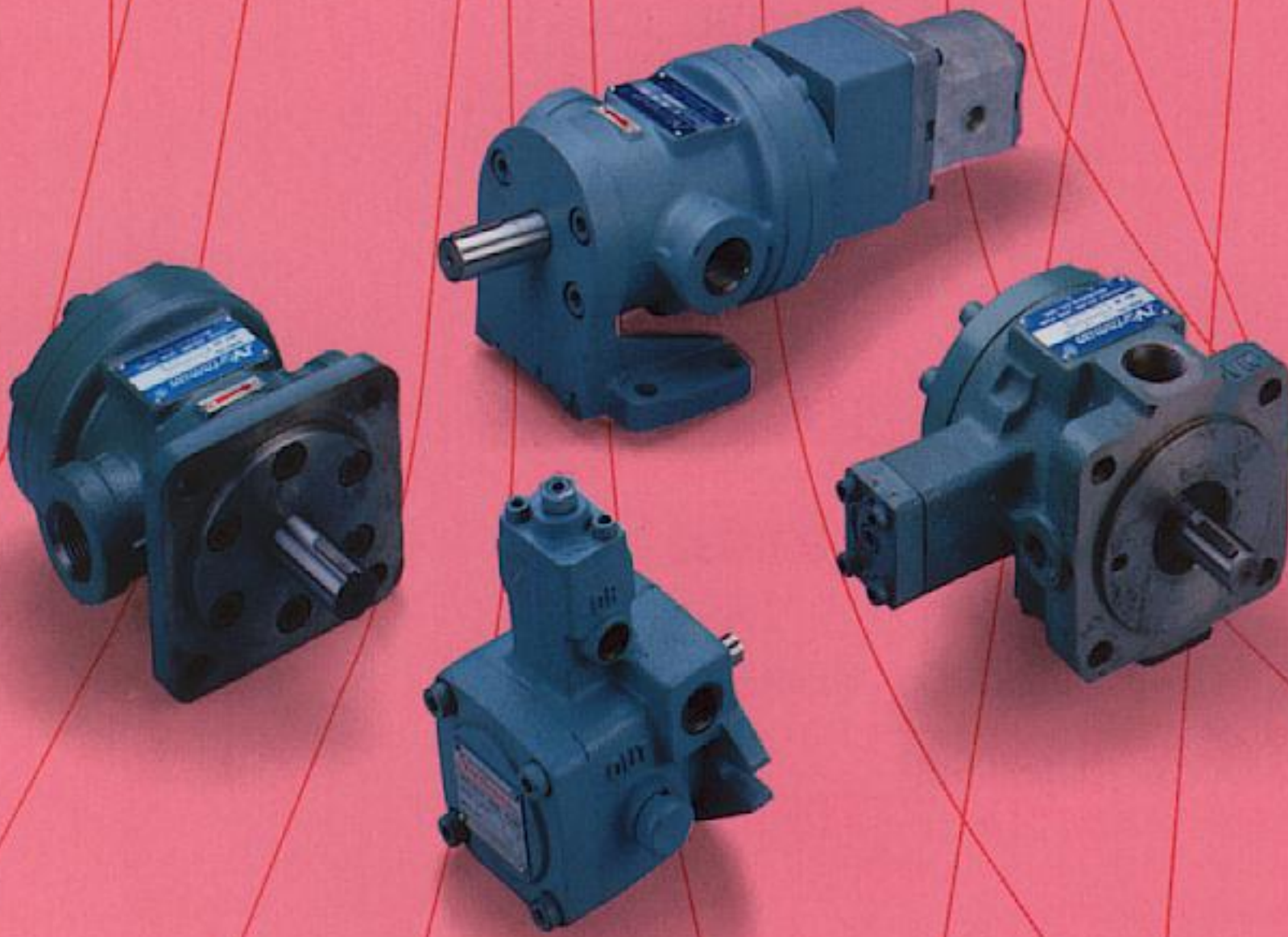




Northman



**HYDRAULIC
VANE PUMP**

INDEX

PUMP OPERATION	2
VPVC-F12 F20 SERIES	3~6
VPVC-F30 F40 SERIES	7~9
VPVCC SERIES	11~12
VPVCG SERIES	13~14
VPNC SERIES	15~18
VPNCG SERIES	19~24
VPNE SERIES	25~28
VPNEG SERIES	29~32

PUMP OPERATION

1. Hydraulic Fluid

- Use hydraulic fluid with the viscosity of ISO VG46-68 (with viscosity index of more than 70kgf/cm² anti-wear hydraulic fluid of ISO VG46-68 is recommendable.)
- Consult the manufacturer in case noninflammable fluid (phosphate-ester, water-glycol, fatty ester, water in oil emulsion, etc) is used.
- Use clean fluid without foreign bodies or water. Whitened fluid indicates aeration and brown fluid deterioration.

2. Viscosity and Temperature of Fluid

- Viscosity: 20-500CST
- Temperature: 0°C-60°C

3. Suction Pressure

- Suction pressure must be within $-0.3 \text{ — } +0.3\text{kgf/cm}^2$
- (Specify high suction pressure shaft seal if pump is used at suction pressure higher than $+0.3\text{kgf/cm}^2$)

4. Filtration

- Fit a filter of 150 mesh or above in suction line. A 25 μm in-line filter in delivery line or a magnet filter will extend pump life.

5. Installation and Alignment

- Mount pump on a base with sufficient rigidity.
- Pump must be so mounted that the suction port may be on either side or upper position.
- Eccentricity between shafts of pump and motor must be less than 0.05mm by using flexible coupling such as chain coupling. Avoid radial force on pump shaft.
- Coupling must go in and out on pump shaft smoothly.

6. Piping

- Use piping flanges.
- Piping size of suction line must be chosen to allow fluid flow of less than 1.5m/sec and suction pressure less than -0.3kgf/cm^2 piping must be as short as possible.
- Avoid push-or pull-force when using steel pipe.

7. Initial Start-Up

- For good lubrication between moving and stationary elements, pour fluid into the pump before use.
- To purge air in pump body, be sure to operate pump by an inching start (on and off) at unload.

8. Rotating Direction

- Clockwise (seen from shaft end) is standard. Counter clockwise optional.
- Check rotation direction by a moment start-up of motor.

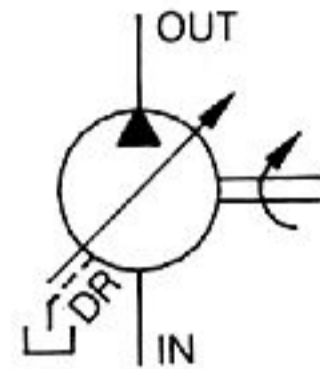
9. Maximum Pressure

- Operation at maximum pressure must not exceed 1/3 of one cycle and 20 seconds.

10. Consult the manufacturer if disassembly is required.



SYMBOL



FEATURES

- VPVC series offer design engineer another opportunity to design circuits with high efficiency.
- Built-in compensator control automatically adjusts pump delivery to system volume requirements at selected pressures. System relief valve is not needed. Horsepower waste is reduced and heat generated is much less than fixed displacement pumps.
- Volume control adjustment is standard which permits user to vary maximum pump output.

HOW TO ORDER

VPVC - F12 - A1 - 20

DESIGN NUMBER

PRESSURE RANGE

1: 8-18/KGF/CM² (120-250PSI)

2: 14-35KGF/CM² (200-500PSI)

3: 30-70KGF/CM² (430-1000PSI)

SHARP CUT-OFF TYPE

DISPLACEMENT: (NOMINAL NO-LOAD DELIVERY AT 1800RPM)

12: 12LPM (3.2GPM)

20: 20LPM (5.3GPM)

F: FLANGE MOUNTING TYPE

VARIABLE DISPLACEMENT VANE PUMP

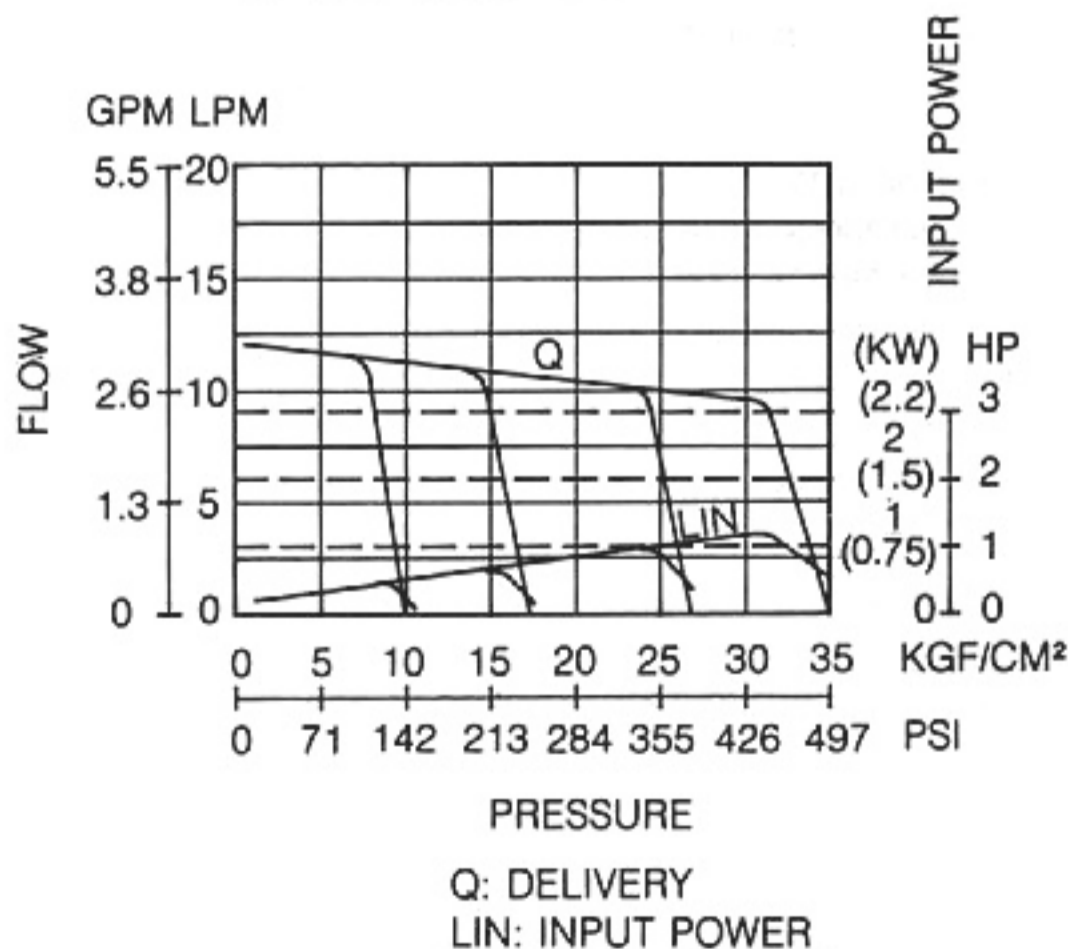
VPVC-F12 F20 SERIES

SPECIFICATIONS

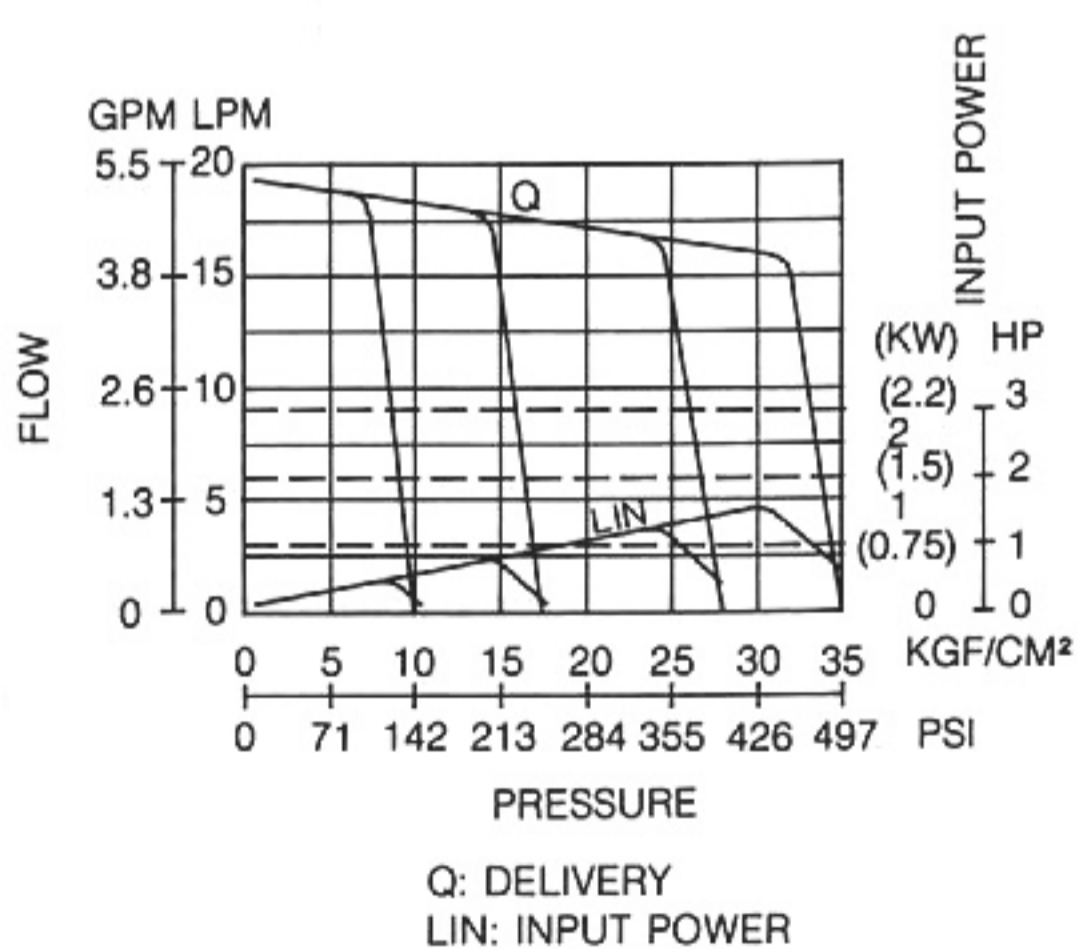
MODEL	DELIVERY AT UNLOADING LPM (GPM)		PRESSURE ADJ. RANGE KGF/CM ² (PSI)	SPEED OF ROTATION (RPM)		MAX. SET PRESSURE KGF/CM ² (PSI)	WEIGHT kgs (lbs)
	1800 RPM	1500 RPM		MAX.	MIN.		
VPVC-F12-A1-02	12 (3.17)	10 (2.64)	10 - 20 (142 - 284)	1800	800	20 (284)	5 (11)
VPVC-F12-A2-02			15 - 35 (213 - 498)			35 (498)	
VPVC-F12-A3-02			50 - 70 (711 - 995)			70 (995)	
VPVC-F20-A1-02	20 (5.28)	17 (4.49)	10 - 20 (142 - 284)	1800	800	20 (284)	5 (11)
VPVC-F20-A2-02			15 - 35 (213 - 498)			35 (498)	
VPVC-F20-A3-02			50 - 70 (711 - 995)			70 (995)	

