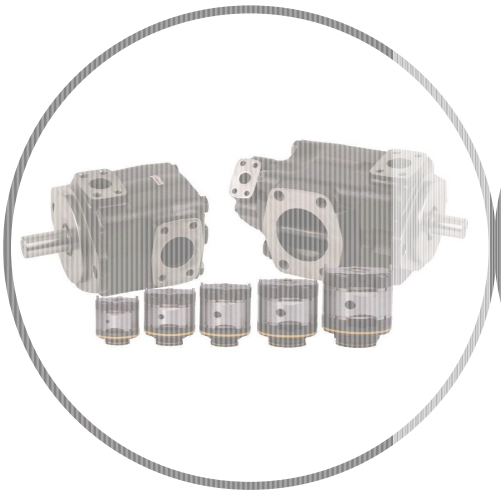
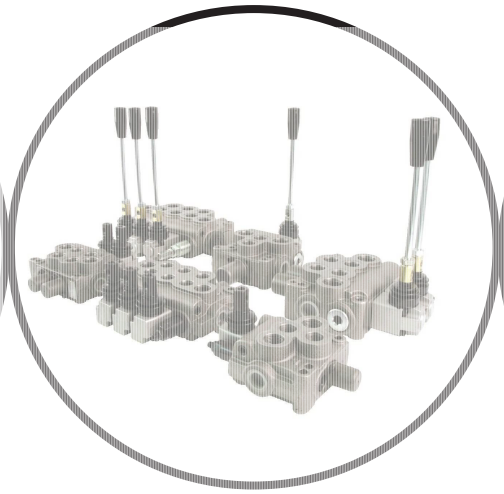
HYDRAULIC COMPONENTS

HOF HYDRAULIC



Hydraulic Pumps
Hydraulic Motors
Cartridge Kits

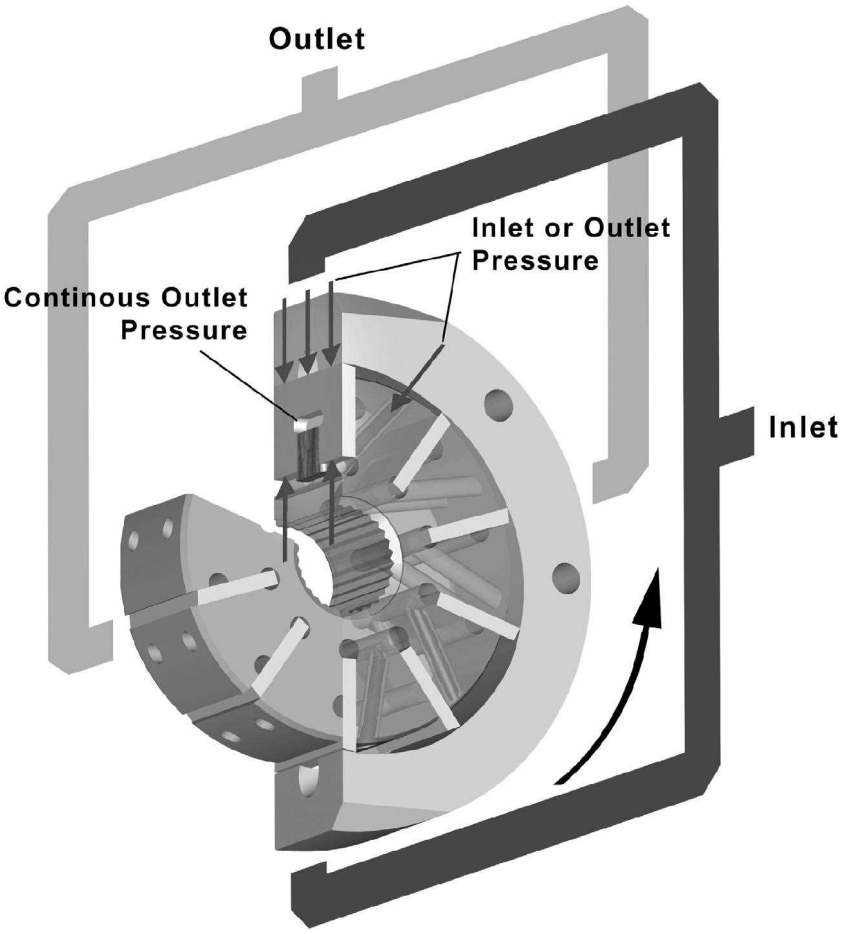


Valves

Accessories

Contents

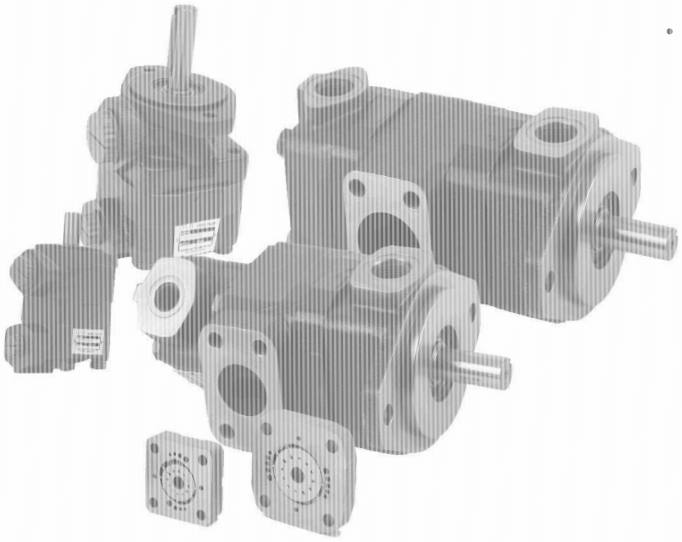
Intra Vane Design



Fixed Displacement Vane Pump
HV10 and HV20 Series

Features

- HV10 / HV20 Series are fixed displacement and balanced type vane pumps. With compact sizes, they are available in single pumps and double pumps for both industrial and mobile application.
- The vane design with self compensation for wear and clearances makes volumetric efficiency of pump nearly constant over the service life. (the vanes always adjust its orbit to contact with the cam ring, even though wear occurs between the cam ring and vane tips)



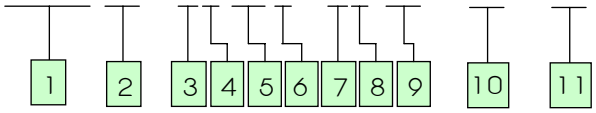
- The vane pump is not damaged at low speed and high pressure operation because pumping action does not start until the speed is high enough for the vane to throw out. With hydraulically balanced design, the bearing is externally loaded only. Therefore, the pump requires minimized maintenance with long service life.
- The inlet or outlet ports can be rotated through increments of 90° in relation to each other, providing application flexibility and easy installation.
- With optional flow control and priority valve covers, the pump can be used in more applications. The flow control cover can limit the flow to the primary circuit at the required flow rate, while diverts remaining flow to the tank. The priority valve cover maintains a constant flow to the primary circuit, while diverts remaining flow to the secondary circuit. Each cover comes with a relief valve to limits the maximum pressure of the primary circuit.

Handling

- For maximum service life, the pump should be protected from contamination. Filtering fluid before filling and during operation to maintain or exceed ISO cleanliness code 17/ 14. Replaceable elements should be changed as filter supplier instructions
- The drive shaft must align with the power source shaft. Avoiding shaft end thrust and applications that impose radial loading.
- The start-up procedures should be as follows:
  - Check the rotation of power source to match the rotation of pump.
  - Check inlet and outlet ports to assure all connections are properly installed and check all mounting bolts and flanges to assure all are tight and properly aligned.
  - Fill pump with fluid through the outlet port if the pump is mounted above the fluid level. The spline shaft models also need to be lubricated with an anti-fretting grease or similar lubricant.
  - Place all controls in the neutral position so the pump is unloaded during initial start-up.
  - Prime the pump within a few second when the pump is started.
  - Bleed off entrapped air from outlet circuit until a steady output flow is observed.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change at any time without notice.

HV20(F) - 1P11S - 1C (8) - (H) - (L)



1 Model

HV10, HV20

2 Cover

Omit - Standard Cover

F - Flow Control Cover

P - Priority Valve Cover

3 Mounting

1 - 2 - Bolt Flange

4 Inlet Port Connection

S - 1.3125"-12 Str.thd. (HV10)

- 1.625"-12 Str.thd. (HV20)

P - 1.00" NPT (HV10)

- 1.25" NPT (HV20)

B - 1.00" BSP (HV10)

- 1.25" BSP (HV20)

5 Delivery (USgpm at 1200 rpm)

HV10-1, 2, 3, 4, 5, 6, 7

HV20-5, 6, 7, 8, 9, 10, 11, 12, 13

6 Outlet Port Connection

HV10 and HV20

S - 0.750"-16 Str.thd. (HV10)

- 1.0625"-12 Str.thd. (HV20)

P - 0.500" NPT (HV10)

- 0.750" NPT (HV20)

B - 0.500" BSP (HV10)

- 0.750" BSP (HV20)

HV10F, HV10P, HV20F and HV20P

S - 0.750"-16 Str.thd. for outlet and 1.0625"-12 Str. thd. For tank port (HV20F)

P - 0.750"-16 Str.thd. for outlet and 0.500" NPT for tank port (HV10F and HV20F)

T - 0.750"-16 Str.thd. for outlet and tank port (HV10F)

- 0.750"-16 Str.thd. for primary outlet and tank port 0.875"-14 Str.thd.for secondary outlet (HV20P)

K - 0.5625"-18 Str.thd. for primary outlet and tank port and 0.750"-16 Str.thd.for secondary outlet (HV10P)

T - 0.750"-16 Str.thd. for outlet and 0.750"-16 Str.thd. for tank port (HV20F)

7 Shaft

1 - Straight keyed

3 - Threaded with woodruff key

6 - Woodruff key stub (HV20 only)

11 - Splined

12 - Splined (HV10 only)

15 - Splined (HV20 only)

38 - Splined (HV20 only)

123 - Threaded with woodruff key

8 Outlet Port Position

(Viewed from cover end)

A - Opposite inlet

B - 90° CCW from inlet

C - Inline with inlet

D - 90° CW from inlet

9 Flow rate Setting for Flow control and Priority Valve Cover L/min (USgpm)

2 - 7.6 (2)	6 - 22.7 (6)
3 - 11.4 (3)	7 - 26.5 (7)
4 - 15.2 (4)	8 - 30.3 (8)
5 - 19.0 (5)	

10 Pressurer Setting for Flow control and Priority Valve Cover bar (psi)

A - 17 (250)	F - 103 (1500)
B - 34 (500)	G - 121 (1750)
C - 52 (750)	H - 138 (2000)
D - 69 (1000)	J - 155 (2200)
E - 86 (1250)	K - 172 (2500)

11 Shaft Rotation

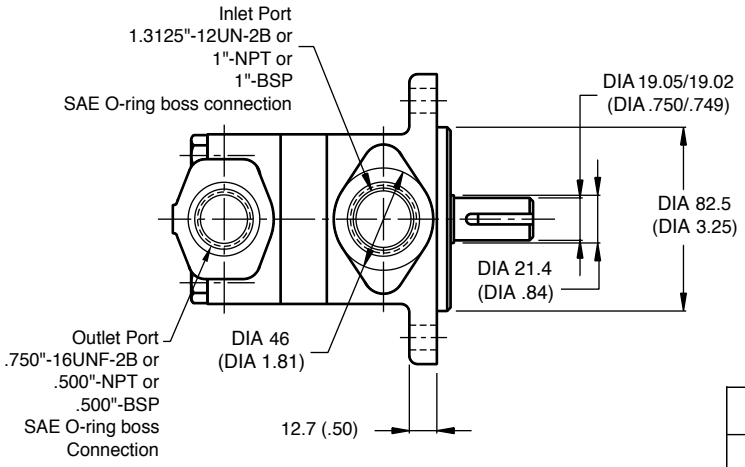
(Viewed from shaft end)

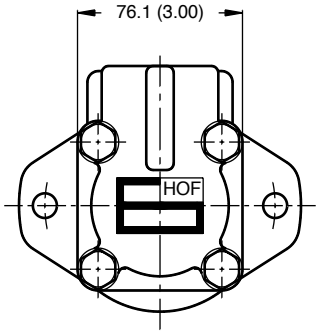
Omit - Turn right

L - Turn left

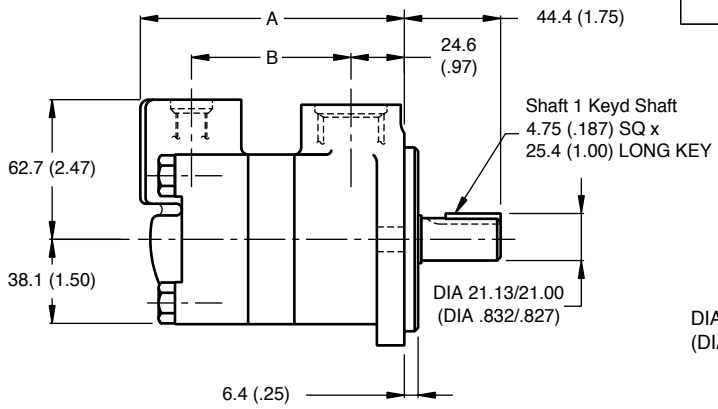
Model Series	Ring Size Delivery at 1200 r/min & 7 bar (100 psi) USgpm	Geometric Displacement cm^3/r (in^3/r)	Delivery at 1500 r/min & 7 bar (100 psi) L/min (USgpm)	Maximum Pressure bar (psi)	Maximum Speed rpm	Minimum Speed rpm	Weight kg (lb)
HV10 HV10F HV10P	1	3.3 (0.20)	4.70 (1.25)	172 (2500)	4800	650	4.5 - 6.8 (10 - 15)
	2	6.6 (0.40)	9.40 (2.50)	172 (2500)	4500	650	
	3	9.8 (0.60)	14.20 (3.75)	172 (2500)	4000	650	
	4	13.1 (0.80)	18.90 (5.00)	172 (2500)	3400	650	
	5	16.4 (1.00)	23.60 (6.25)	172 (2500)	3200	650	
	6	19.5 (1.19)	28.40 (7.50)	152 (2200)	3000	650	
	7	22.8 (1.39)	33.10 (8.75)	138 (2000)	2800	650	
HV20 HV20F HV20P	5	16.4 (1.00)	23.60 (6.25)	172 (2500)	3400	650	7.3 - 8.2 (16 - 18)
	6	19.5 (1.19)	28.39 (7.50)	172 (2500)	3400	650	
	7	22.8 (1.39)	33.11 (8.75)	172 (2500)	3000	650	
	8	26.5 (1.62)	37.85 (10.00)	172 (2500)	2800	650	
	9	29.7 (1.81)	42.57 (11.25)	172 (2500)	2800	650	
	10	34.1 (2.08)	47.30 (12.51)	172 (2500)	2500	650	
	11	36.4 (2.22)	52.04 (13.75)	172 (2500)	2500	650	
	12	39.0 (2.38)	56.77 (15.00)	152 (2200)	2400	650	
	13	42.4 (2.59)	61.50 (16.25)	152 (2200)	2400	650	

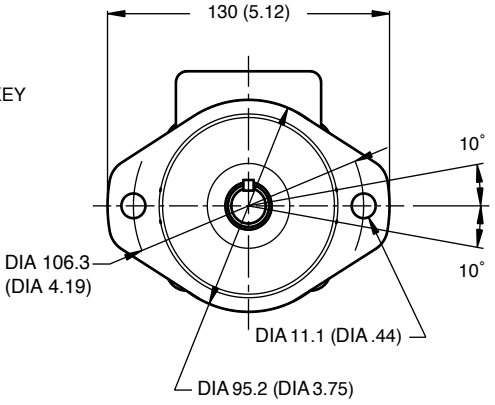
HV10



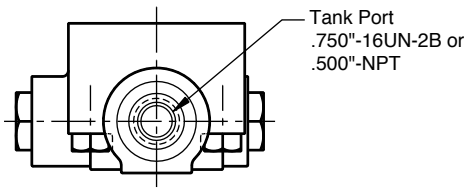


Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
1, 2, 3	115.6 (4.55)	67.3 (2.65)
4, 5	121.9 (4.80)	73.7 (2.90)
6, 7	127.0 (5.00)	78.7 (3.10)

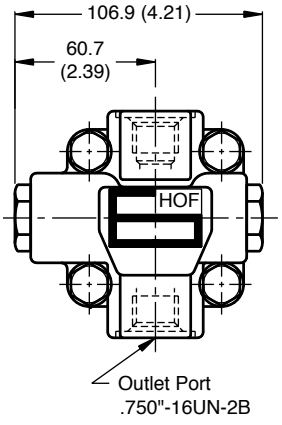


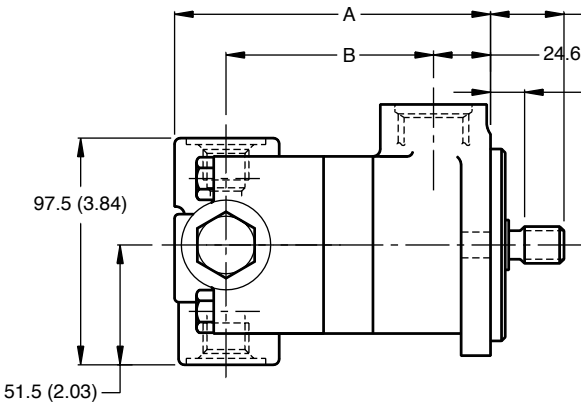


HV10F



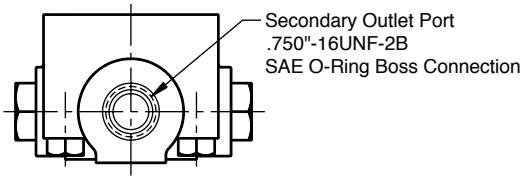
Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
1, 2, 3	128.8 (5.07)	84.8 (3.34)
4, 5	135.1 (5.32)	91.2 (3.59)
6, 7	140.2 (5.52)	96.3 (3.79)



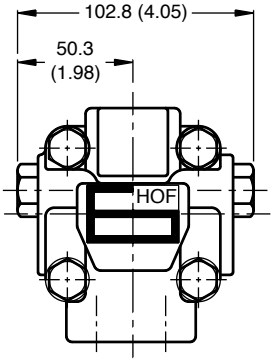


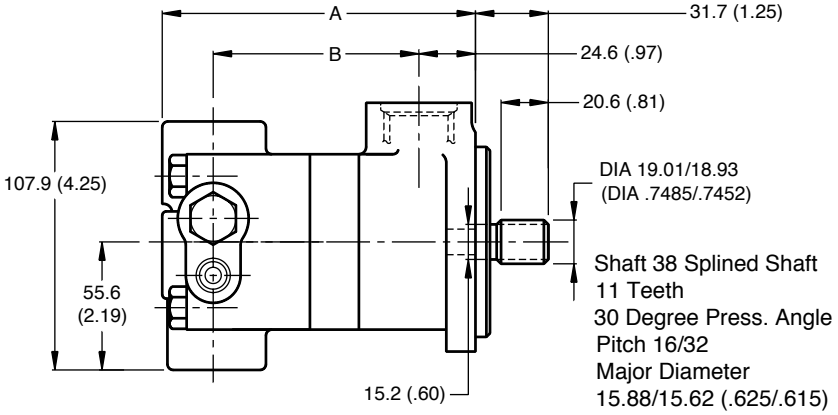
Shaft 11 Splined Shaft
9 Teeth-14.29 (.5625) P.D.
30 Degree Press. Angle
Pitch 16/32
Major Diameter
15.82/15.80 (.623/.622)
Minor Diameter
12.28/12.00 (.4835/.4725)
Flat Root
Major Diameter Fit

HV10P

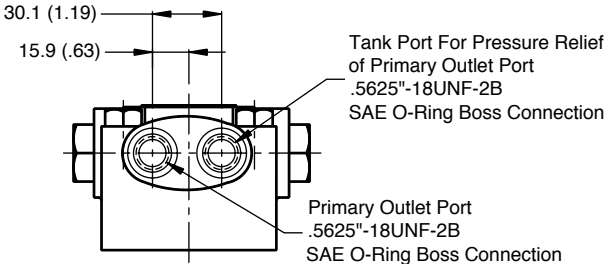


Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
1, 2, 3	130.0 (5.12)	84.8 (3.34)
4, 5	136.4 (5.37)	91.2 (3.59)
6, 7	141.5 (5.57)	96.3 (3.79)

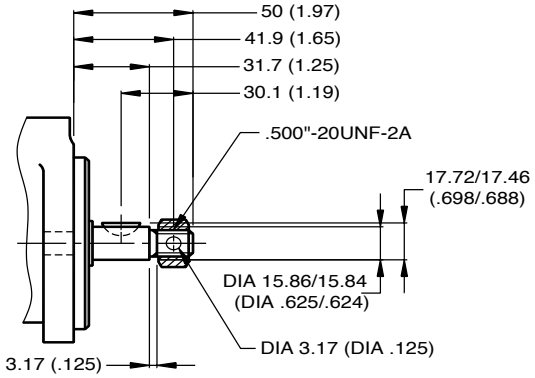




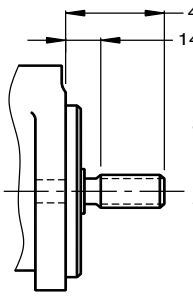
Shaft 38 Splined Shaft
11 Teeth
30 Degree Press. Angle
Pitch 16/32
Major Diameter
15.88/15.62 (.625/.615)
Flat Root



Other shaft options for HV10 Series



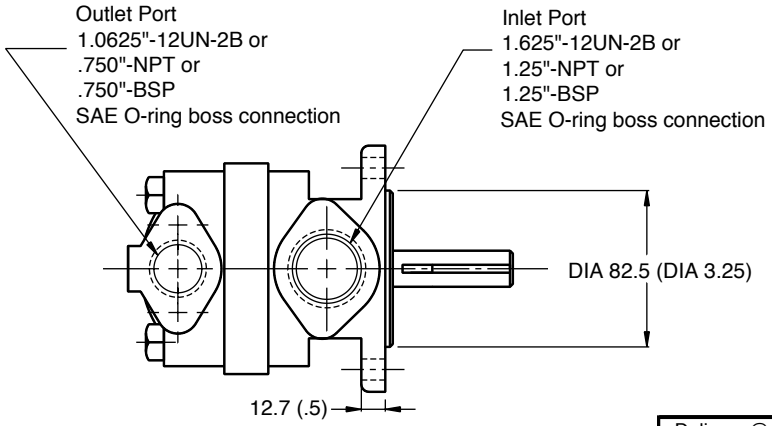
Shaft 3 Threaded with #6 Woodruff Key

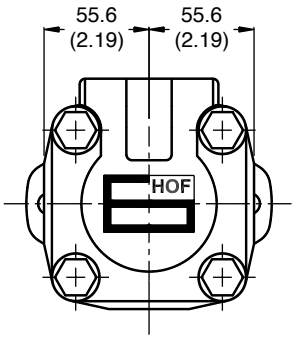


13 Teeth-20.64 (.8125) P.D.
30 Degree Press. Angle
Pitch 16/32
Major Diameter
22.17/22.15 (.873/.872)
Minor Diameter
18.63/18.35 (.7335/.7225)
Flat Root
Major Diameter Fit

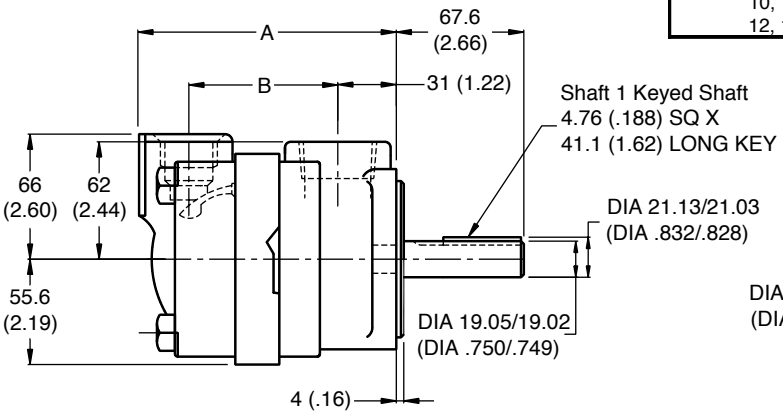
Shaft 12 Splined Shaft 13 Teeth

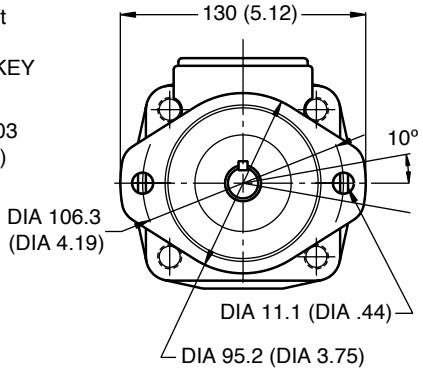
HV20



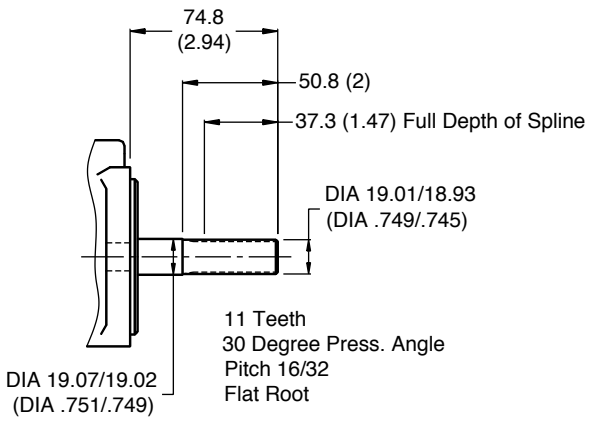


Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
5, 6	125.2 (4.93)	71.1 (2.80)
7, 8, 9	131.6 (5.18)	77.5 (3.05)
10, 11	136.7 (5.38)	82.6 (3.25)
12, 13	140.2 (5.52)	86.1 (3.39)

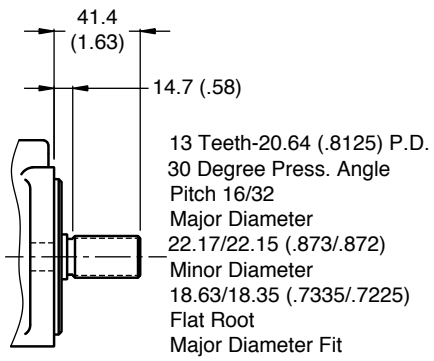




Other shaft options for HV20 Series

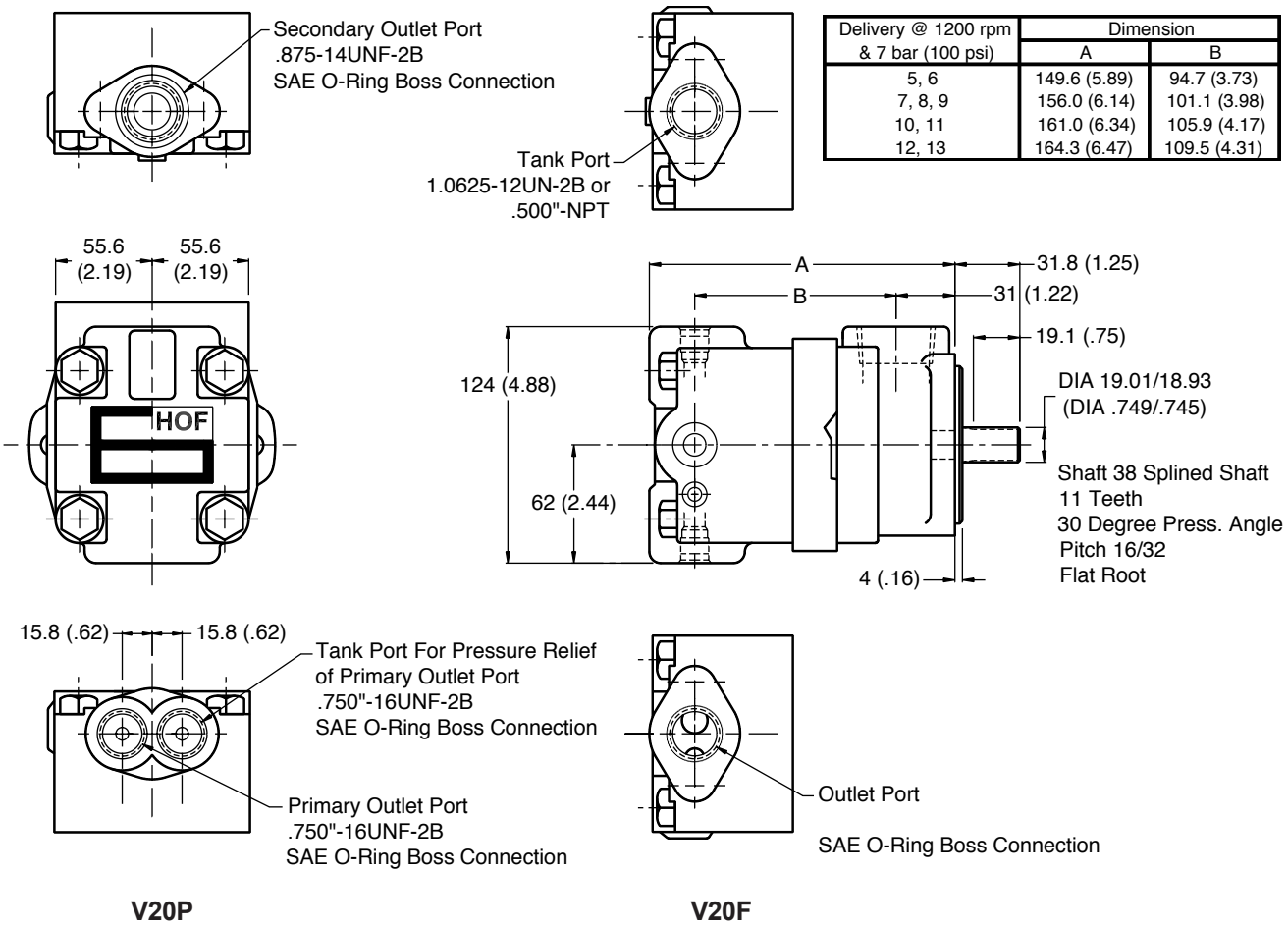


Shaft 11 Splined Shaft 11 Teeth



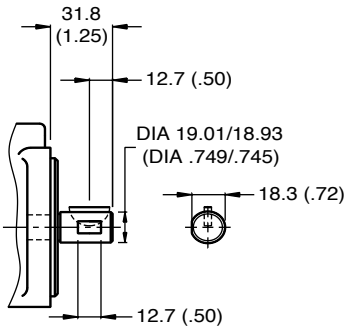
Shaft 15 Splined Shaft 13 Teeth

HV20F and HV20P

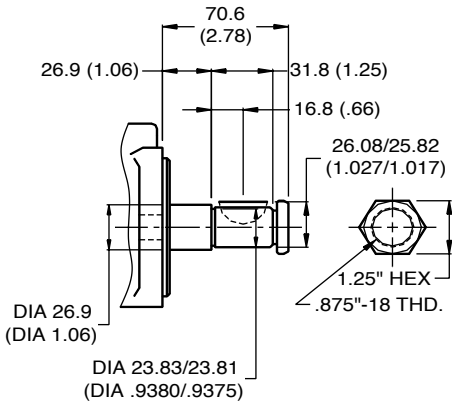


Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
5, 6	149.6 (5.89)	94.7 (3.73)
7, 8, 9	156.0 (6.14)	101.1 (3.98)
10, 11	161.0 (6.34)	105.9 (4.17)
12, 13	164.3 (6.47)	109.5 (4.31)

Other shaft options for HV20 Series

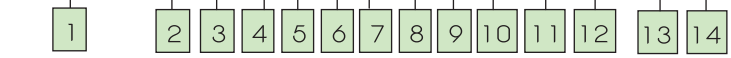


Shaft 6 Straight Stub Keyed Shaft



Shaft 3 Threaded with #6 Woodruff Key

HV2010 (F) - 1 F13S7S - 1CC - (8) (H) - (L)



1 Model

HV2010, HV2020

2 Cover

Omit - Standard Cover

F - Flow Control Cover

P - Priority Valve Cover

3 Mounting

1 - 2-Bolt Flang

4 Inlet Port Connection

F - 4-bolt Flange Dia 1.5" (HV2010)

- 4-bolt Flange Dia 2.0" (HV2020)

5 Shaft End Pump Delivery (Usgpm at 1200 rpm)

5, 6, 7, 8, 9, 10, 11, 12, 13

6 Shaft End Outlet Port Connection

S - 1.0625"-12 Str.thd.

