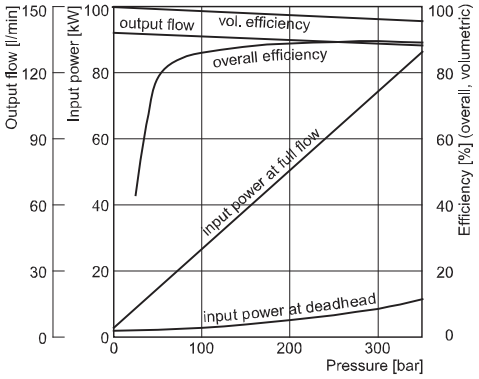
PV071



PV080

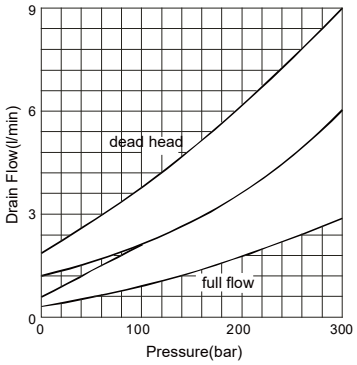


PV092



■ Case drain flows

PV016~023



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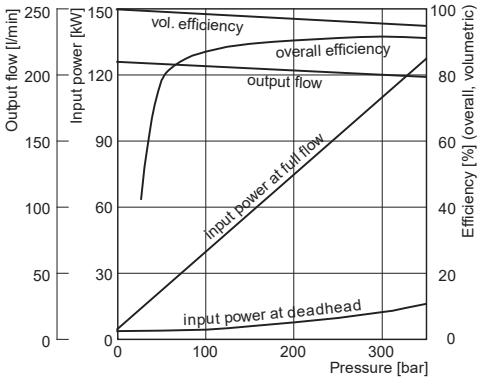

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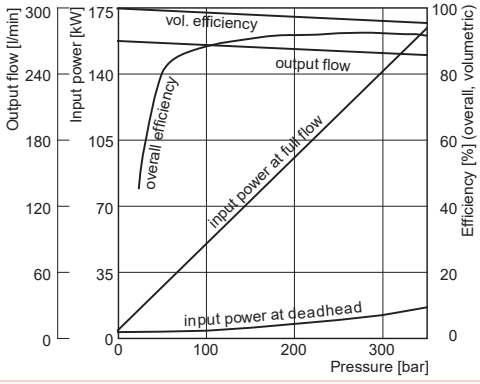
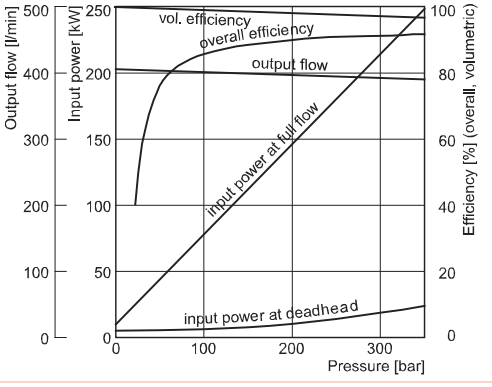