PERFORMANCE CURVES

VPVC-F12-A*-02



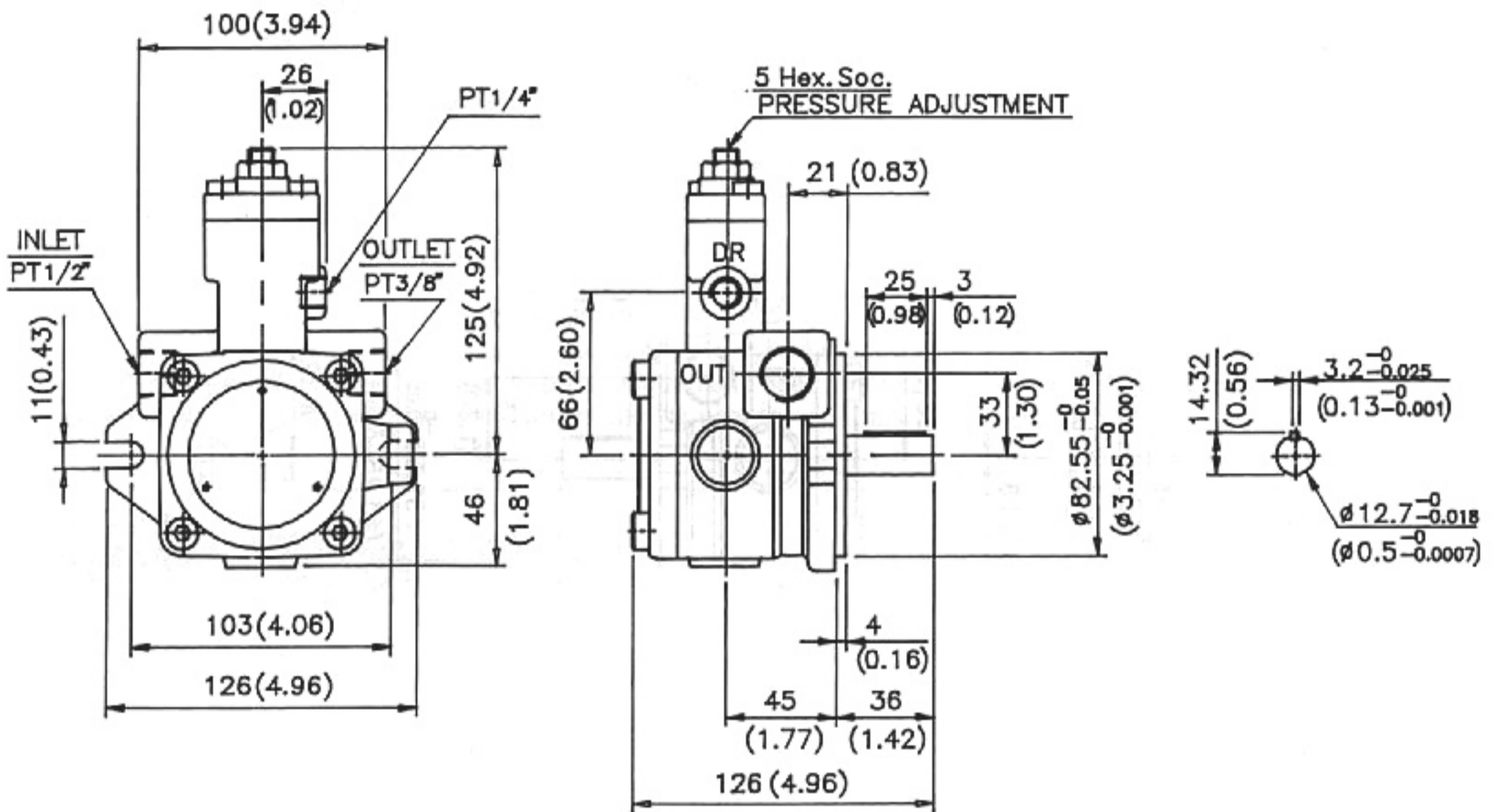
VPVC-F20-A*-02



INSTALLATION DIMENSIONS

UNIT: mm (inch)

VPVC-F12-A*-02

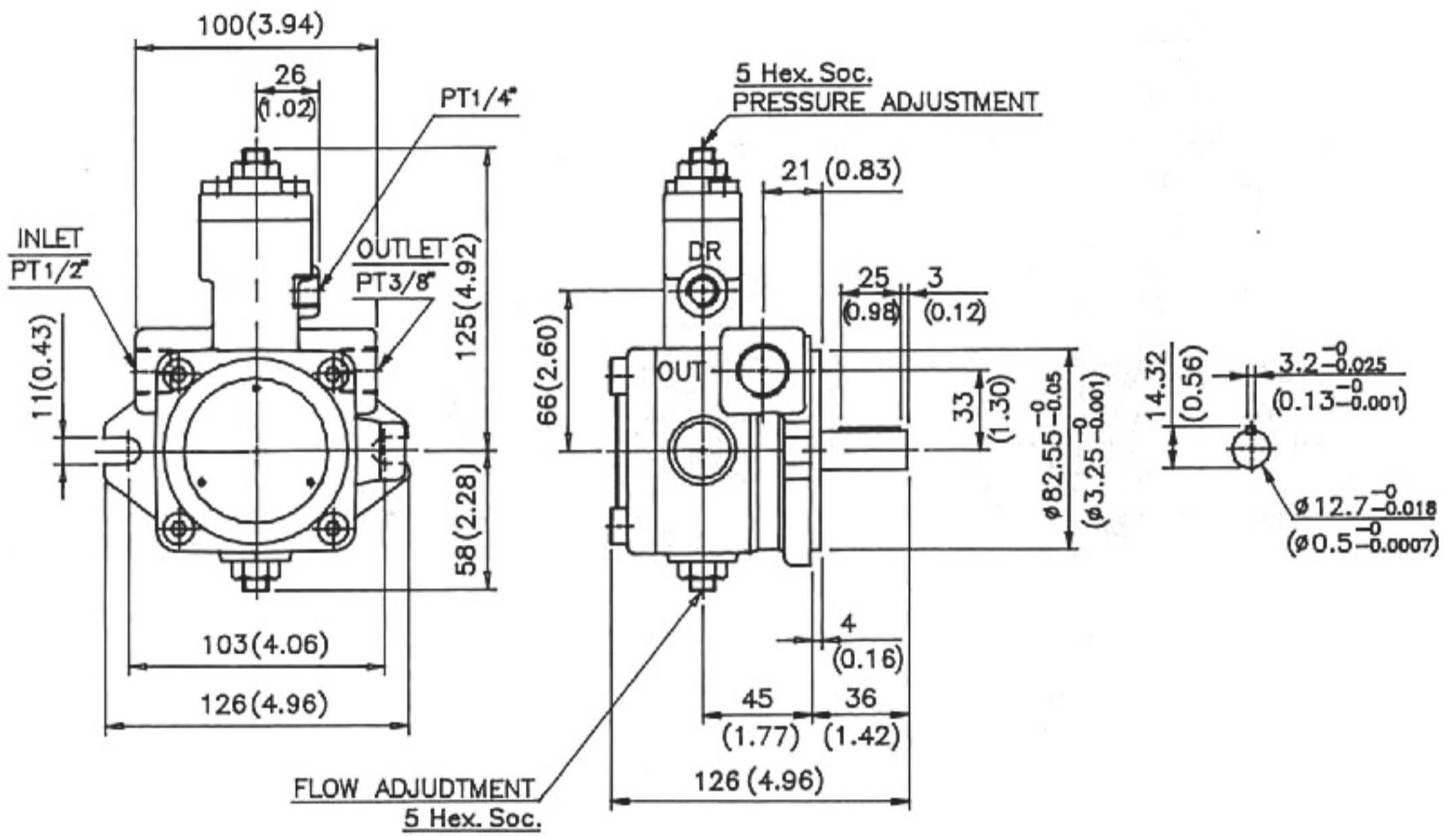


VPVC-F20 SERIES

INSTALLATION DIMENSIONS

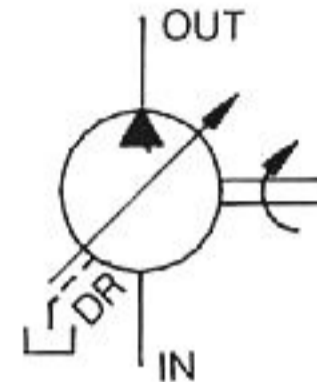
UNIT: mm (inch)

VPVC-F20-A※-02





SYMBOL



FEATURES

- VPVC series offer design engineer another opportunity to design circuits with high efficiency.
- Built-in compensator control automatically adjusts pump delivery to system volume requirements at selected pressures. System relief valve is not needed. Horsepower waste is reduced and heat generated is much less than fixed displacement pumps.
- Volume control adjustment is standard which permits user to vary maximum pump output.

HOW TO ORDER

VPVC – F30 – A1 – 02

DESIGN NUMBER

PRESSURE RANGE :

1: 8-18/KGF/CM² (120-250PSI)

2: 14-35KGF/CM² (200-500PSI)

3: 30-70KGF/CM² (430-1000PSI)

SHARP CUT-OFF TYPE

DISPLACEMENT: (NOMINAL NO-LOAD DELIVERY AT 1800RPM)

30: 30LPM (8.0GPM)

40: 40LPM (10.5GPM)

F: FLANGE MOUNTING TYPE

VARIABLE DISPLACEMENT VANE PUMP

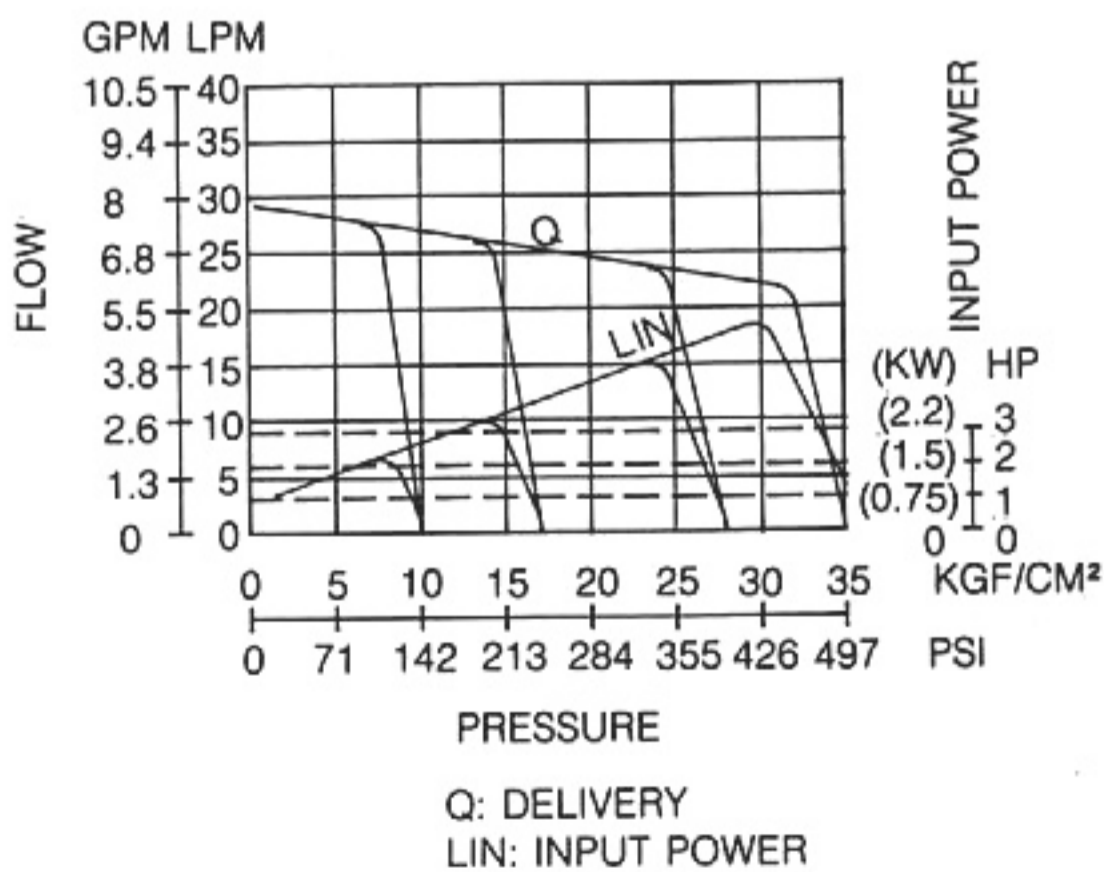
VPVC-F30 F40 SERIES

SPECIFICATIONS

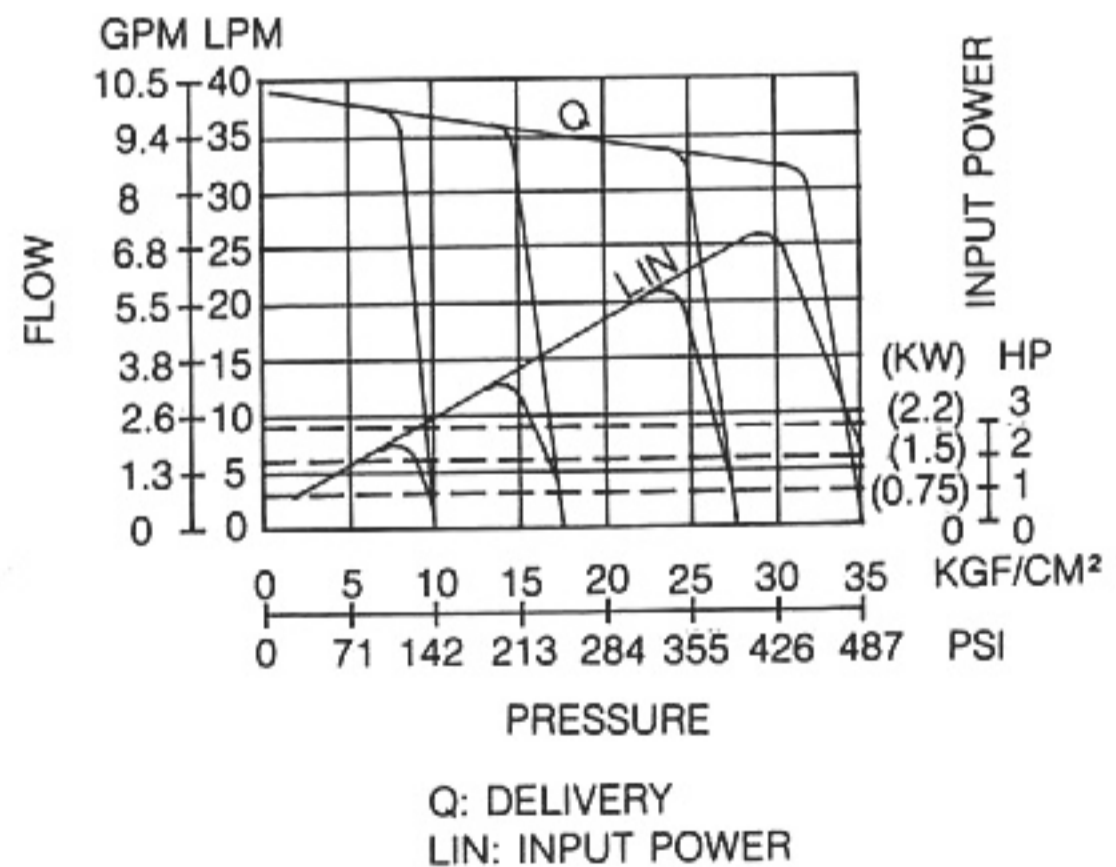
MODEL	DELIVERY AT UNLOADING LPM(GPM)		PRESSURE ADJ. RANGE KGF/CM ² (PSI)	SPEED OF ROTATION (RPM)		MAX. SET PRESSURE KGF/CM ² (PSI)	WEIGHT kgs (lbs)
	1800 RPM	1500 RPM		MAX.	MIN.		
VPVC-F30-A1-02	30 (7.93)	25 (6.6)	10 - 20 (142 - 284)	1800	800	20 (284)	9 (20)
VPVC-F30-A2-02			15 - 35 (213 - 498)			35 (498)	
VPVC-F30-A3-02			50 - 70 (711 - 995)			70 (995)	
VPVC-F40-A1-02	40 (10.57)	35 (9.25)	10 - 20 (142 - 284)	1800	800	20 (284)	9 (20)
VPVC-F40-A2-02			15 - 35 (213 - 498)			35 (498)	
VPVC-F40-A3-02			50 - 70 (711 - 995)			70 (995)	