P - 0.750" NPT

B - 0.750" BSP

7 Cover End Pump Delivery (Usgpm at 1200 rpm)

HV2010 - 1, 2, 3, 4, 5, 6, 7

HV2020 - 5, 6, 7, 8, 9, 10, 11, 12, 13

8 Cover End Outlet Port Connection

HV2010 and HV2020

S - 0.750"-16 Str.thd. (HV2010)

- 1.0625"-12 Str.thd. (HV2020)

P - 0.500" NPT (HV2010)

B - 0.500" BSP (HV2010)

- 0.750" BSP (HV2020)

HV10F, HV10P, HV20F and HV20P

9 Shaft

1 - Straight keyed

11 - Splined

10 Shaft End Outlet Port Position

(Viewed from cover end)

A - Opposite inlet

B - 90° CCW from inlet

C - Inline with inlet

D - 90° CW from inlet

11 Cover End Outlet Port Connection

(Viewed from cover end)

HV2010,HV2010F,HV2010P	HV2020,HV2020F,HV2020P
A - 135° CCW from inlet	A - Opposite inlet
B - 45° CCW from inlet	B - 90° CCW from inlet
C - 45° CW from inlet	C - Inline with inlet
D - 135° CW from inlet	D - 90° CW from inlet

12 Flow rate Setting for Flow control and

Priority Valve Cover L/min (Usgpm)

2 - 7.6 (2)	6 - 22.7 (6)
3 - 11.4 (3)	7 - 26.5 (7)
4 - 15.2 (4)	8 - 30.3 (8)
5 - 19.0 (5)	

13 Pressurer Setting for Flow control and

Priority Valve Cover bar (psi)

A - 17 (250)	F - 103 (1500)
B - 34 (500)	G - 121 (1750)
C - 52 (750)	H - 138 (2000)
D - 69 (1000)	J - 155 (2200)
E - 86 (1250)	K - 172 (2500)

14 Shaft Rotation

(Viewed from shaft end)

Omit - Turn right

L - Turn left

S - 0.750"-16 Str.thd. for outlet and 1.0625"-12 Str. thd. For tank port (HV2020F)

P - 0.750"-16 Str.thd. for outlet and 0.500" NPT for tank port (HV2010F and HV2020F)

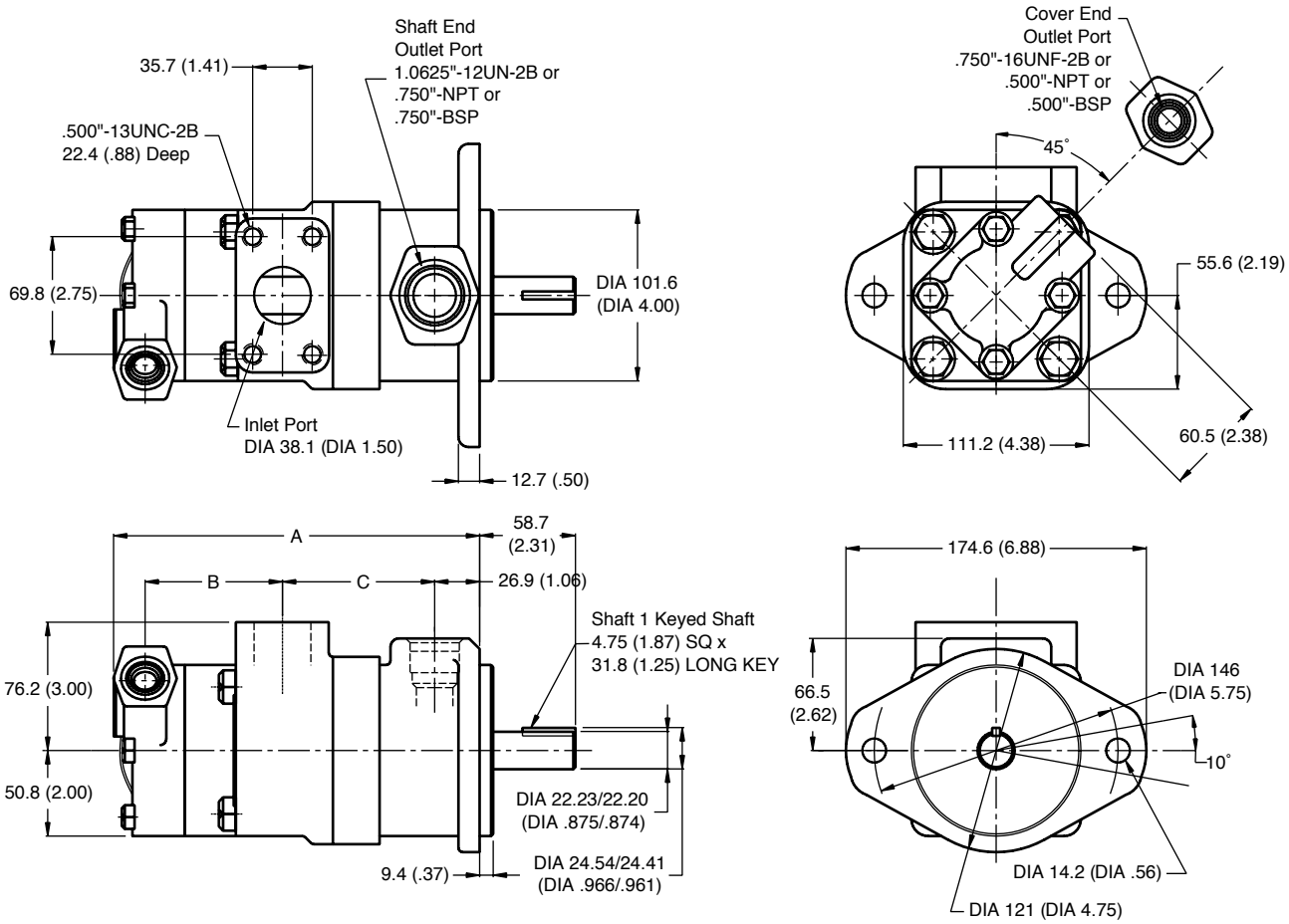
T - 0.750"-16 Str.thd. for outlet and tank port (HV2010F and HV2020F)

- 0.750"-16 Str.thd. for main outlet and tank port 0.875"-14 Str.thd.for secondary outlet (HV2020P)

K - 0.5625"-18 Str.thd. for main outlet and tank port and 0.750"-16 Str.thd.for secondary outlet (HV2010P)

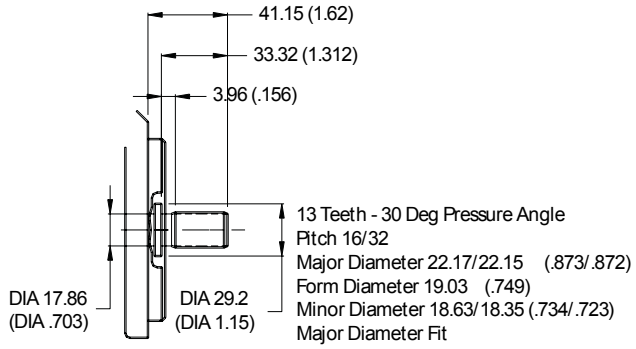
T - 0.750"-16 Str.thd. for outlet and 0.750"-16 Str.thd. for tank port (HV2020F)

Model Series	Cartridge Position	Ring Size Delivery at 1200 r/min & 7 bar (100 psi) USgpm	Geometric Displacement cm^3/r (in^3/r)	Delivery at 1500 r/min & 7 bar (100 psi) L/min (USgpm)	Maximum Pressure bar (psi)	Maximum Speed rpm	Weight kg (lb)
HV2010	Shaft End	5	16.4 (1.00)	23.60 (6.25)	172 (2500)	3400	13.6 (30)
		6	19.5 (1.19)	28.40 (7.50)	172 (2500)	3400	
		7	22.8 (1.39)	33.11 (8.75)	172 (2500)	3000	
		8	26.5 (1.62)	37.85 (10.00)	172 (2500)	2800	
		9	29.7 (1.81)	42.57 (11.25)	172 (2500)	2800	
		10	34.1 (2.08)	47.30 (12.51)	172 (2500)	2500	
		11	36.4 (2.22)	52.04 (13.75)	172 (2500)	2500	
		12	39.0 (2.38)	56.77 (15.00)	152 (2200)	2400	
		13	42.4 (2.59)	61.50 (16.25)	152 (2200)	2400	
	Cover End	1	3.3 (0.20)	4.70 (1.25)	172 (2500)	3000	
		2	6.6 (0.40)	9.40 (2.50)	172 (2500)	3000	
		3	9.8 (0.60)	14.20 (3.75)	172 (2500)	3000	
		4	13.1 (0.80)	18.90 (5.00)	172 (2500)	3000	
		5	16.4 (1.00)	23.60 (6.25)	172 (2500)	3000	
		6	19.5 (1.19)	28.40 (7.50)	152 (2200)	3000	
		7	22.8 (1.39)	33.10 (8.75)	138 (2000)	2800	
HV2020	Shaft End	10	34.1 (2.08)	47.30 (12.51)	172 (2500)	2500	15.9 (35)
		11	36.4 (2.22)	52.04 (13.75)	172 (2500)	2500	
		12	39.0 (2.38)	56.77 (15.00)	152 (2200)	2400	
		13	42.4 (2.59)	61.50 (16.25)	152 (2200)	2400	
	Cover End	5	16.4 (1.00)	23.60 (6.25)	172 (2500)	3000	
		6	19.5 (1.19)	28.39 (7.50)		3000	
		7	22.8 (1.39)	33.11 (8.75)		3000	
		8	26.5 (1.62)	37.85 (10.00)		2800	
		9	29.7 (1.81)	42.57 (11.25)		2800	
		10	34.1 (2.08)	47.30 (12.52)		2500	
		11	36.4 (2.22)	52.04 (13.75)		2500	

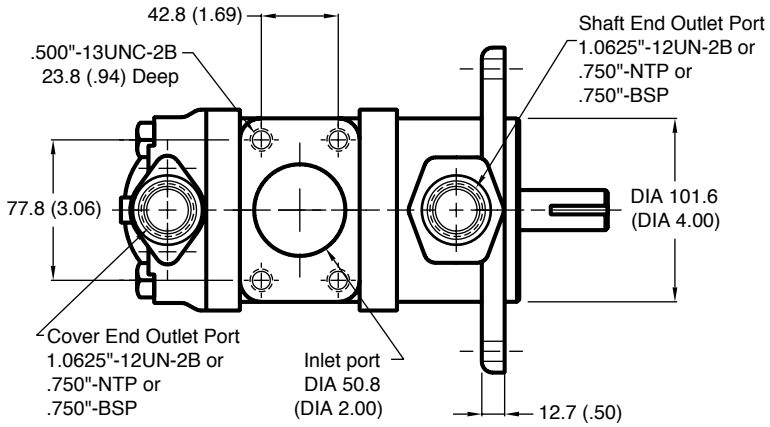


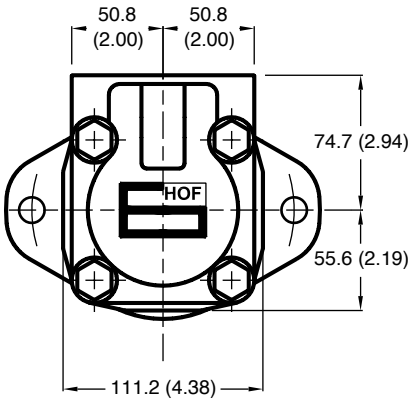
Delivery @ 1200 rpm & 7 bar (100 psi)		Dimension		
Shaft End	Cover End	A	B	C
7, 8, 9	1, 2, 3	213.1 (8.39)	75.9 (2.99)	86.4 (3.40)
7, 8, 9	4, 5	219.5 (8.64)	82.3 (3.24)	86.4 (3.40)
7, 8, 9	6, 7	224.5 (8.84)	87.4 (3.44)	86.4 (3.40)
10, 11	1, 2, 3	218.2 (8.59)	75.9 (2.99)	91.2 (3.59)
10, 11	4, 5	224.5 (8.84)	82.3 (3.24)	91.2 (3.59)
10, 11	6, 7	229.6 (9.04)	87.4 (3.44)	91.2 (3.59)
12, 13	1, 2, 3	221.7 (8.73)	75.9 (2.99)	94.7 (3.73)
12, 13	4, 5	227.8 (8.97)	82.3 (3.24)	94.7 (3.73)
12, 13	6, 7	232.9 (9.17)	87.4 (3.44)	94.7 (3.73)

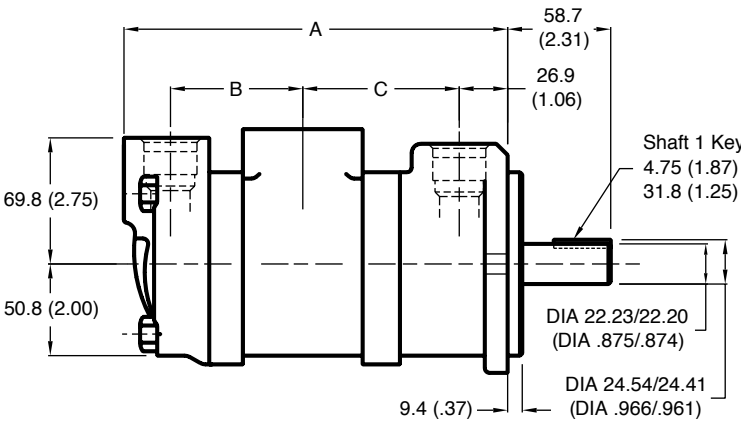
Other shaft options for Double Pump HV2010 and HV2020

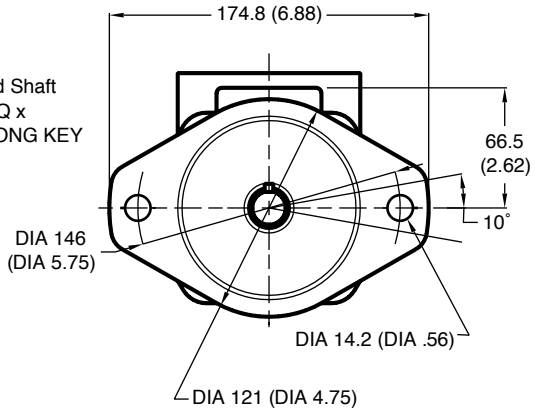


Shaft 11
Splined Shaft



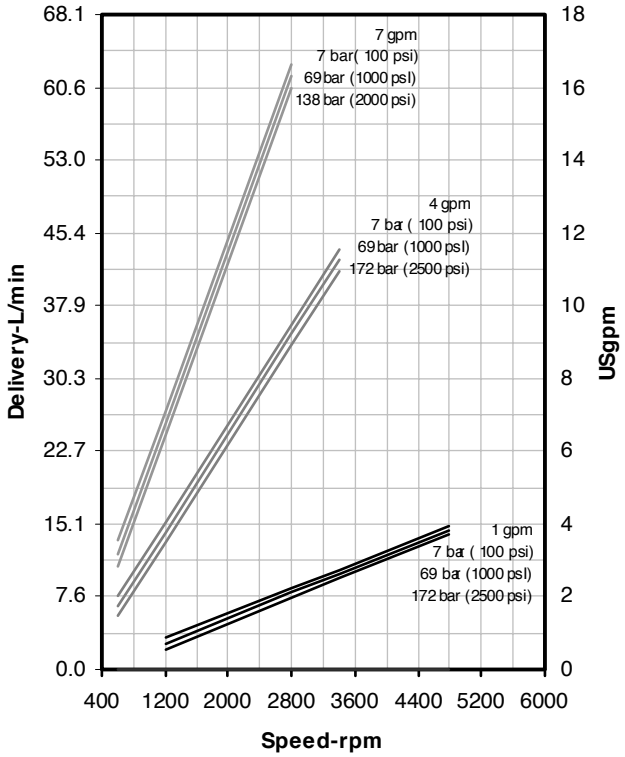


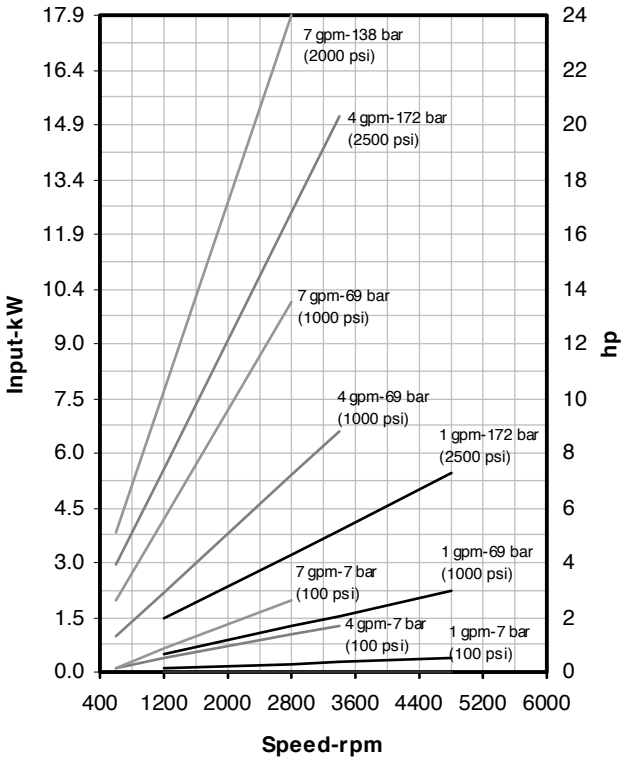


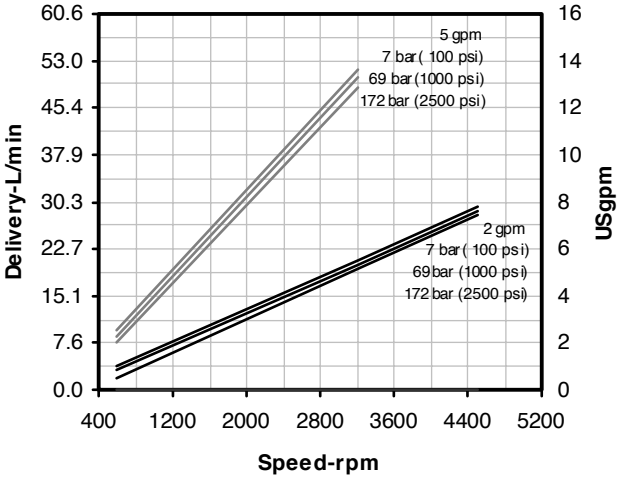


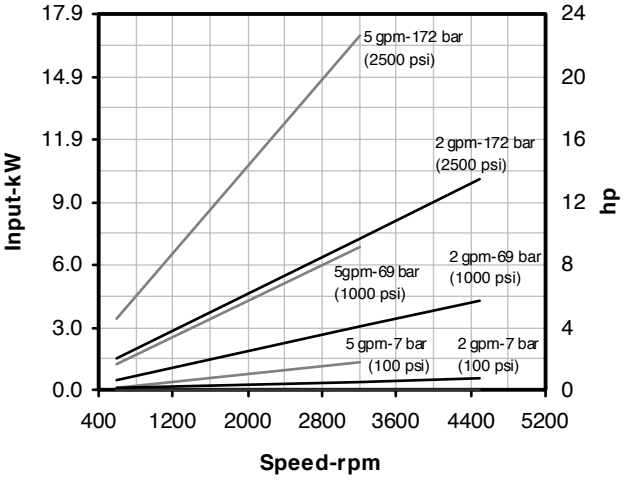
Delivery @ 1200 rpm & 7 bar (100 psi)		Dimension		
Shaft End	Cover End	A	B	C
7, 8, 9	5, 6	213.6 (8.41)	73.7 (2.90)	87.1 (3.43)
7, 8, 9	7, 8, 9	220.0 (8.66)	80.0 (3.15)	87.1 (3.43)
10, 11	5, 6	218.7 (8.61)	73.7 (2.90)	92.2 (3.63)
10, 11	7, 8, 9	225.0 (8.86)	80.0 (3.15)	92.2 (3.63)
10, 11	10, 11	229.9 (9.05)	85.1 (3.35)	92.2 (3.63)
12, 13	5, 6	222.3 (8.75)	73.7 (2.90)	95.5 (3.76)
12, 13	7, 8, 9	228.3 (8.99)	80.0 (3.15)	95.5 (3.76)
12, 13	11	233.4 (9.19)	85.1 (3.35)	95.5 (3.76)

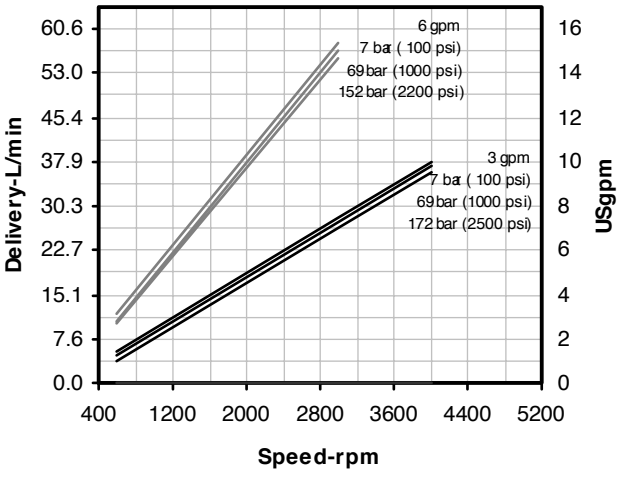
Based on viscosity 32 cSt (150 SSU) oil at 49 °C (120 °F) and pump inlet at 0 PSIG (14.7 PSIA)

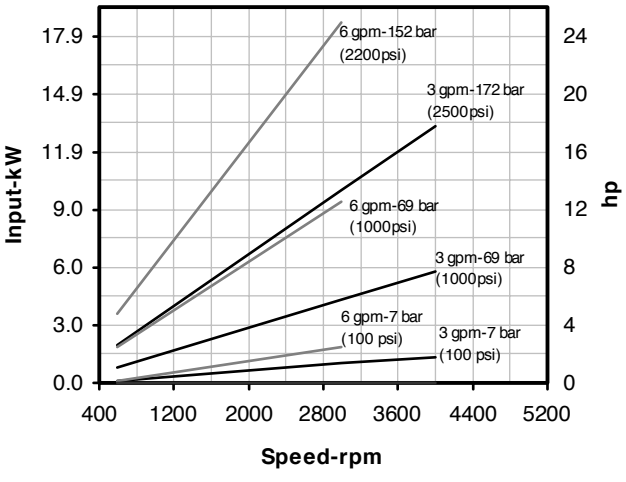






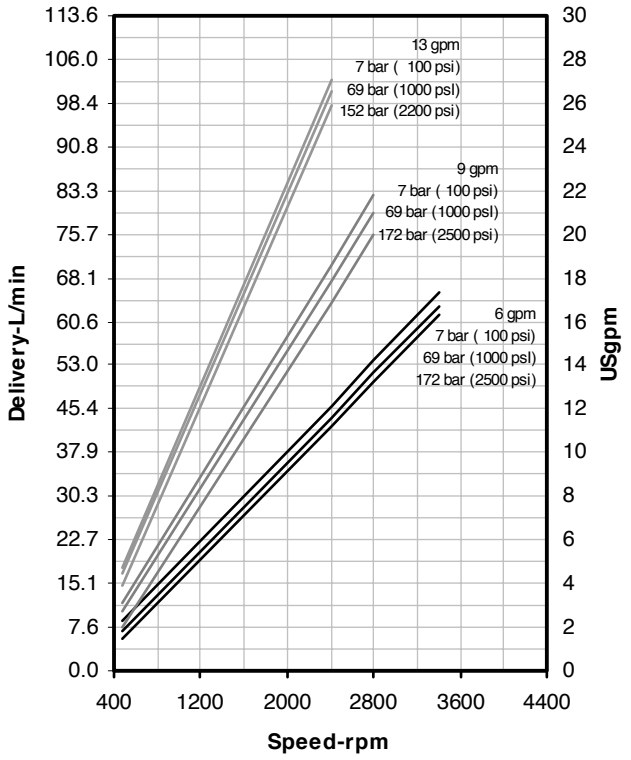


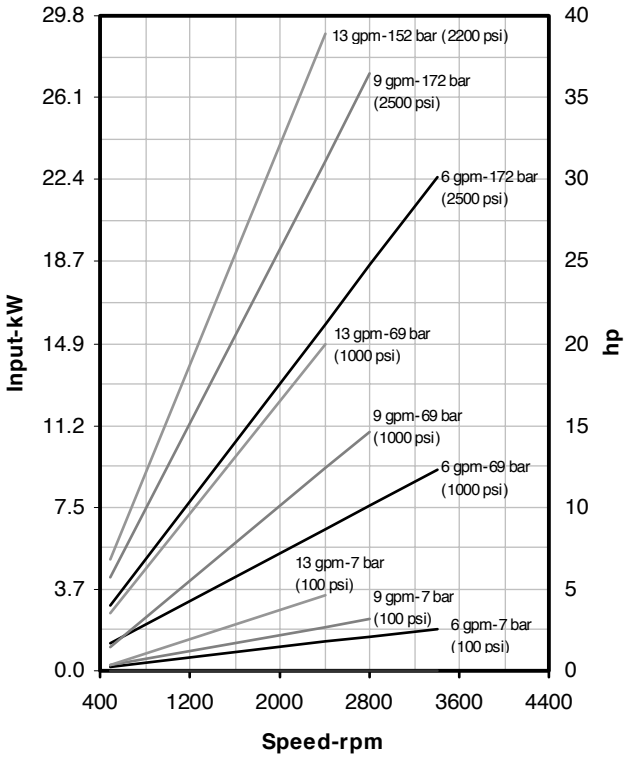


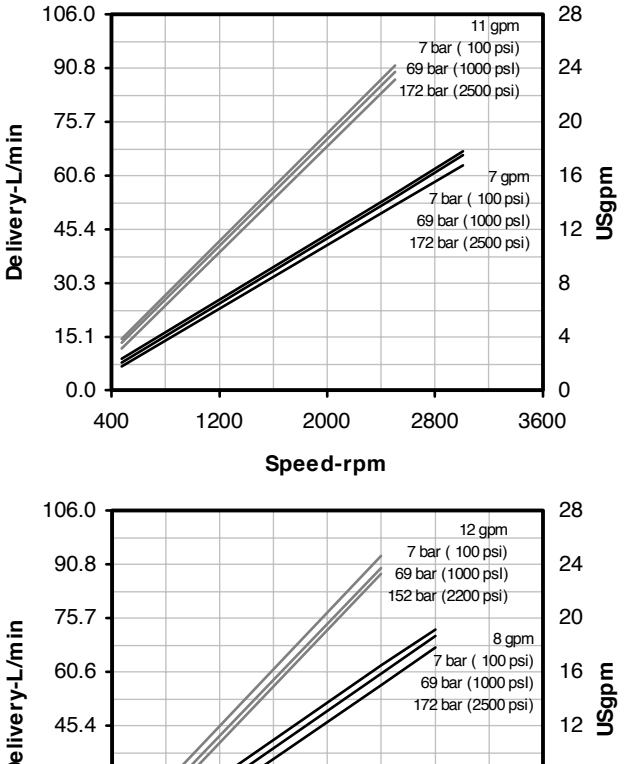


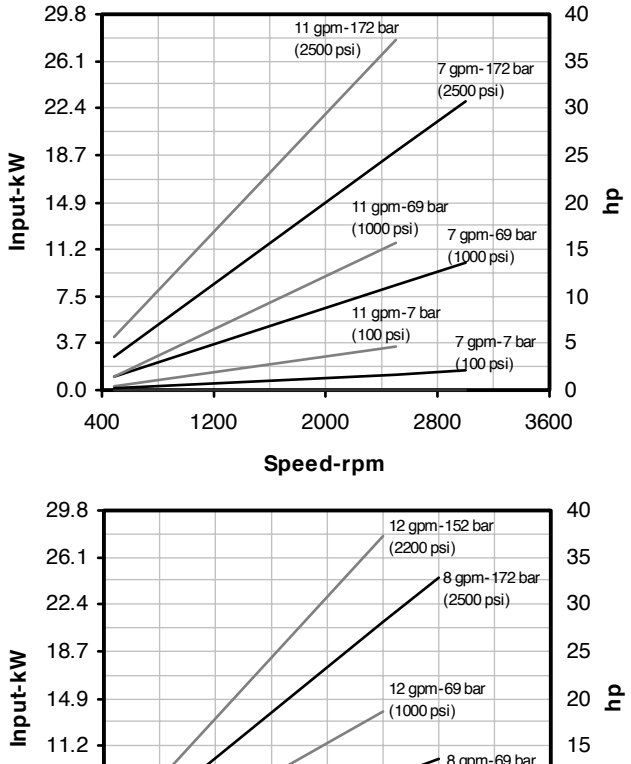
For the Cover End Cartridge, the speed could not exceed the maximum speed of the Shaft End Cartridge.

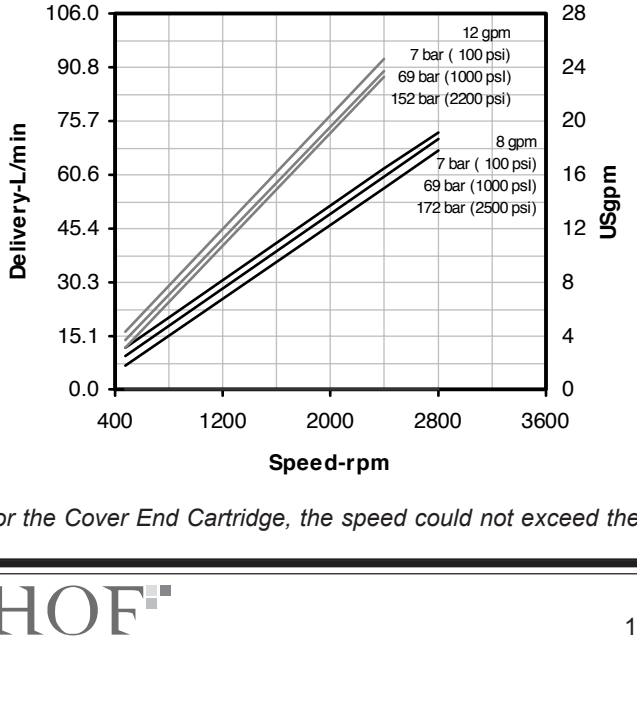
Based on viscosity 32 cSt (150 SSU) oil at 49 °C (120 °F) and pump inlet at 0 PSIG (14.7 PSIA)

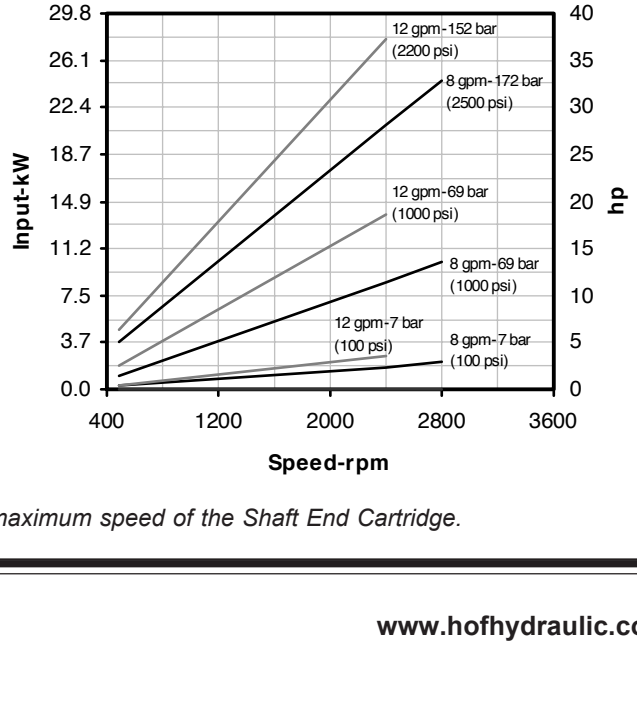










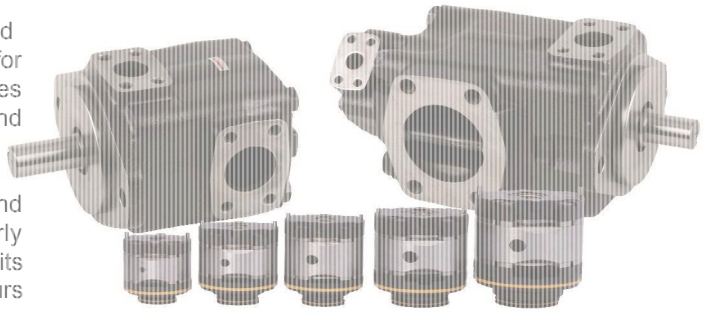


For the Cover End Cartridge, the speed could not exceed the maximum speed of the Shaft End Cartridge.

Fixed Displacement Vane Pump
HV and HVQ Series

Features

- HV / HVQ Series are fixed displacement and balanced type vane pumps. Available in both 12 vanes design for industrial application with quiet operating and 10 vanes design for mobile application with higher pressure and wider range of speed.
- The vane design with self compensation for wear and clearances makes volumetric efficiency of pump nearly constant over the service life. (the vane always adjust its orbit to contact with the cam ring, even though wear occurs between the cam ring and vane tip)
- With a balanced intra-vane design, outlet pressure is continuously applied only to the area between the vane and insert. This area is small and thrust is correspondingly light. Top and bottom areas of the vane are subject to either inlet or outlet pressure, depending on the vane's location during rotor rotation. The valving of pressure to and from the bottom area of the vane is through holes drilled in the rotor. This varying pressure under the vane reduces wear and increases pump efficiency.
- The vane pump is not damaged at low speed and high pressure operation because pumping action does not start until the speed is high enough for the vane to throw out.
- The inlet or outlet ports can be rotated through increments of 90° in relation to each other, providing application flexibility and easy installation.