PV270



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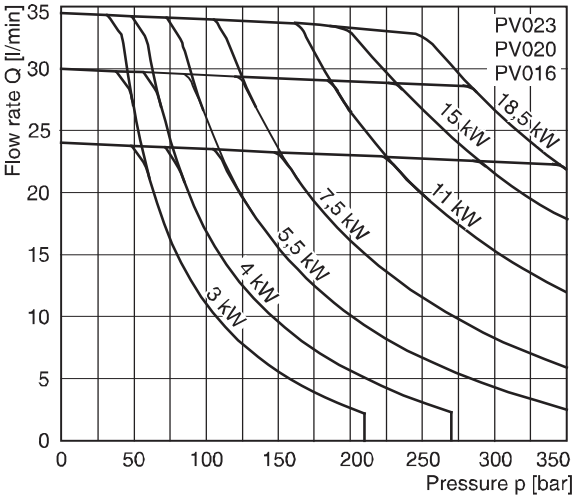
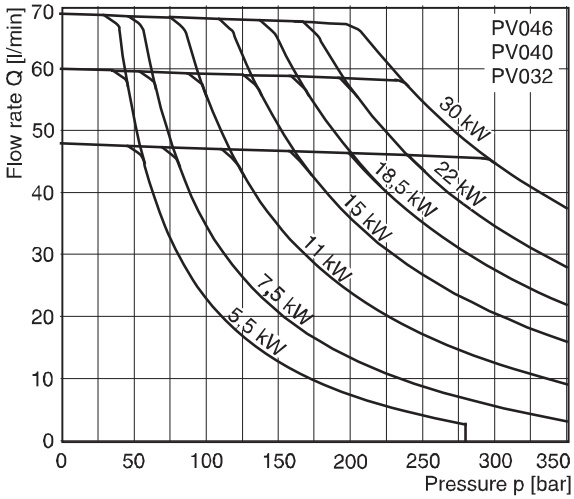
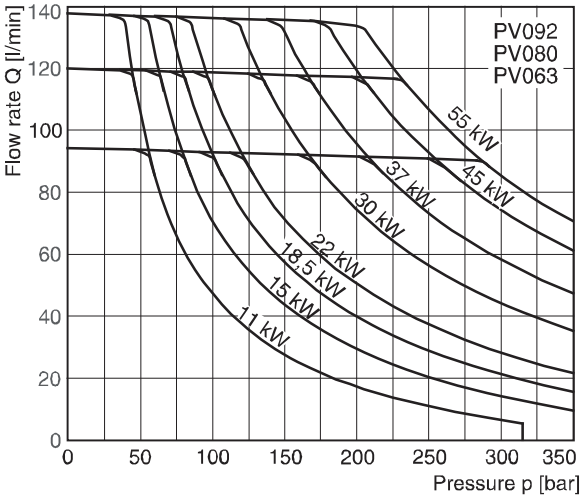
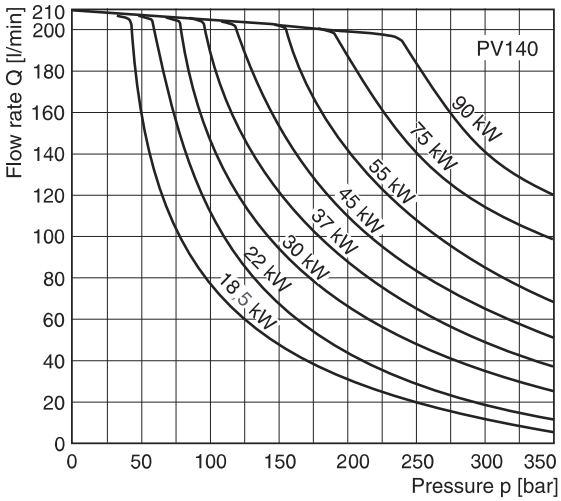
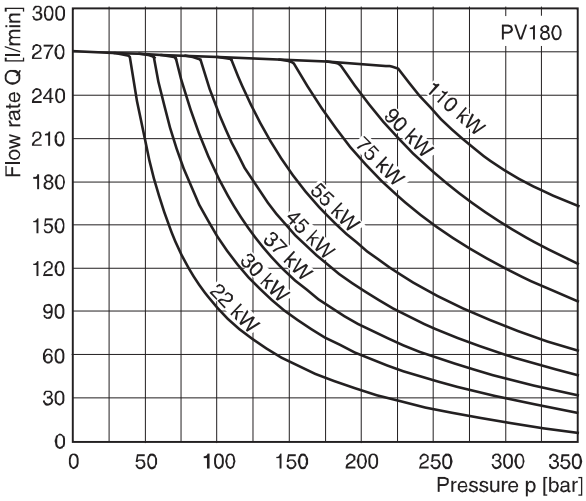
※CHARACTERISTIC CURVES, HORSE POWER COMPENSATORS