PERFORMANCE CURVES

VPVC-F30-A*-02



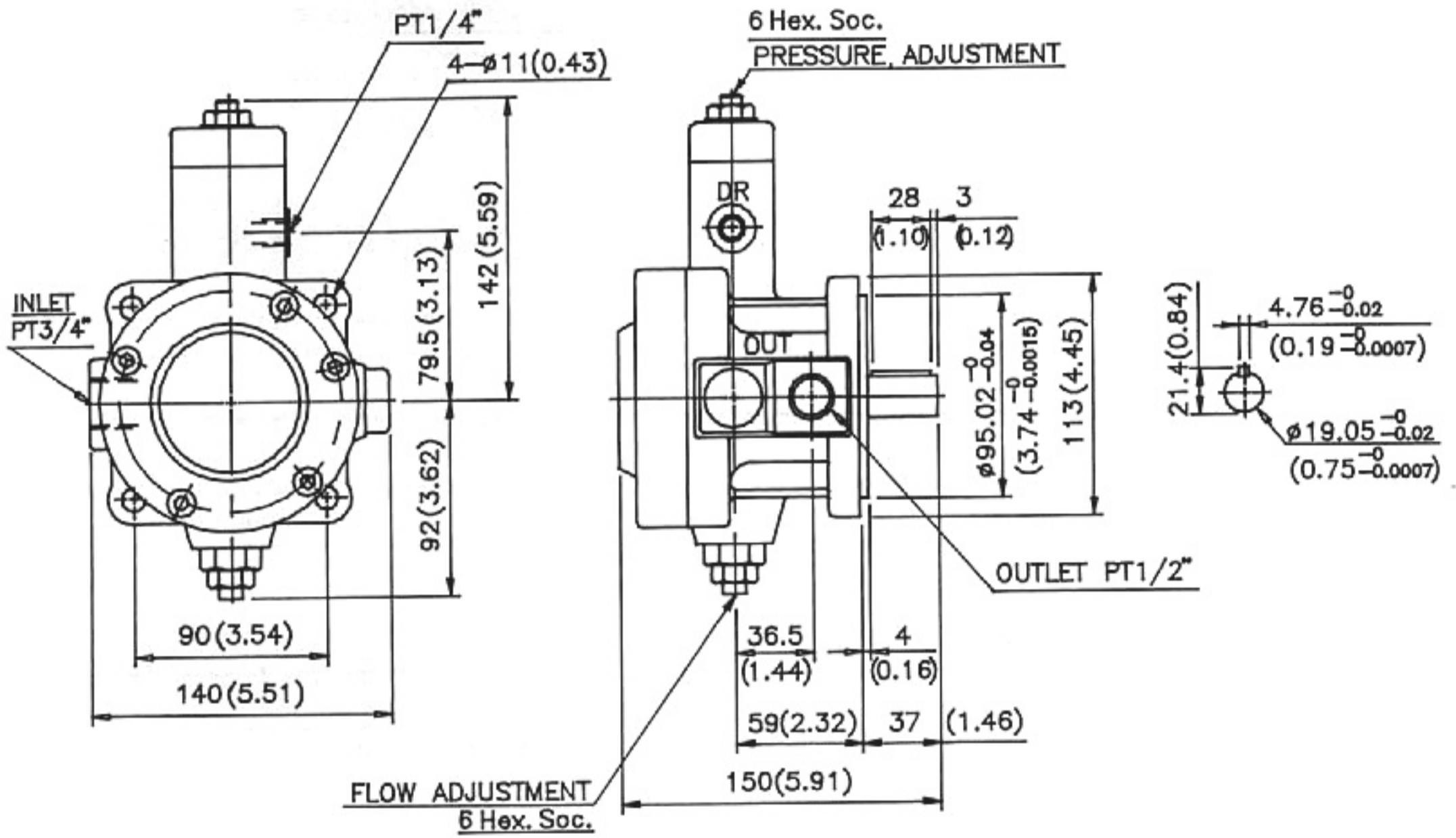
VPVC-F40-A*-02

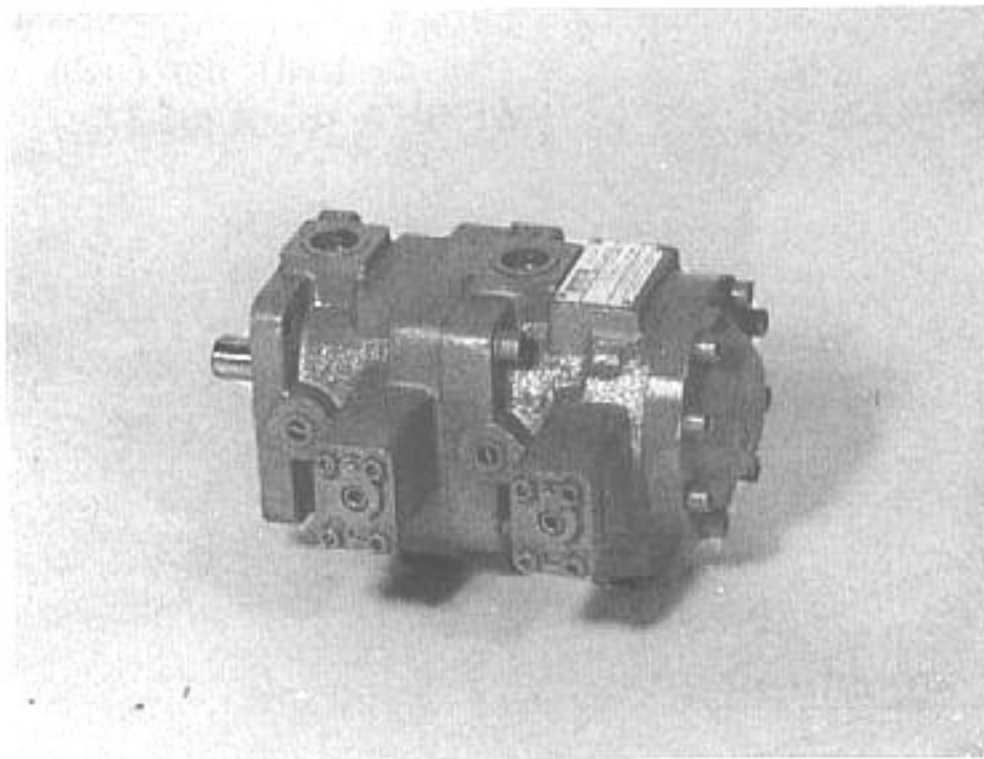


INSTALLATION DIMENSIONS

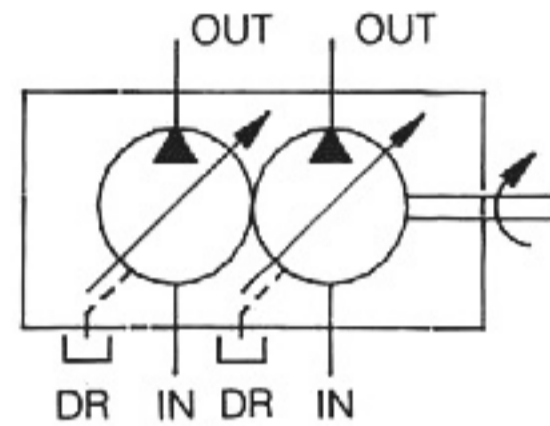
UNIT: mm (inch)

VPVC-F30/F40-A※-02





SYMBOL

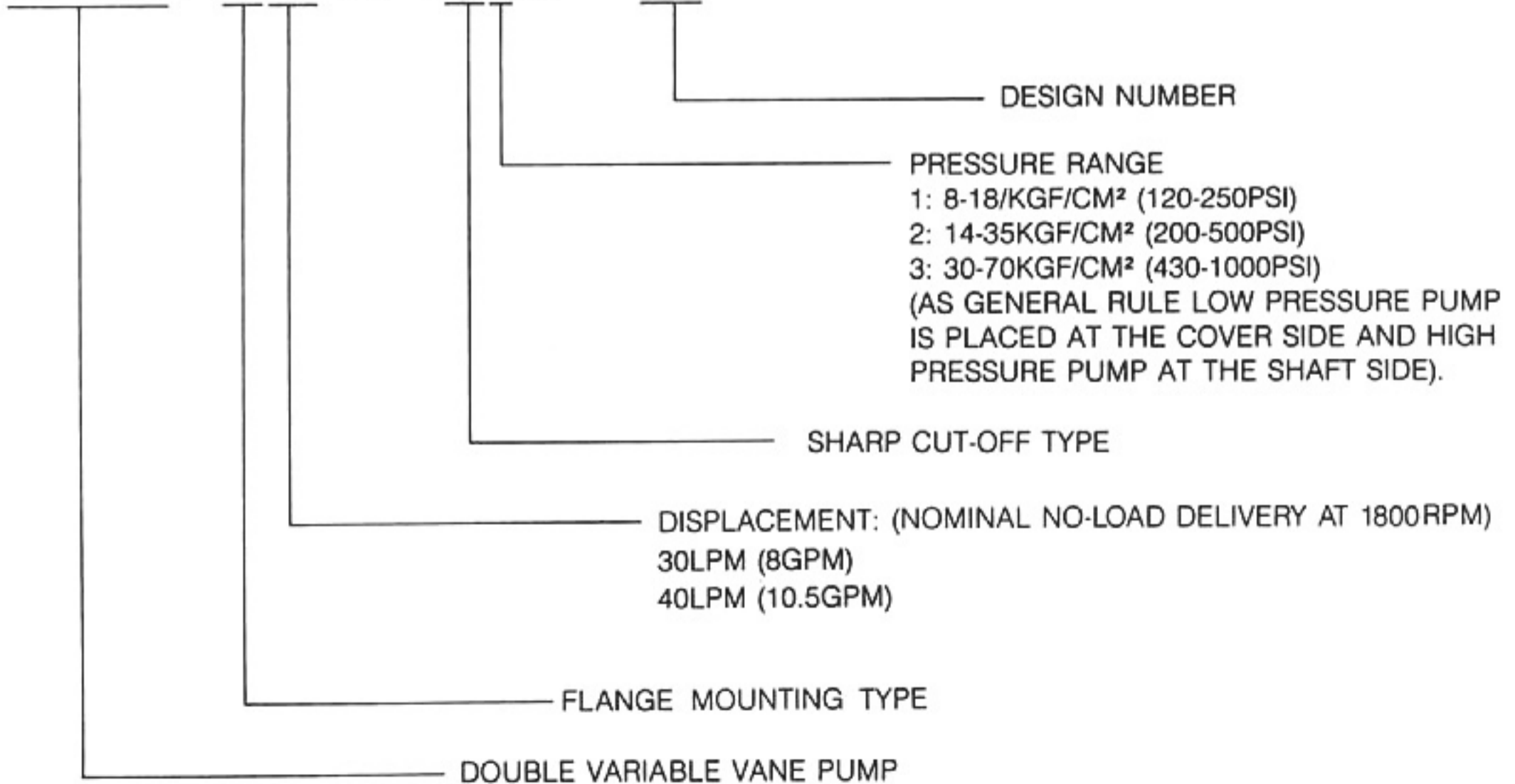


FEATURES

- Two VPVC variable vane pumps built into one single body, with a common driving shaft, enable design engineer to use one single electric motor driving two independent pumps to produce two branches of oil flow with separately adjustable pressures.
- Pumps perform exactly same as single pump. For performance curves please refer to single VPVC pump (SEE PAGE 8).
- Direction of rotation is clockwise, as viewed from shaft end.
- The pump working at higher pressure should always be the one closer to the driving shaft so to ensure the double pumps with prolonged operating life.