- With the cartridge independent of the shaft, allowing for easy change of flow capacity and field servicing without removing the pump from its mounting.
- For the cartridge kit of HVQ Series, the flexible plates are inserted between the support plates and the rotor. The flexible plates are assembled with the bronze facing towards the rotor to improve cold start capability and compensate thermal expansion in the rotor. This makes HVQ Series particularly suited for mobile application.

Handling

- For maximum service life, the pump should be protected from contamination. Filtering fluid before filling and during operation to maintain or exceed ISO cleanliness code 16/13. Appropriately size suction filter, with cold start bypass, of 149 micron absolute (100 mesh) and 10 micron absolute return line filter is recommended. Replaceable elements should be changed as filter supplier instructions
- The drive shaft must align with the power source shaft. Avoiding shaft end thrust and applications that impose radial loading.
- The start-up procedures should be as follows:
  - Check the rotation of power source to match with rotation of pump.
  - Check inlet and outlet ports to assure all connections are properly installed and check all mounting bolts and flanges to assure all are tight and properly aligned.
  - Fill pump with fluid through the outlet port if the pump is mounted above the fluid level. The spline shaft models also need to be lubricate with an anti-fretting grease or similar lubricant.
  - Place all controls in the neutral position so the pump is unloaded during initial start-up.
  - Prime the pump within a few second when the pump is started.
  - Bleed off entrapped air from outlet circuit until a steady output flow is observed.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change at any time without notice.

25HVQ - 21A - 11C L

1 2 3 4 5 6 7

1 Model

20, 25, 30, 35, 45

2 Series

HV - Industrial

HVQ - Mobile

3 Ring Size (USgallon)

20HV/HVQ - 2, 5, 8, 9, 11, 12, 14

25HV/HVQ - 12, 14, 17, 19, 21

30HV/HVQ - 24, 28

35HV/HVQ - 21, 25, 30, 35, 38

45HV/HVQ - 42, 47, 50, 57, 60

4 Port Connection

A - SAE 4-bolt with Inch threads

AM - SAE 4-bolt with Metric threads

5 Shaft

1 - Straight keyed

11 - Splined (25,30,35,45HV/HVQ)

86 - Heavy duty straight keyed (25,30,35,45HV/HVQ)

151 - Splined (20HV/HVQ only)

6 Outlet Port position

(Viewed from cover end)

A - Opposite inlet

B - 90° CCW from inlet

C - Inline with inlet

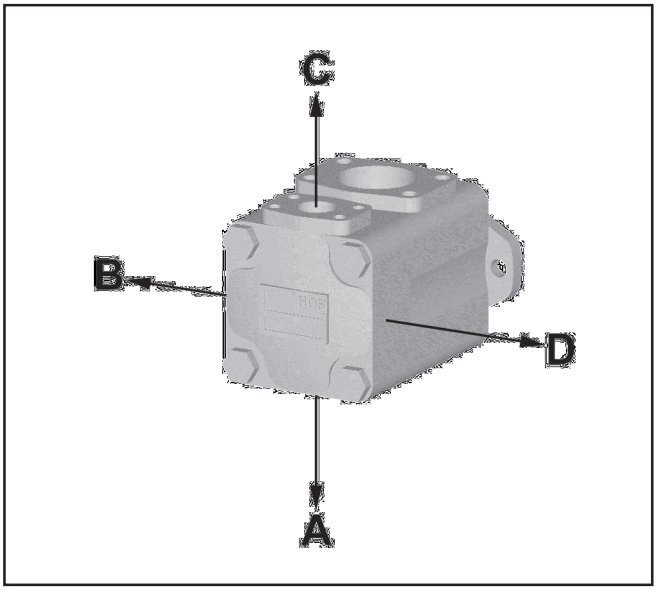
D - 90° CW from inlet

7 Shaft Rotation

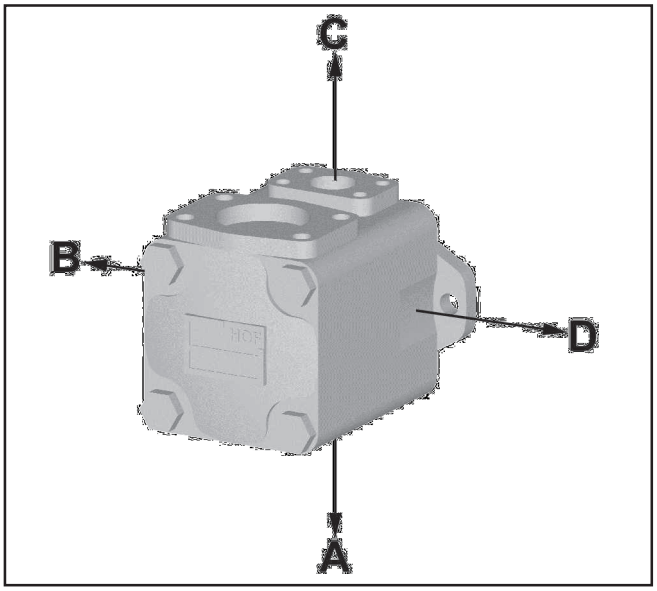
(Viewed from shaft end)

Omit - Turn right

L - Turn left



Port Positions for 20HV/HVQ



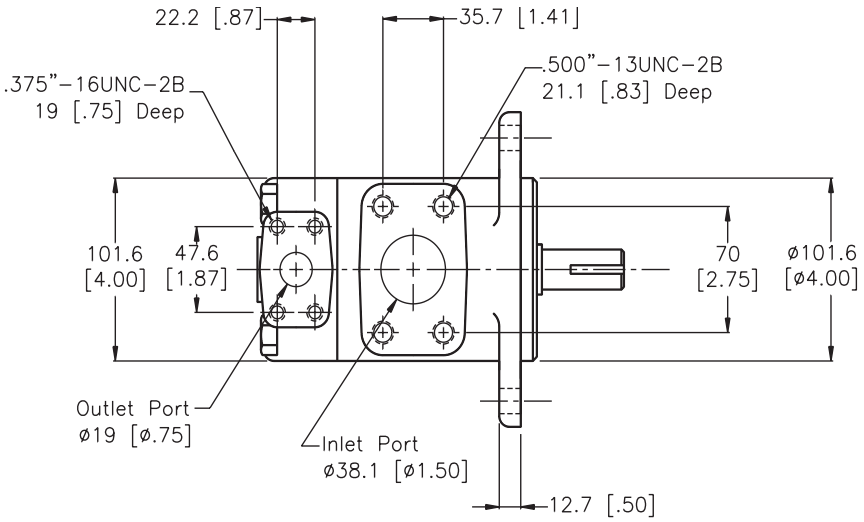
Port Positions for 25HV/HVQ, 30HV/HVQ, 35HV/HVQ, 45HV/HVQ

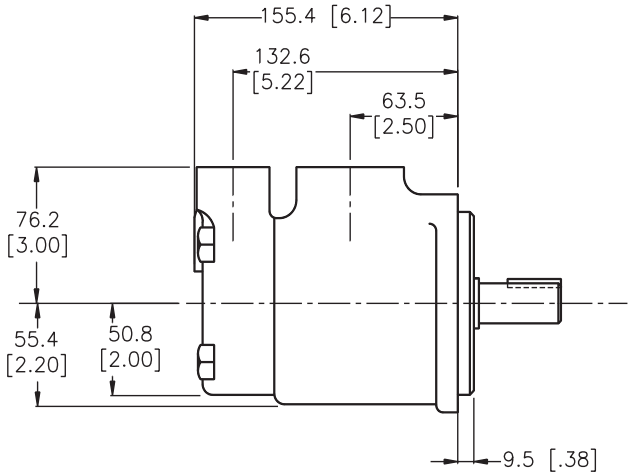
Specifications — *Single Pump HV Series*

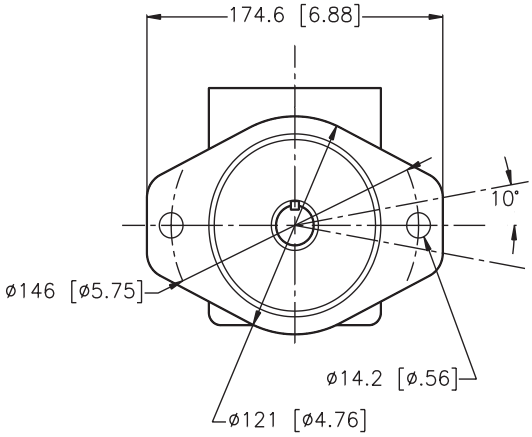
Model	Delivery at 1200 rpm & 7 bar (100 psi) USgpm	Displacement cm^3/r (in^3/r)	Maximum Speed rpm	Maximum Pressure bar (psi)	Typical Delivery at max speed & pressure L/min (USgpm)	Typical Input Power at max speed & pressure kW (hp)	Weight kg (lb)
20HV	2	7.0 (0.42)	1800	206 (3000)	11.3 (3.0)	5.2 (7.0)	11.8 (26)
	5	18 (1.10)		206 (3000)	28.4 (7.5)	11.2 (15.0)	
	8	27 (1.67)		206 (3000)	45.4 (12.0)	17.0 (22.8)	
	9	30.2 (1.84)		206 (3000)	51.0 (13.5)	23.5 (31.5)	
	11	36 (2.22)		206 (3000)	56.8 (15.0)	22.6 (30.3)	
	12	40 (2.47)		158 (2300)	62.1 (16.4)	25.1 (33.7)	
	14	45 (2.78)		138 (2000)	69.6 (18.4)	28.3 (37.9)	
25HV	12	39 (2.47)	1800	172 (2500)	62.1 (16.4)	22.9 (30.8)	14.5 (32)
	14	45 (2.78)			69.6 (18.4)	25.7 (34.5)	
	17	55 (3.39)			86.3 (22.8)	29.8 (40.0)	
	19	60.8 (3.72)			96.1 (25.4)	32.5 (43.5)	
	21	67 (4.13)			106.0 (28.0)	34.0 (45.6)	
35HV	21	68.3 (4.18)	1800	172 (2500)	106.3 (28.1)	34.0 (45.5)	22.7 (50)
	25	81 (4.94)			124.9 (33.0)	45.5 (61.0)	
	30	97 (5.91)			154.4 (40.8)	54.5 (73.0)	
	35	112 (6.83)			181.7 (48.0)	61.5 (82.4)	
	38	121 (7.37)			193.8 (51.2)	65.9 (88.3)	
45HV	42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	34.0 (75)
	47	151.4 (9.26)			244.1 (64.5)	82.5 (110.6)	
	50	162 (9.85)			253.6 (67.0)	87.3 (117.0)	
	57	183.6 (11.23)			295.0 (77.8)	94.0 (126.0)	
	60	193 (11.75)			310.4 (82.0)	103.7 (139.0)	

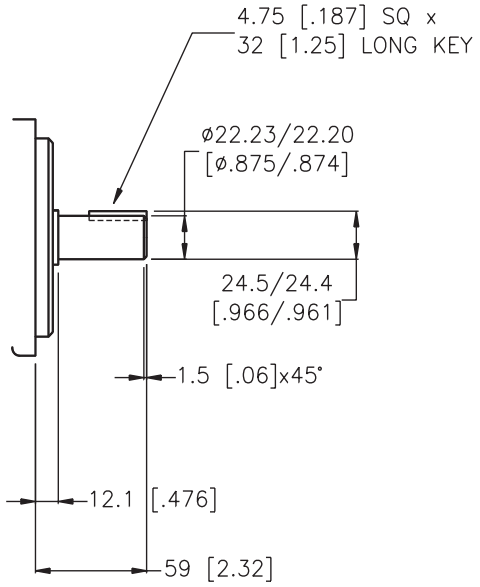
Specifications — *Single Pump HVQ Series*

Model	Delivery at 1200 rpm & 7 bar (100 psi) USgpm	Displacement cm^3/r (in^3/r)	Maximum Speed rpm	Maximum Pressure bar (psi)	Typical Delivery at max speed & pressure L/min (USgpm)	Typical Input Power at max speed & pressure kW (hp)	Weight kg (lb)
20HVQ	2	7.0 (0.42)	2700	206 (3000)	15.9 (4.2)	7.3 (9.8)	11.8 (26)
	5	18 (1.10)		206 (3000)	41.6 (11.0)	17.9 (24.0)	
	8	27 (1.67)		206 (3000)	64.3 (17.0)	26.1 (35.0)	
	9	30.2 (1.84)		206 (3000)	71.5 (18.9)	32.9 (44.1)	
	11	36 (2.22)		206 (3000)	87.1 (23.0)	35.4 (47.5)	
	12	39 (2.41)		158 (2300)	96.5 (25.5)	28.3 (38.0)	
	14	45 (2.80)		138 (2000)	113.6 (30.0)	29.1 (39.0)	
25HVQ	12	40 (2.45)	2700	206 (3000)	87.1 (23.0)	41.0 (55.0)	14.5 (32)
	14	45 (2.77)	2700		102.2 (27.0)	46.6 (62.5)	
	17	55 (3.37)	2500		117.3 (31.0)	51.8 (69.5)	
	19	60.8 (3.72)	2500		133.5 (34.5)	53.0 (71.0)	
	21	67 (4.12)	2500		143.8 (38.0)	61.9 (83.0)	
35HVQ	21	68.3 (4.18)	2500	206 (3000)	143.8 (38.0)	55.0 (73.9)	22.7 (50)
	25	81 (4.98)	2500		170.3 (45.0)	75.3 (101.0)	
	30	97 (5.96)	2500		208.2 (55.0)	87.7 (117.5)	
	35	112 (6.88)	2400		227.1 (60.0)	98.5 (132.0)	
	38	121 (7.42)	2400		246.0 (65.0)	104.4 (140.0)	
45HVQ	42	138 (8.46)	2200	172 (2500)	251.7 (66.5)	91.4 (122.5)	34.0 (75)
	47	151.4 (9.26)			280.8 (74.20)	95.0 (127.3)	
	50	162 (9.90)			299.0 (79.0)	105.2 (141.0)	
	57	183.6 (11.23)			342.5 (90.50)	109.3 (146.6)	
	60	193 (11.80)			363.4 (96.0)	126.8 (170.0)	

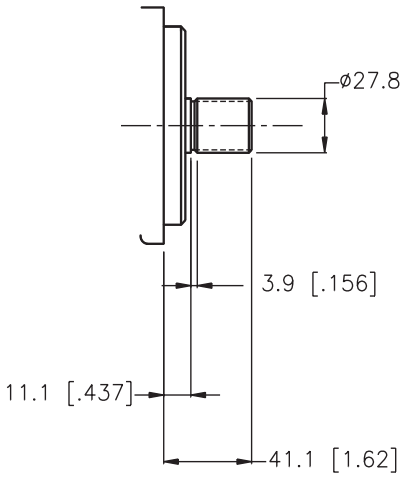






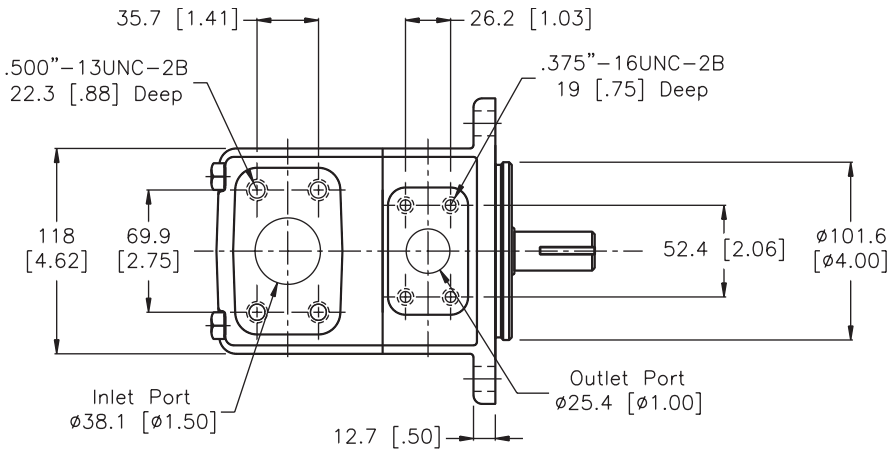


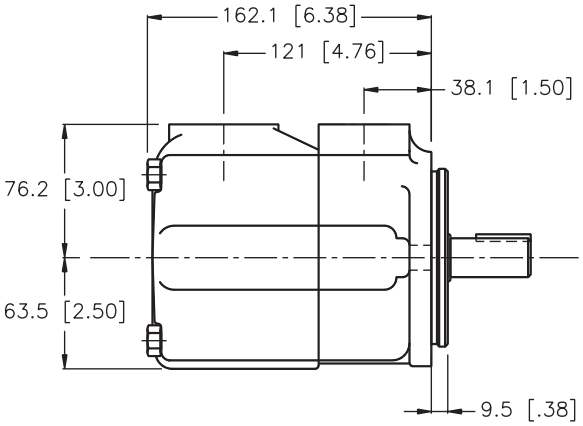
Shaft 1
Keyed Shaft

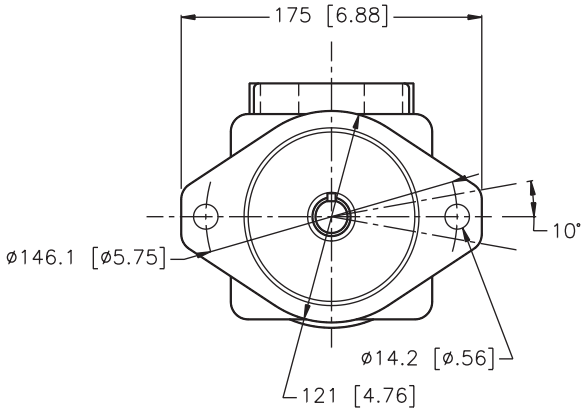


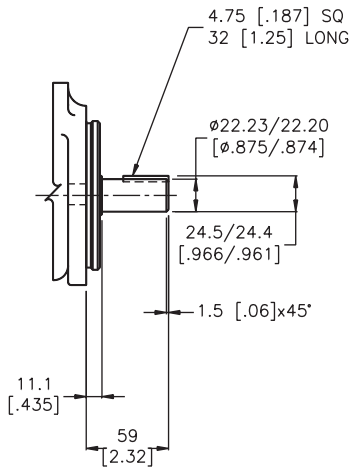
13 Teeth – 30° Press. Angle
Pitch 16/32
Major Diameter
22.17/22.15 [.873/.872]
Form Diameter
19.03 [.749]
Minor Diameter
18.63/18.35 [.734/.723]
Major Diameter Fit

Shaft 151
Splined Shaft

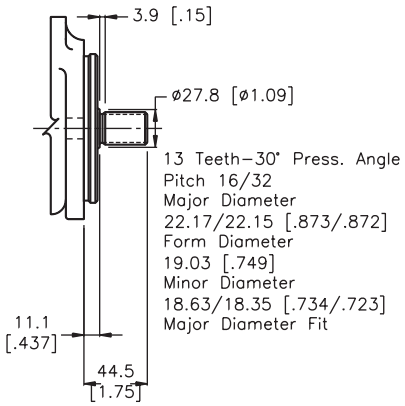




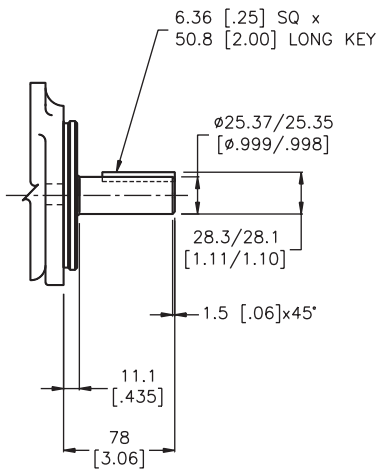




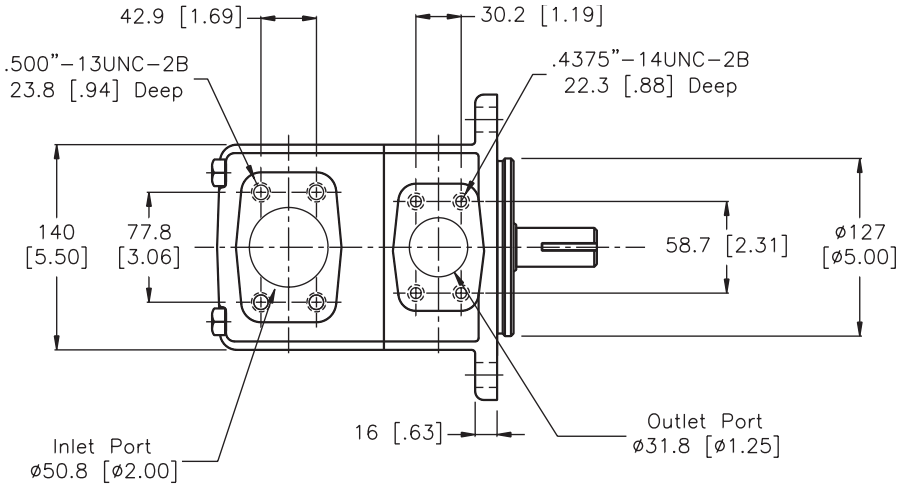
Shaft 1
Keyed Shaft

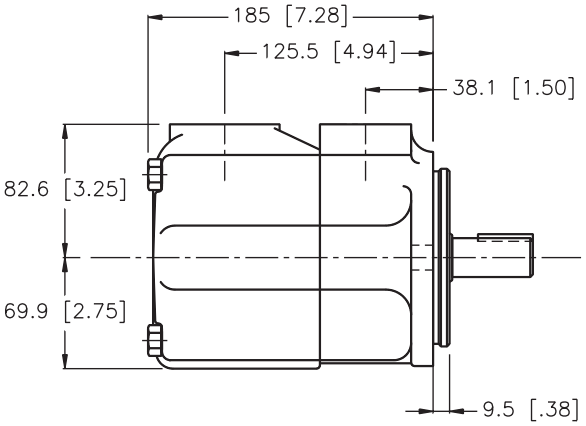


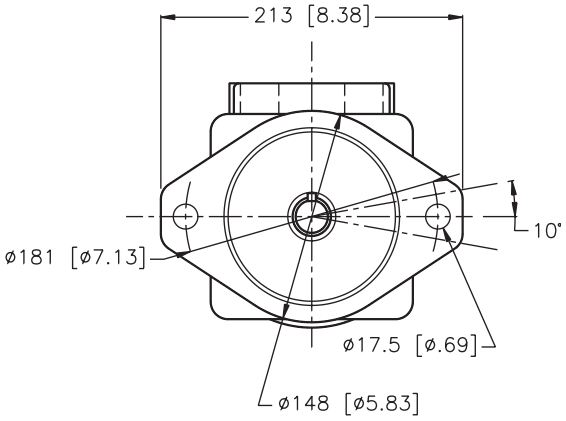
Shaft 11
Splined Shaft

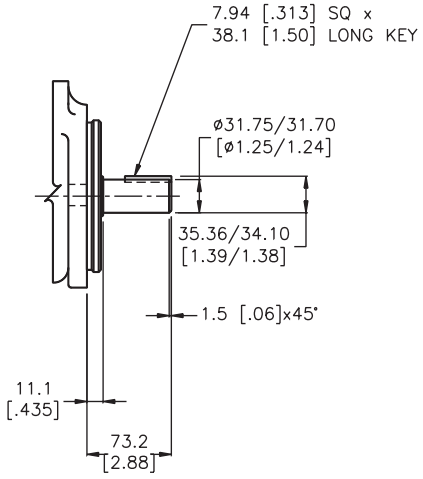


Shaft 86
Keyed Shaft

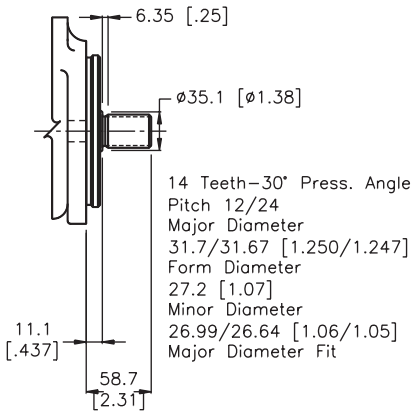




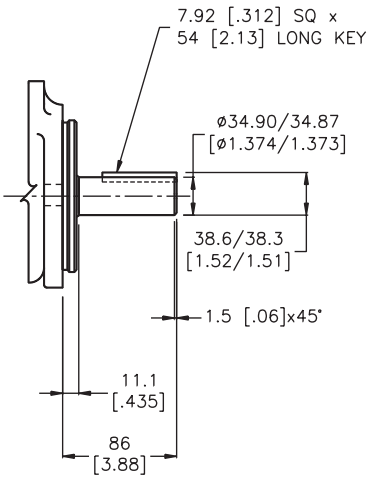




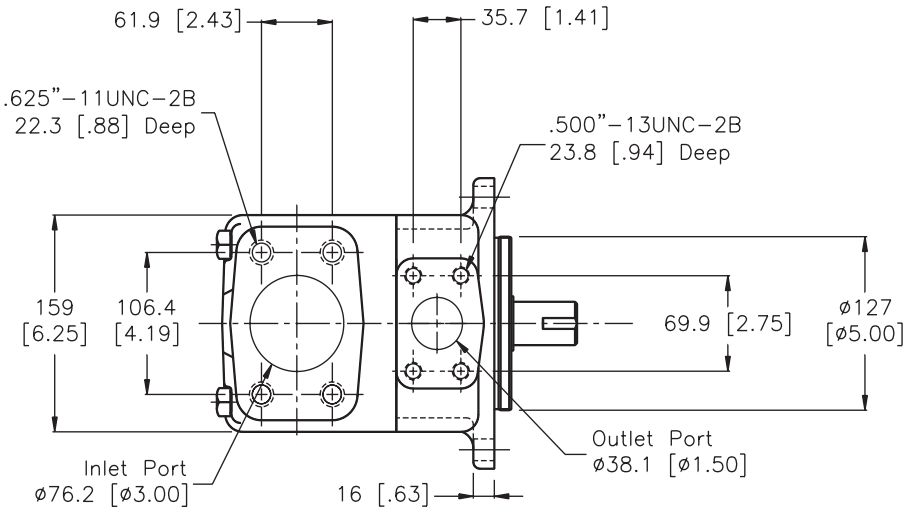
Shaft 1
Keyed Shaft

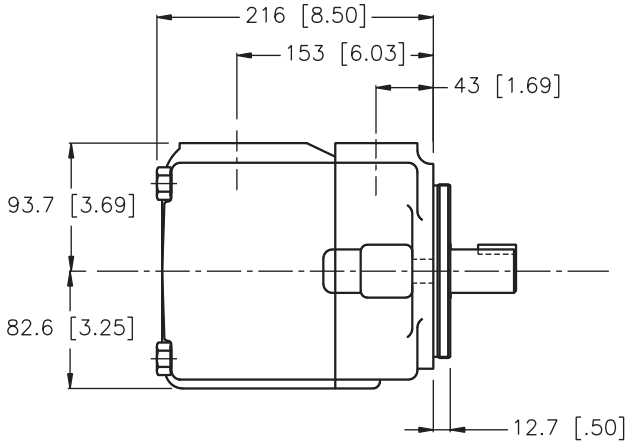


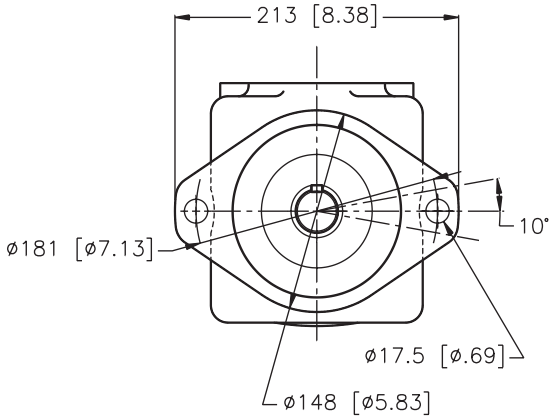
Shaft 11
Splined Shaft

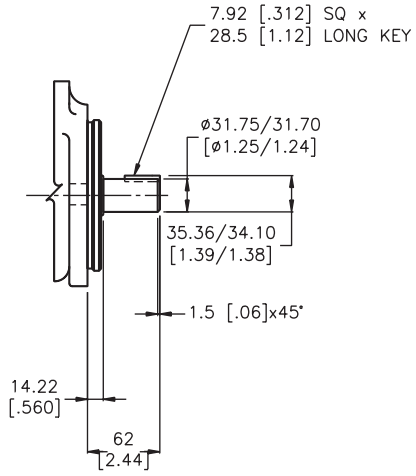


Shaft 86
Keyed Shaft

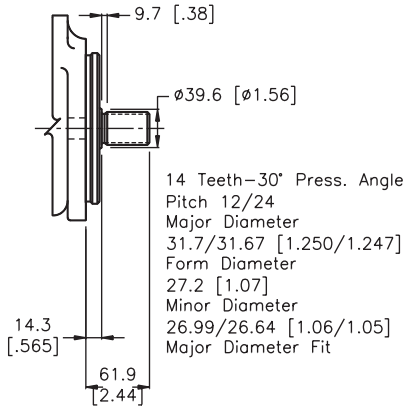




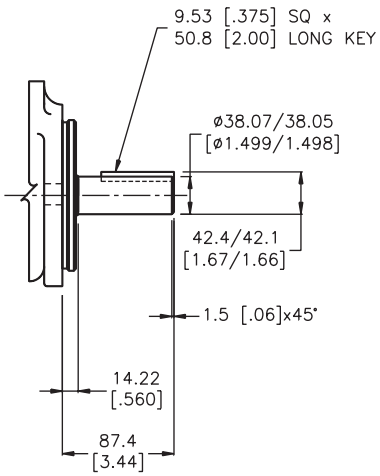




Shaft 1
Keyed Shaft



Shaft 11
Splined Shaft



Shaft 86
Keyed Shaft

2520HVQ - 21A11 - 1 C B L

1 2 3 4 5 6 7 8 9

1 Model
2520, 3520, 4520
3525, 4525, 4535

2 Series
HV - Industrial
HVQ - Mobile

3 Shaft End Pump
Ring Size (USgallon)
25**HV/HVQ - 12, 14, 17, 19, 21
35**HV/HVQ - 21, 25, 30, 35, 38
45**HV/HVQ - 42, 47, 50, 57, 60

4 Port Connection
A - SAE 4-bolt with Inch threads
AM - SAE 4-bolt with Metric threads

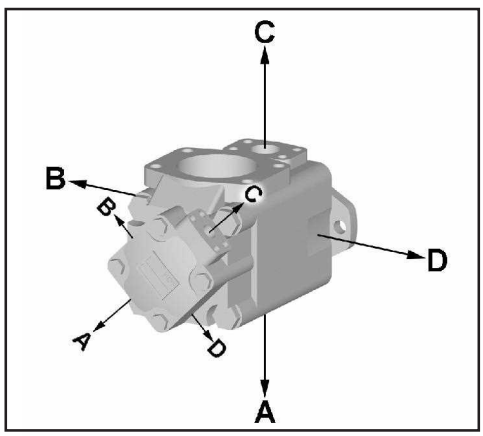
5 Cover End Pump
Ring Size (Usgallon)
**20HV/HVQ - 2, 5, 8, 9, 11, 12, 14
**25HV/HVQ - 12, 14, 17, 19, 21
**35HV/HVQ - 21, 25, 30, 35, 38

6 Shaft
1 - Straight keyed
11 - Splined
86 - Heavy duty straight keyed

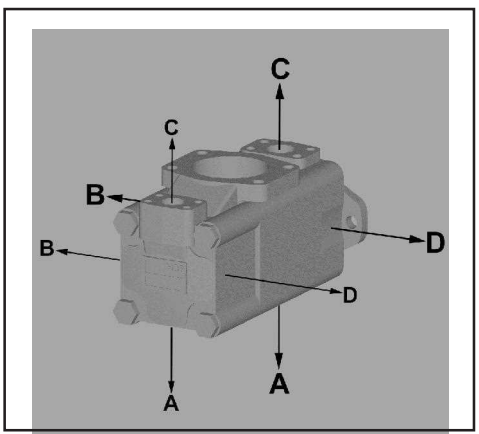
7 Shaft End Outlet Port position
(Viewed from cover end)
A - Opposite inlet
B - 90° CCW from inlet
C - Inline with inlet
D - 90° CW from inlet

8 Cover End Outlet Port position
(Viewed from cover end)
For all models except 4535HV/HVQ
A - 135° CCW from inlet
B - 45° CCW from inlet
C - 45° CW from inlet
D - 135° CW from inlet
For 4535HV/HVQ
A - Opposite inlet
B - 90° CCW from inlet
C - Inline with inlet
D - 90° CW from inlet