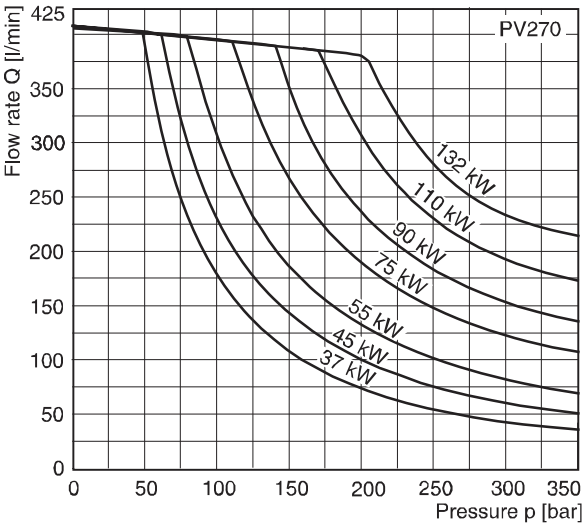




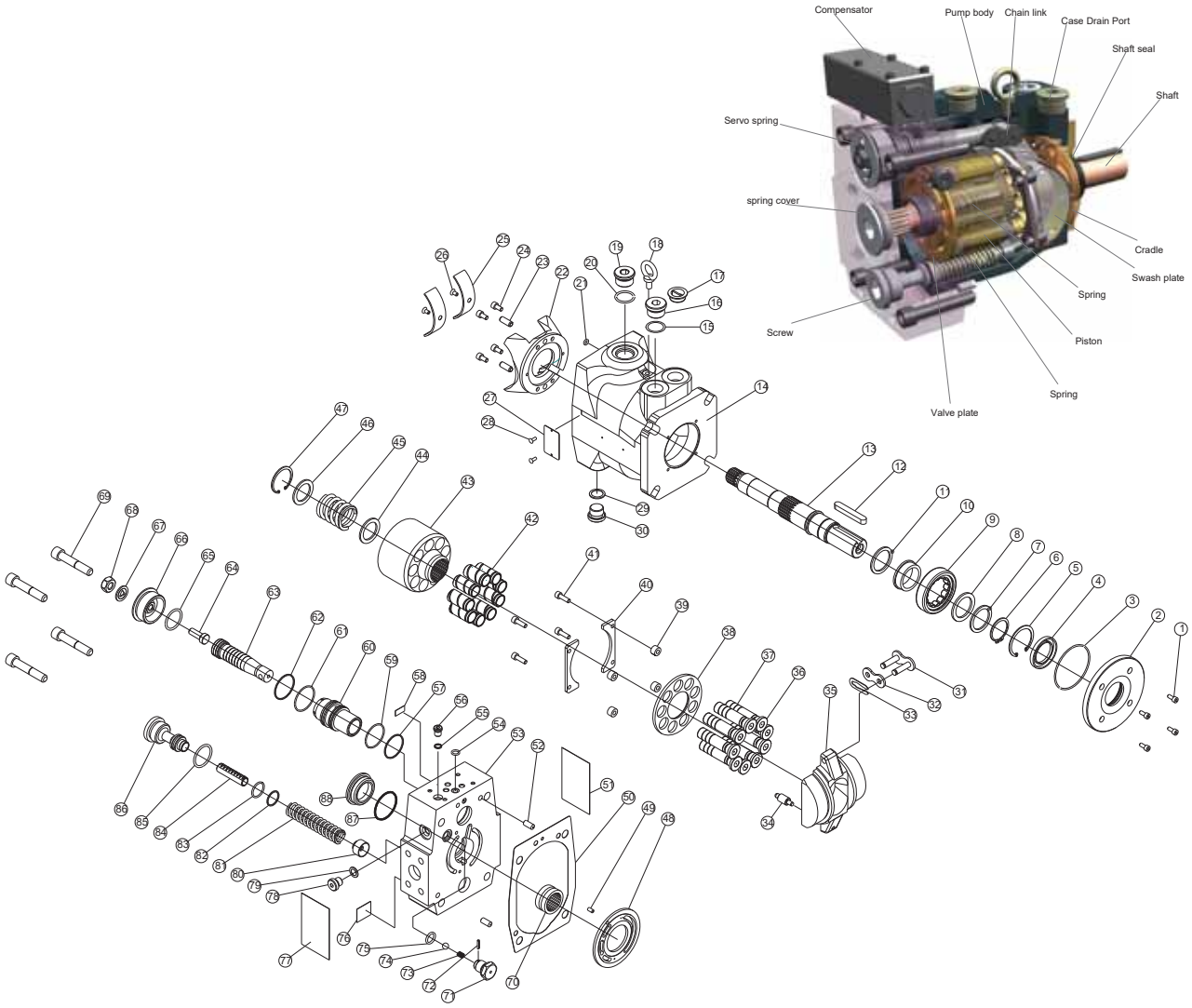








【ASSEMBLY】



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PARTS LIS							
NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION
1	Hexagon socket head cap screw	23	Pin	45	Spring	67	Washer
2	Pilot cover	24	Screw	46	Washer	68	Servo piston sleeve
3	O-ring	25	Trunnion bearing	47	Snap ring	69	Screw
4	Shaft seal	26	Screw	48	Valve plate	70	Trunnion bearing
5	Snap ring	27	Rotation indicator	49	Pin	71	Plug
6	Snap ring	28	Rivet	50	Seal	72	Pin
7	Washer	29	O-ring	51	Seal	73	Spring
8	Washer	30	Plug	52	Pin	74	Ball
9	Roller bearing	31	Chain link	53	Pump body	75	O-ring
10	Roller bearing	32	Chain link	54	O-ring	76	Label
11	Roller bearing	33	Chain link	55	O-ring	77	Seal
12	Key	34	Connector servo spring	56	Plug	78	Plug
13	Shaft	35	Swash plate	57	O-ring	79	O-ring
14	Pump body	36	Piston	58	Label	80	Washer
15	O-ring	37	Piston	59	O-ring	81	Spring
16	Plug	38	Slipper segment	60	Servo piston sleeve	82	O-ring
17	Plug	39	Washer	61	O-ring	83	O-ring
18	Ring	40	Retainer segment	62	O-ring	84	Pin