HOW TO ORDER

VPVCC – F30 30 – A1A1 – 02

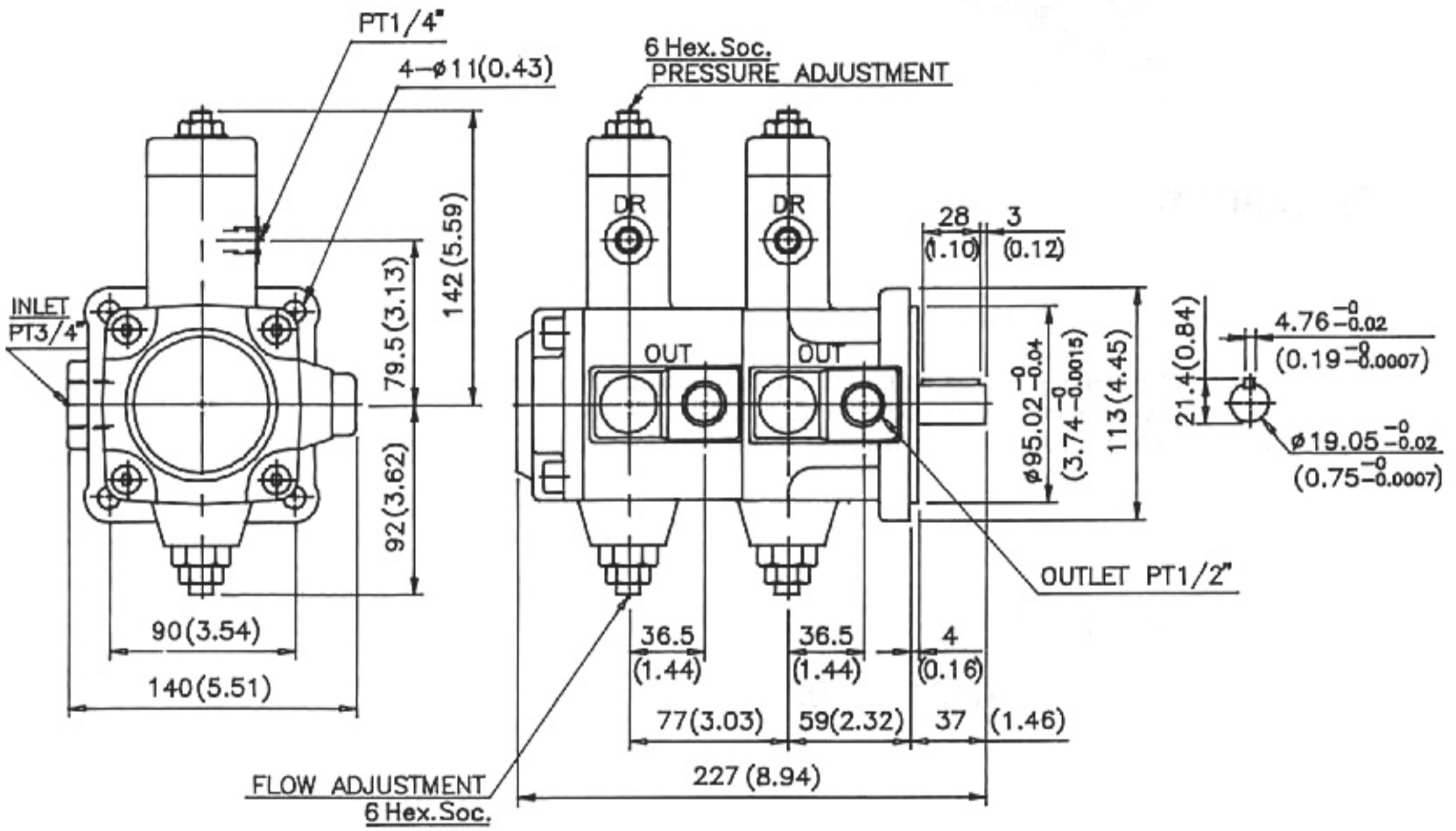


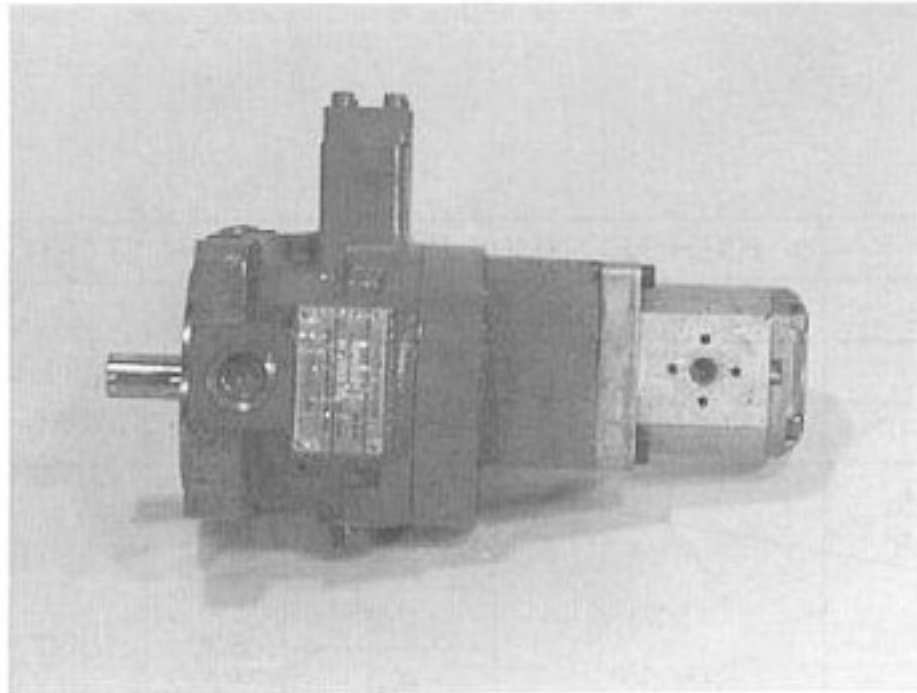
VPVCC SERIES

INSTALLATION DIMENSIONS

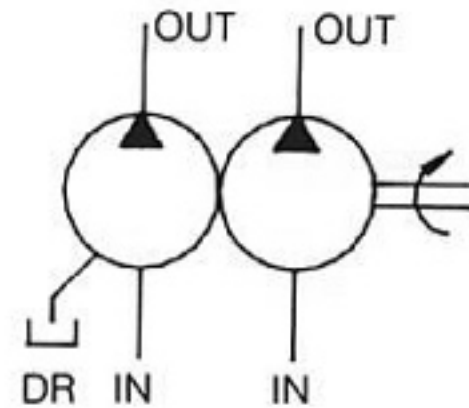
UNIT: mm (inch)
WEIGHT: 16 kgs (35.3 lbs)

VPVCC-F * * * * -A * A * -02





SYMBOL

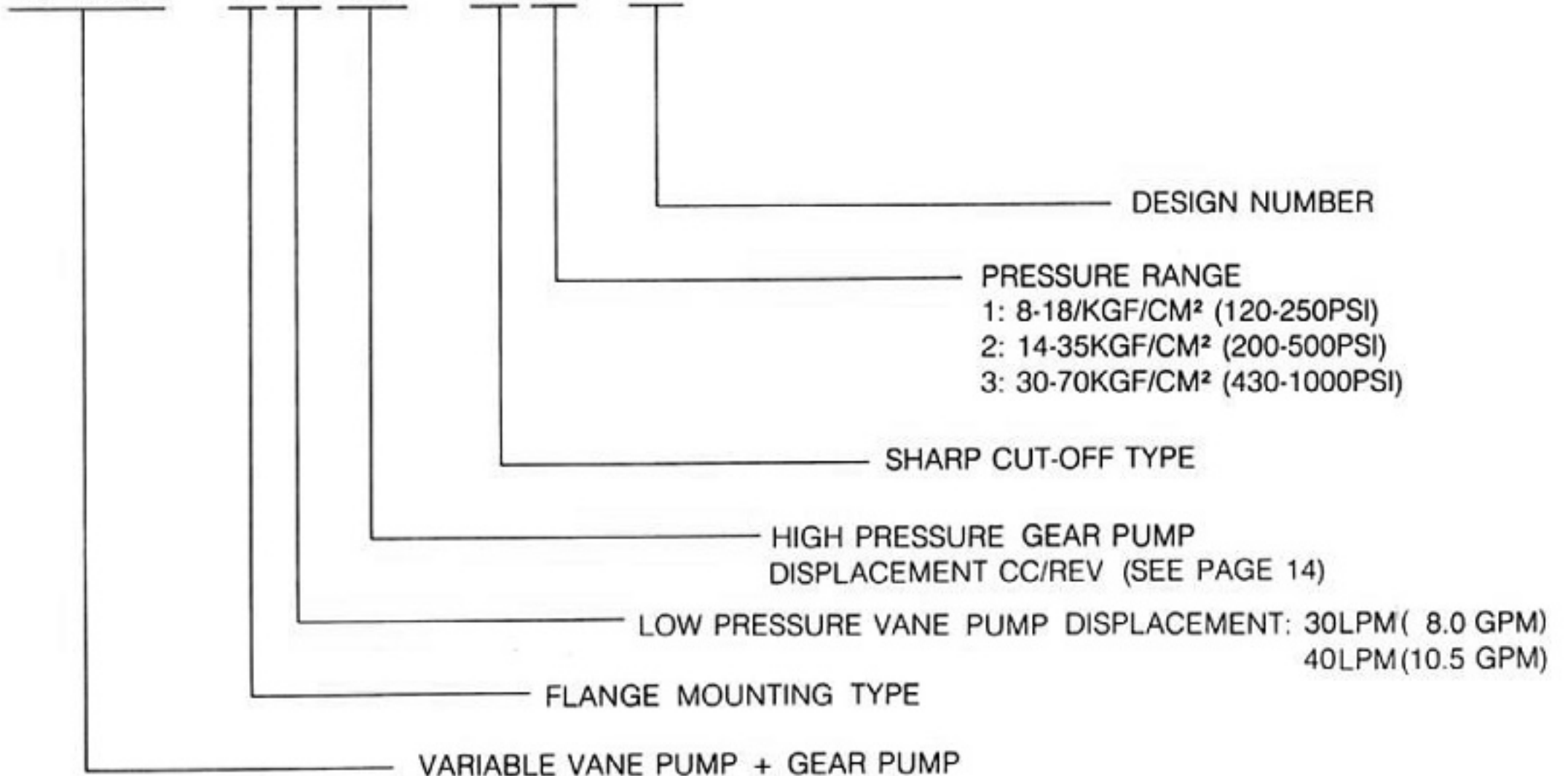


FEATURES

- Our low cost variable displacement vane pump, though limited by its rated working pressure to only 70kgf/cm²(1000 PSI), we; however, through our engineering innovation, bring its applicational pressure up to 238 kgf/cm² (3500 PSI) by installing another gear pump to the same shaft, and make it become a tandem pump capable to handle working pressure up to 238 kgf/cm² (3500 PSI).
- This "Variable Vane Pump + Gear Pump" performs better, or at least as good as a high cost variable piston pump. It is with much lower cost, easier for maintenance, and more tolerant to contamination than the high cost piston pump, hence it makes much less down time, and requires simpler, lower cost filtration system.
- Noise level during operation is much lower than variable piston pump. Extremely suitable for applications which need high speed, high pressure and low horse power.

HOW TO ORDER

VPVCG - F 30/4.3 - A 3 - 01



VPVCG SERIES

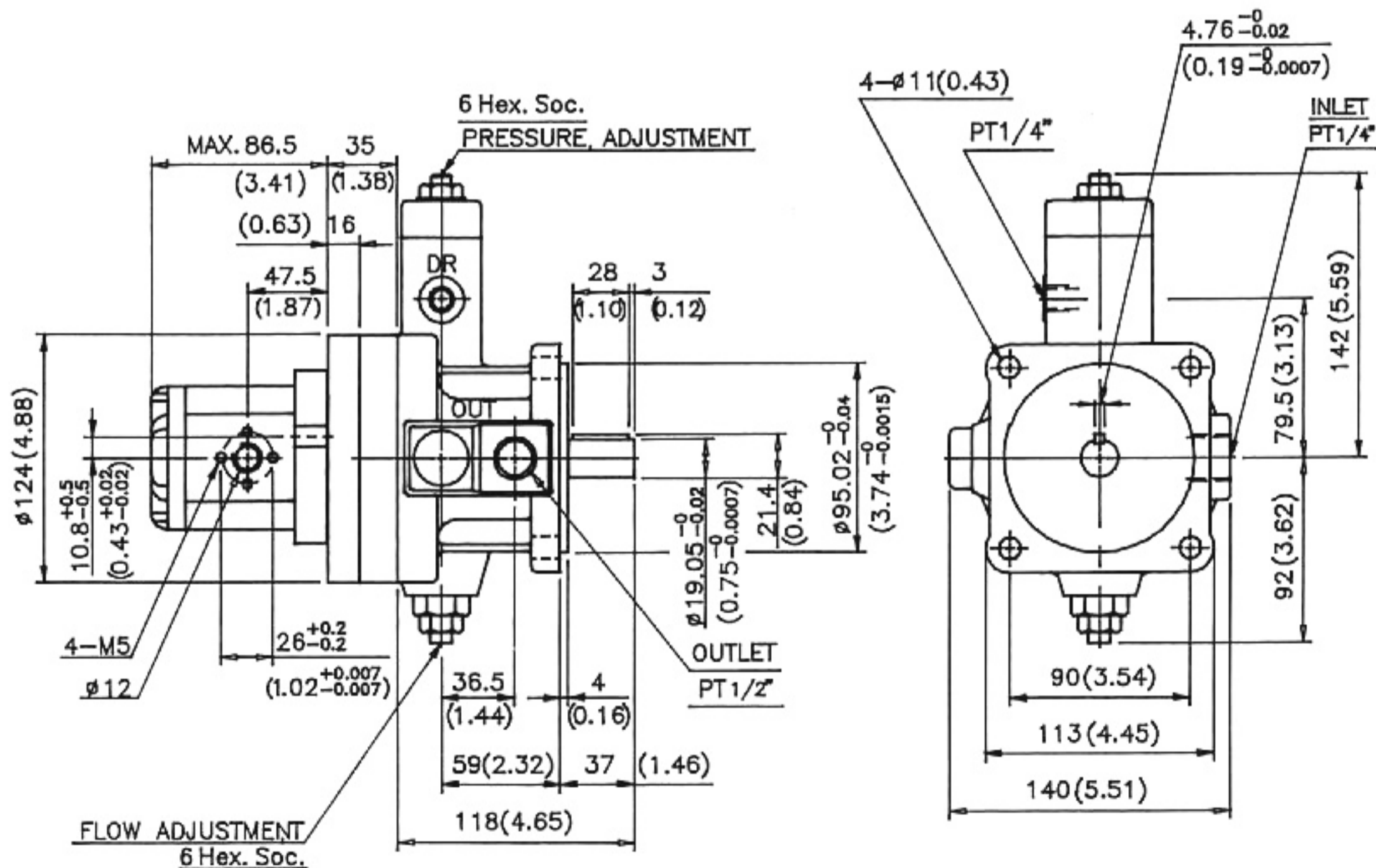
SPECIFICATIONS

MODEL	LOW PRESSURE PUMP		HIGH PRESSURE PUMP		SHAFT SPEED		
	MAX. PRESSURE	DELIVERY	MAX. PRESSURE	DELIVERY	MAX. (RPM)	MIN. (RPM)	
	KGf/Cm ² (PSI)	LPM (GPM)	KGf/Cm ² (PSI)	CC/REV			
VPVCG-F30/4.3-A※-20	70 (1000)	30 (7.93)	210 (3000)	4.3	800	1800	
VPVCG-F30/3.2-A※-20							25 (6.6)
VPVCG-F30/2.2-A※-20		4.3		2.2			
VPVCG-F40/4.3-A※-20							40 (10.57)
VPVCG-F40/3.2-A※-20		3.2					
VPVCG-F40/2.2-A※-20				2.2			

INSTALLATION DIMENSIONS

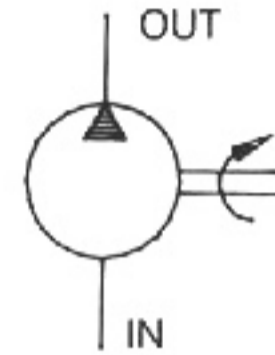
UNIT: mm (inch)

VPVCG-F※※/※※-A※-02





SYMBOL



FEATURES

- Designed with high capacity in all aspects.
- Special design consideration has been given to the flow passage to prevent anti-cavitation. Extreme smooth and quiet in operation, particularly suitable for in plant application.
- Maximum working pressure 70kgf/cm² (1000PSI) ideal to use as low pressure pump in Hi-Lo system because of price and performance.
- Viewing from the shaft end, the direction of rotation is always clockwise.