9 Shaft Rotation
(Viewed from shaft end)
Omit - Turn right
L - Turn left



Port Positions for 2520HV/HVQ, 3520HV/HVQ
4520HV/HVQ, 3525HV/HVQ, 4525HV/HVQ

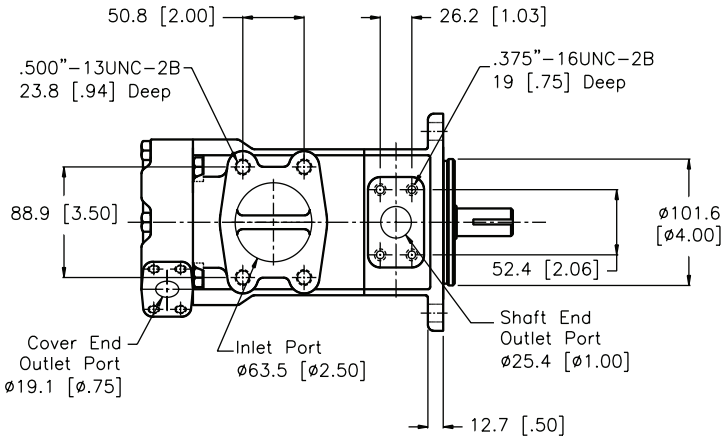


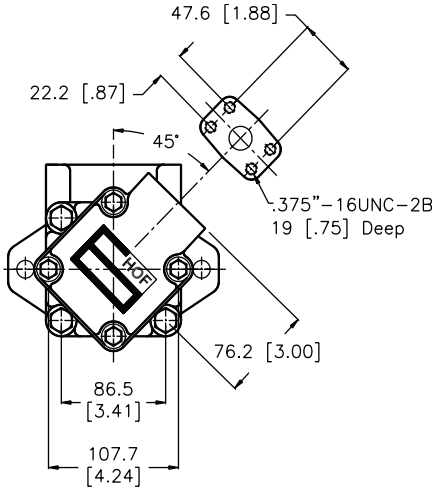
Port Positions for 4535HV/HVQ

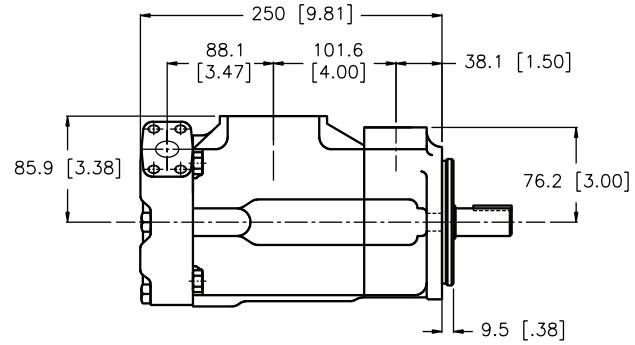
Model	Cartridge Position	Delivery at 1200 rpm & 7 bar (100 psi) USgpm	Displacement cm^3/r (in^3/r)	Maximum Speed rpm	Maximum Pressure bar (psi)	Typical Delivery at max speed & pressure L/min (USgpm)	Typical Input Power at max speed & pressure kW (hp)	Weight kg (lb)
2520HV	Shaft End	12	39 (2.47)	1800	172 (2500)	62.1 (16.4)	22.9 (30.8)	20 (45)
		14	45 (2.78)			69.6 (18.4)	25.7 (34.5)	
		17	55 (3.39)			86.3 (22.8)	29.8 (40.0)	
		19	60.8 (3.72)			91.6 (25.4)	32.5 (43.5)	
		21	67 (4.13)			106.0 (28.0)	34.0 (45.6)	
	Cover End	2	7.0 (0.42)	1800	206 (3000)	11.3 (3.00)	5.2 (7.0)	
		5	18 (1.10)		206 (3000)	28.4 (7.5)	11.2 (15.0)	
		8	27 (1.67)		206 (3000)	45.4 (12.0)	17.0 (22.8)	
		9	30.2 (1.84)		206 (3000)	51.0 (13.5)	23.5 (31.5)	
		11	36 (2.22)		206 (3000)	56.8 (15.0)	22.6 (30.3)	
		12	40 (2.47)		158 (2300)	62.1 (16.4)	25.1 (33.7)	
		14	45 (2.78)		138 (2000)	69.6 (18.4)	28.3 (37.9)	
3520HV	Shaft End	21	68.3 (4.18)	1800	172 (2500)	106.3 (28.1)	33.9 (45.5)	34 (75)
		25	81 (4.94)			124.9 (33.0)	45.5 (61.0)	
		30	97 (5.91)			154.4 (40.8)	54.5 (73.0)	
		35	112 (6.83)			181.7 (48.0)	61.5 (82.4)	
		38	121 (7.37)			193.8 (51.2)	65.9 (88.3)	
	Cover End	2	7.0 (0.42)	1800	206 (3000)	11.3 (3.00)	5.2 (7.0)	
		5	18 (1.10)		206 (3000)	28.4 (7.5)	11.2 (15.0)	
		8	27 (1.67)		206 (3000)	45.4 (12.0)	17.0 (22.8)	
		9	30.2 (1.84)		206 (3000)	51.0 (13.5)	23.5 (31.5)	
		11	36 (2.22)		206 (3000)	56.8 (15.0)	22.6 (30.3)	
		12	40 (2.47)		158 (2300)	62.1 (16.4)	25.1 (33.7)	
		14	45 (2.78)		138 (2000)	69.6 (18.4)	28.3 (37.9)	
3525HV	Shaft End	21	68.3 (4.18)	1800	172 (2500)	106.3 (28.1)	33.9 (45.5)	34.5 (76)
		25	81 (4.94)			124.9 (33.0)	45.5 (61.0)	
		30	97 (5.91)			154.4 (40.8)	54.5 (73.0)	
		35	112 (6.83)			181.7 (48.0)	61.5 (82.4)	
		38	121 (7.37)			193.8 (51.2)	65.9 (88.3)	
	Cover End	12	39 (2.47)	1800	172 (2500)	62.1 (16.4)	22.9 (30.8)	
		14	45 (2.78)			69.6 (18.4)	25.7 (34.5)	
		17	55 (3.39)			86.3 (22.8)	29.8 (40.0)	
		19	68.3 (3.72)			96.1 (25.4)	32.5 (43.5)	
		21	67 (4.13)			106.0 (28.0)	34.0 (45.6)	
4520HV	Shaft End	42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	43 (94)
		47	151.4 (9.26)			244.1 (64.5)	82.5 (110.6)	
		50	162 (9.85)			253.6 (67.0)	87.3 (117.0)	
		57	183.6 (11.23)			295.0 (77.8)	94.0 (126.0)	
		60	193 (11.75)			310.4 (82.0)	103.7 (139.0)	
	Cover End	2	7.0 (0.42)	1800	206 (3000)	11.3 (3.00)	5.2 (7.0)	
		5	18 (1.10)		206 (3000)	28.4 (7.5)	11.2 (15.0)	
		8	27 (1.67)		206 (3000)	45.4 (12.0)	17.0 (22.8)	
		9	30.2 (1.84)		206 (3000)	51.0 (13.5)	23.5 (31.5)	
		11	36 (2.22)		206 (3000)	56.8 (15.0)	22.6 (30.3)	
		12	40 (2.47)		158 (2300)	62.1 (16.4)	25.1 (33.7)	
		14	45 (2.78)		138 (2000)	69.6 (18.4)	28.3 (37.9)	
4525HV	Shaft End	42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	46 (101)
		47	151.4 (9.26)			244.1 (64.5)	82.5 (110.6)	
		50	162 (9.85)			253.6 (67.0)	87.3 (117.0)	
		57	183.6 (11.23)			295.0 (77.8)	94.0 (126.0)	
		60	193 (11.75)			310.4 (82.0)	103.7 (139.0)	
	Cover End	12	39 (2.47)	1800	172 (2500)	62.1 (16.4)	22.9 (30.8)	
		14	45 (2.78)			69.6 (18.4)	25.7 (34.5)	
		17	55 (3.39)			86.3 (22.8)	29.8 (40.0)	
		19	60.8 (3.72)			96.1 (25.4)	32.5 (43.5)	
		21	67 (4.13)			106.0 (28.0)	34.0 (45.6)	
4535HV	Shaft End	42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	54 (118)
		47	151.4 (9.26)			244.1 (64.5)	82.5 (110.6)	
		50	162 (9.85)			253.6 (67.0)	87.3 (117.0)	
		57	183.6 (11.23)			295.0 (77.8)	94.0 (126.0)	
		60	193 (11.75)			310.4 (82.0)	103.7 (139.0)	
	Cover End	21	68.3 (4.18)	1800	172 (2500)	106.3 (28.1)	33.9 (45.5)	
		25	81 (4.94)			124.9 (33.0)	45.5 (61.0)	
		30	97 (5.91)			154.4 (40.8)	54.5 (73.0)	
		35	112 (6.83)			181.7 (48.0)	61.5 (82.4)	
		38	121 (7.37)			193.8 (51.2)	65.9 (88.3)	

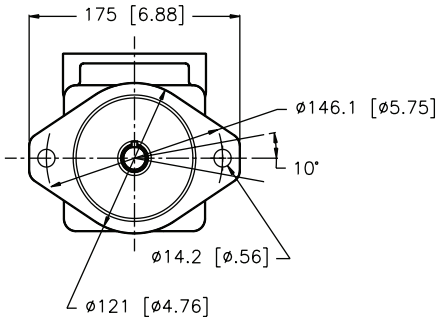
Model	Cartridge Position	Delivery at 1200 rpm & 7 bar (100 psi) USgpm	Displacement cm^3/r (in^3/r)	Maximum Speed rpm	Maximum Pressure bar (psi)	Typical Delivery at max speed & pressure L/min (USgpm)	Typical Input Power at max speed & pressure kW (hp)	Weight kg (lb)
2520HVQ	Shaft End	12	40 (2.45)	2500	206 (3000)	87.1 (23.0)	41.0 (55.0)	20 (45)
		14	45 (2.77)			102.2 (27.0)	46.6 (62.5)	
		17	55 (3.37)			117.3 (31.0)	51.8 (69.5)	
		19	60.8 (3.72)			130.5 (34.50)	53.0 (71.0)	
		21	67 (4.12)			143.8 (38.0)	61.9 (83.0)	
	Cover End	2	7.0 (0.42)	2700	206 (3000)	15.9 (4.2)	7.3 (9.8)	
		5	18 (1.10)		206 (3000)	37.9 (10.0)	16.4 (22.0)	
		8	27 (1.67)		206 (3000)	60.6 (16.0)	24.2 (32.5)	
		9	30.2 (1.84)		206 (3000)	71.5 (18.9)	32.9 (44.1)	
		11	36 (2.22)		206 (3000)	79.5 (21.0)	32.8 (44.0)	
		12	39 (2.41)		158 (2300)	88.9 (23.5)	26.1 (35.0)	
		14	45 (2.80)		138 (2000)	104.1 (27.5)	26.9 (36.0)	
3520HVQ	Shaft End	21	68.3 (4.18)	2500	206 (3000)	143.8 (38.0)	55.0 (73.9)	34 (75)
		25	81 (4.98)			145.7 (38.5)	66.4 (89.0)	
		30	97 (5.96)			177.9 (47.0)	77.6 (104.0)	
		35	112 (6.88)			208.2 (55.0)	89.5 (120.0)	
		38	121 (7.42)			223.3 (59.0)	97.0 (130.0)	
	Cover End	2	7.0 (0.42)	2500	206 (3000)	15.0 (4.0)	6.1 (8.2)	
		5	18 (1.10)		206 (3000)	37.9 (10.0)	16.4 (22.0)	
		8	27 (1.67)		206 (3000)	60.6 (16.0)	24.2 (32.5)	
		9	30.2 (1.84)		206 (3000)	67.8 (17.9)	27.5 (36.8)	
		11	36 (2.22)		206 (3000)	79.5 (21.0)	32.8 (44.0)	
		12	39 (2.41)		158 (2300)	88.9 (23.5)	26.1 (35.0)	
		14	45 (2.80)		138 (2000)	104.1 (27.5)	26.9 (36.0)	
3525HVQ	Shaft End	21	68.3 (4.18)	2500	206 (3000)	143.8 (38.0)	55.0 (73.9)	34.5 (76)
		25	81 (4.98)			145.7 (38.5)	66.4 (89.0)	
		30	97 (5.96)			177.9 (47.0)	77.6 (104.0)	
		35	112 (6.88)			208.2 (55.0)	89.5 (120.0)	
		38	121 (7.42)			223.3 (59.0)	97.0 (130.0)	
	Cover End	12	40 (2.45)	2500	206 (3000)	79.5 (21.0)	38.0 (51.0)	
		14	45 (2.77)			90.8 (24.0)	43.3 (58.0)	
		17	55 (3.37)			117.3 (31.0)	51.5 (69.0)	
		19	60.8 (3.72)			130.5 (34.50)	53.0 (71.0)	
		21	67 (4.12)			143.8 (38.0)	61.9 (83.0)	
4520HVQ	Shaft End	42	138 (8.46)	2200	172 (2500)	251.7 (66.5)	91.4 (122.5)	43 (94)
		47	151.4 (9.26)			280.8 (74.2)	95.0 (127.3)	
		50	162 (9.90)			299.0 (79.0)	105.2 (141.0)	
		57	183.6 (11.23)			342.5 (90.5)	109.3 (146.6)	
		60	193 (11.80)			363.4 (96.0)	126.8 (170.0)	
	Cover End	2	7.0 (0.42)	2200	206 (3000)	13.6 (3.6)	5.6 (7.5)	
		5	18 (1.10)		206 (3000)	32.2 (8.5)	14.5 (19.5)	
		8	27 (1.67)		206 (3000)	51.1 (13.5)	21.3 (28.5)	
		9	30.2 (1.84)		206 (3000)	59.7 (15.7)	24.2 (32.5)	
		11	36 (2.22)		206 (3000)	68.1 (18.0)	28.7 (38.5)	
		12	39 (2.41)		158 (2300)	77.6 (20.5)	23.1 (31.0)	
		14	45 (2.80)		138 (2000)	90.8 (24.0)	23.9 (32.0)	
4525HVQ	Shaft End	42	138 (8.46)	2200	172 (2500)	251.7 (66.5)	91.4 (122.5)	46 (101)
		47	151.4 (9.26)			280.8 (74.2)	95.0 (127.3)	
		50	162 (9.90)			299.0 (79.0)	105.2 (141.0)	
		57	183.6 (11.23)			342.5 (90.5)	109.3 (146.6)	
		60	193 (11.80)			363.4 (96.0)	126.8 (170.0)	
	Cover End	12	40 (2.45)	2200	206 (3000)	68.1 (18.0)	32.8 (44.0)	
		14	45 (2.77)			79.5 (21.0)	38.0 (51.0)	
		17	55 (3.37)			100.3 (26.5)	45.5 (61.0)	
		19	60.8 (3.72)			120.6 (31.8)	48.8 (69.5)	
		21	67 (4.12)			124.9 (33.0)	54.5 (73.0)	
4535HVQ	Shaft End	42	138 (8.46)	2200	172 (2500)	251.7 (66.5)	91.4 (122.5)	54 (118)
		47	151.4 (9.26)			280.8 (74.2)	95.0 (127.3)	
		50	162 (9.90)			299.0 (79.0)	105.2 (141.0)	
		57	183.6 (11.23)			342.5 (90.5)	109.3 (146.6)	
		60	193 (11.80)			363.4 (96.0)	126.8 (170.0)	
	Cover End	21	68.3 (4.18)	2200	206 (3000)	128 (33.8)	51.9 (69.5)	
		25	81 (4.98)			145.7 (38.5)	66.4 (89.0)	
		30	97 (5.96)			177.9 (47.0)	77.6 (104.0)	
		35	112 (6.88)			208.2 (55.0)	89.5 (120.0)	
		38	121 (7.42)			223.3 (59.0)	97.0 (130.0)	

2520HV/HVQ *for shaft, see 25HV/HVQ*

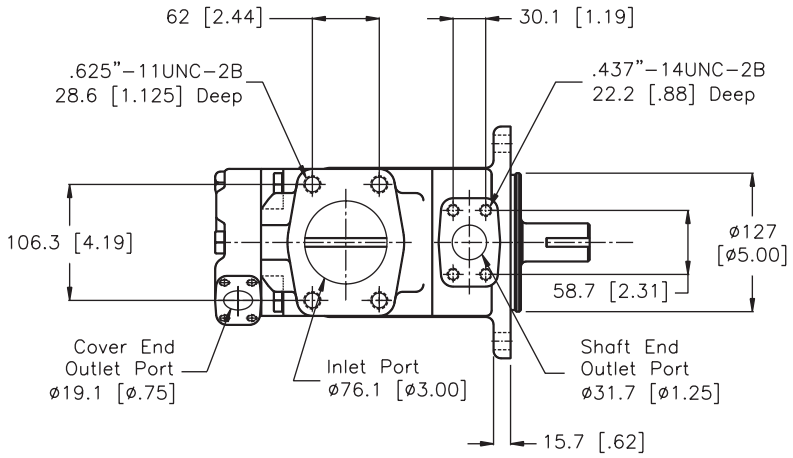


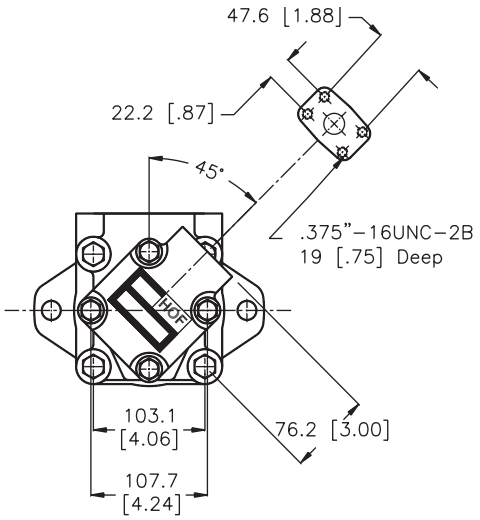


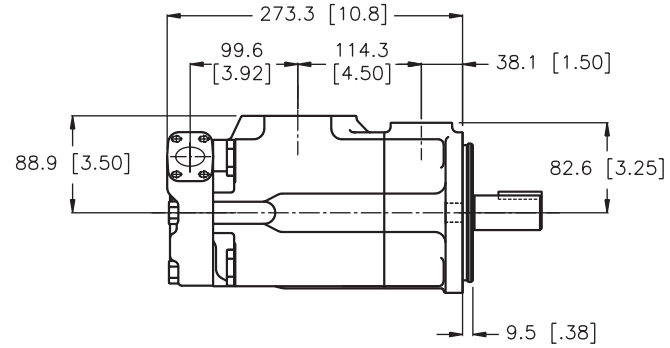


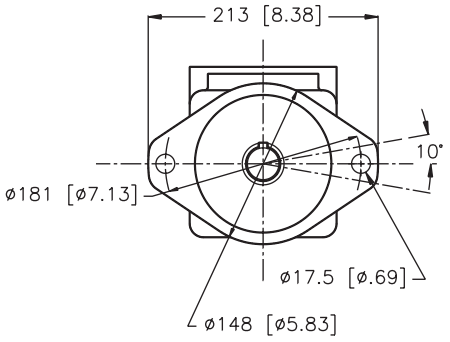


3520HV/HVQ *for shaft, see 35HV/HVQ*

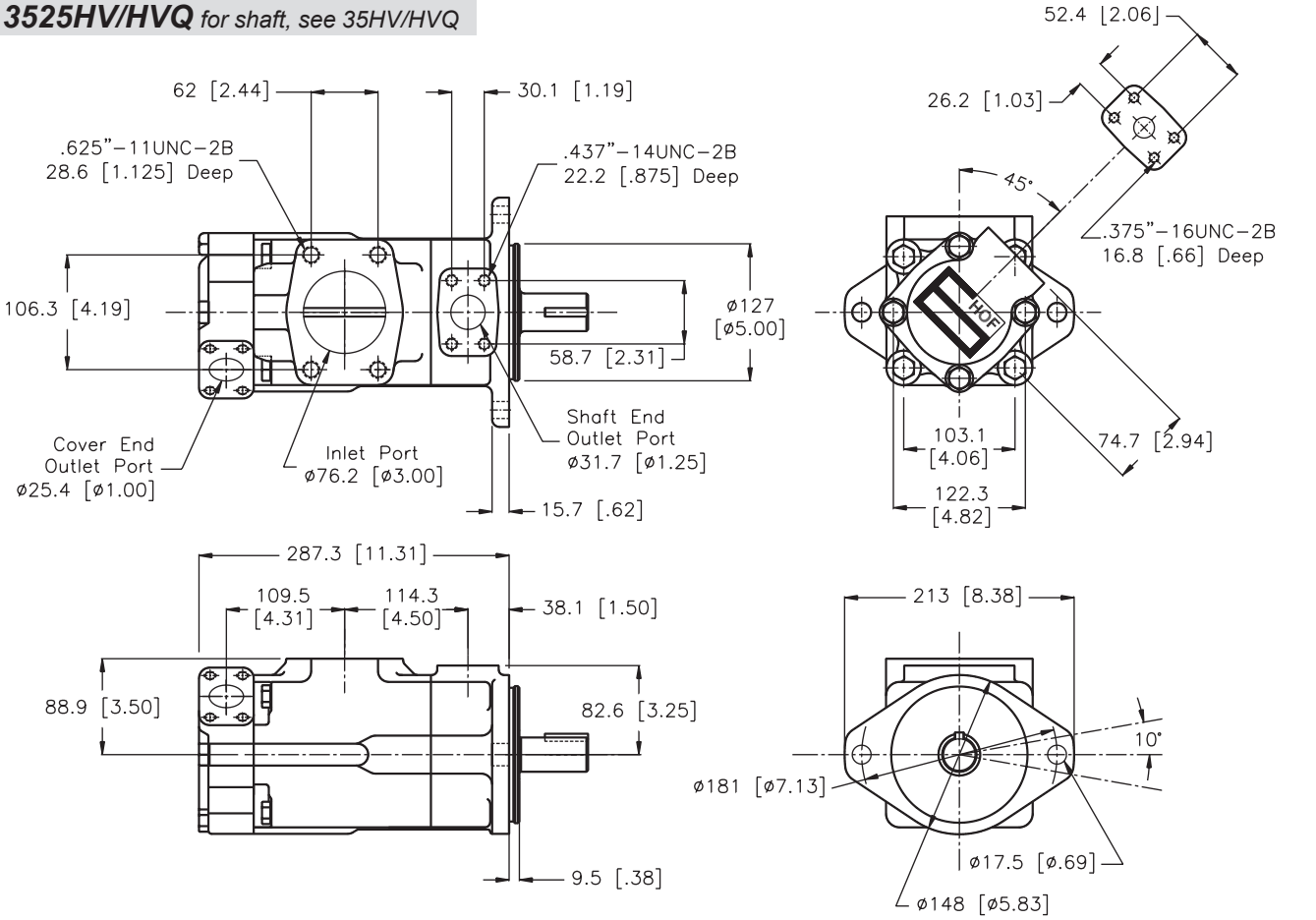




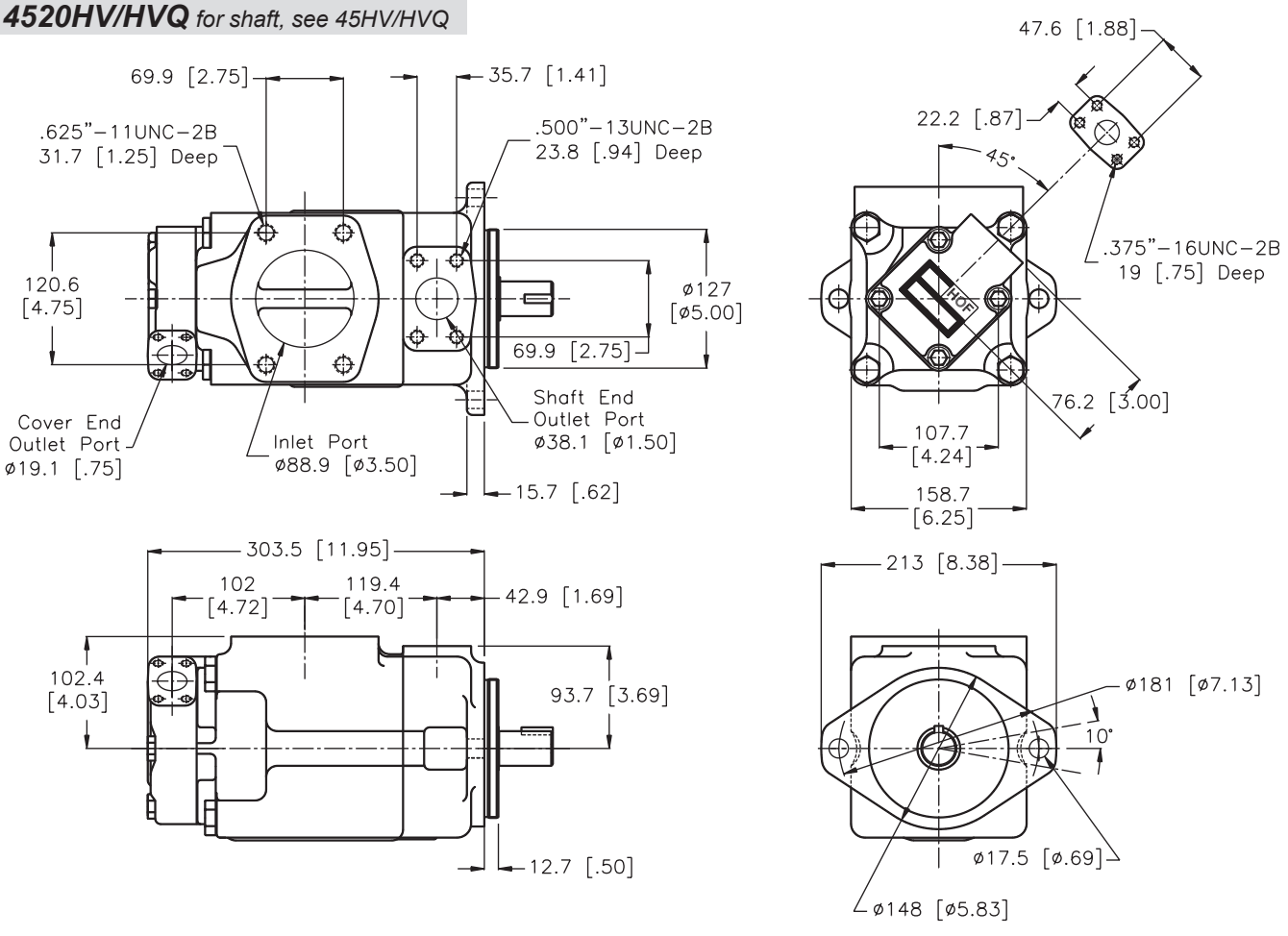




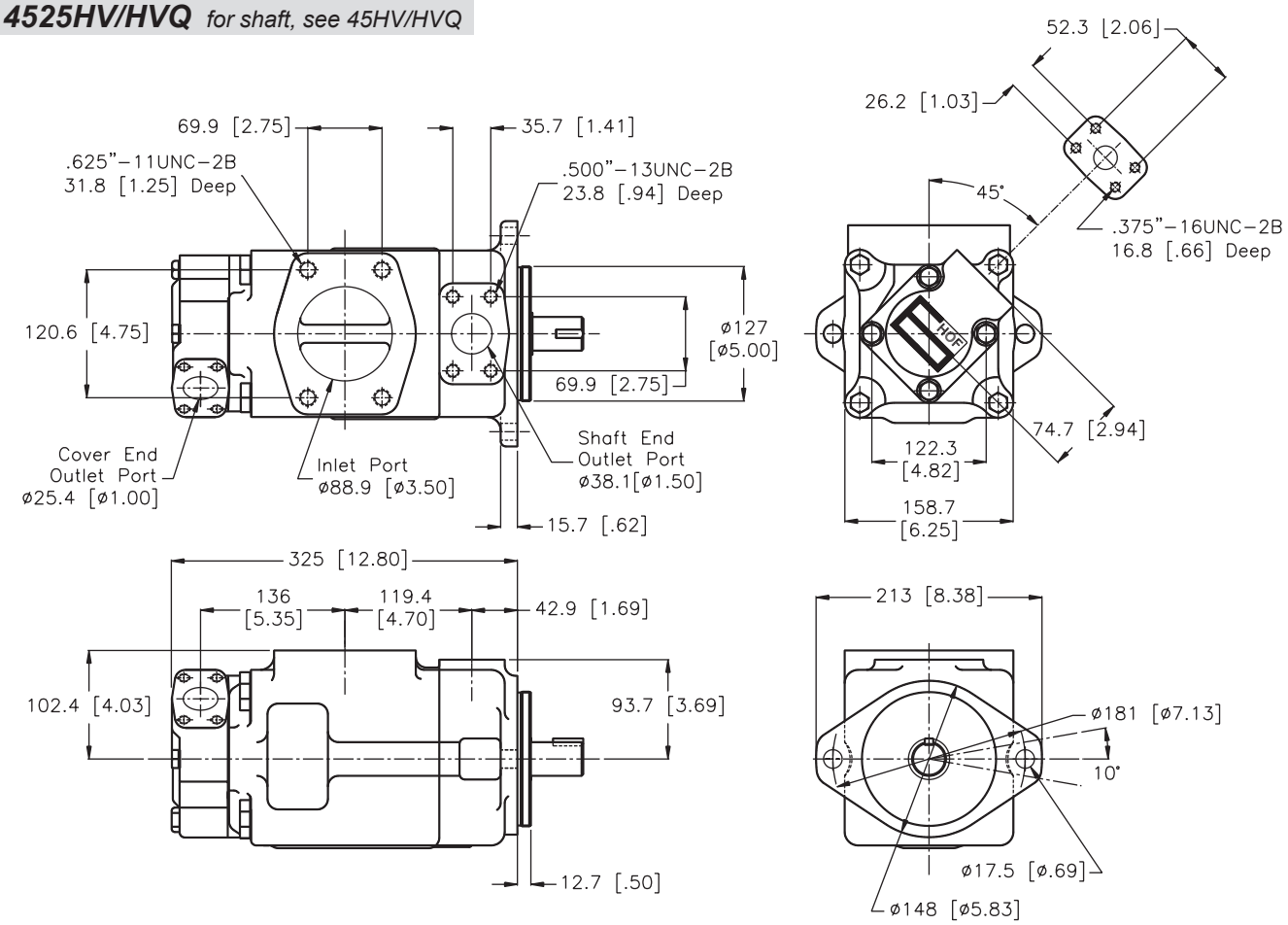
3525HV/HVQ *for shaft, see 35HV/HVQ*



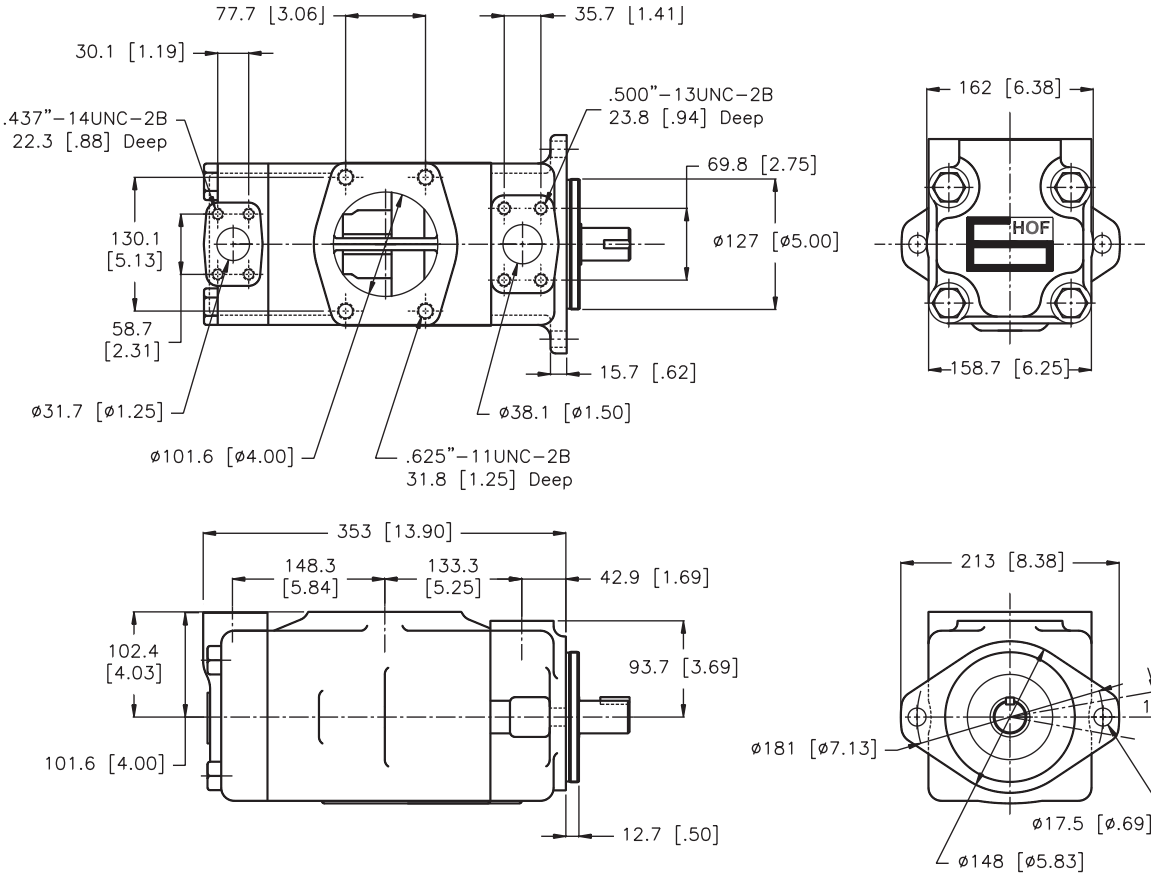
4520HV/HVQ *for shaft, see 45HV/HVQ*



4525HV/HVQ *for shaft, see 45HV/HVQ*

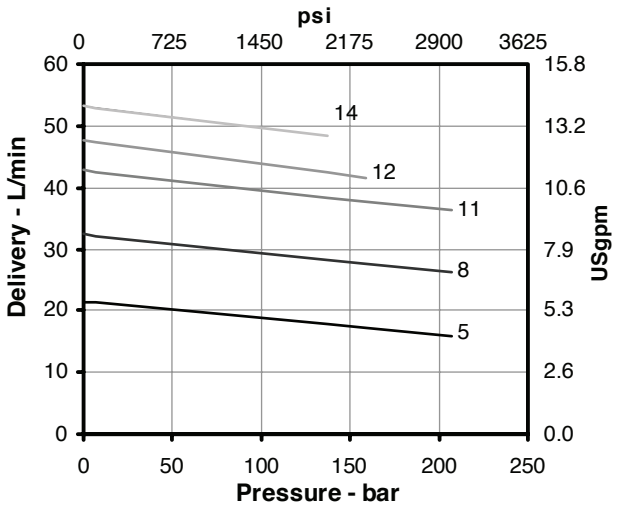


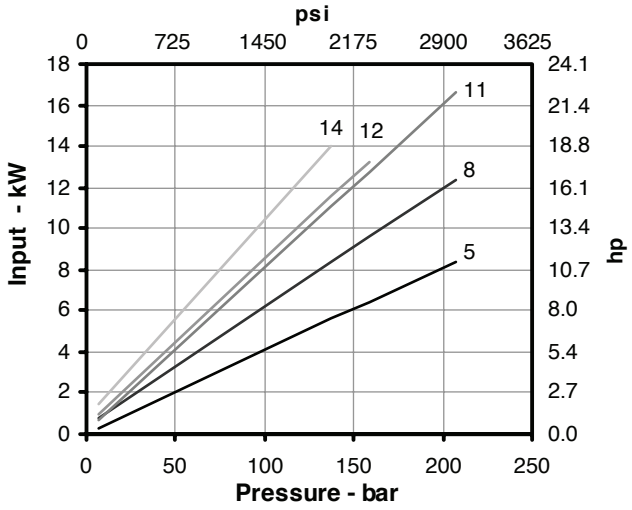
4535HV/HVQ *for shaft, see 45HV/HVQ*



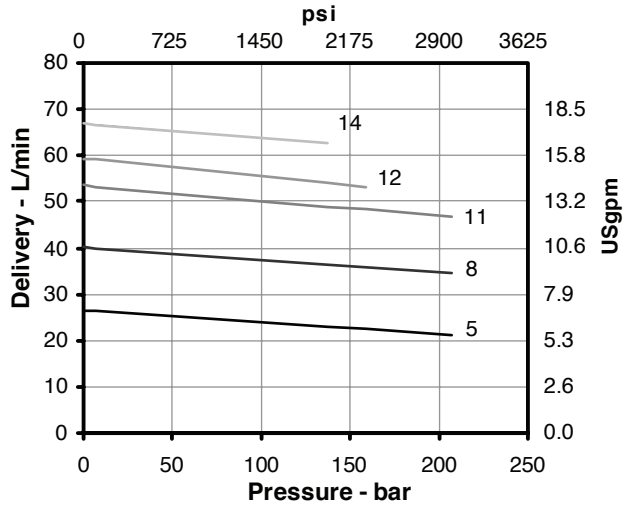
Based on SAE 10W Fluid at 50 °C (120 °F) and Pump inlet at 0 PSIG (14.7 PSIA)