19	Plug	41	Screw	63	Servo piston sleeve	85	O-ring
20	O-ring	42	Spring	64	Servo piston sleeve	86	Screw
21	O-ring	43	Cylinder block	65	O-ring	87	O-ring
22	Cradle	44	Washer	66	Servo piston sleeve	88	Spring cover

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【PV-SERIES】

※FEATURE

1 . New type of swash plate and large servo piston with strong bias spring achieves fast response, reduce the noise due to active decompression of system at down stroke.

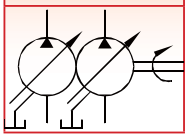
2 . Nine piston and new precompression technology (precompression filter volume) result in unbeaten low outlet flow pulsation. Complete compensator program.

3 . Rigid and FEM-optimized body design for lowest noise level.

4 . Thru drive for 100% nominal torque.

5 . Pump combinations (multiple pumps) of same size and model and mounting interface for basically all metric or SAE mounting

PV-SERIES



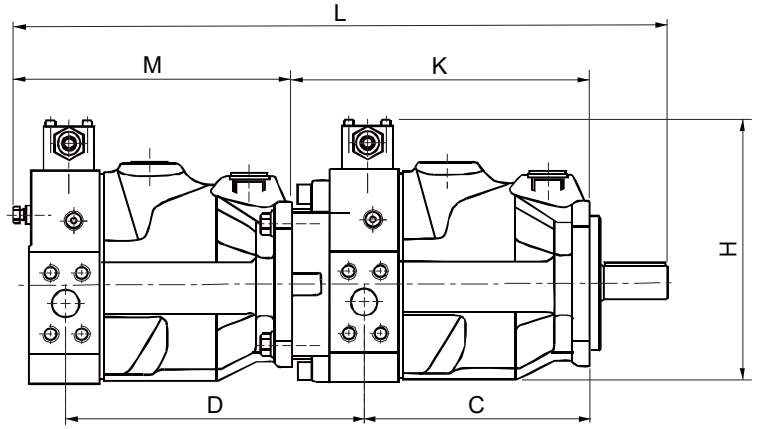
※MODEL NUMBER DESIGNATION

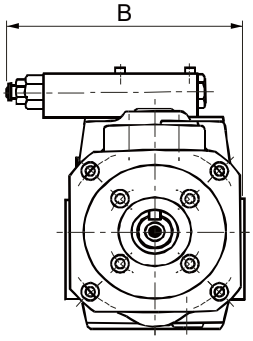
PV-	063-	063-	A1-	A1-	R-	M-	1-	A-	(A25)-	(V)-	10
Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ	Ⅶ	Ⅷ	Ⅸ	Ⅹ	ⅩⅠ	ⅩⅡ