HOW TO ORDER

VPNC - F 12 - 2 - 30

DESIGN NUMBER

PRESSURE RATING 7-70KGF/CM² (100-1000PSI)

DISPLACEMENT CC/REV (SEE PAGE 16)

F: FLANGE TYPE MOUNTING
NO CODE: FOOT TYPE MOUNTING

FIXED DISPLACEMENT VANE PUMP

VPNC SERIES

SPECIFICATIONS

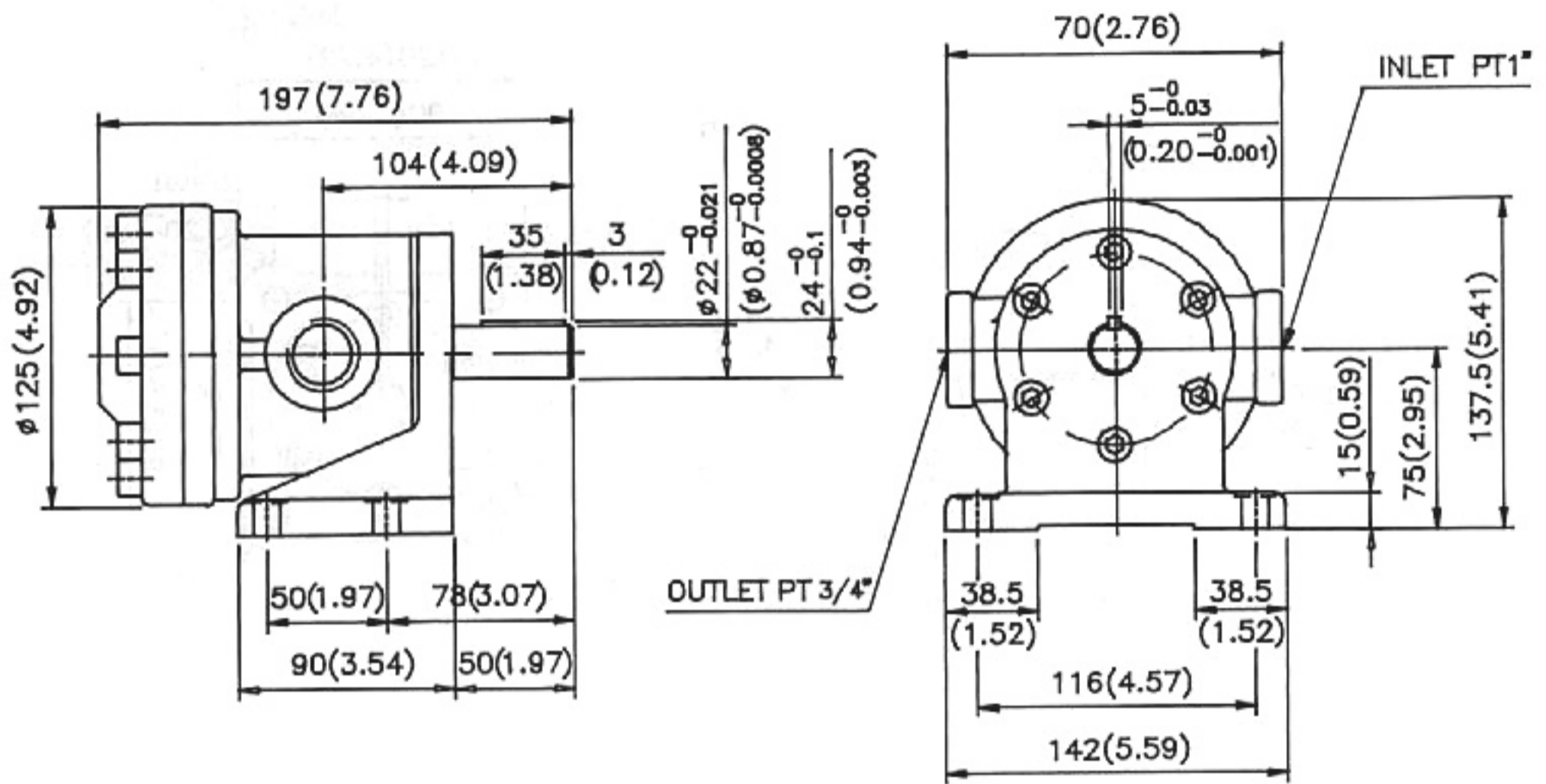
MODEL	MAX. PRESSURE kgf/cm ² (PSI)	CHARACTERISTICS WITH 20 CST FLUID							SHAFT SPEED RANGE (RPM)		WEIGHT kgs(lbs)	
		SPEED OF ROTATION (RPM)	DELIVERY LPM (GPM)			POWER INPUT (KW)			MAX.	MIN.	FOOT TYPE	FLANGE TYPE
			3.5 (50) kgf/cm ² (PSI)	35 (498) kgf/cm ² (PSI)	70 (995) kgf/cm ² (PSI)	3.5 (50) kgf/cm ² (PSI)	35 (498) kgf/cm ² (PSI)	70 (995) kgf/cm ² (PSI)				
VPNC-7-2-30	70(995.4)	1200	7.9 (2.1)	6.9 (1.8)	5.7 (1.5)	0.2	0.82	1.51	2000	800	10.5 (23.2)	9 (19.8)
		1500	9.9 (2.6)	8.9 (2.3)	7.7 (2.0)	0.30	1.05	1.87				
		1800	11.9 (3.1)	10.9 (2.8)	9.7 (2.5)	0.34	1.26	2.13				
VPNC-12-2-30	70(995.4)	1200	13.5 (3.5)	12.5 (3.3)	11.3 (2.9)	0.21	1.12	2.13	2000	600	10.5 (23.2)	9 (19.8)
		1500	16.8 (4.4)	15.8 (4.1)	14.6 (3.8)	0.31	1.42	2.70				
		1800	20.2 (5.3)	19.2 (5.0)	18.0 (4.7)	0.39	1.73	2.80				
VPNC-17-2-30	70(995.4)	1200	19.2 (5.0)	18.2 (4.7)	17.0 (4.4)	0.30	1.48	2.80	1800	600	10.5 (23.2)	9 (19.8)
		1500	24.0 (6.2)	23.0 (6.0)	21.8 (5.7)	0.39	1.86	3.50				
		1800	28.8 (7.5)	27.8 (7.2)	26.6 (6.9)	0.52	2.28	4.23				
VPNC-23-2-30	70(995.4)	1200	27.0 (7.0)	25.7 (6.7)	24.1 (6.3)	0.32	1.94	3.75	1800	600	10.5 (23.2)	9 (19.8)
		1500	33.7 (8.8)	32.4 (8.4)	30.8 (8.0)	0.47	2.50	4.73				
		1800	40.4 (10.5)	39.1 (10.2)	37.5 (9.8)	0.58	3.01	5.71				
VPNC-26-2-30	70(995.4)	1200	30.0 (7.8)	28.5 (7.4)	26.6 (6.9)	0.40	2.33	4.47	1800	600	10.5 (23.2)	9 (19.8)
		1500	37.5 (9.8)	36.0 (9.4)	34.1 (8.9)	0.52	2.92	5.60				
		1800	45.0 (11.7)	43.5 (11.3)	41.6 (10.8)	0.71	3.57	6.73				
VPNC-36-2-30	70(995.4)	1200	42.0 (10.9)	10.4 (2.7)	38.4 (10.0)	0.52	3.18	6.15	1800	600	10.5 (23.2)	9 (19.8)
		1500	52.5 (13.7)	50.9 (13.2)	48.9 (12.7)	0.72	3.95	7.60				
		1800	63.0 (13.4)	61.4 (16.0)	59.4 (15.4)	0.98	4.83	9.18				

INSTALLATION DIMENSIONS

UNIT: mm (inch)

VPNC-※ ※-2-30

Models with foot mounting type

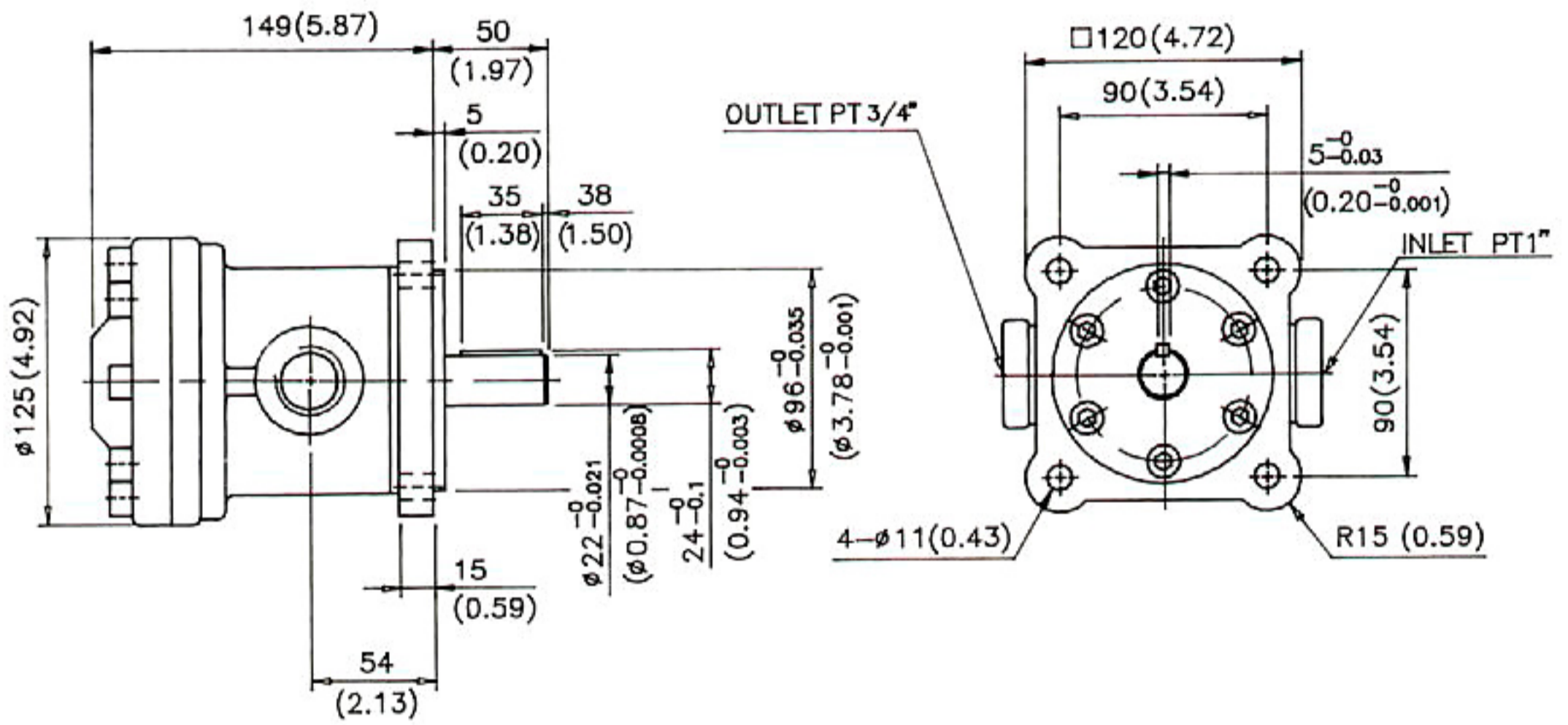


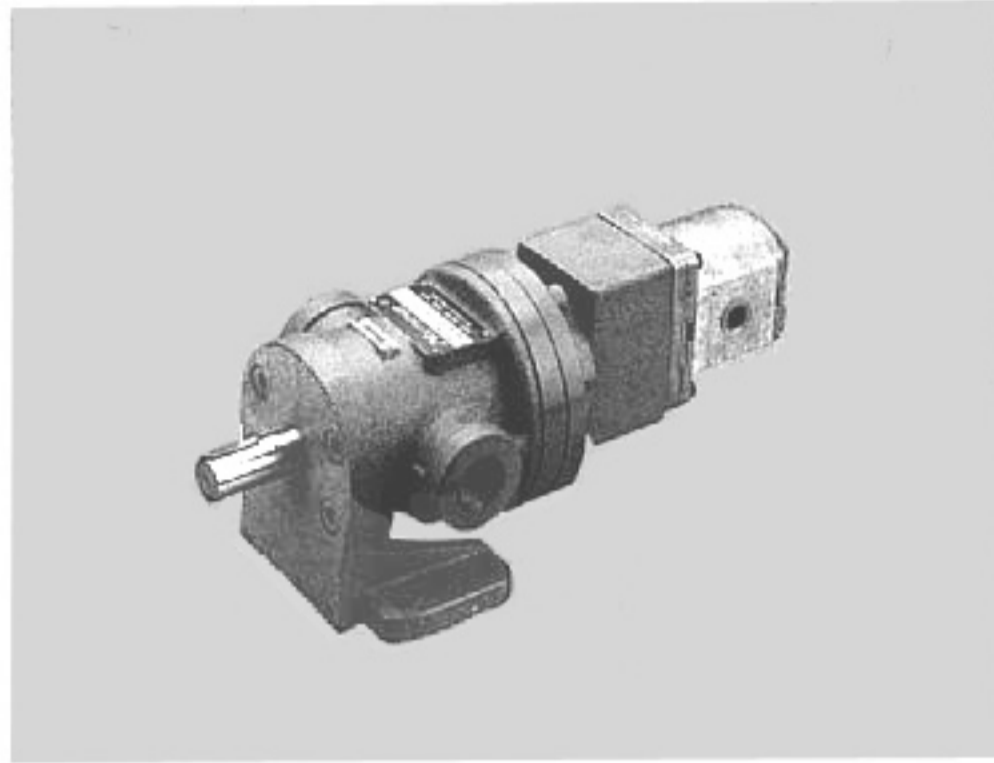
INSTALLATION DIMENSIONS

UNIT: mm (inch)

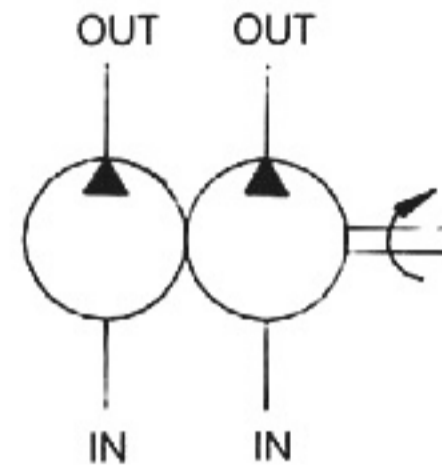
VPNC-F ※ ※ -2-30

Models with flange mounting type





SYMBOL



FEATURES

- This series of pump provides system design engineers a low cost, low noise level vane pump to acquire the high flow capacity required by the system, yet the attached gear pump provides him the needed high working pressure at the selected lower flow capacity.
- Requires no extra plumbing other than an unloading and check valve to build into a Hi-Lo system.
- Even lower cost than equivalent tandem gear pump.
- Lower noise level and not as sensitive to contamination problem as variable piston pump, or even tandem gear pump Hi-Lo system.
- Requires only one single-shaft electric motor, ease the installation work for building a Hi-Lo system.

HOW TO ORDER

VPNCG – F 26/4.3 – 30

DESIGN NUMBER

HIGH PRESSURE GEAR PUMP
DISPLACEMENT CC/REV (SEE PAGE 20)

LOW PRESSURE VANE PUMP DISPLACEMENT
LPM(GPM) (SEE PAGE 20)

F: FLANGE MOUNTING TYPE .
NO CODE: FOOT MOUNTING TYPE.