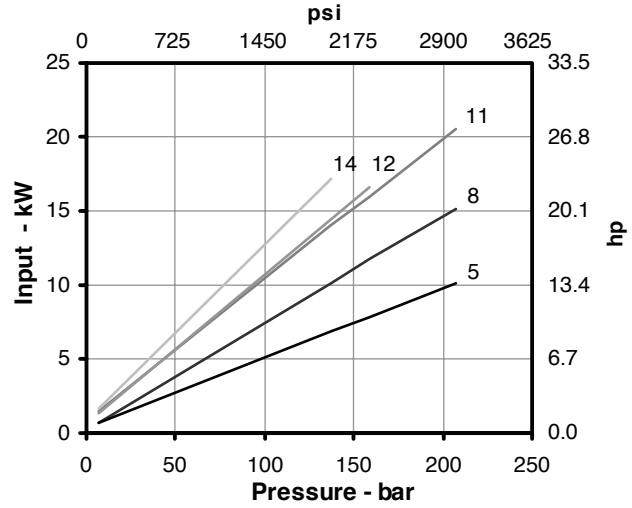
At 1200 rpm



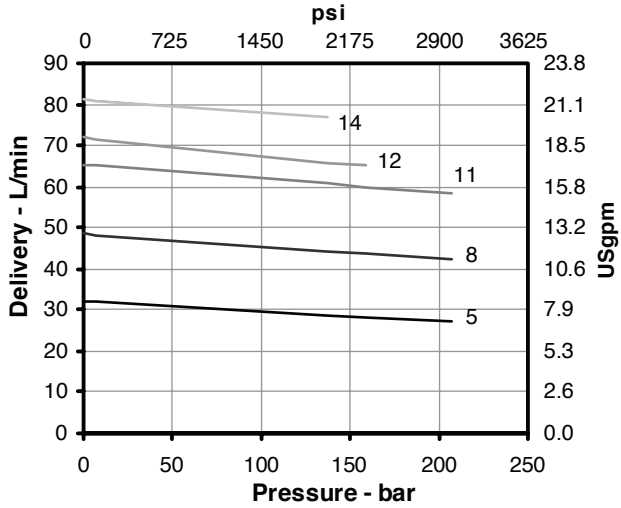


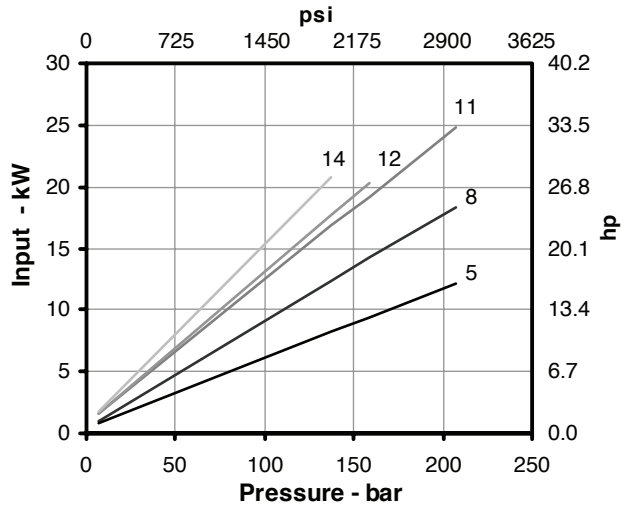
At 1500 rpm





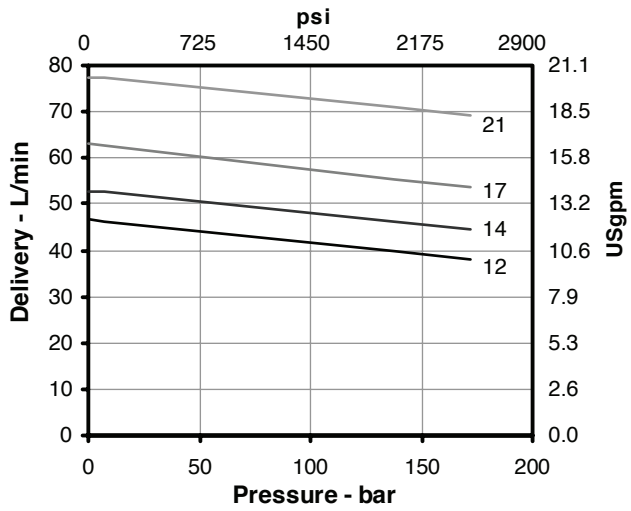
At 1800 rpm

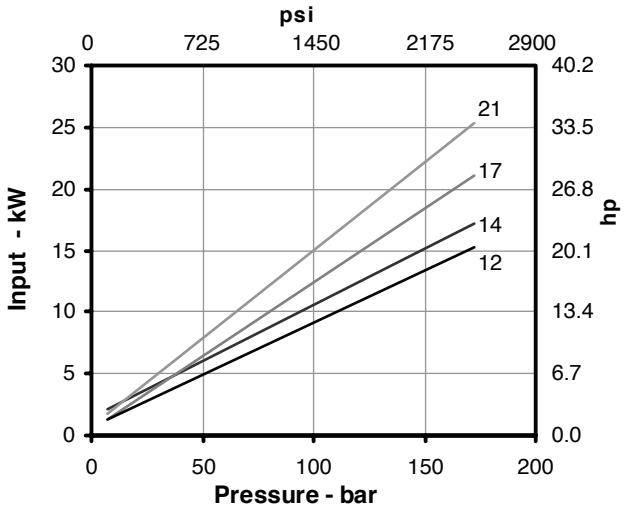




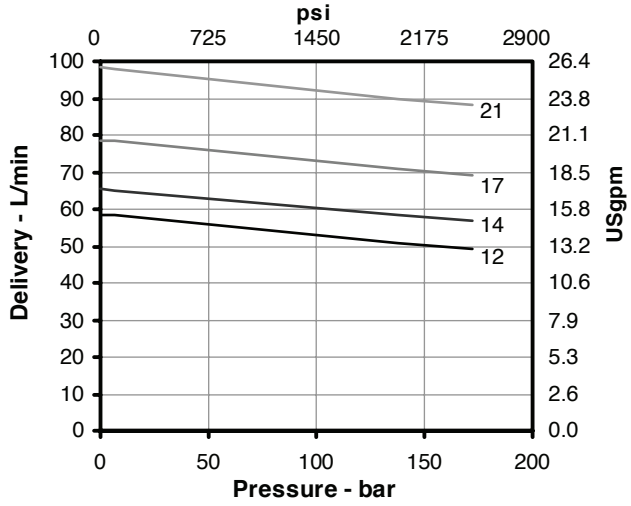
Based on SAE 10W Fluid at 50 °C (120 °F) and Pump inlet at 0 PSIG (14.7 PSIA)

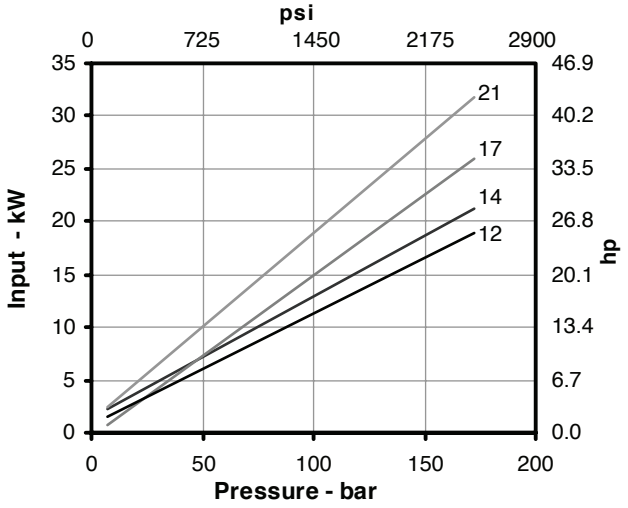
At 1200 rpm



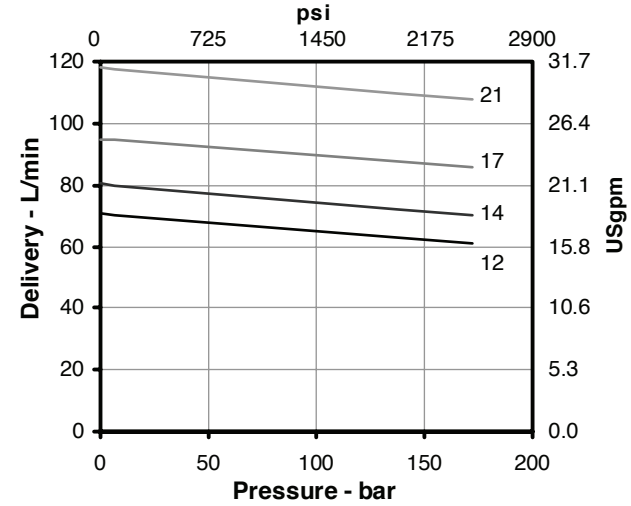


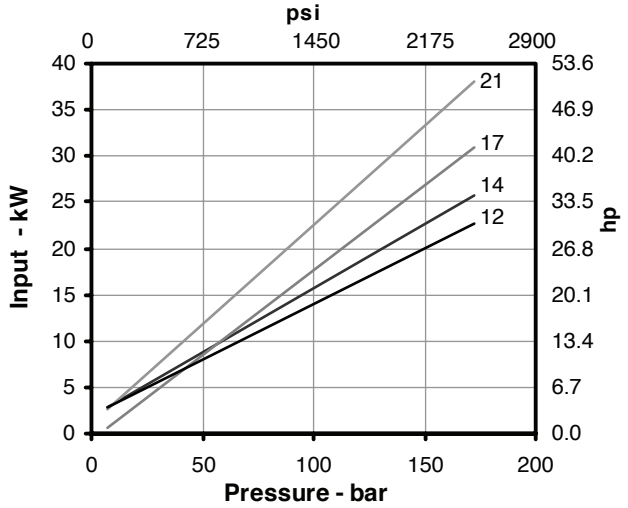
At 1500 rpm





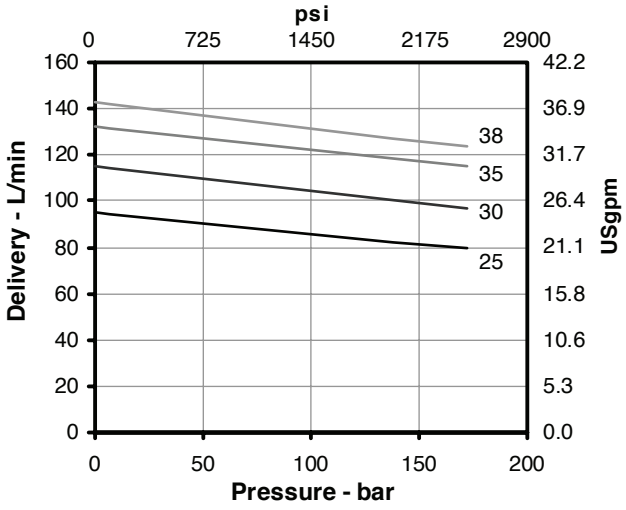
At 1800 rpm

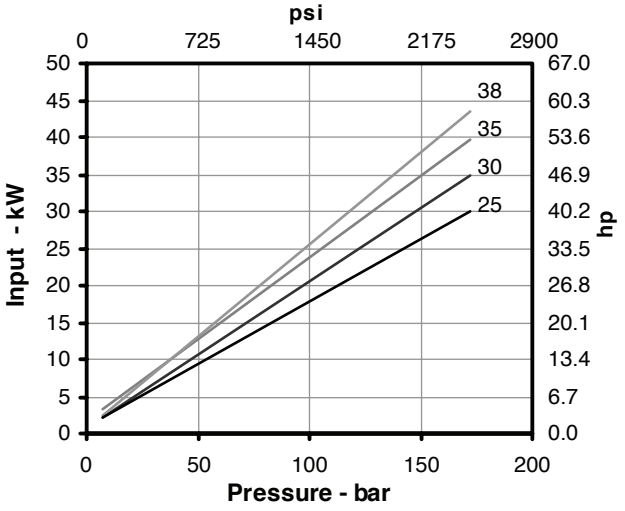




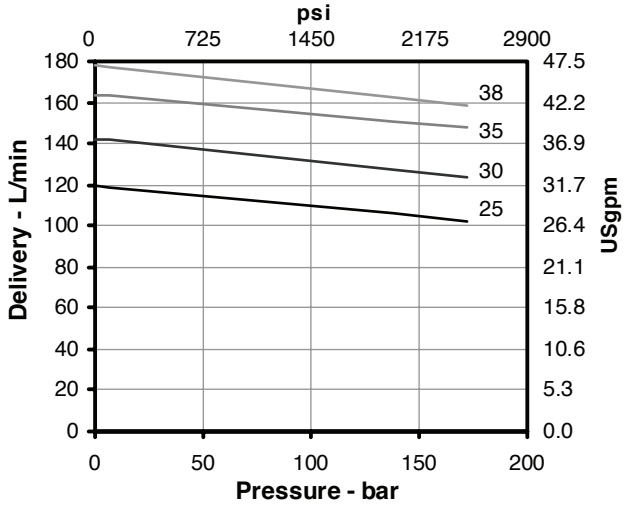
Based on SAE 10W Fluid at 50 °C (120 °F) and Pump inlet at 0 PSIG (14.7 PSIA)

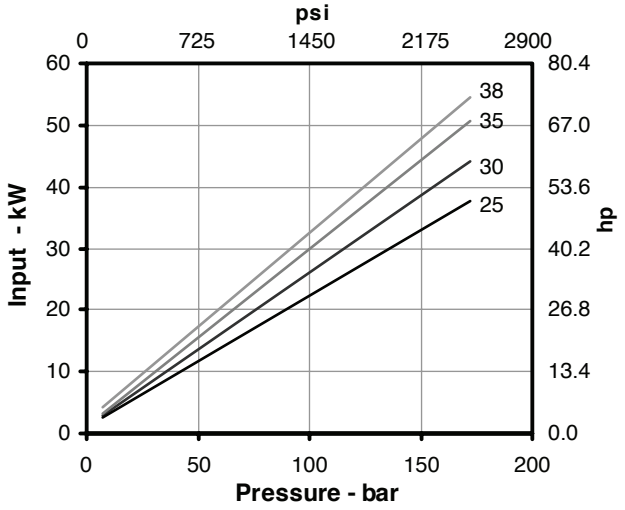
At 1200 rpm



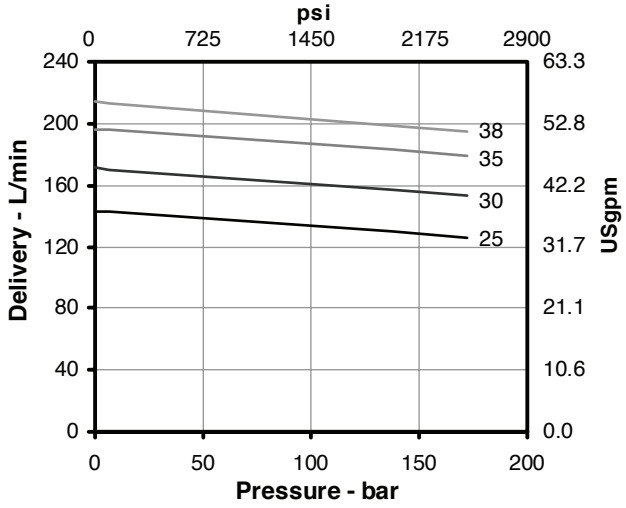


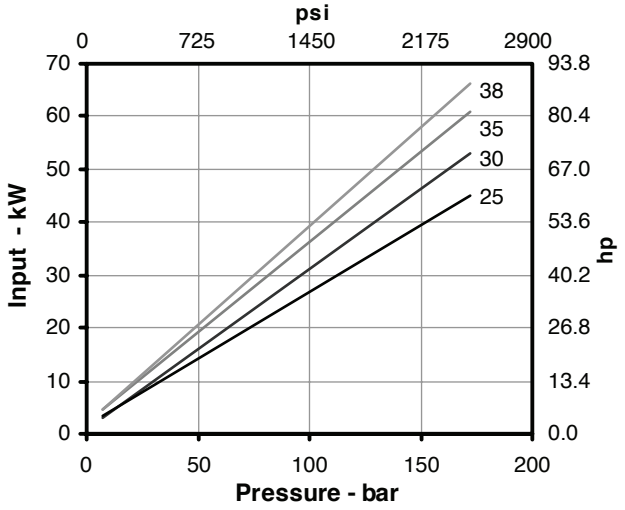
At 1500 rpm





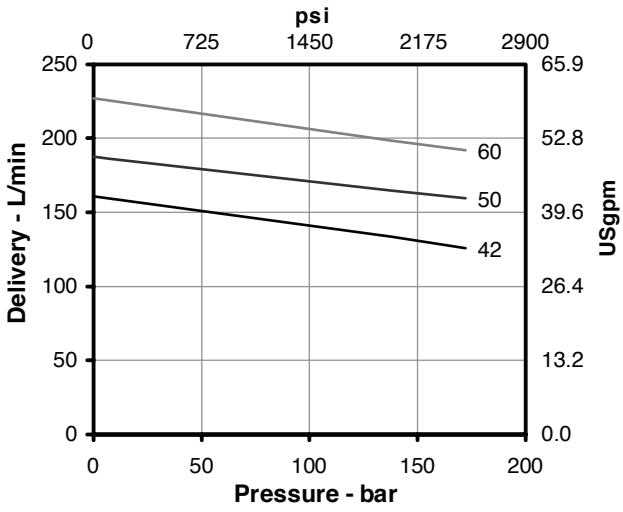
At 1800 rpm

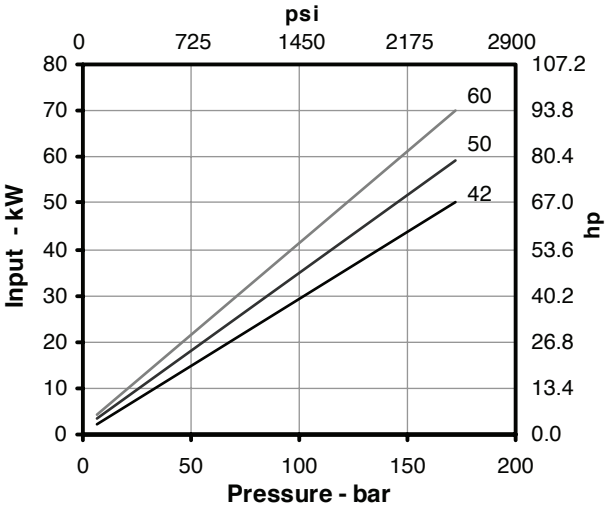




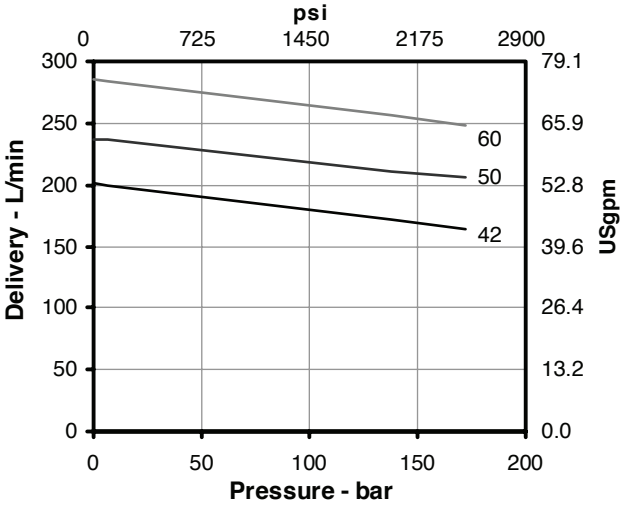
Based on SAE 10W Fluid at 50 °C (120 °F) and Pump inlet at 0 PSIG (14.7 PSIA)

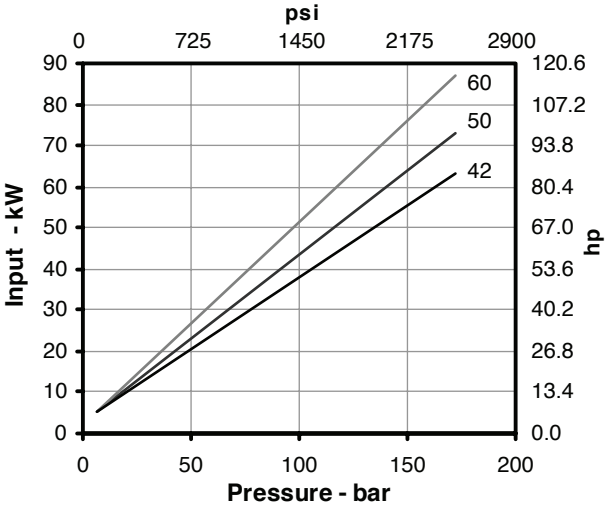
At 1200 rpm



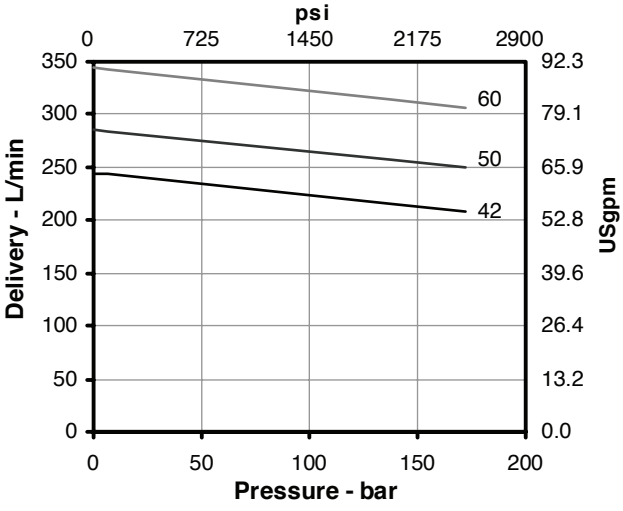


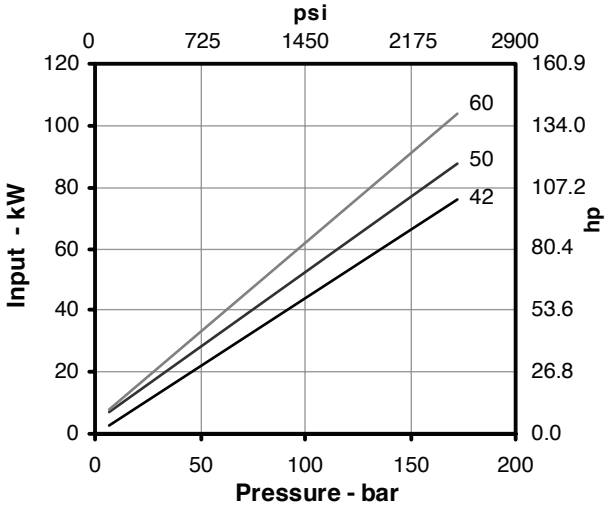
At 1500 rpm





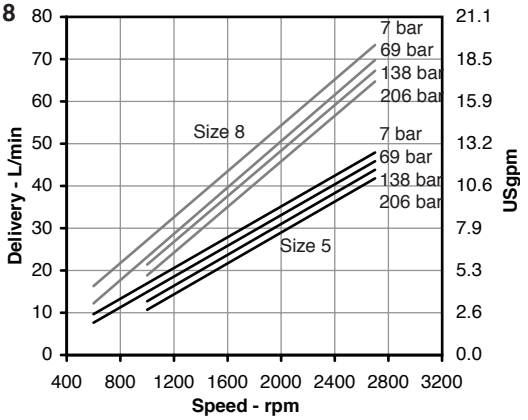
At 1800 rpm

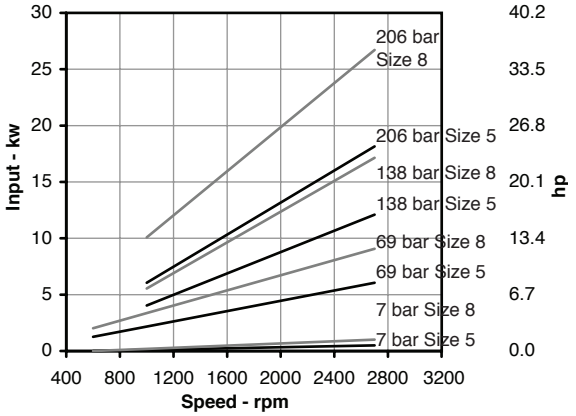




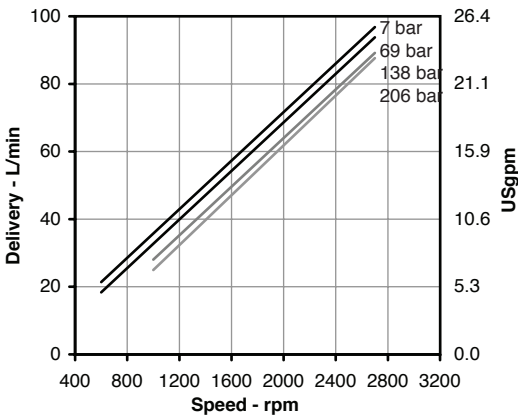
Based on SAE 10W Fluid at 82 °C (180 °F) and Pump inlet at 0 PSIG (14.7 PSIA)

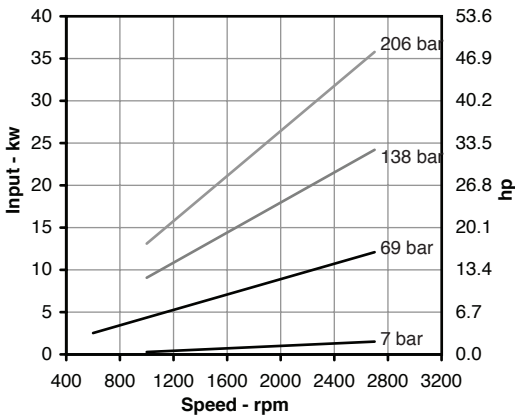
Size 5, 8



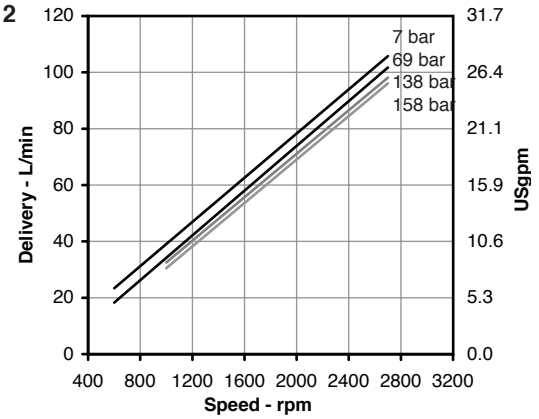


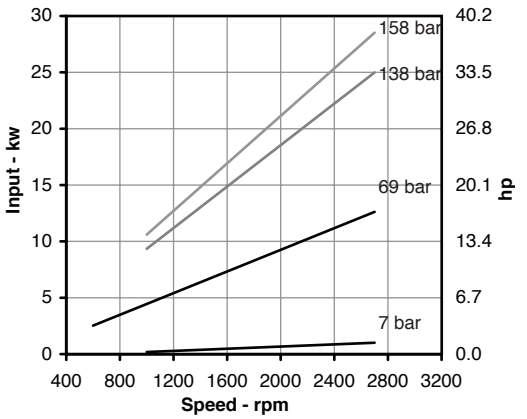
Size 11



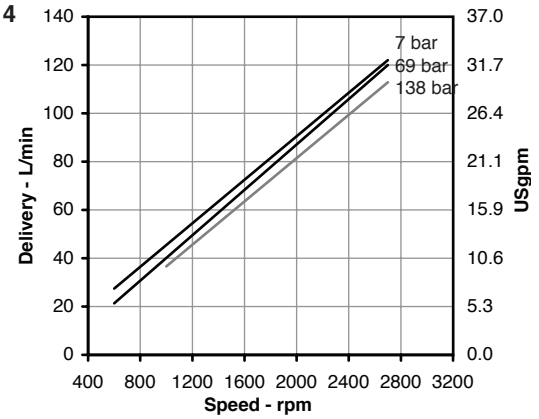


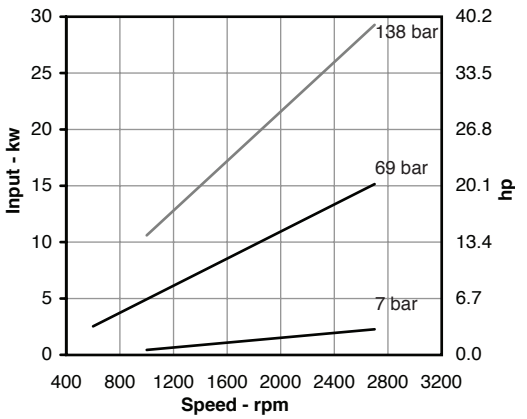
Size 12





Size 14

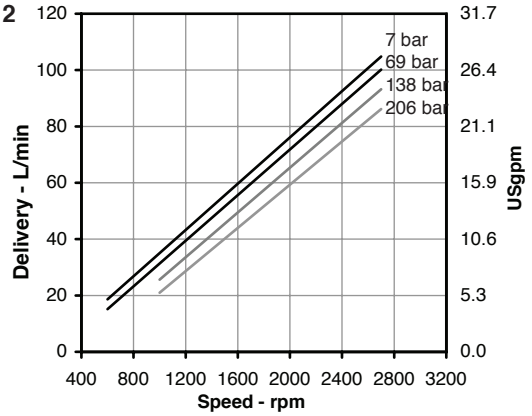


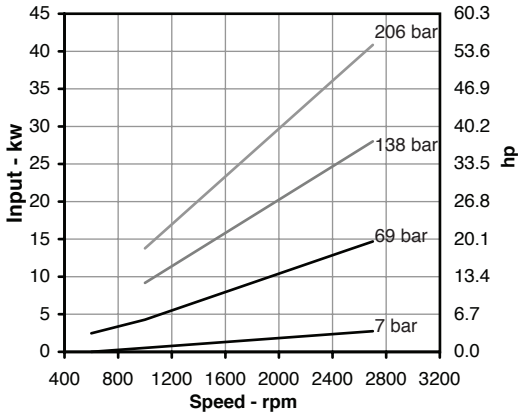


For the Cover End Cartridge, the speed could not exceed the maximum speed of the Shaft End Cartridge.