Ⅱ : Main pump(Shaft Side) displacement, Refer to PV model number designation.
Ⅲ : Second pump(Rear Side) displacement, Refer to PV model number designation.
Ⅳ : Main pump(Shaft Side) control type, Refer to PV model number designation.
Ⅴ : Second pump(Rear Side) control type, Refer to PV model number designation.
Ⅰ , Ⅵ~ⅩⅡ : Refer to PV model number designation.

※DIMENSIONS

Main pump	Second pump	Interface main pump	L	B	C	D	H	K	M
PV016~PV023	PV016~PV023	K: Metric, ø100	489	196	170.5	225	220	225	212
PV032~PV046	PV016~PV023	L: Metric, ø125	541	208	197	235.5	245	261	212
	PV032~PV046		574	208	197	261	245	261	245
PV063~PV092	PV016~PV023	M: Metric, ø160	630	232	252	244.5	301	326	212
	PV032~PV046		663	232	252	271	301	326	245
	PV063~PV092		724	232	252	326	301	326	306
PV140~PV180	PV016~PV023	M: Metric, ø160	719	230	305	280.5	349	415	212
	PV032~PV046		752	230	305	307	349	415	245
	PV063~PV092		813	230	305	362	349	415	306
	PV140~PV180		878	230	305	415	349	415	385
PV270	PV016~PV023	N: Metric, ø200	860	255	403	299	406	531.5	212
	PV032~PV046		893	255	403	325.5	406	531.5	245
	PV063~PV092		954	255	403	380.5	406	531.5	306
	PV140~PV180		1033	255	403	433.5	406	531.5	385
	PV270		1134	255	403	531.5	406	531.5	510





M.M.(INCHES)

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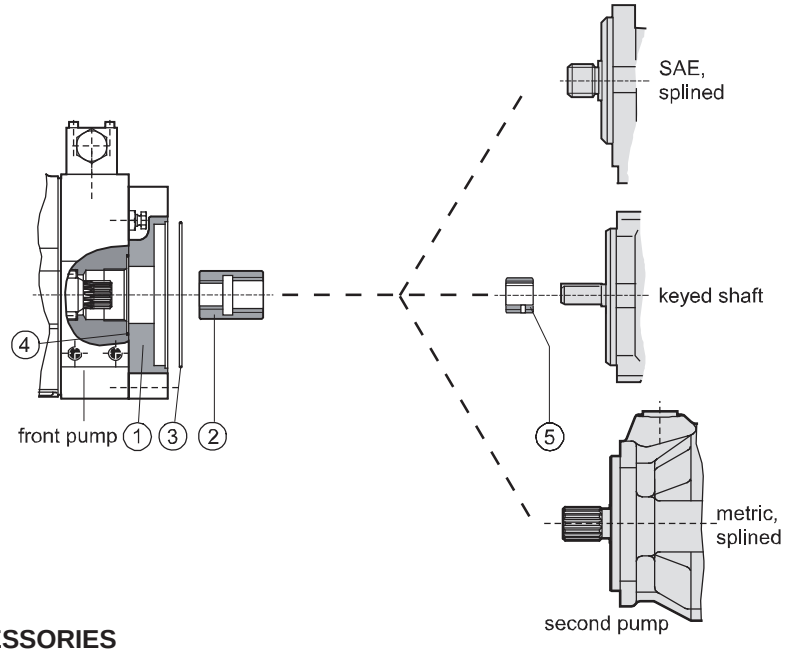
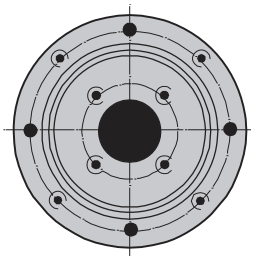
※PV PUMP WITH THRU DRIVE