FIXED VANE PUMP + GEAR PUMP

VPNCG SERIES

SPECIFICATIONS

1800 RPM 20 CST

MODEL	LOW PRESSURE VANE PUMP		HIGH PRESSURE GEAR PUMP			SPEED (RPM)	
	MAX PRESSURE	DELIVERY	MAX. PRESSURE	DELIVERY		MAX.	MIN.
	KGF/CM ² (PSI)	LPM (GPM)	KGF/CM ² (PSI)	LPM (GPM)			
VPNCG- * 7/4.3-30	70 (1000)	9.7 (2.52)	210 (3000)	7.7 (2.0)	1800	800	
VPNCG- * 12/4.3-30		18 (4.68)					
VPNCG- * 17/4.3-30		26.6 (6.92)					
VPNCG- * 23/4.3-30		37.5 (9.75)					
VPNCG- * 26/4.3-30		41.6 (10.81)					
VPNCG- * 36/4.3-30		59.4 (15.44)					

1800 RPM 20 CST

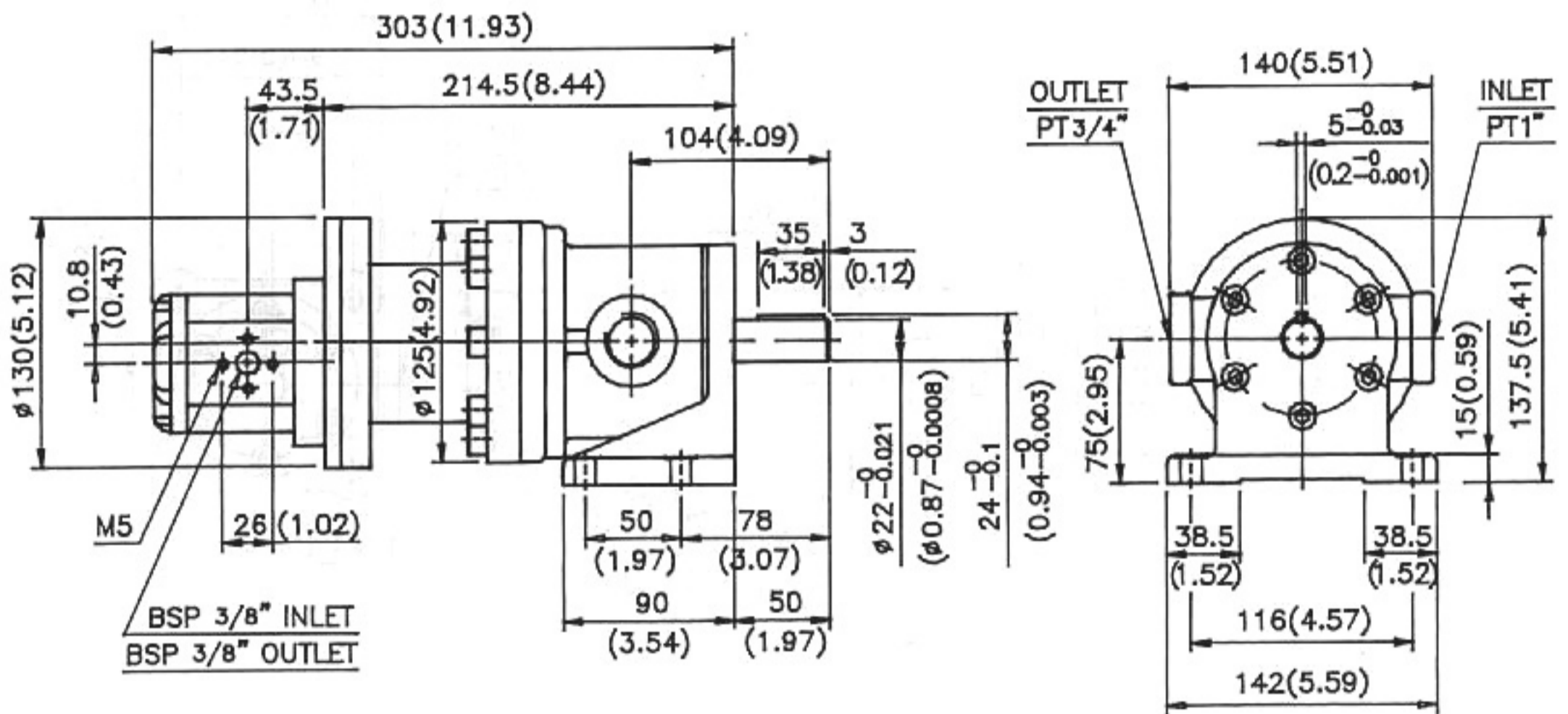
MODEL	LOW PRESSURE VANE PUMP		HIGH PRESSURE GEAR PUMP				SPEED (RPM)	
	MAX PRESSURE	DELIVERY	MAX. PRESSURE	DELIVERY LPM (GPM)			MAX.	MIN.
	KGF/CM ² (PSI)	LPM (GPM)	KGF/CM ² (PSI)	6.2 cc/rev.	8.4 cc/rev.	11 cc/rev.		
VPNCG- * 7/ * * -30	70 (1000)	9.7 (2.52)	210 (3000)	11.2 (3.0)	15.1 (4.0)	19.8 (5.2)	1800	800
VPNCG- * 12/ * * -30		18 (4.68)						
VPNCG- * 17/ * * -30		26.6 (6.92)						
VPNCG- * 23/ * * -30		37.5 (9.75)						
VPNCG- * 26/ * * -30		41.6 (10.81)						
VPNCG- * 36/ * * -30		59.4 (15.44)						

INSTALLATION DIMENSIONS

UNIT: mm (inch)

VPNCG-※ ※/4.3-30

Models with foot mounting type



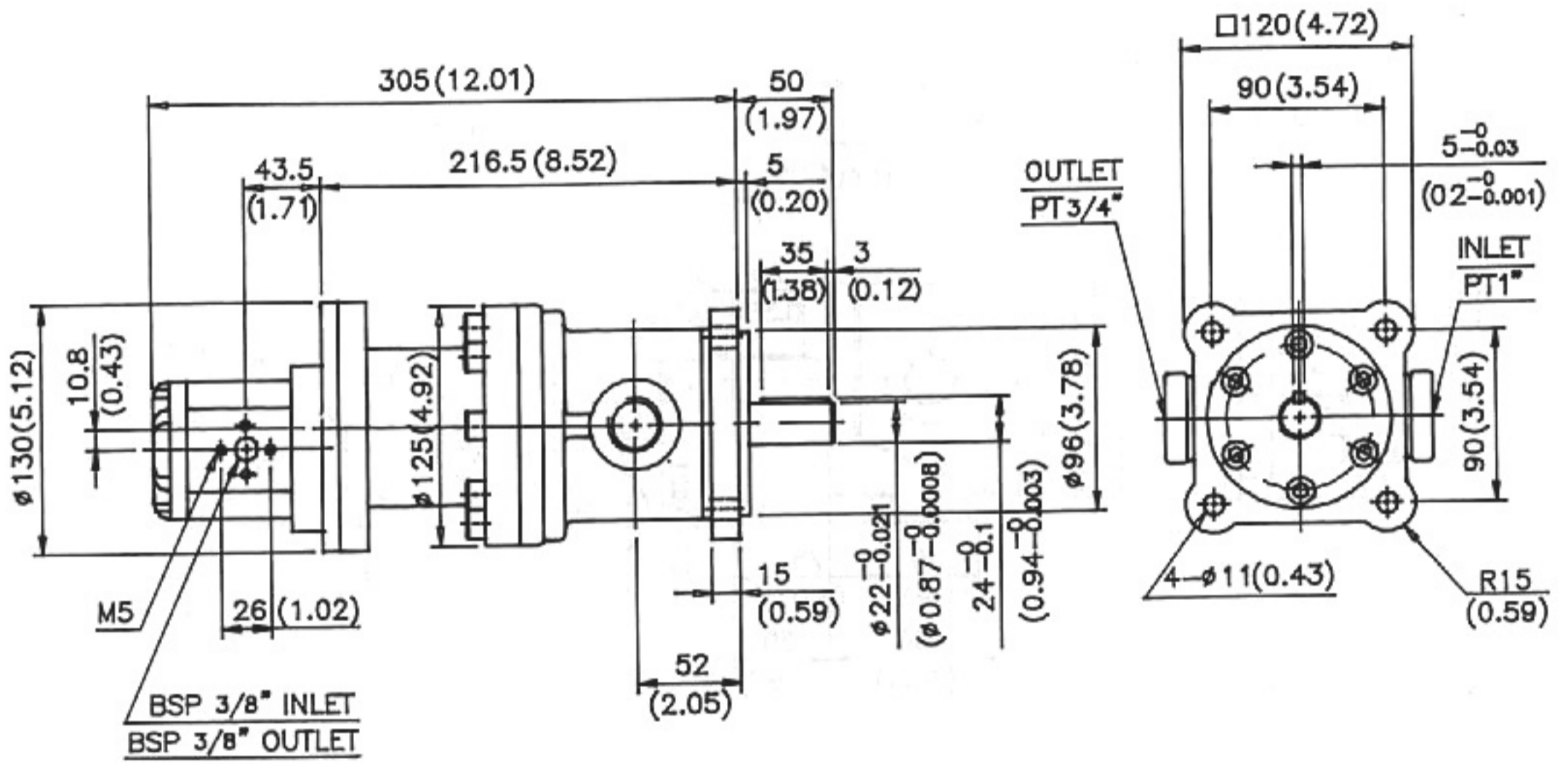
VPNCG SERIES

INSTALLATION DIMENSIONS

UNIT: mm (inch)

VPNCG-F * * /4.3-30

Models with flange mounting type

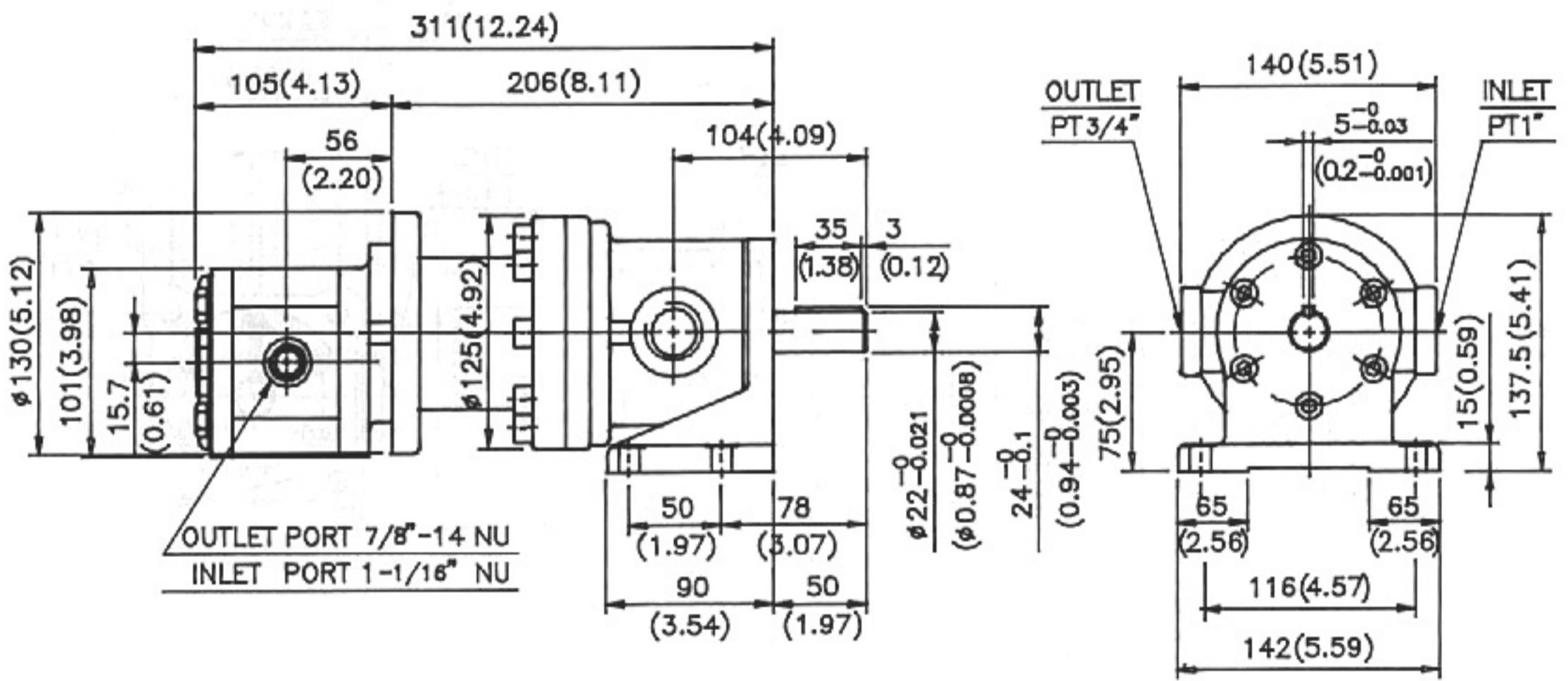


INSTALLATION DIMENSIONS

UNIT: mm (inch)