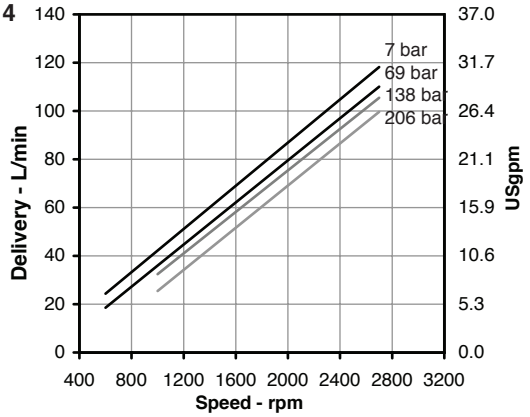
Based on SAE 10W Fluid at 82 ºC (180 ºF) and Pump inlet at 0 PSIG (14.7 PSIA)

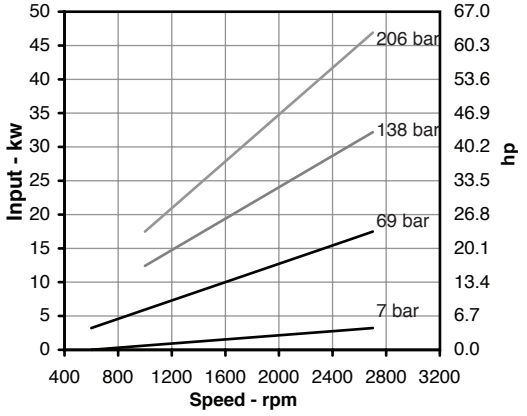
Size 12



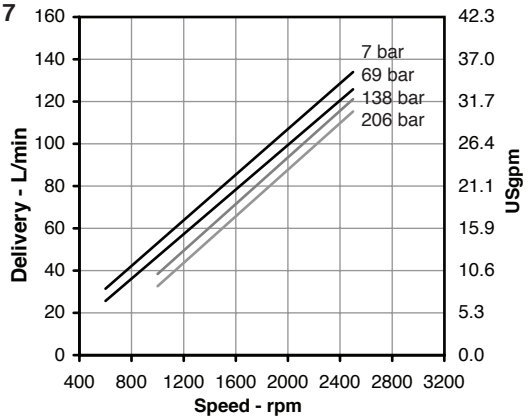


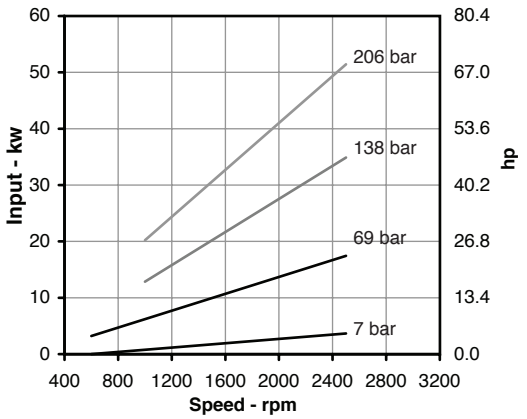
Size 14



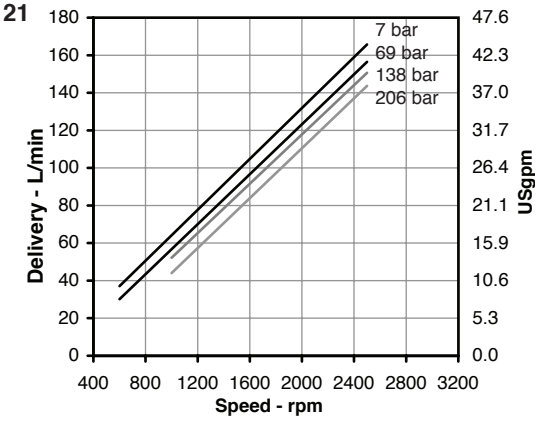


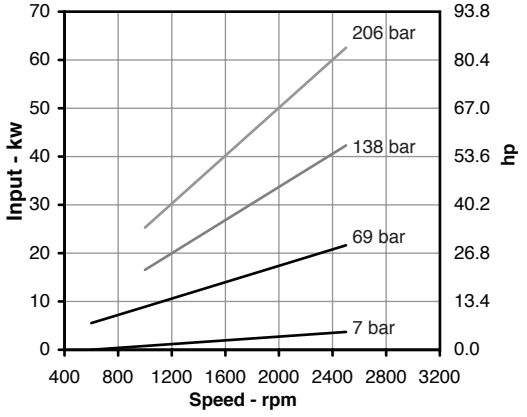
Size 17





Size 21

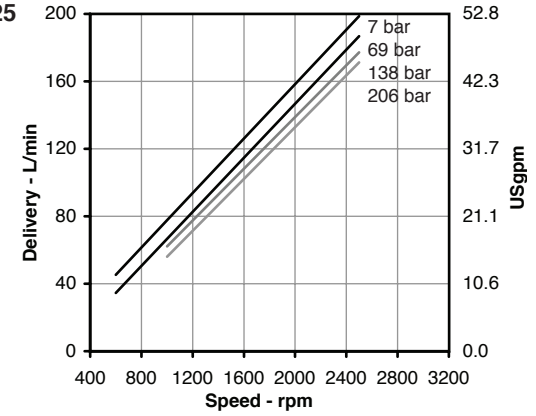


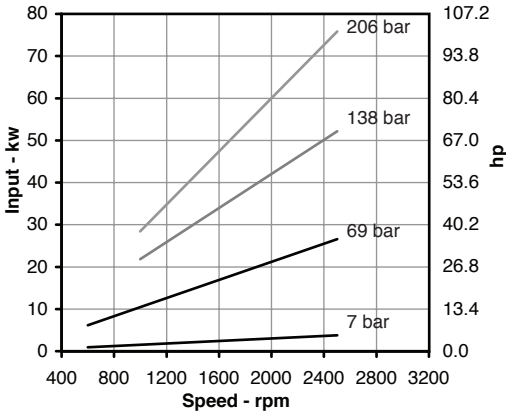


For the Cover End Cartridge, the speed could not exceed the maximum speed of the Shaft End Cartridge.

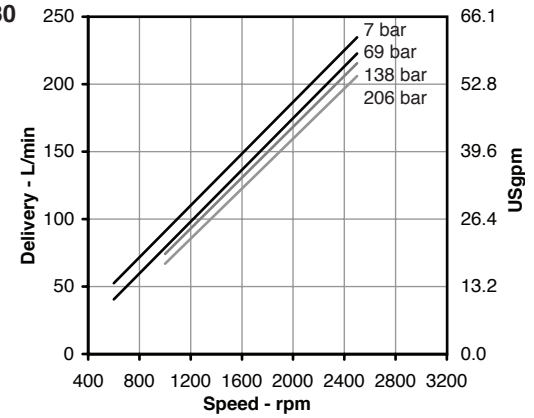
Based on SAE 10W Fluid at 82 °C (180 °F) and Pump inlet at 0 PSIG (14.7 PSIA)

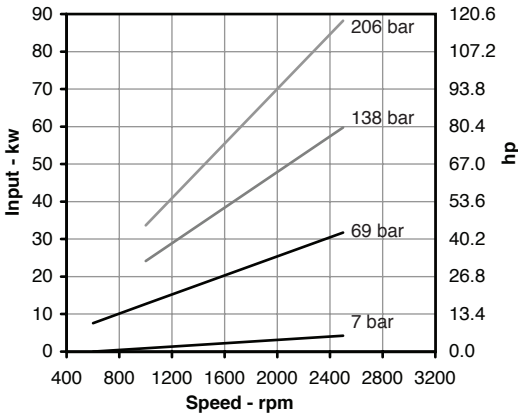
Size 25



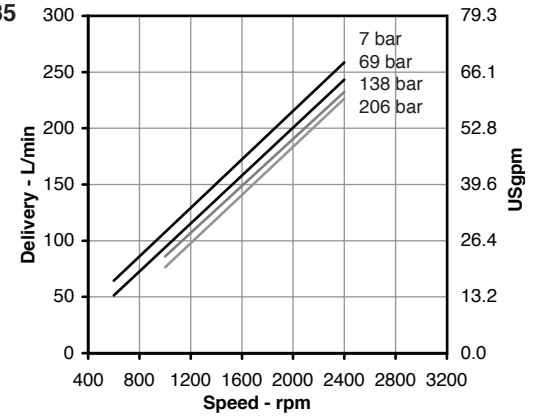


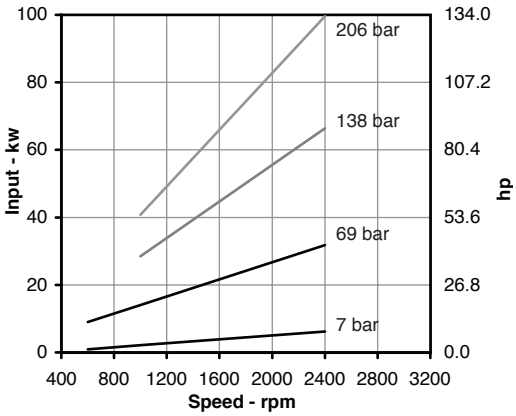
Size 30



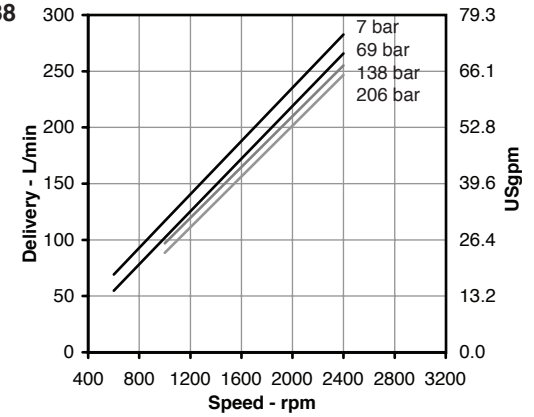


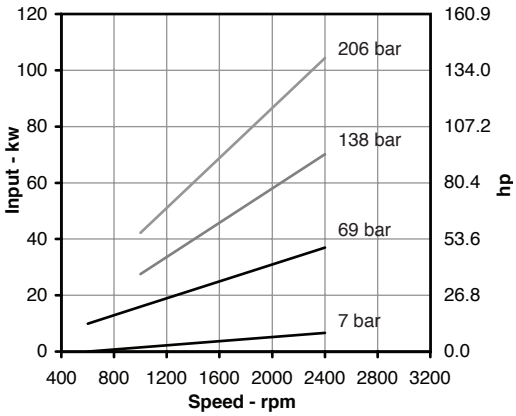
Size 35





Size 38

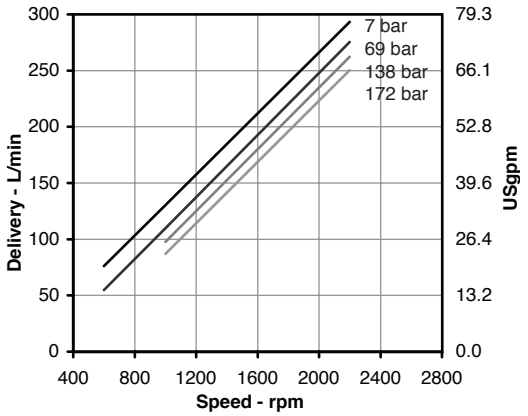


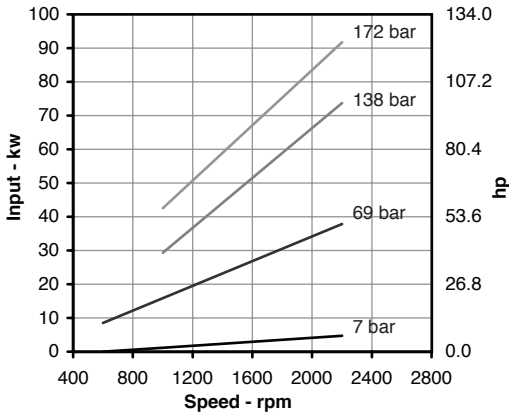


For the Cover End Cartridge, the speed could not exceed the maximum speed of the Shaft End Cartridge.

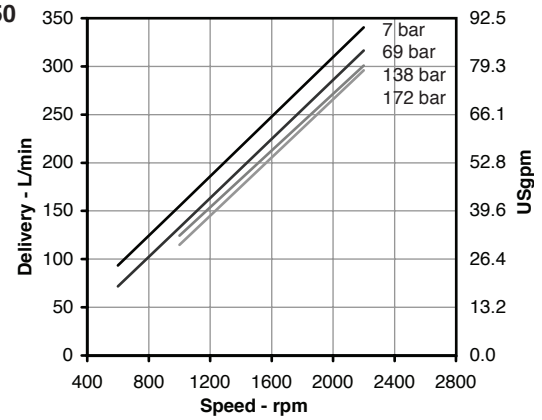
Based on SAE 10W Fluid at 82 ºC (180 ºF) and Pump inlet at 0 PSIG (14.7 PSIA)

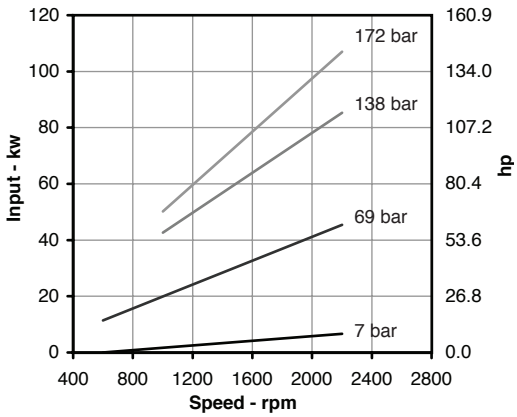
Size 42



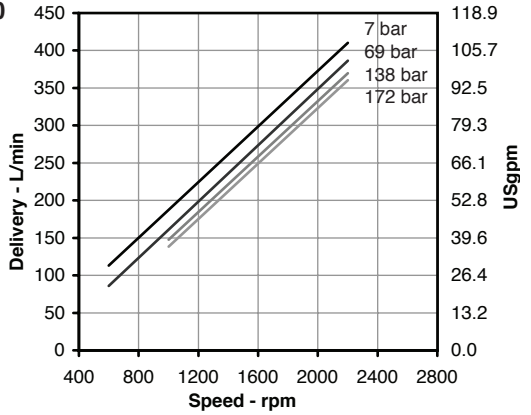


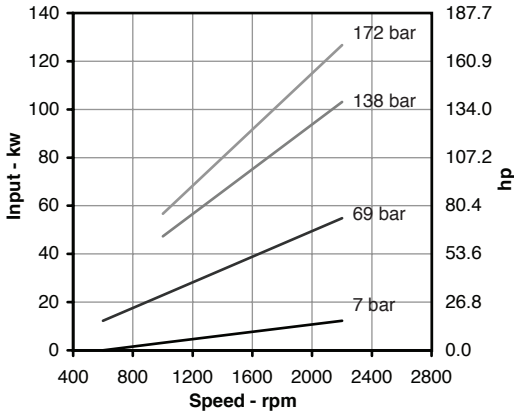
Size 50





Size 60

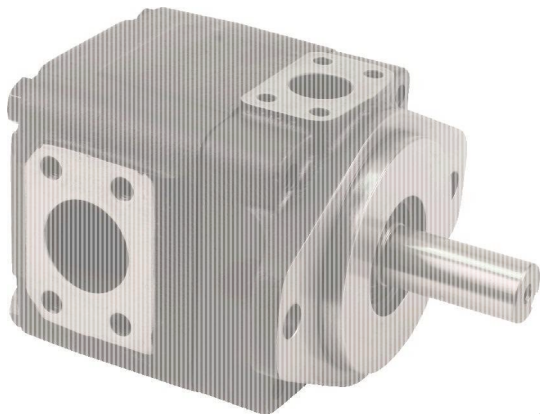




High Pressure Single Vane Pump
HT6C/HT6D/HT7E Series

Features

- HT6C, HT6D and HT7E Series are fixed displacement and balanced type single vane pumps. The pump is designed for higher operating pressure and greater flow at the same housing size.
- With a balanced pin-vane design, outlet pressure is continuously applied only the pin. The pin provides the steady light force against the vane. Top and bottom areas of the vane are subject to the same pressure, either inlet or outlet pressure, depending on the vane's location during rotor rotation. This pin-vane design minimizes noise level and improves volumetric effciency.
- With the cartridge independent of the shaft, allowing for easy change of flow capacity and field servicing without removing the pump from its mounting.



HT6CM - 022 - 1 R 00

1 2 3 4 5 6

1 Model

HT6C, HT6D, HT7E

2 Series

Omit - Industrial

M - Mobile

3 Ring Size (USgallon)

HT6C - 003, 005, 006, 008, 010, 012, 014, 017, 020, 022, 025, 028, 031

HT6D - 014, 020, 024, 028, 031, 035, 038, 042, 045, 050, 061

HT7E - 042, 045, 050, 052, 054, 057, 062, 066, 072, 085

4 Shaft

For HT6C

1 - SAE B Keyed Shaft

2 - Keyed Shaft

3 - SAE B Splined Shaft

4 - SAE BB Splined Shaft

For HT6D

1 - SAE C Keyed Shaft

2 - Keyed Shaft

3 - SAE C Splined Shaft

4 - Splined Shaft

For HT7E

1 - SAE CC Keyed Shaft

2 - Keyed Shaft

3 - SAE C Splined Shaft

(*Special shaft for mobile use available upon request)

5 Shaft Rotation

(Viewed from shaft end)

Omit - Turn right

L - Turn left

6 Inlet Port position

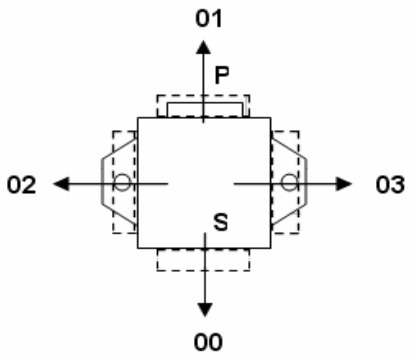
(Viewed from cover end)

00 - Opposite Outlet

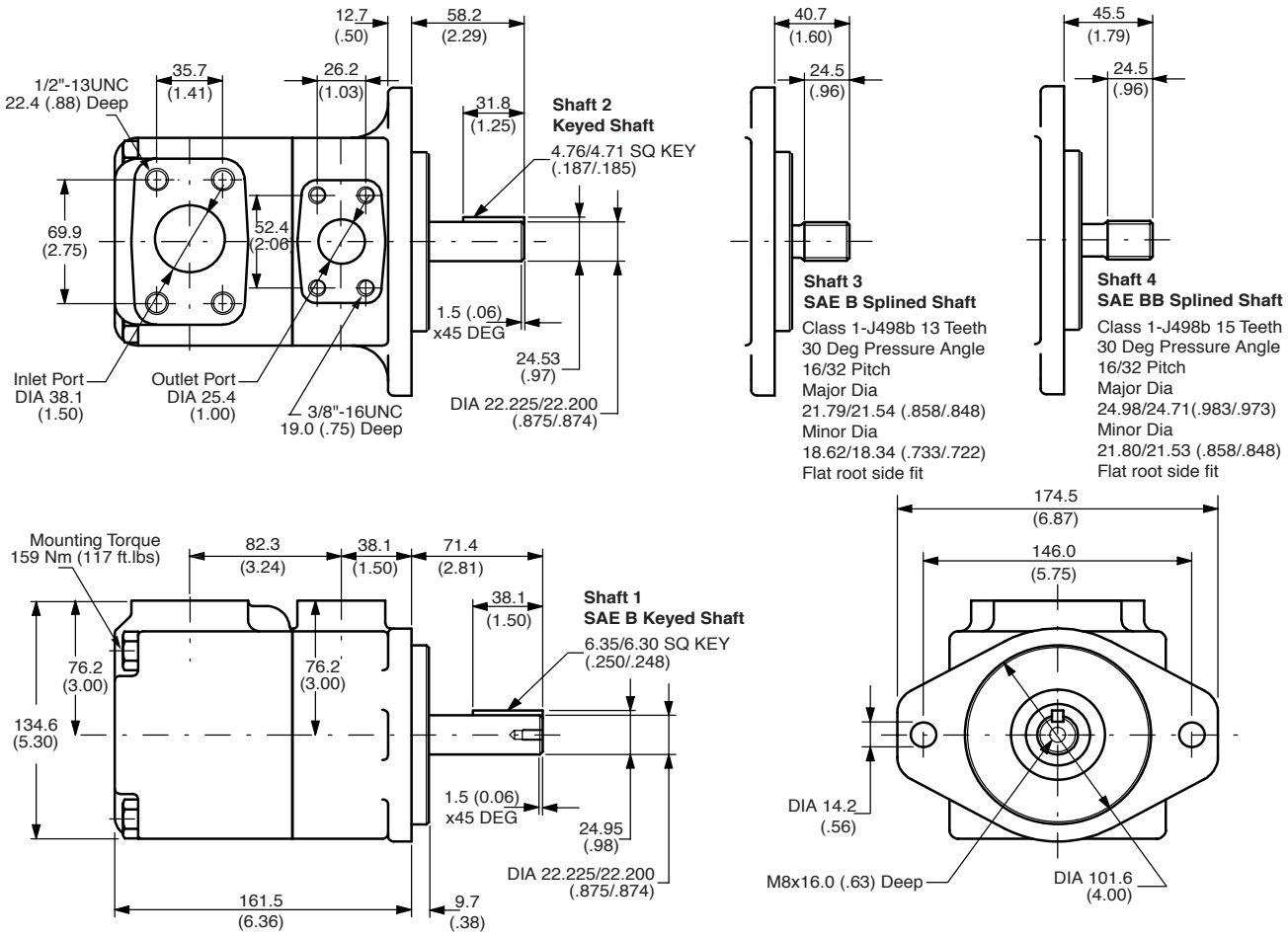
02 - 90° CCW from Outlet

01 - Inline with Outlet

03 - 90° CW from Outlet

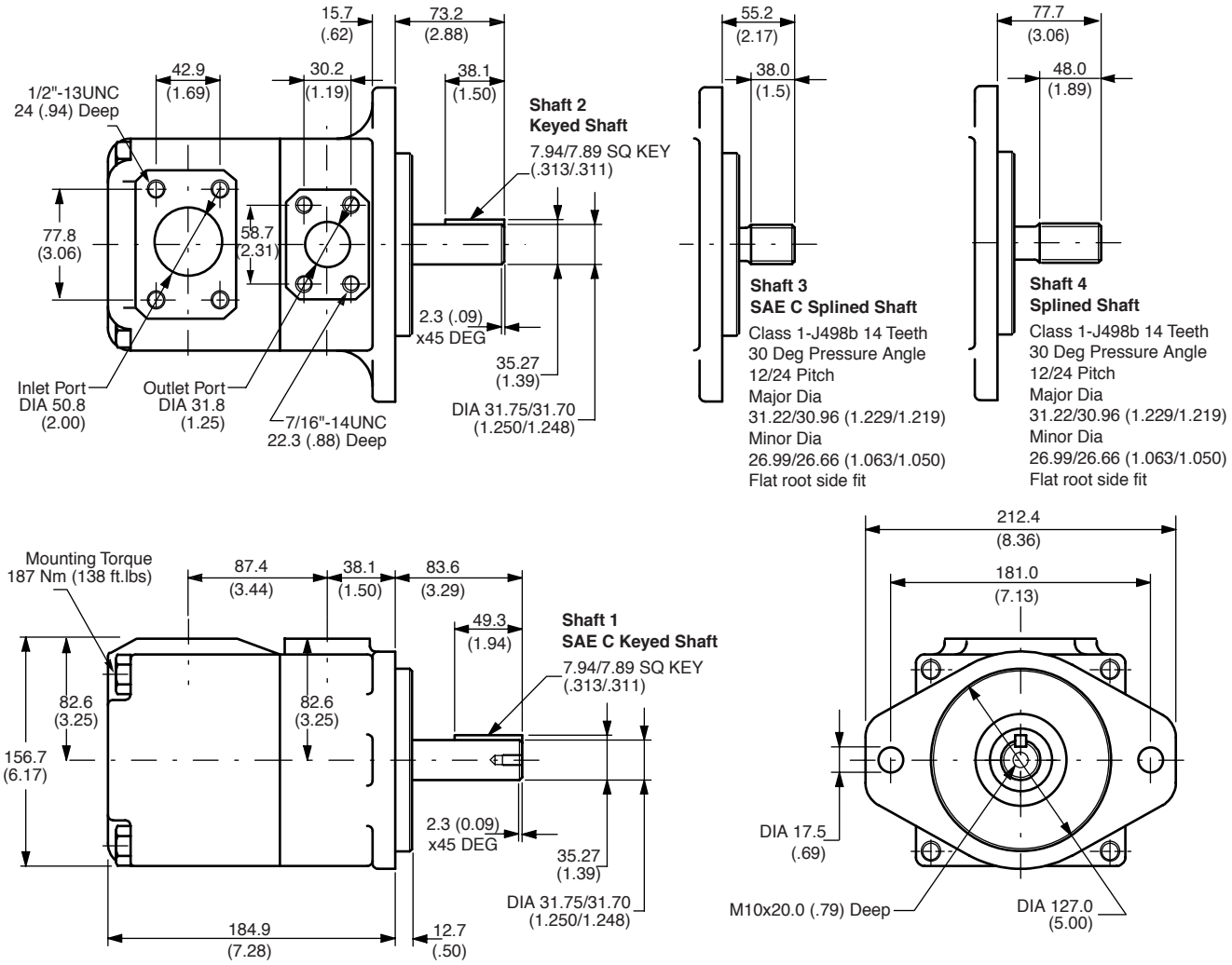


Installation Dimensions mm (inch) — HT6C

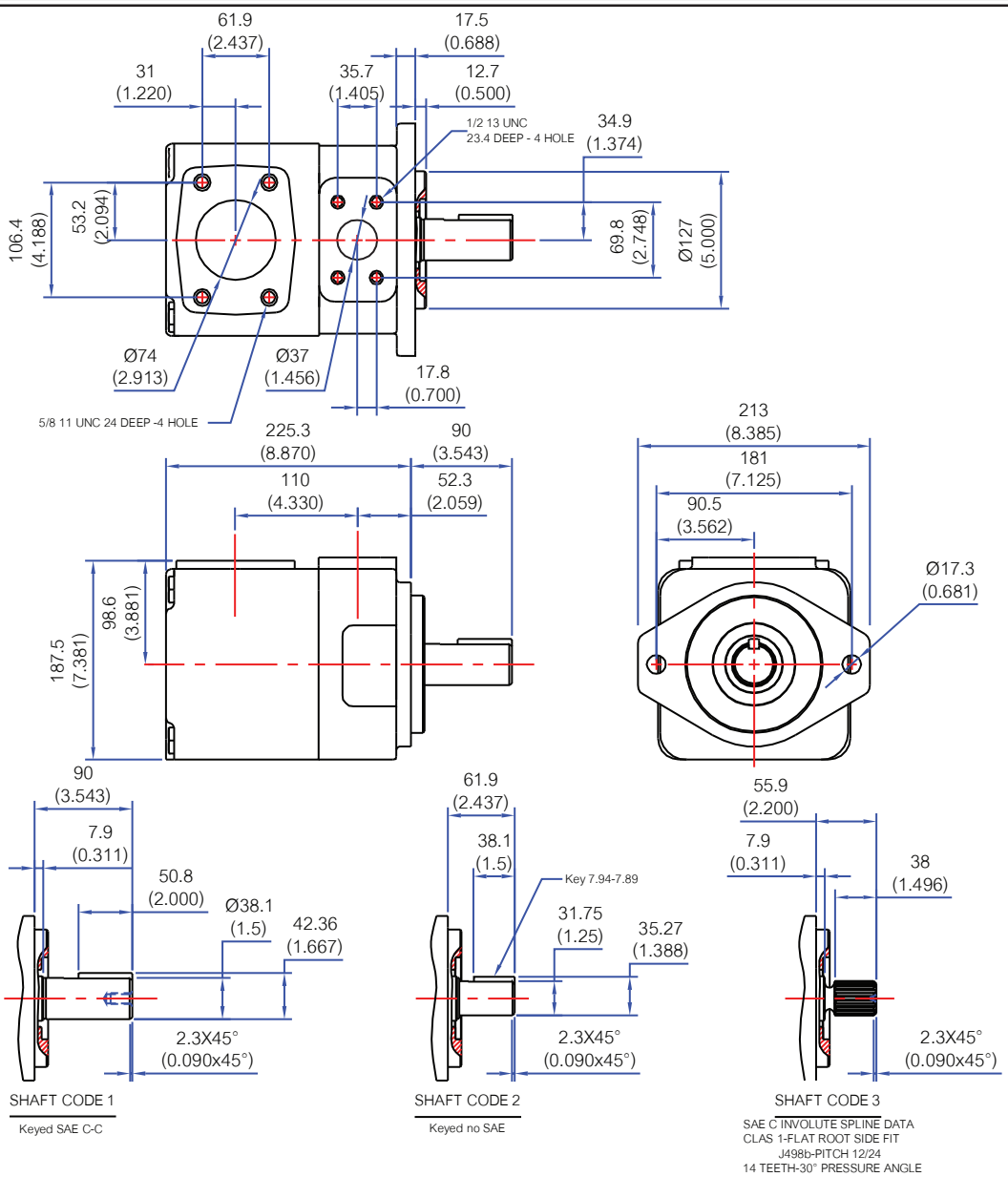


Specifications — HT6C

Size	Displacement cm^3/r (in^3/r)	Max Speed rpm	Min Speed rpm	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	Weight kg (lb)
003	10.8 (0.66)	2800	600	280 (4000)	240 (3500)	15 (34)
005	17.2 (1.05)					
006	21.3 (1.30)					
008	26.4 (1.61)					
010	34.1 (2.08)					
012	37.1 (2.26)					
014	46.0 (2.81)					
017	58.3 (3.56)					
020	63.8 (3.89)					
022	70.3 (4.29)					
025	79.3 (4.84)	2500	600	210 (3000)	160 (2300)	
028	88.8 (5.42)					
031	100.0 (6.10)					



Size	Displacement cm^3/r (in^3/r)	Max Speed rpm	Min Speed rpm	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	Weight kg (lb)
014	47.6 (2.90)	2500	600	240 (3500)	210 (3000)	24 (53)
020	66.0 (4.03)					
024	79.5 (4.85)					
028	89.7 (5.47)					
031	98.3 (6.00)					
035	111.0 (6.77)					
038	120.3 (7.34)					
042	136.0 (8.30)	2200				
045	145.7 (8.89)					
050	158.0 (9.64)			210 (3000)	160 (2320)	
061	190.5 (11.63)	1800		120 (1700)	80 (1160)	



Specifications HT7E

Size	Displacement cm³/r (in³/r)	Max Speed rpm	Max Speed rpm	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	Weight kg (lb)
042	132.3 (8.06)	2200	600	240	210	43.3 (95.26)
045	142.4 (8.68)					
050	158.5 (9.66)					
052	164.8 (10.04)					
054	171.0 (10.42)					
057	183.3 (11.17)					
062	196.7 (11.99)					
066	213.3 (13.00)					
072	227.1 (13.84)					
085	268.8 (16.4)	2000	600	90	75	43.3 (95.26)

High Pressure Single Vane Pump
HT6GC Series

Features

- HT6GC Series is a fixed displacement and balanced type single vane pump. The pump is designed for higher load than HT6CM pump by having double row ball bearing with needle bearing and 2 shaft seals.
- Can be connected to PTO directly.