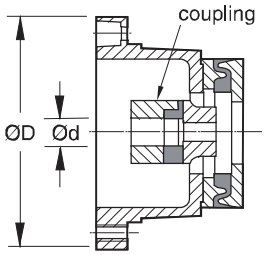


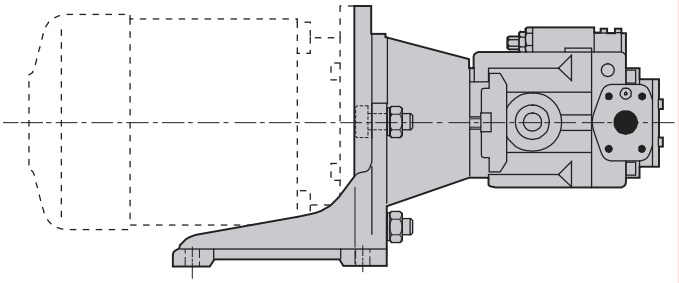
※PV PUMP ACCESSORIES

BELL HOUSING, COUPLING AND FOOT FLNAGE

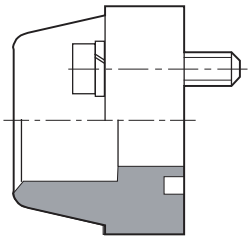


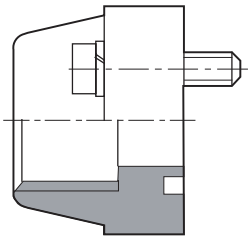
WELDING FLANGE

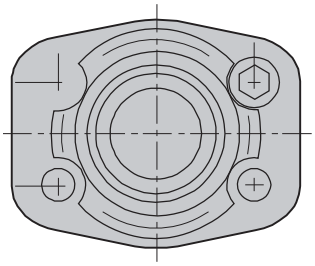




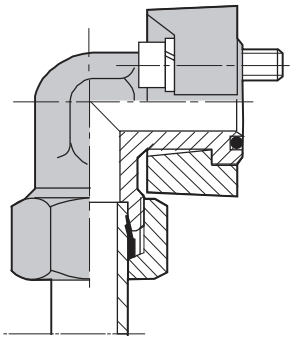
THREADED FLANGE



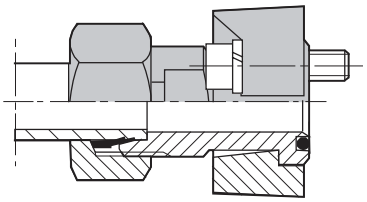




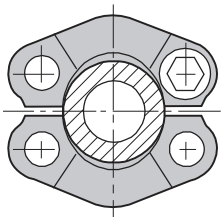
SAE FLANGE CONNECTIONS, PIPE CONNECTION IN ACCORDANCE TO DIN-2353



ELBOW SAE-FLANGE CONNECTION WFS



STRAIGHT SAE CONNECTION GFS



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【HPP-5HP60L】

※**SPECIFICATION**

MOTOR	5HP / 3.7 KW / 3 PHASE 220V/60HX
MAX. PRESSURE	720 kg/cm^2/ 706 Bar / 72 MPa
FLOW (LOW / HIGH PRESSURE)	15 / 3.3 L/MIN. (4 / 0.9 GALLON)
TANK CAPACITY	60 L /15 GALLON
WEIGHT	125 KG
DIMENSION	50 X 38 X 92 CM

【HPP-3HP40L】

※**SPECIFICATION**

MOTOR	3HP / 2.2 KW / 3 PHASE 220V/60HX
MAX. PRESSURE	720 kg/cm^2/ 706 Bar / 72 MPa
FLOW (LOW / HIGH PRESSURE)	12 / 3.1 L/MIN. (2.6 / 0.7 GALLON)
TANK CAPACITY	40 L / 10 GALON
WEIGHT	95 KG
DIMENSION	50 X 38 X 70 CM

【HPP-2HP8L】

※**SPECIFICATION**

MOTOR	2HP / 1.5 KW / 3 PHASE 220V/60HX
MAX. PRESSURE	720 kg/cm^2/ 706 Bar / 72 MPa
FLOW (LOW / HIGH PRESSURE)	6 / 1.5 L/MIN. (1.6 / 0.4 GALLON)
TANK CAPACITY	8 L / 2 GALON
WEIGHT	48 KG
DIMENSION	40 X 35 X 60 CM