VPNCG- **/6.2,8.4,11-30

Models with foot mounting type



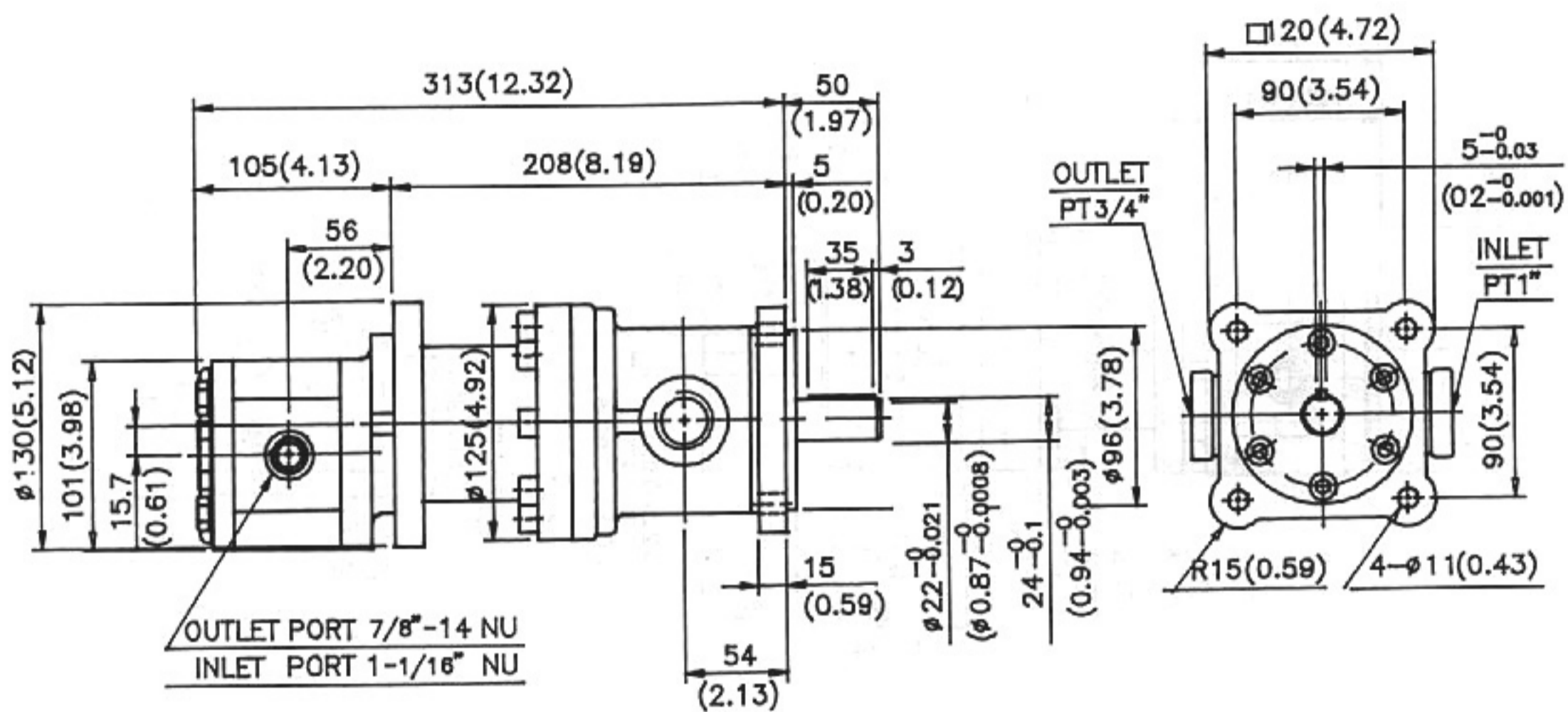
VPNCG SERIES

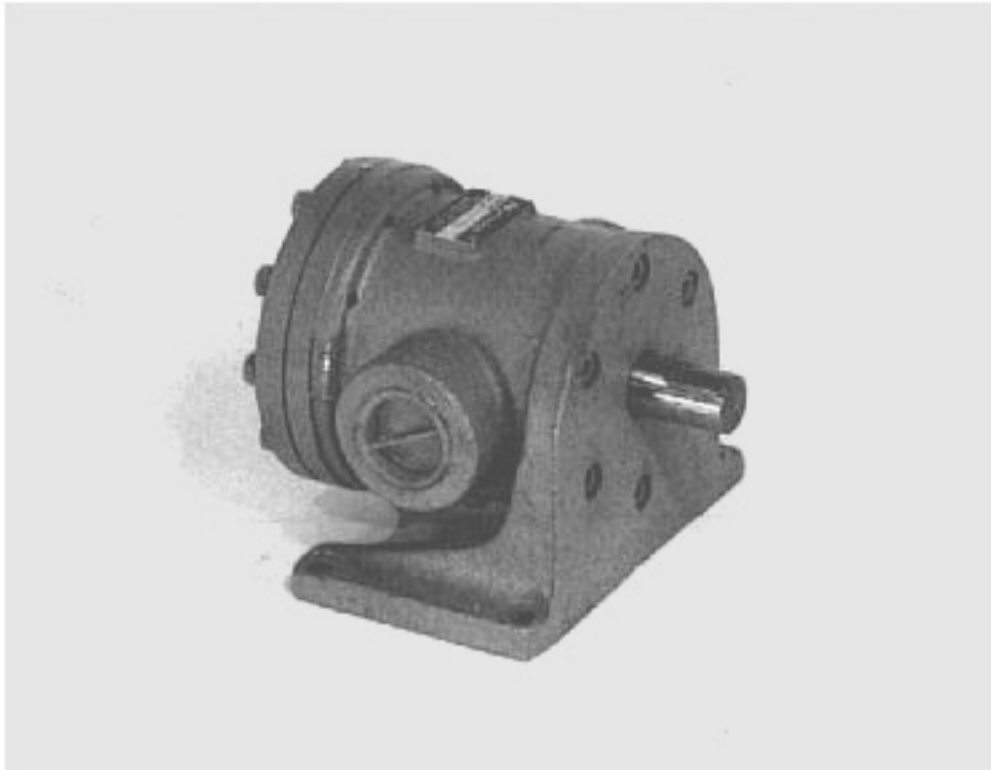
UNIT: mm (inch)

INSTALLATION DIMENSIONS

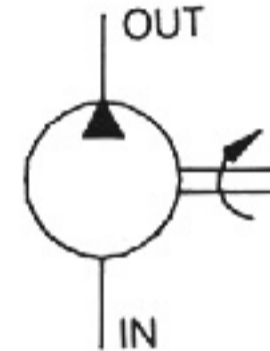
VPNCG-F * * /6.2,8.4,11-30

Models with flange mounting type





SYMBOL

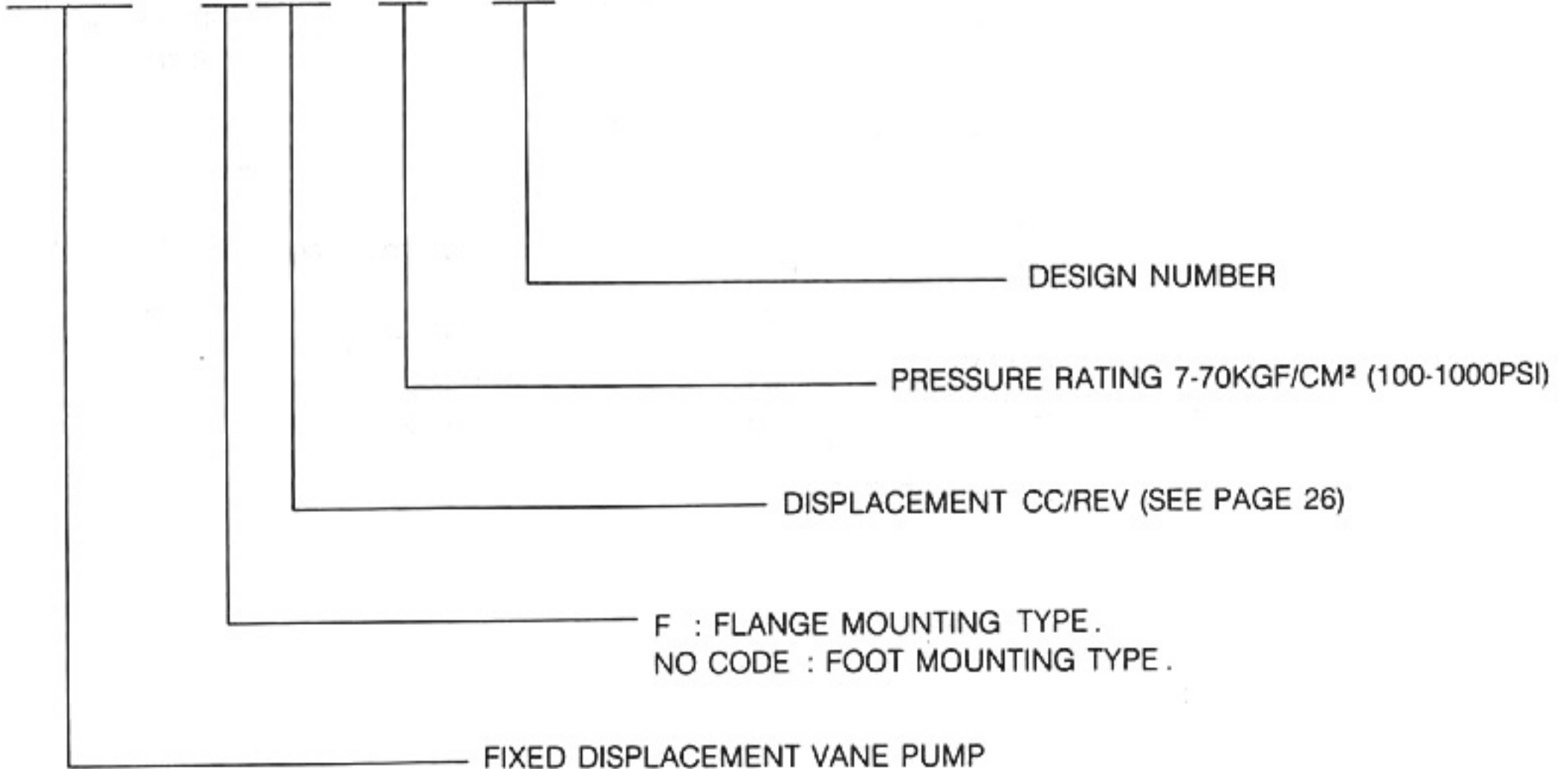


FEATURES

- Same basic design as VPNC Series.
- Special design consideration has been given to the flow passage to prevent anti-cavitation. Extreme smooth and quiet in operation, particularly suitable for In-plant application.
- Maximum working pressure 70kgf/cm² (1000 PSI), ideal to use as low pressure pump in Hi-Lo system because of price and performance.
- Viewing from the shaft end, the direction of rotation is always clockwise.
- Viewing from the shaft end, inlet port is located at the left side, and the outlet port at the right side.

HOW TO ORDER

VPNE - F116 - 2 - 30



VPNE SERIES

SPECIFICATIONS

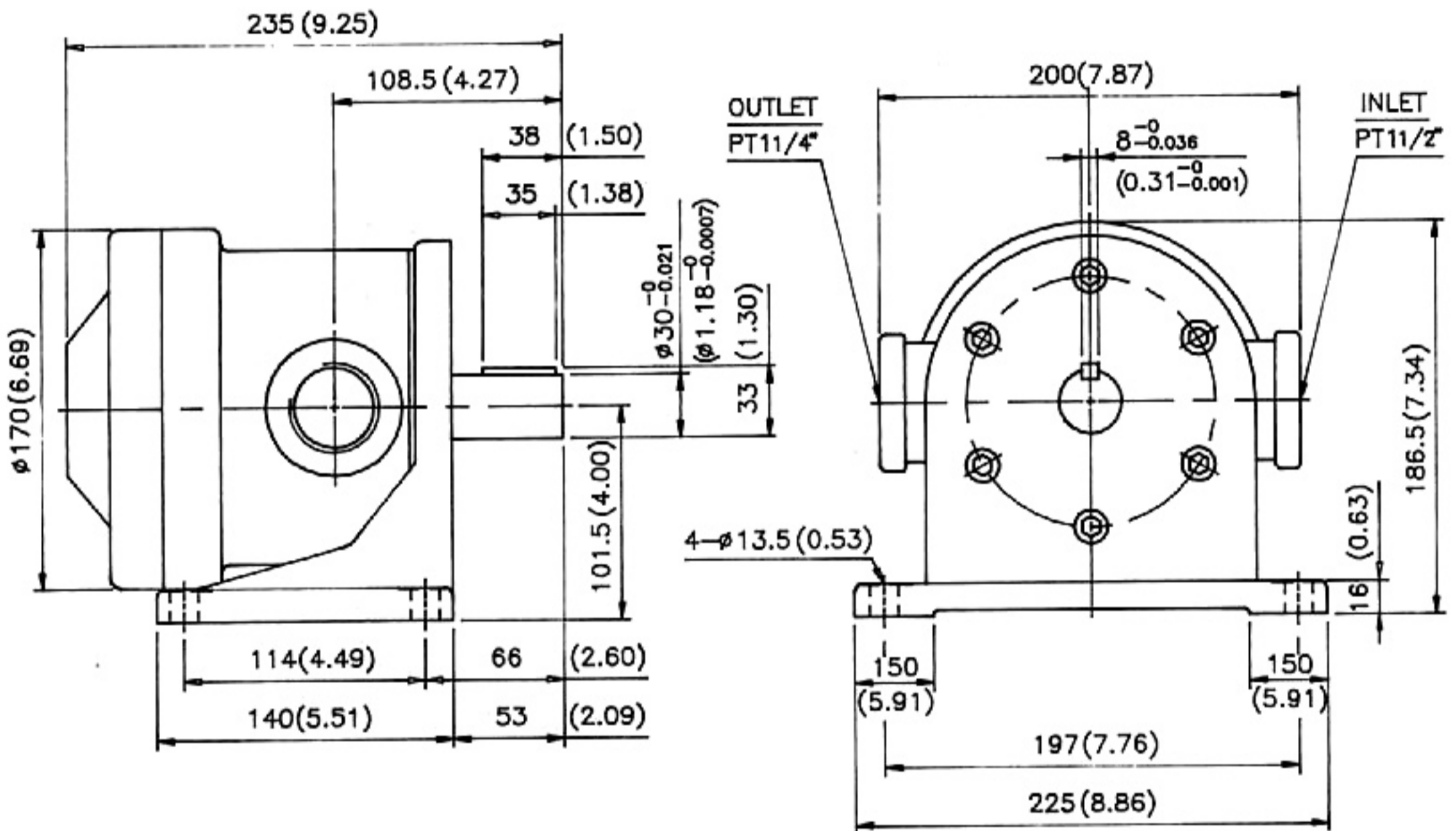
MODEL	MAX. PRESSURE kgf/cm ² (PSI)	CHARACTERISTICS WITH 20 CST FLUID							SHAFT SPEED RANGE (RPM)		WEIGHT kgs(lbs)	
		SPEED OF ROTATION (RPM)	DELIVERY LPM (GPM)			POWER INPUT KW			MAX.	MIN.	FOOT TYPE	FLANGE TYPE
			3.5 (50) kgf/cm ² (PSI)	35 (498) kgf/cm ² (PSI)	70 (995) kgf/cm ² (PSI)	3.5 (50) kgf/cm ² (PSI)	35 (498) kgf/cm ² (PSI)	70 (995) kgf/cm ² (PSI)				
VPNE-※48-2-30	70(995.4)	1000	47.0 (12.2)	43.5 (11.3)	40.0 (10.4)	0.9	3.9	7.2	1500	600	47.0 (10.36)	47.0 (10.36)
		1200	56.5 (14.7)	53.0 (13.8)	49.5 (12.9)	1.1	4.7	8.6				
		1500	70.5 (18.3)	67.0 (17.4)	63.5 (16.5)	1.4	5.8	10.7				
VPNE-※61-2-30	70(995.4)	1000	60.0 (15.6)	56.5 (14.7)	53.0 (13.8)	1.1	4.8	8.8	1500	600	47.0 (10.36)	47.0 (10.36)
		1200	72.0 (18.7)	68.5 (17.8)	65.0 (16.9)	1.3	5.7	10.5				
		1500	90.0 (23.4)	86.5 (22.5)	83.0 (21.6)	1.7	7.1	13.1				
VPNE-※75-2-30	70(995.4)	1000	73.7 (19.2)	70.5 (18.3)	66.0 (17.2)	1.3	5.6	10.3	1500	600	47.0 (10.36)	47.0 (10.36)
		1200	88.5 (23.0)	84.5 (22.0)	81.0 (21.1)	1.5	6.7	12.4				
		1500	111.0 (28.9)	107.0 (27.8)	103.5 (26.9)	1.9	8.3	15.5				
VPNE-※94-2-30	70(995.4)	1000	92.5 (24.1)	88.0 (22.9)	82.5 (21.5)	1.4	6.8	12.8	1200	600	47.0 (10.36)	47.0 (10.36)
		1200	111.0 (28.9)	106.5 (27.7)	101.0 (26.3)	1.7	8.3	15.4				
VPNE-※116-2-30	70(995.4)	1000	116.0 (30.2)	110.0 (28.6)	103.0 (26.8)	1.7	8.5	16.1	1200	600	47.0 (10.36)	47.0 (10.36)
		1200	139.0 (36.1)	133.0 (34.6)	126.0 (32.8)	2.0	10.3	19.3				

INSTALLATION DIMENSIONS

UNIT: mm (inch)