HT6GC - 022 – 6 R 00 - 00

1 2 3 4 5 6

1 **Model**

HT6GC

2 **Ring Size** (USgpm)

HT6GC - 003, 005, 006, 008, 010, 012, 014, 017, 020, 022, 025, 028, 031

3 **Shaft**

6 – Splined (DIN 5462)

4 **Shaft Rotation**

(Viewed from shaft end)

Omit - Turn right

L - Turn left

5 **Inlet Port position**

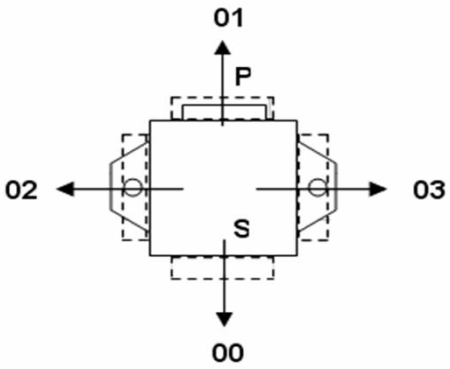
(Viewed from cover end)

00 - Opposite Outlet

02 - 90° CCW from Outlet

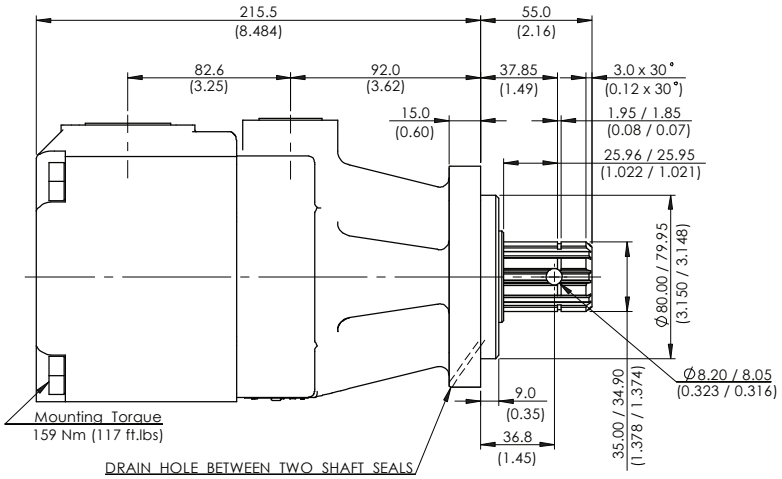
01 - Inline with Outlet

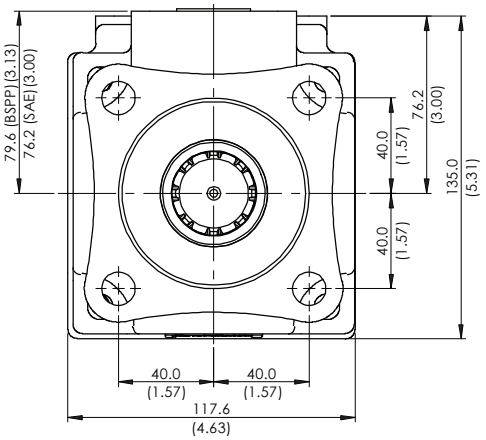
03 - 90° CW from Outlet

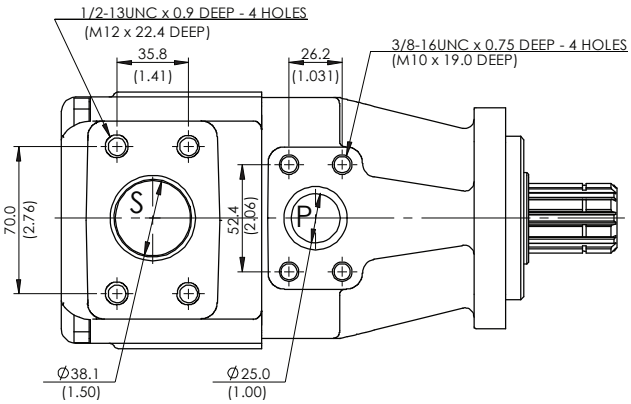


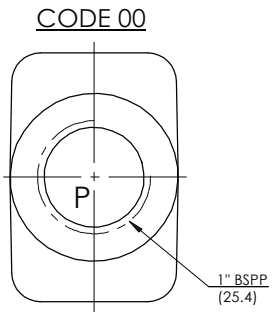
6 **Port Size**

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









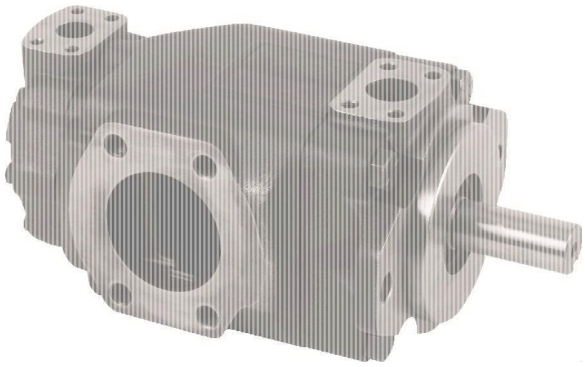
Specifications *HT6GC*

Size	Displacement cm³ / r (in³ / r)	Max Speed rpm	Min Speed rpm	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	Weight kg (lb)
003	10.8 (0.66)	2800	600	280 (4000)	240 (3500)	17.5 (38.5)
005	17.2 (1.05)					
006	21.3 (1.30)					
008	26.4 (1.61)					
010	34.1 (2.08)					
012	37.1 (2.26)					
014	46.0 (2.81)					
017	58.3 (3.56)					
020	63.8 (3.89)					
022	70.3 (4.29)					
025	79.3 (4.84)	2500	600			
028	88.8 (5.42)			210 (3000)	160 (2300)	
031	100.0 (6.10)					

* Performance Characteristics same as HT6C *

Features

- Fixed displacement and balanced type double vane pumps. The pump is designed for higher operating pressure and greater flow at the same housing size.
- With a balanced pin-vane design, outlet pressure is continuously applied only to the pin. The pin provides the steady light force against the vane. Top and bottom areas of the vane are subject to the same pressure, either inlet or outlet pressure, depending on the vane's location during rotor rotation. This pin-vane design minimizes noise level and improves volumetric efficiency.
- With the cartridge independent of the shaft, allowing for easy change of flow capacity and field servicing without removing the pump from its mounting.



HT6CCM - 031 - 005 - 1 R 00 - 0 0

1 2 3 4 5 6 7 8 9

1 Model

HT6CC, HT6DC, HT7EC, HT7ED

2 Series

Omit - Industrial

M - Mobile

MW - Used for severe duty shaft only

3 Shaft End Pump

Ring Size (USqallon)

HT6CC - 003, 005, 006, 008, 010, 012, 014, 017, 020, 022, 025, 028, 031

HT6D* - 014, 020, 024, 028, 031, 035, 038, 042, 045, 050, 061

HT7E* - 042, 045, 050, 052, 054, 057, 062, 067, 072, 085

4 Cover End Pump

Ring Size (Usgallon)

HT6*C - 003, 005, 006, 008, 010, 012, 014, 017, 020, 022, 025, 028, 031

HT7ED - 014, 020, 024, 028, 031, 035, 038, 042, 045, 050, 061

5 Shaft

For HT6CC

1 - Keyed Shaft

2 - SAE BB Keyed Shaft (HT6CCMW only)

3 - SAE BB Splined Shaft

5 - SAE B Splined Shaft

For HT6DC

1 - SAE C Keyed Shaft

2 - Keyed Shaft

3 - SAE C Splined Shaft

For HT7EC

1 - SAE CC Keyed Shaft

2 - Keyed Shaft

3 - SAE C Splined Shaft

4 - SAE CC Splined Shaft

For HT7ED

1 - SAE CC Keyed Shaft

2 - Keyed Shaft

3 - SAE C Splined Shaft

4 - SAE CC Splined Shaft (*Special shaft for mobile use available upon request)

6 Shaft Rotation

(Viewed from shaft end)

Omi t - Turn right

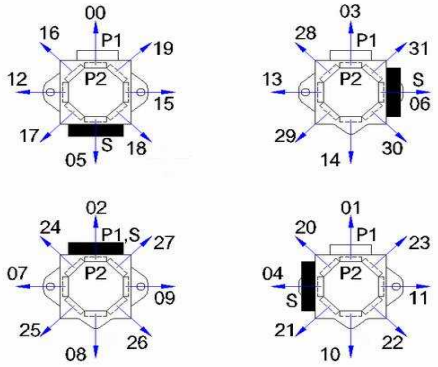
L - Turn left

7 Port position

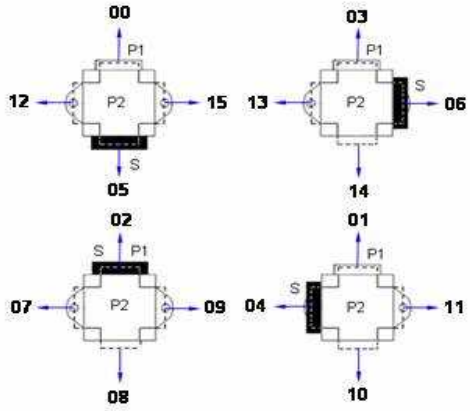
(Viewed from cover end)

For all models except HT7ED

2 digits code presents the position of cover end outlet (P2) at various positions of shaft end outlet (P1) and inlet (S)



For HT7ED



8 Inlet Port Size

For T6CC only

0 - 3" 1 - 2 1/2"

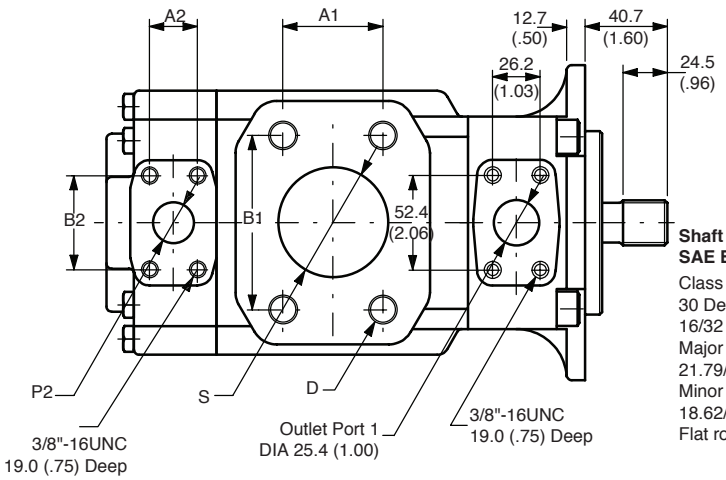
9 Cover End Outlet Port Size

For all models except HT7ED

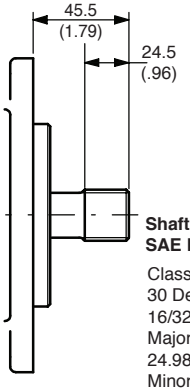
T6CC : 0 - 1" , 1 - 3/4"

T6DC : 0 - 1" , 1 - 3/4"

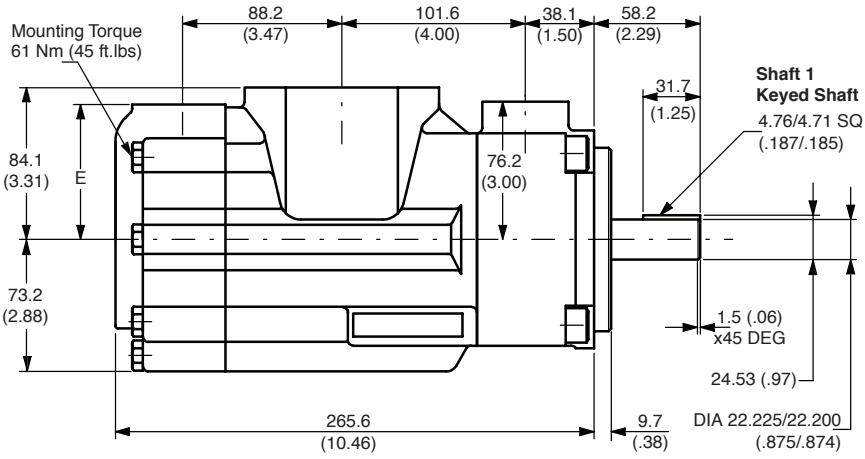
T7EC : 0 - 1" , 1 - 3/4"



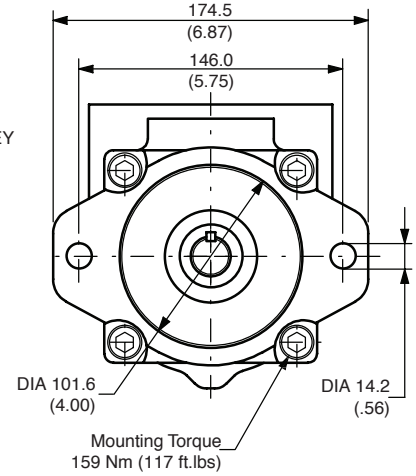
Shaft 5
SAE B Splined Shaft
Class 1-J498b 13 Teeth
30 Degree Pressure Angle
16/32 Pitch
Major Dia
21.79/21.54 (.858/.848)
Minor Dia
18.62/18.34 (.733/.722)
Flat root side fit



Shaft 3
SAE BB Splined Shaft
Class 1-J498b 15 Teeth
30 Degree Pressure Angle
16/32 Pitch
Major Dia
24.98/24.71(.983/.973)
Minor Dia
21.80/21.53 (.858/.848)
Flat root side fit



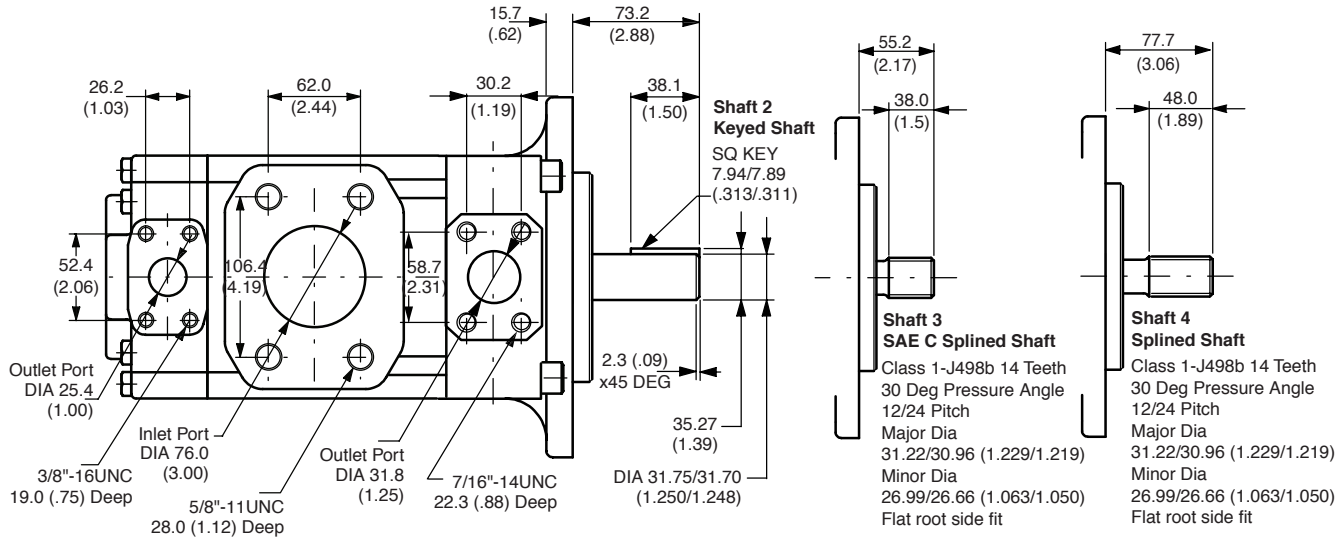
Shaft 1
Keyed Shaft
4.76/4.71 SQ KEY
(.187/.185)

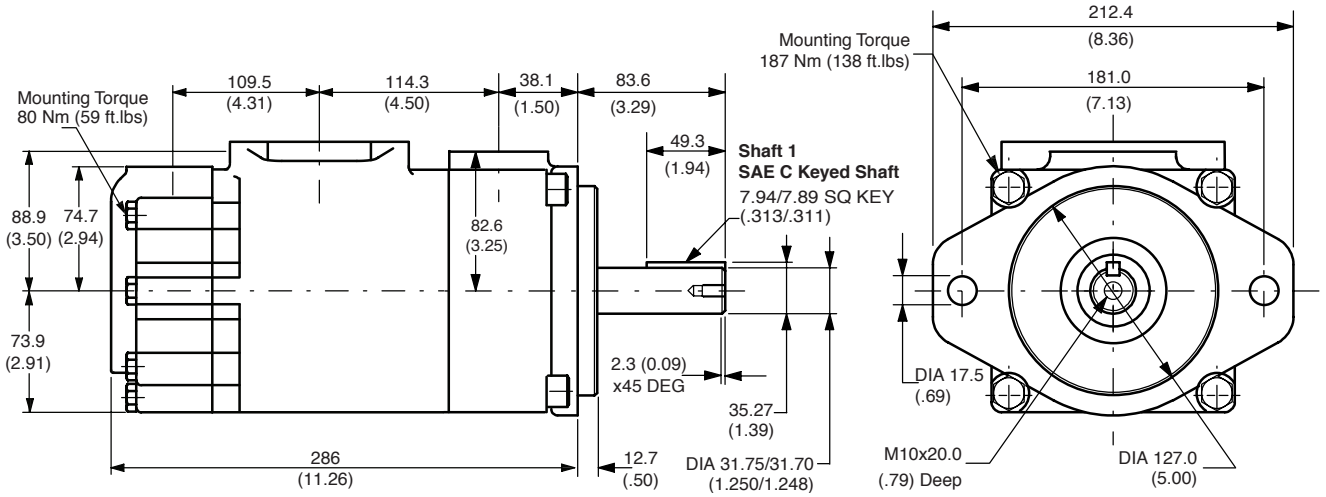


Inlet Port Size	S	A1	B1	D
3"	76.2 (3.00)	61.9 (2.44)	106.4 (4.19)	5/8"-11UNC 28.4 (1.12) Deep
2 1/2"	63.5 (2.50)	50.8 (2.00)	88.9 (3.50)	1/2"-13UNC 23.9 (.94) Deep

Cover End Outlet Port Size	P2	A2	B2	E
1"	25.4 (1.00)	26.2 (1.03)	52.4 (2.06)	74.7 (2.94)
3/4"	19.0 (.75)	22.4 (.88)	47.7 (1.88)	76.2 (3.00)

Shaft End Pump				**Cover End Pump**				Max Speed	Weight
	cm^3/r (in^3/r)	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	Size	Displacement cm^3/r (in^3/r)	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	rpm	kg (lb)
003	10.8 (0.66)	280 (4000)	240 (3500)	003	10.8 (0.66)	280 (4000)	240 (3500)	2800	26 (57)
005	17.2 (1.05)			005	17.2 (1.05)				
006	21.3 (1.30)			006	21.3 (1.30)				
008	26.4 (1.61)			008	26.4 (1.61)				
010	34.1 (2.08)			010	34.1 (2.08)				
012	37.1 (2.26)			012	37.1 (2.26)				
014	46.0 (2.81)			014	46.0 (2.81)				
017	58.3 (3.56)			017	58.3 (3.56)				
020	63.8 (3.89)			020	63.8 (3.89)				
022	70.3 (4.29)			022	70.3 (4.29)				
025	79.3 (4.84)			025	79.3 (4.84)				
028	88.8 (5.42)	210 (3000)	160 (2300)	028	88.8 (5.42)	210 (3000)	160 (2300)		
031	100.0 (6.10)			031	100.0 (6.10)				





Shaft End Pump				Cover End Pump				Max Speed	Weight
Size	Displacement cm^3/r (in^3/r)	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	Size	Displacement cm^3/r (in^3/r)	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	rpm	kg (lb)
014	47.6 (2.90)	240 (3500)	210 (3000)	003	10.8 (0.66)	280 (4000)	240 (3500)	2500	37 (82)
020	66.0 (4.03)			005	17.2 (1.05)				
024	79.5 (4.85)			006	21.3 (1.30)				
028	89.7 (5.47)			008	26.4 (1.61)				
031	98.3 (6.00)			010	34.1 (2.08)				
035	111.0 (6.77)			012	37.1 (2.26)				
038	120.3 (7.34)			014	46.0 (2.81)				
042	136.0 (8.30)			017	58.3 (3.56)				
045	145.7 (8.89)			020	63.8 (3.89)				
050	158.0 (9.64)	210 (3000)	160 (2320)	022	70.3 (4.29)				
061	190.5 (11.63)	120 (1700)	80 (1160)	025	79.3 (4.84)				
				028	88.8 (5.42)	210 (3000)	160 (2300)		
				031	100.0 (6.10)				

Size	Displacement	Speed	Output Flow L/min (USgpm)			Input Power kW (hp)		
			at 0 bar	at 140 bar	at 240 bar	at 7 bar	at 140 bar	at 240 bar
	cm^3/r (in^3/r)	rpm	(0 psi)	(2000 psi)	(3500 psi)	(100 psi)	(2000 psi)	(3500 psi)
003	10.8 (0.66)	1000	10.8 (2.9)	5.8 (1.5)	-	0.9 (1.2)	3.7 (5.0)	-
		1200	13.0 (3.4)	8.0 (2.1)	-	1.1 (1.5)	4.4 (5.9)	-
		1500	16.2 (4.3)	11.2 (3.0)	8.2 (2.2)	1.3 (1.7)	5.4 (7.2)	8.5 (11.4)
		1800	19.4 (5.1)	14.4 (3.8)	11.4 (3.0)	1.7 (2.3)	6.4 (8.6)	10.0 (13.4)
005	17.2 (1.05)	1000	17.2 (4.5)	12.2 (3.2)	9.2 (2.4)	1.0 (1.3)	5.2 (7.0)	8.4 (11.3)
		1200	20.6 (5.4)	15.6 (4.1)	12.6 (3.3)	1.1 (1.5)	6.2 (8.3)	10.0 (13.4)
		1500	25.8 (6.8)	20.8 (5.5)	17.8 (4.7)	1.4 (1.9)	7.7 (10.3)	12.3 (16.5)
		1800	31.0 (8.2)	26.0 (6.9)	23.0 (6.1)	1.9 (2.5)	9.1 (12.2)	14.6 (19.6)
006	21.3 (1.30)	1000	21.3 (5.6)	16.3 (4.3)	13.3 (3.5)	1.0 (1.3)	6.1 (8.2)	10.0 (13.4)
		1200	25.6 (6.8)	20.6 (5.4)	17.6 (4.6)	1.2 (1.6)	7.3 (9.8)	11.9 (16.0)
		1500	32.0 (8.5)	27.0 (7.1)	24.0 (6.3)	1.5 (2.0)	9.1 (12.2)	14.8 (19.8)
		1800	38.3 (10.1)	33.3 (8.8)	30.3 (8.0)	1.9 (2.5)	10.8 (14.5)	17.6 (23.6)
008	26.4 (1.61)	1000	26.4 (7.0)	21.4 (5.7)	18.4 (4.9)	1.1 (1.5)	7.3 (9.8)	12.0 (16.1)
		1200	31.7 (8.4)	26.7 (7.1)	23.7 (6.3)	1.3 (1.7)	8.7 (11.7)	14.4 (19.3)
		1500	39.6 (10.5)	34.6 (9.1)	31.6 (8.3)	1.6 (2.1)	10.9 (14.6)	17.8 (23.9)
		1800	47.5 (12.5)	42.5 (11.2)	39.5 (10.4)	2.1 (2.8)	13.0 (17.4)	21.3 (28.6)
010	34.1 (2.08)	1000	34.1 (9.0)	29.1 (7.7)	26.1 (6.9)	1.2 (1.6)	9.1 (12.2)	15.1 (20.2)
		1200	40.9 (10.8)	35.9 (9.5)	32.9 (8.7)	1.4 (1.9)	10.9 (14.6)	18.1 (24.3)
		1500	51.2 (13.5)	46.2 (12.2)	43.2 (11.4)	1.7 (2.3)	13.6 (18.2)	22.5 (30.2)
		1800	61.4 (16.2)	56.4 (14.9)	53.4 (14.1)	2.2 (2.9)	16.2 (21.7)	26.8 (35.9)
012	37.1 (2.26)	1000	37.1 (9.8)	32.1 (8.5)	29.1 (7.7)	1.2 (1.6)	9.8 (13.1)	16.3 (21.8)
		1200	44.5 (11.8)	39.5 (10.4)	36.5 (9.6)	1.4 (1.9)	11.7 (15.7)	19.5 (26.1)
		1500	55.7 (14.7)	50.7 (13.4)	47.7 (12.6)	1.7 (2.3)	14.6 (19.6)	24.3 (32.6)
		1800	66.8 (17.6)	61.8 (16.3)	58.8 (15.5)	2.3 (3.1)	17.5 (23.5)	29.0 (38.9)
014	46.0 (2.81)	1000	46.0 (12.2)	41.0 (10.8)	38.0 (10.0)	1.3 (1.7)	11.9 (16.0)	19.9 (26.7)
		1200	55.2 (14.6)	50.2 (13.3)	47.2 (12.5)	1.5 (2.0)	14.2 (19.0)	23.8 (31.9)
		1500	69.0 (18.2)	64.0 (16.9)	61.0 (16.1)	1.9 (2.5)	17.7 (23.7)	29.6 (39.7)
		1800	82.8 (21.9)	77.8 (20.6)	74.8 (19.8)	2.5 (3.4)	21.2 (28.4)	35.4 (47.5)
017	58.3 (3.56)	1000	58.3 (15.4)	53.3 (14.1)	50.3 (13.3)	1.5 (2.0)	14.8 (19.8)	24.8 (33.2)
		1200	70.0 (18.5)	65.0 (17.2)	62.0 (16.4)	1.7 (2.3)	17.7 (23.7)	29.7 (39.8)
		1500	87.5 (23.1)	82.5 (21.8)	79.5 (21.0)	2.1 (2.8)	22.0 (29.5)	37.0 (49.6)
		1800	104.9 (27.7)	99.9 (26.4)	96.9 (25.6)	2.7 (3.6)	26.4 (35.4)	44.2 (59.2)
020	63.8 (3.89)	1000	63.8 (16.9)	58.8 (15.5)	55.8 (14.7)	1.5 (2.0)	16.0 (21.4)	27.0 (36.2)
		1200	76.6 (20.2)	71.6 (18.9)	68.6 (18.1)	1.8 (2.4)	19.2 (25.7)	32.3 (43.3)
		1500	95.7 (25.3)	90.7 (24.0)	87.7 (23.2)	2.2 (2.9)	24.0 (32.2)	40.3 (54.0)
		1800	114.8 (30.3)	109.8 (29.0)	106.8 (28.2)	2.8 (3.8)	28.7 (38.5)	48.2 (64.6)
022	70.3 (4.29)	1000	70.3 (18.6)	65.3 (17.3)	62.3 (16.5)	1.6 (2.1)	17.6 (23.6)	29.6 (39.7)
		1200	84.4 (22.3)	79.4 (21.0)	76.4 (20.2)	1.9 (2.5)	21.0 (28.2)	35.5 (47.6)
		1500	105.5 (27.9)	100.5 (26.6)	97.5 (25.8)	2.3 (3.1)	26.2 (35.1)	44.2 (59.2)
		1800	126.5 (33.4)	121.5 (32.1)	118.5 (31.3)	3.0 (4.0)	31.4 (42.1)	52.9 (70.9)
025	79.3 (4.84)	1000	79.3 (21.0)	74.3 (19.6)	71.3 (18.8)	1.7 (2.3)	19.7 (26.4)	33.2 (44.5)
		1200	95.2 (25.2)	90.2 (23.8)	87.2 (23.0)	2.0 (2.7)	23.6 (31.6)	39.8 (53.4)
		1500	119.0 (31.4)	114.0 (30.1)	111.0 (29.3)	2.5 (3.4)	29.4 (39.4)	49.6 (66.5)
		1800	142.7 (37.7)	137.7 (36.4)	134.7 (35.6)	3.2 (4.3)	35.2 (47.2)	59.3 (79.5)
028	88.8 (5.42)	1000	88.8 (23.5)	83.8 (22.1)	81.3 (21.5)*	1.8 (2.4)	21.9 (29.4)	32.5 (43.6)*
		1200	106.6 (28.2)	101.6 (26.8)	99.1 (26.2)*	2.1 (2.8)	26.2 (35.1)	38.9 (52.1)*
		1500	133.2 (35.2)	128.2 (33.9)	125.7 (33.2)*	2.7 (3.6)	32.7 (43.8)	48.5 (65.0)*
		1800	159.8 (42.2)	154.8 (40.9)	152.3 (40.2)*	3.4 (4.6)	39.2 (52.5)	58.1 (77.9)*
031	100.0 (6.10)	1000	100.0 (26.4)	95.0 (25.1)	92.5 (24.4)*	2.0 (2.7)	24.5 (32.8)	36.4 (48.8)*
		1200	120.0 (31.7)	115.0 (30.4)	112.5 (29.7)*	2.3 (3.1)	29.4 (39.4)	43.6 (58.4)*
		1500	150.0 (39.6)	145.0 (38.3)	142.5 (37.6)*	2.9 (3.9)	36.6 (49.1)	54.4 (72.9)*
		1800	180.0 (47.6)	175.0 (46.2)	172.5 (45.6)*	3.6 (4.8)	43.9 (58.8)	65.1 (87.3)*

*Size 28 and 31, at max pressure 210 bar (3000 psi)

Size	Displacement	Speed	Output Flow L/min (USgpm)			Input Power kW (hp)		
			at 0 bar	at 140 bar	at 240 bar	at 7 bar	at 140 bar	at 240 bar
	cm^3/r (in^3/r)	rpm	(0 psi)	(2000 psi)	(3500 psi)	(100 psi)	(2000 psi)	(3500 psi)
014	47.6 (2.90)	1000	47.6 (12.6)	38.6 (10.2)	32.6 (8.6)	1.6 (2.1)	12.5 (16.8)	20.7 (27.7)
		1200	57.1 (15.1)	48.1 (12.7)	42.1 (11.1)	1.8 (2.4)	14.9 (20.0)	24.8 (33.2)
		1500	71.4 (18.9)	62.4 (16.5)	56.4 (14.9)	2.3 (3.1)	18.5 (24.8)	30.7 (41.2)
		1800	85.7 (22.6)	76.7 (20.3)	70.7 (18.7)	2.9 (3.9)	22.3 (29.9)	36.9 (49.5)
020	66.0 (4.03)	1000	66.0 (17.4)	57.0 (15.1)	51.0 (13.5)	1.8 (2.4)	16.8 (22.5)	28.1 (37.7)
		1200	79.2 (20.9)	70.2 (18.5)	64.2 (17.0)	2.1 (2.8)	20.1 (26.9)	33.6 (45.0)
		1500	99.0 (26.2)	90.0 (23.8)	84.0 (22.2)	2.7 (3.6)	24.9 (33.4)	41.7 (55.9)
		1800	118.8 (31.4)	109.8 (29.0)	103.8 (27.4)	3.3 (4.4)	30.1 (40.3)	50.1 (67.2)
024	79.5 (4.85)	1000	79.5 (21.0)	70.5 (18.6)	64.5 (17.0)	1.9 (2.5)	20.0 (26.8)	33.5 (44.9)
		1200	95.4 (25.2)	86.4 (22.8)	80.4 (21.2)	2.2 (2.9)	23.9 (32.0)	40.1 (53.8)
		1500	119.3 (31.5)	110.3 (29.1)	104.3 (27.6)	2.9 (3.9)	29.7 (39.8)	49.8 (66.8)
		1800	143.1 (37.8)	134.1 (35.4)	128.1 (33.8)	3.6 (4.8)	35.7 (47.9)	59.9 (80.3)
028	89.7 (5.47)	1000	89.7 (23.7)	80.7 (21.3)	74.7 (19.7)	2.0 (2.7)	22.3 (29.9)	37.5 (50.3)
		1200	107.6 (28.4)	98.6 (26.1)	92.6 (24.5)	2.4 (3.2)	26.7 (35.8)	45.0 (60.3)
		1500	134.6 (35.6)	125.6 (33.2)	119.6 (31.6)	3.1 (4.2)	33.2 (44.5)	55.9 (74.9)
		1800	161.5 (42.7)	152.5 (40.3)	146.5 (38.7)	3.8 (5.1)	40.0 (53.6)	67.2 (90.1)
031	98.3 (6.00)	1000	98.3 (26.0)	89.3 (23.6)	83.3 (22.0)	2.1 (2.8)	24.3 (32.6)	41.0 (55.0)
		1200	118.0 (31.2)	109.0 (28.8)	103.0 (27.2)	2.5 (3.4)	29.1 (39.0)	49.1 (65.8)
		1500	147.5 (39.0)	138.5 (36.6)	132.5 (35.0)	3.2 (4.3)	36.2 (48.5)	61.1 (81.9)
		1800	176.9 (46.7)	167.9 (44.4)	161.9 (42.8)	4.0 (5.4)	43.6 (58.4)	73.4 (98.4)
035	111.0 (6.77)	1000	111.0 (29.3)	102.0 (26.9)	96.0 (25.4)	2.3 (3.1)	27.3 (36.6)	46.1 (61.8)
		1200	133.2 (35.2)	124.2 (32.8)	118.2 (31.2)	2.7 (3.6)	32.7 (43.8)	55.2 (74.0)
		1500	166.5 (44.0)	157.5 (41.6)	151.5 (40.0)	3.4 (4.6)	40.7 (54.6)	68.7 (92.1)
		1800	199.8 (52.8)	190.8 (50.4)	184.8 (48.8)	4.2 (5.6)	49.0 (65.7)	82.5 (110.6)
038	120.3 (7.34)	1000	120.3 (31.8)	111.3 (29.4)	105.3 (27.8)	2.4 (3.2)	29.5 (39.5)	49.8 (66.8)
		1200	144.4 (38.2)	135.4 (35.8)	129.4 (34.2)	2.8 (3.8)	35.3 (47.3)	59.7 (80.0)
		1500	180.5 (47.7)	171.5 (45.3)	165.5 (43.7)	3.6 (4.8)	43.9 (58.8)	74.3 (99.6)
		1800	216.5 (57.2)	207.5 (54.8)	201.5 (53.2)	4.4 (5.9)	52.9 (70.9)	89.2 (119.6)
042	136.0 (8.30)	1000	136.0 (35.9)	127.0 (33.6)	121.0 (32.0)	2.6 (3.5)	33.1 (44.4)	56.1 (75.2)
		1200	163.2 (43.1)	154.2 (40.7)	148.2 (39.2)	3.0 (4.0)	39.7 (53.2)	67.2 (90.1)
		1500	204.0 (53.9)	195.0 (51.5)	189.0 (49.9)	3.9 (5.2)	49.4 (66.2)	83.7 (112.2)
		1800	244.8 (64.7)	235.8 (62.3)	229.8 (60.7)	4.8 (6.4)	59.5 (79.8)	100.5 (134.7)
045	145.7 (8.89)	1000	145.7 (38.5)	136.7 (36.1)	130.7 (34.5)	2.7 (3.6)	35.4 (47.5)	59.9 (80.3)
		1200	174.8 (46.2)	165.8 (43.8)	159.8 (42.2)	3.2 (4.3)	42.4 (56.8)	71.9 (96.4)
		1500	218.6 (57.8)	209.6 (55.4)	203.6 (53.8)	4.0 (5.4)	52.8 (70.8)	89.5 (120.0)
		1800	262.3 (69.3)	253.3 (66.9)	247.3 (65.3)	5.0 (6.7)	63.5 (85.1)	107.5 (144.1)
050	158.0 (9.64)	1000	158.0 (41.7)	149.0 (39.4)	145.0 (38.3)*	2.8 (3.8)	38.3 (51.3)	56.9 (76.3)*
		1200	189.6 (50.1)	180.6 (47.7)	176.6 (46.7)*	3.3 (4.4)	45.8 (61.4)	68.2 (91.4)*
		1500	237.0 (62.6)	228.0 (60.2)	224.0 (59.2)*	4.3 (5.8)	57.1 (76.5)	85.0 (113.9)*
		1800	284.4 (75.1)	275.4 (72.8)	271.4 (71.7)*	5.2 (7.0)	68.7 (92.1)	102.1 (136.9)*
061	190.5 (11.63)	1000	190.5 (50.3)	186.5 (49.3)*	-	3.2 (4.3)	23.4 (31.4)*	-
		1200	228.6 (60.4)	224.6 (59.3)*	-	3.8 (5.1)	28.0 (37.5)*	-
		1500	285.8 (75.5)	281.8 (74.5)*	-	4.8 (6.4)	35.0 (46.9)*	-
		1800	342.9 (90.6)	338.9 (89.5)*	-	5.9 (7.9)	42.1 (56.4)*	-

*Size 050, at max pressure 210 bar (3000 psi) *Size 061, at pressure 70 bar (1000 psi)

High Pressure Double Vane Pump

HT6GCC/HT6CCZ Series

Features

- HT6GCC Series is fixed displacement and balanced type double vane pumps. The pump is designed for higher load than HT6CM pump by having double row ball bearing with needle bearing and 2 shaft seals.
- Can be connected to PTO directly.
- HT6CCZ Series is fixed displacement and balanced type double vane pumps. The pump is designed to carry high shaft loads by double row ball bearing at the front and needle ball bearing at the rear.
- Can be connected to PTO directly.