VPNE-***-2-30

Models with foot mounting type



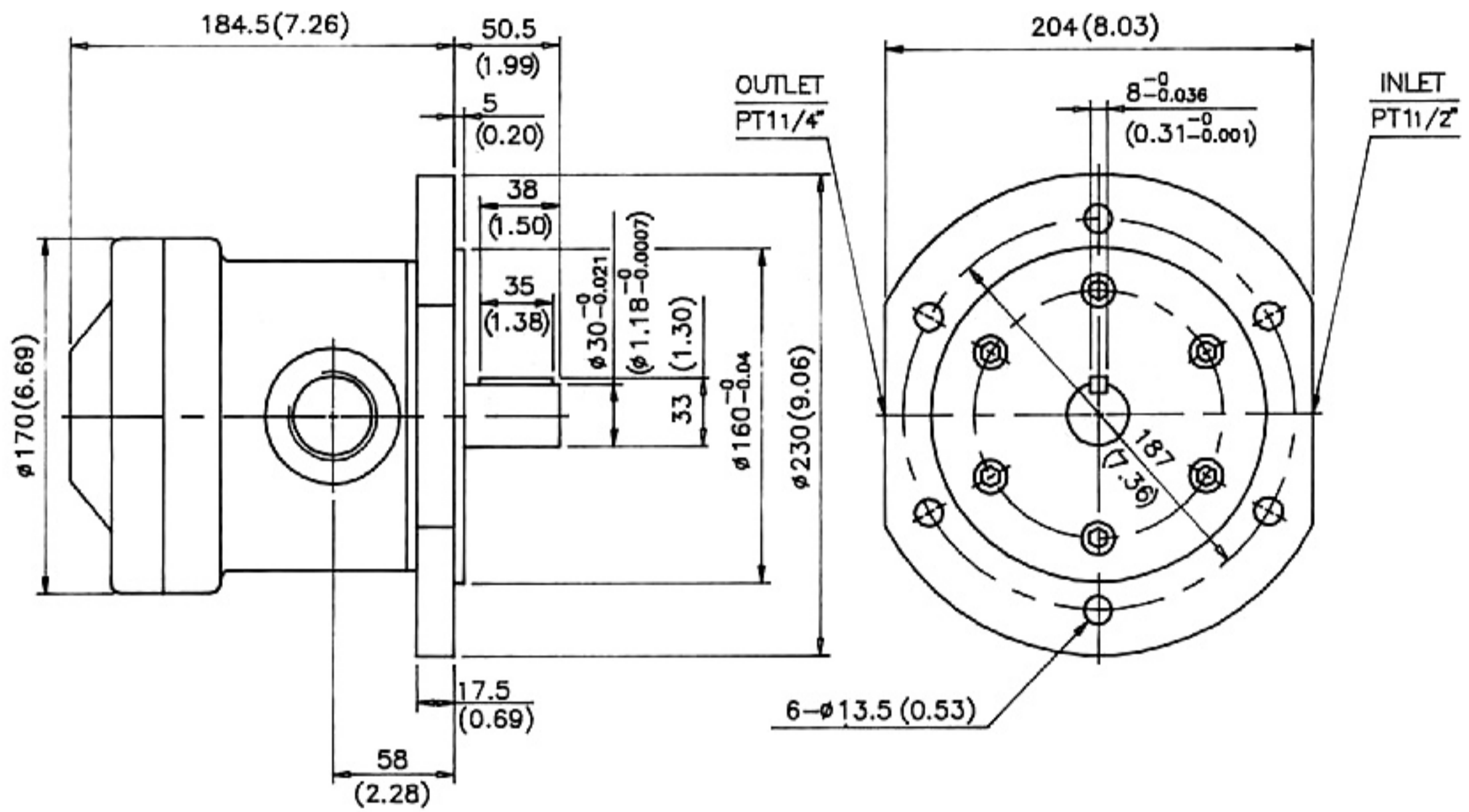
VPNE SERIES

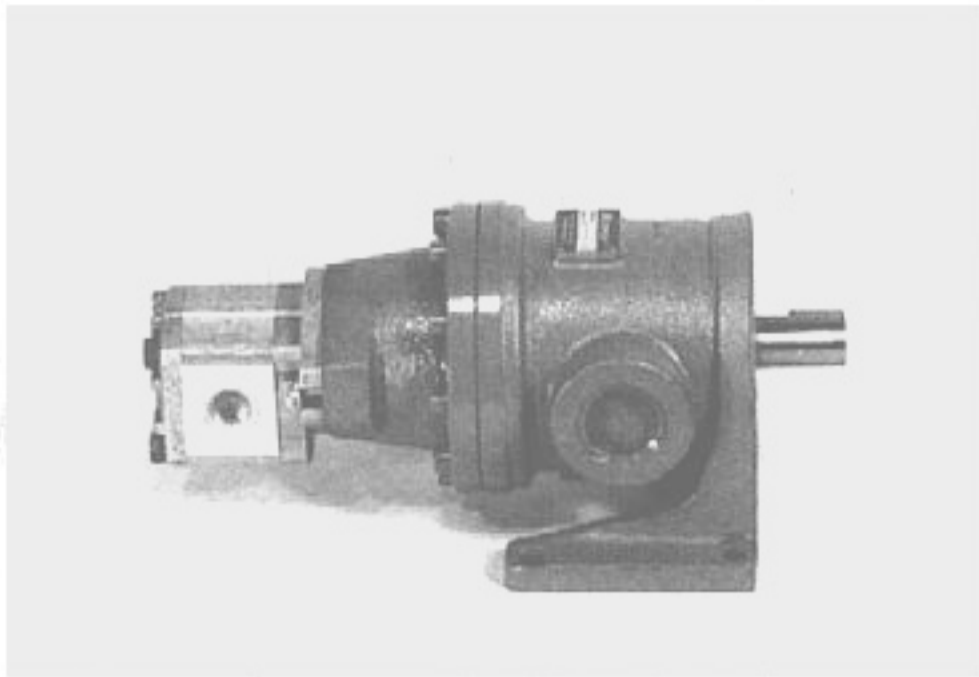
INSTALLATION DIMENSIONS

UNIT: mm (inch)

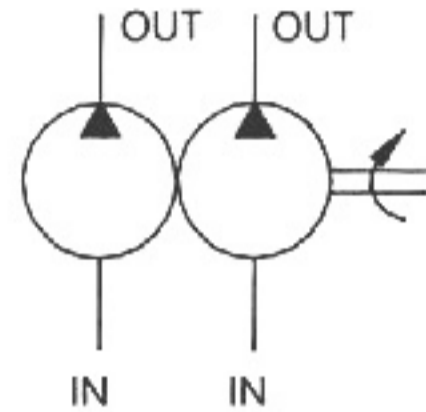
VPNE-F * * * -2-30

Models with flange mounting type





SYMBOL

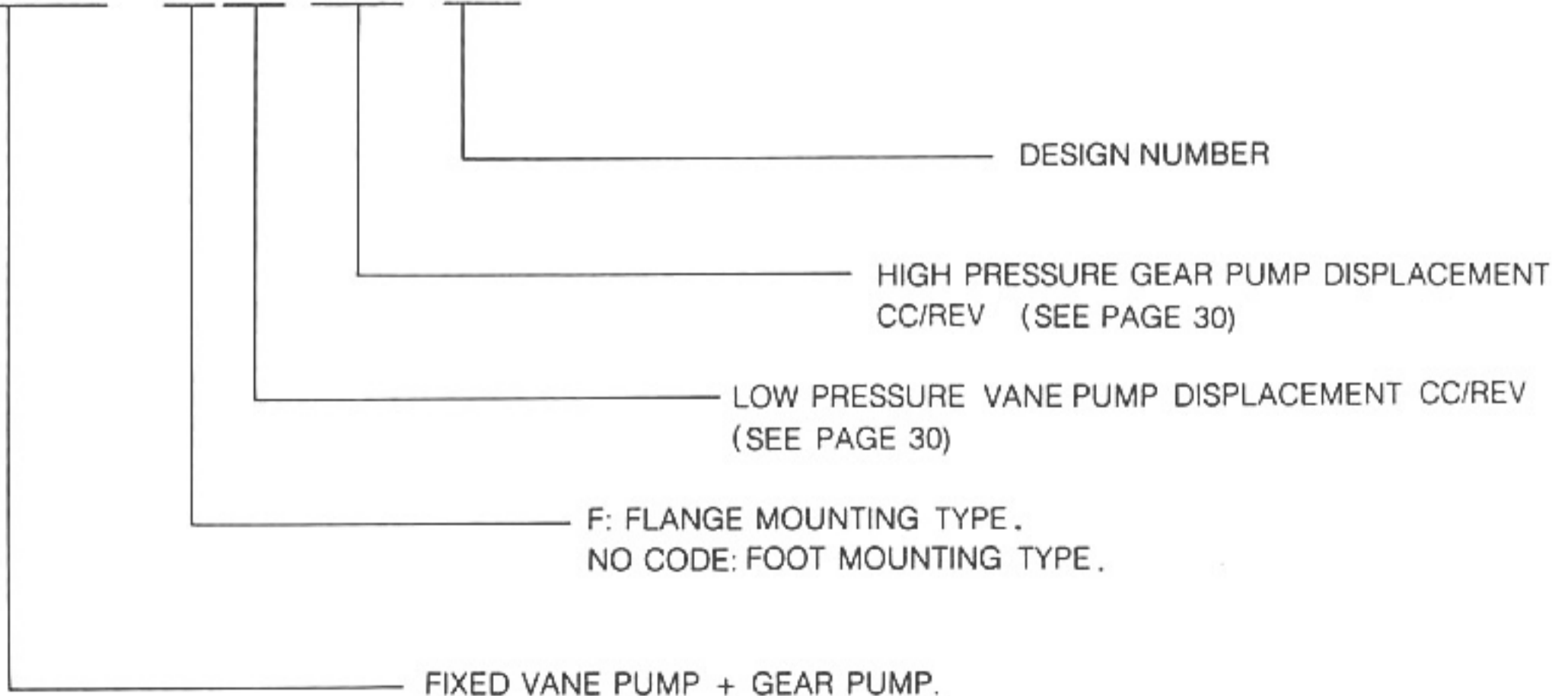


FEATURES

- This series of pump provides system design engineers a low cost, low noise level vane pump to acquire the high flow capacity required by the system, yet the attached gear pump provides them the needed high working pressure at the selected lower flow capacity.
- Requires no extra plumbing other than an unloading and check valve to build into a Hi-Lo system.
- Even lower cost than equivalent tandem gear pump.
- Lower noise level and not as sensitive to contamination problem as variable piston pump, or even tandem gear pump Hi-Lo system.
- Requires only one single - shaft electric motor, ease the installation work for building a Hi-Lo system.

HOW TO ORDER

VPNEG – F116/16.5– 20



VPNEG SERIES

SPECIFICATIONS

1200 RPM 20 CST

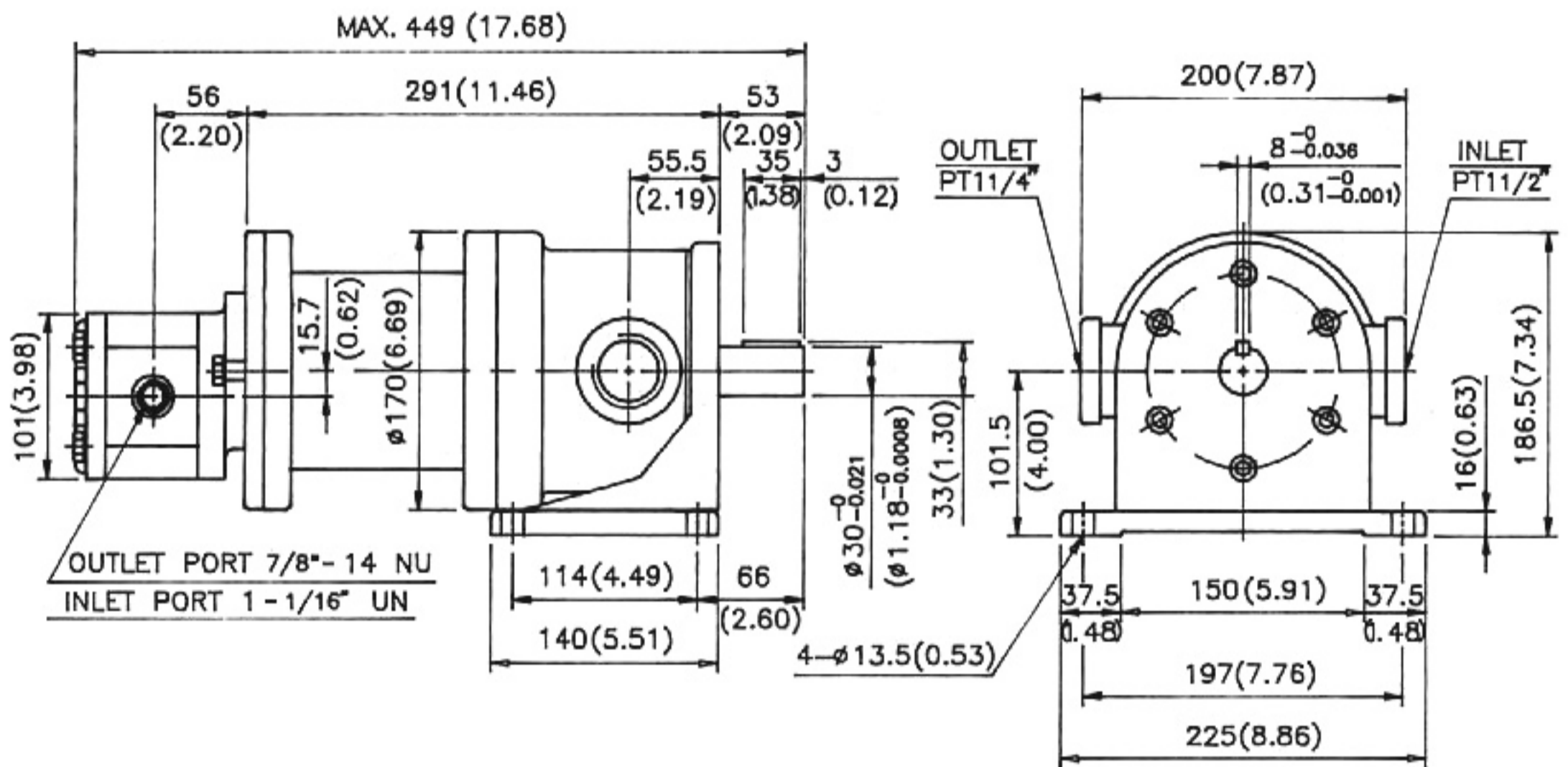
MODEL	LOW PRESSURE VANE PUMP		HIGH PRESSURE GEAR PUMP				SPEED (RPM)		
	MAX PRESSURE	DELIVERY	MAX. PRESSURE	DELIVERY LPM (GPM)				MAX.	MIN.
	KG/CM ² (PSI)	LPM (GPM)	KG/CM ² (PSI)	8.4 cc/rev.	11 cc/rev.	14.3 cc/rev.	16.5 cc/rev.		
VPNEG- *48/ **-30	70 (1000)	49.5 (12.87)	210 (3000)	10.0 (2.6)	13.2 (2.9)	17.2 (4.6)	19.8 (5.2)	1200	600
VPNEG- *61/ **-30		65 (16.9)							
VPNEG- *75/ **-30		81 (21.06)							
VPNEG- *94/ **-30		101 (26.26)							
VPNEG- *116/ **-30		126 (32.76)							

INSTALLATION DIMENSIONS

UNIT: mm (inch)

VPNEG-*** /8.4,11,14.3,16.5-20

Models with foot mounting type



VPNEG SERIES

INSTALLATION DIMENSIONS

UNIT: mm (inch)

VPNEG-F-*** /8.4,11,14.3,16.5-20

Models with flange mounting type