HT6GCC - 031 - 005 – 6 R 00 – 00

1 2 3 4 5 6 7

1 Model

HT6GCC

2 Shaft End Pump

Ring Size (USgpm)

HT6GCC - 003, 005, 006, 008, 010, 012, 014, 017, 020, 022, 025, 028, 031

3 Cover End Pump

Ring Size (USgpm)

HT6G*C - 003, 005, 006, 008, 010, 012, 014, 017, 020, 022, 025, 028, 031

4 Shaft

6 – Splined (DIN 5462)

5 Shaft Rotation

(Viewed from shaft end)

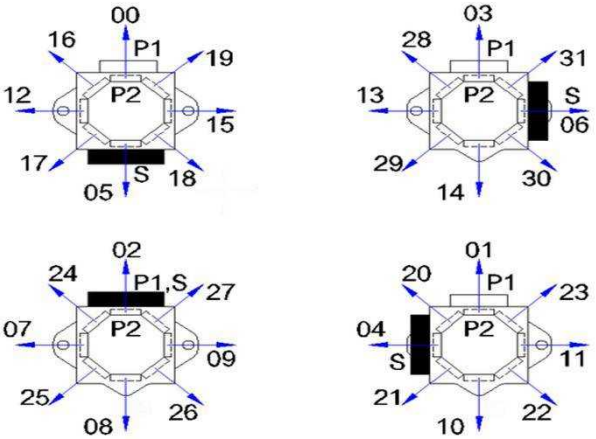
Omit - Turn right

L - Turn left

6 Port position

(Viewed from cover end)

2 digits code presents the position of cover end outlet (P2) at various positions of shaft end outlet (P1) and inlet (S)



8 Port Size

CODE		4 bolt SAE flanges		
UNC	METRIC	P1	P2	S
00	0M	1"	1"	3"
01	M0	1"	3/4"	3"
10	1M	1"	1"	2"1/2"
11	M1	1"	3/4"	2"1/2"

HT6CCZ - 031 - 005 – X R 00 – 00

1 2 3 4 5 6 7

1 Model

HT6CCZ

2 Shaft End Pump

Ring Size (USgpm)

HT6CC - 003, 005, 006, 008, 010, 012, 014, 017, 020, 022, 025, 028, 031

3 Cover End Pump

Ring Size (USgpm)

HT6*C - 003, 005, 006, 008, 010, 012, 014, 017, 020, 022, 025, 028, 031

4 Shaft

X - Keyed Shaft

W - Keyed Shaft

V - Keyed Shaft

5 Shaft Rotation

(Viewed from shaft end)

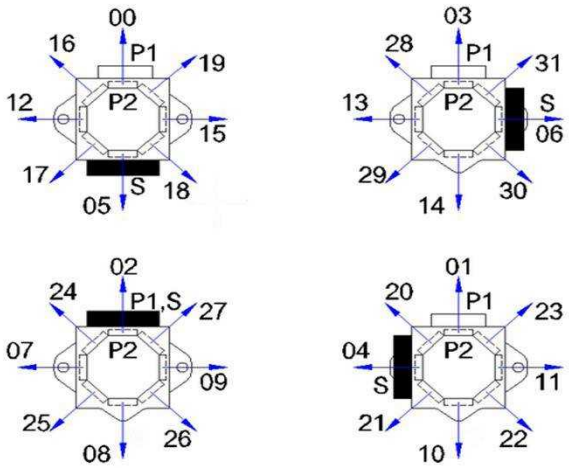
Omit - Turn right

L - Turn left

6 Port position

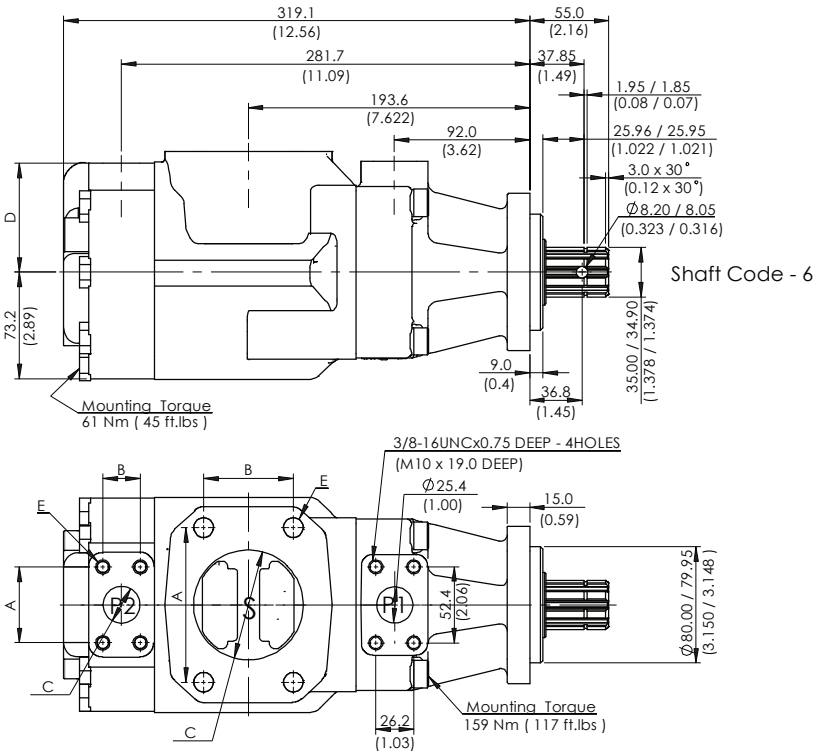
(Viewed from cover end)

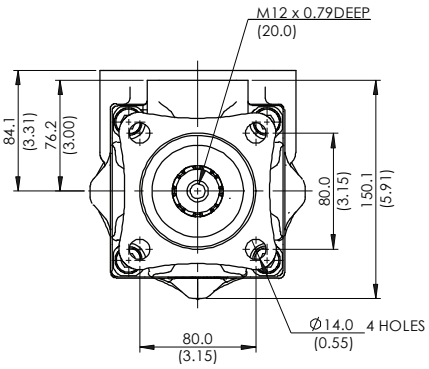
2 digits code presents the position of cover end outlet (P2) at various positions of shaft end outlet (P1) and inlet (S)



7 Port Size

CODE		4 bolt SAE flanges		
UNC	METRIC	P1	P2	S
00	0M	1"	1"	3"
01	M0	1"	3/4"	3"
10	1M	1"	1"	2"1/2"
11	M1	1"	3/4"	2"1/2"

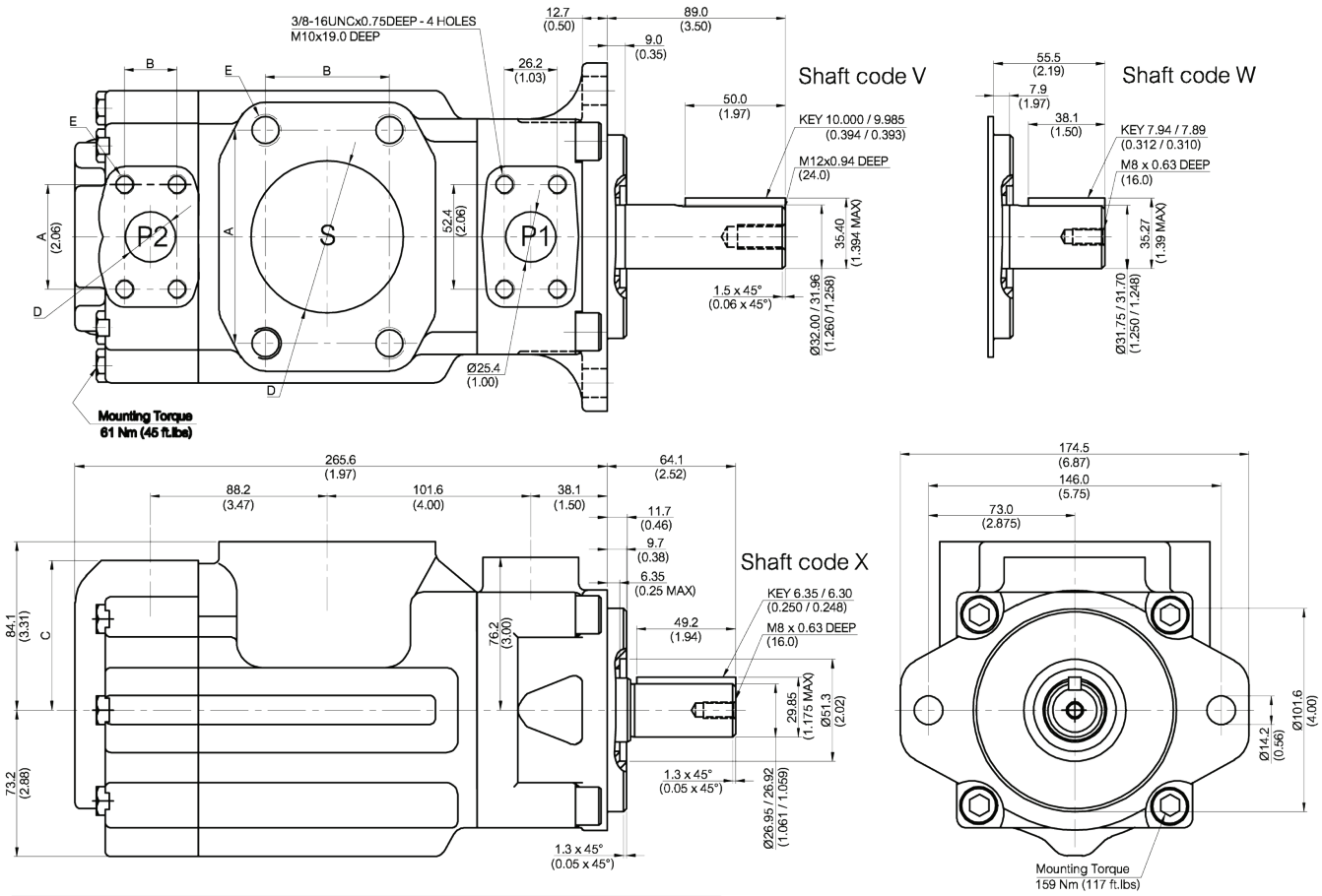




PORT	A	B	C	D	E
S	106.4(4.19)	61.9(2.44)	∅76.2(3.00)		5/8-11 UNC x 1.12 DEEP (M16 x 28.4 DEEP)
S	88.9(3.50)	50.8(2.00)	∅63.5(2.50)		1/2-13UNC x 0.94 DEEP (M12 x 24.0 DEEP)
P2	47.7(1.88)	22.2(0.88)	∅19.0(0.75)	76.2(3.00)	3/8-16 UNC x 0.75 DEEP (M10 X 19.0 DEEP)
P2	52.4(2.06)	26.2(1.03)	∅25.4(1.00)	74.7(3.94)	

Shaft End Pump				Cover End Pump				Max Speed	Weight
Size	Displacement cm³/r (in³/r)	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	Size	Displacement cm³/r (in³/r)	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	rpm	kg (lb)
003	10.8 (0.66)	280 (4000)	240 (3500)	003	10.8 (0.66)	280 (4000)	240 (3500)	2800	28(61.7)
005	17.2 (1.05)			005	17.2 (1.05)				
006	21.3 (1.30)			006	21.3 (1.30)				
008	26.4 (1.61)			008	26.4 (1.61)				
010	34.1 (2.08)			010	34.1 (2.08)				
012	37.1 (2.26)			012	37.1 (2.26)				
014	46.0 (2.81)			014	46.0 (2.81)				
017	58.3 (3.56)			017	58.3 (3.56)				
020	63.8 (3.89)			020	63.8 (3.89)				
022	70.3 (4.29)			022	70.3 (4.29)				
025	79.3 (4.84)			025	79.3 (4.84)			2500	
028	88.8 (5.42)	210 (3000)	160 (2300)	028	88.8 (5.42)	210 (3000)	160 (2300)		
031	100.0 (6.10)			031	100.0 (6.10)				

* Performance Characteristics same as HT6C , HT6CC *



PORT	A	B	C	D	E
S	406.4(4.19)	61.9(2.44)		Ø76.2(3.00)	5/8-11UNC x1.12 DEEP (M16 x 28.4 DEEP)
S	88.9(3.50)	50.8(2.00)		Ø63.5(2.5)	1/2-13UNC x0.94 DEEP (M12 x 24.0 DEEP)
P2	47.6(1.874)	22.2(0.874)	76.2(3.00)	Ø19.0(0.75)	3/8-16UNC x 0.75 DEEP M10 x 19.0 DEEP
P2	52.4(2.06)	26.2(1.03)	74.7(2.94)	Ø25.4(1.00)	

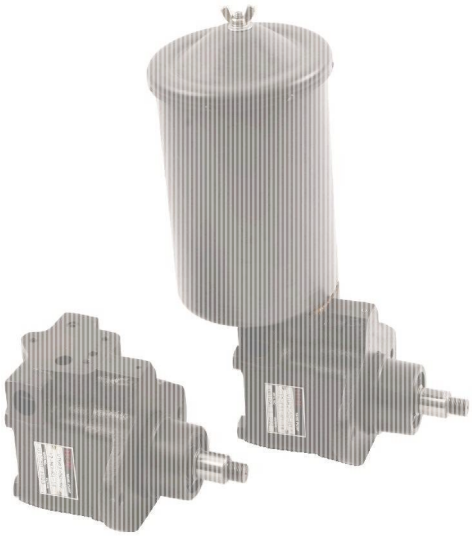
Shaft End Pump				Cover End Pump				Max	**Weight**
Size	Displacement cm^3/r (in^3/r)	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	Size	Displacement cm^3/r (in^3/r)	Max Intermittent Pressure bar (psi)	Max Continuous Pressure bar (psi)	Speed **rpm**	**kg (lb)**
003	10.8 (0.66)	280 (4000)	240 (3500)	003	10.8 (0.66)	280 (4000)	240 (3500)	**2800**	**27 (59.5)**
005	17.2 (1.05)			005	17.2 (1.05)				
006	21.3 (1.30)			006	21.3 (1.30)				
008	26.4 (1.61)			008	26.4 (1.61)				
010	34.1 (2.08)			010	34.1 (2.08)				
012	37.1 (2.26)			012	37.1 (2.26)				
014	46.0 (2.81)			014	46.0 (2.81)				
017	58.3 (3.56)			017	58.3 (3.56)				
020	63.8 (3.89)			020	63.8 (3.89)				
022	70.3 (4.29)			022	70.3 (4.29)				
025	79.3 (4.84)			025	79.3 (4.84)			2500	
028	88.8 (5.42)	210 (3000)	160 (2300)	028	88.8 (5.42)	210 (3000)	160 (2300)		
031	100.0 (6.10)			031	100.0 (6.10)				

* Performance Characteristics same as HT6C , HT6CC *

Power Steering Vane Pump
HVTM42 Series

Features

- VTM42 Series is fixed displacement and balanced type vane pump for mobile and marine power steering application. With flow control and relief valves, the pump does not need separate valves. The pump also can be combined with tank or manifold assembly to be piped to an external tank. With threaded shaft and heavy duty bearing, the pump can be used with gear and pulley drive.



HVTM42 - 20 - 15 - 20 - F 11 - R 1

1 2 3 4 5 6 7 8

1 Model

HVTM42

2 Delivery (USgpm at 1200 rpm & 7 bar)

10 - 1.0 USgpm
15 - 1.5 USgpm
20 - 2.0 USgpm
40 - 4.0 USgpm
50 - 5.0 USgpm
60 - 6.0 USgpm

3 Controlled Flow rate (at 1500 rpm & 7 bar)

USgpm (L/min)

15 - 1.5 (6.0)
20 - 2.0 (8.0)
25 - 2.5 (9.5)
30 - 3.5 (13.0)
40 - 4.0 (15.0)
45 - 4.5 (17.0)
50 - 5.0 (19.0)
55 - 5.5 (21.0)
60 - 6.0 (23.0)
65 - 6.5 (25.0)
70 - 7.0 (26.5)
75 - 7.5 (28.0)

4 Relief Valve Cracking Pressure Setting

psi (bar)

05 - 500 (35)
07 - 750 (52)
10 - 1000 (70)
12 - 1250 (86)
15 - 1500 (100)
17 - 1700 (120)
20 - 2000 (140)

5 Filter for Tank

no code - Standard baffle without filter
F - With filter

6 Tank or Manifold

NO - Without Tank
11 - With 115 cu.in. (1884 cc.) Tank
07 - With 70 cu.in. (1147 cc.) Tank
MA - Manifold without bypass tube
MF - Cast iron manifold with bypass tube
ME - Cast iron manifold with no bypass tube
MB - Manifold with bypass tube

7 Shaft Rotation

(Viewed from shaft end)

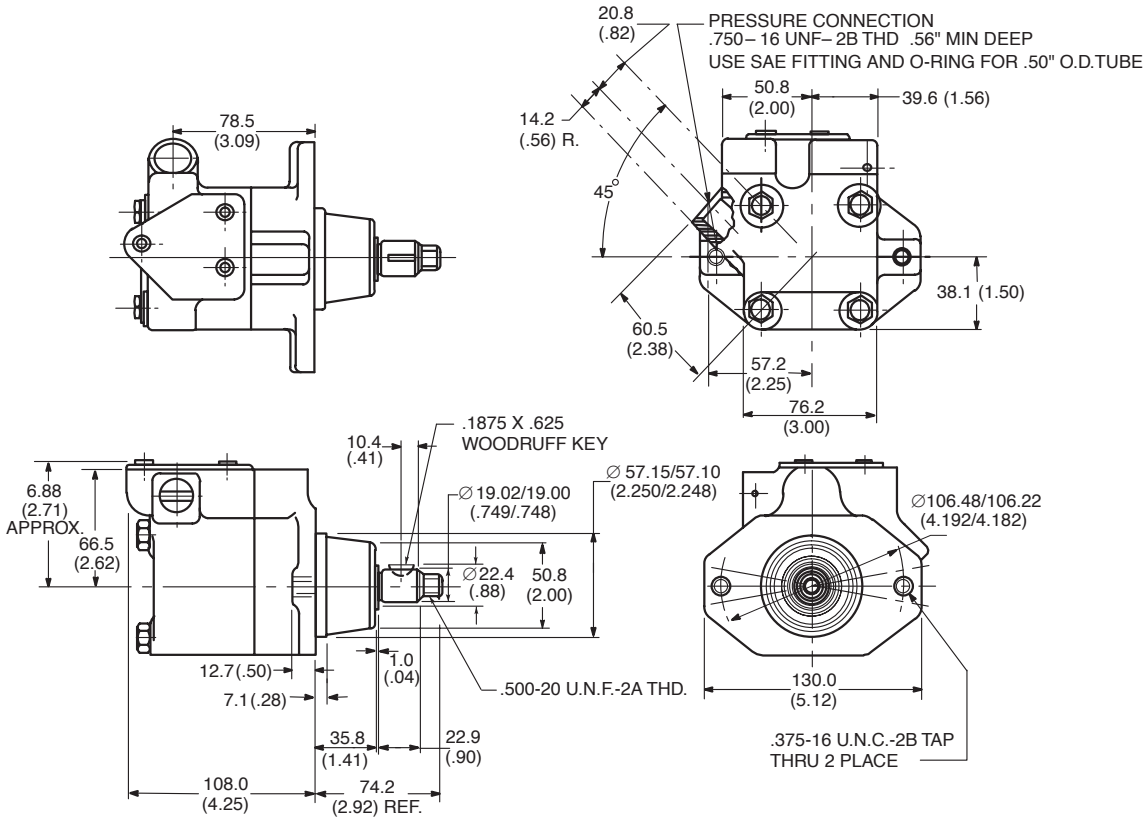
no code - Turn right
L - Turn left

8 Shaft

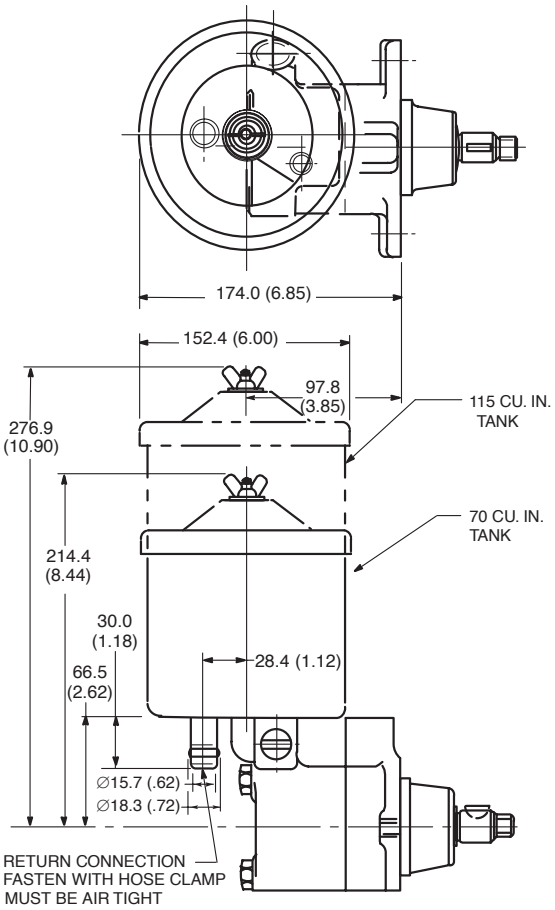
1 - Threaded

Specification

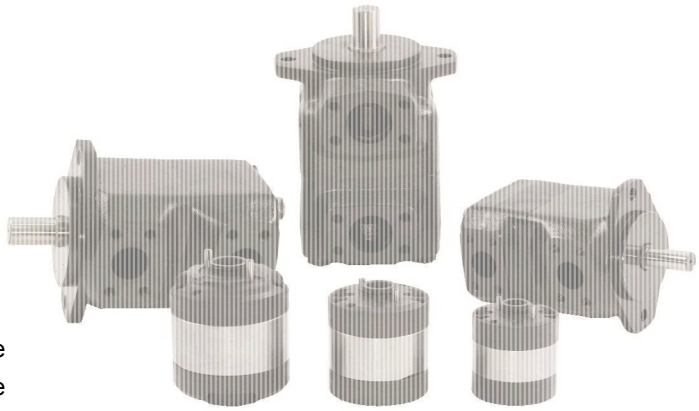
Model Series	Ring Size Delivery at 1200 r/m & 7 bar (100psi) Usgpm	Geometric Displacement cm^3/r (in^3/r)	Maximam Speed at 7 bar (100 psi) rpm	Maximam Speed at 100 bar (1500 psi) rpm	Maximam Speed at 140 bar (2000 psi) rpm	Maximum Pressure bar (psi)	Weight kg (lb)
HVTM42	1	3.4 (0.21)	7000	5000	4250	140 (2000)	6.4 (14)
	1.5	5.0 (0.31)	7000	4500	4000		
	2	6.2 (0.38)	7000	4200	3800		
	4	12.9 (0.79)	7000	2800	2800		
	5	15.7 (0.96)	6000	2500	2300		
	6	19.3 (1.18)	5000	2500	2000		



HVTM42 *Tank Dimensions*



Features and Handling



High speed and high-pressure motors ranging from 43.9 to 193.2 cm^3 / r with 172 bar of maximum pressure and 9 torques rating choices.The internal inlet chambers are equally and diametrically opposed resulting in balanced in radial loads.
Thus, the motors are hydraulically balanced which reduced wear and heat from friction.

These motors provide 90% efficiency due to dual pressure plates, which produced low internal leakage. Motors are bi-rotational, simply reversed by reversing in flow direction.

25 HM 65 A - 11 C

1 2 3 4 5 6

1 Series

25HM, 35HM, 45HM

2 Vane Type Motor (Externally drained)

3 Ring size-Nominal torque Rating

(lb.in./100psi)

25HM - 30, 42, 55, 65

35HM - 80, 95, 115

45HM - 130, 155, 185

4 Mounting Flange and Port Connections

A - SAE type 2 - bolt mounting Flange and SAE 4- bolt flange connections

5 Shaft

1 - Straight keyed

11 - Splined

6 Cover positions

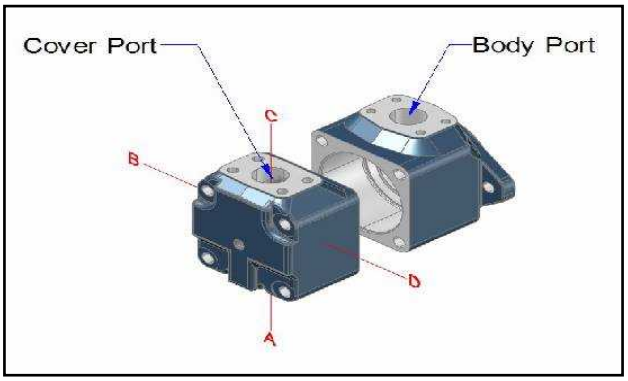
(Viewed from cover end)

A - Opposite body port

B - 90° CCW body port

C - Inline with body port

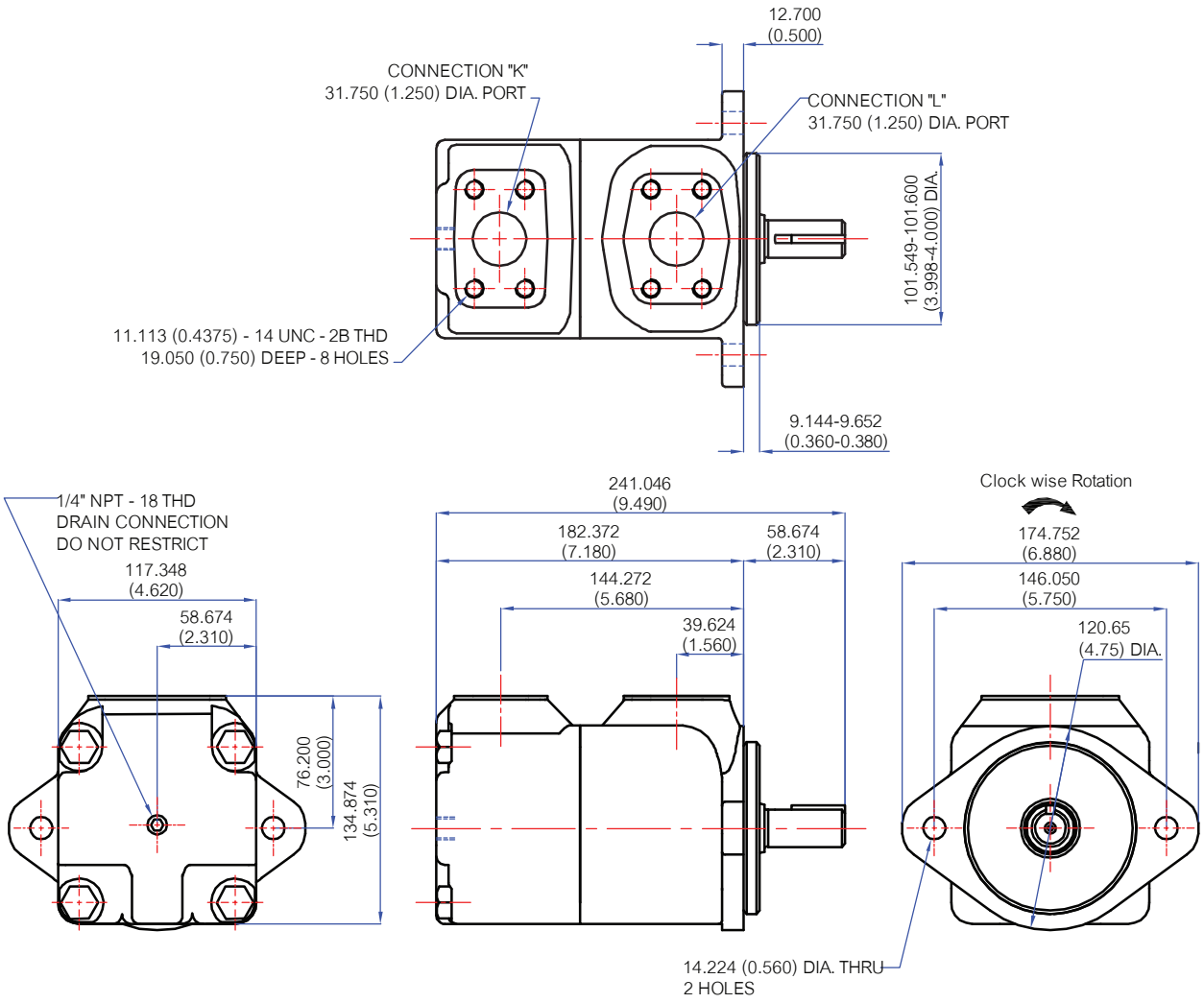
D - 90° CW from body port



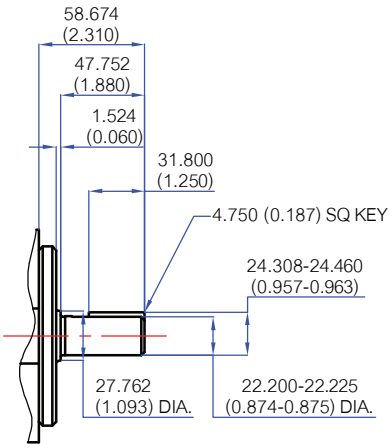
Specifications — Vane Motor HM Series

Model Series	Torque Nm/6, 9bar (lb in/100 psi)	Displacement cm^3/r (in^3/r)	Flow input/ requried @ 1200 r/min L/min (USgpm)	Maximum speeds & pressures	Approx Weight kg (lb)
25HM	3.3 (30)	29.0 (1.77)	34.8 (9.19)	3600 r/min @ 34 bar (500 psi) 4000 r/min @ 34 bar (500 psi)	18 (40)
	4.7 (42)	43.9 (2.68)	52.6 (13.9)		
	6.2 (55)	57.7 (3.52)	69.3 (18.3)		
	7.3 (65)	68.7 (4.19)	82.5 (21.8)		
35HM	9.0 (80)	83.6 (5.10)	100.3 (26.5)		29 (64)
	10.7 (95)	100.3 (6.12)	120.4 (31.8)		
	13.0 (115)	121.9 (7.44)	146.1 (38.6)		
45HM	14.7 (130)	138.0 (8.42)	165.4 (43.7)	2400 r/min @ 155 bar (2250 psi) 3000 r/min @ 172 bar (2500 psi)	39 (85)
	17.5 (155)	163.2 (9.96)	195.7 (51.7)		
	20.9 (185)	193.2 (11.79)	232.0 (61.3)		

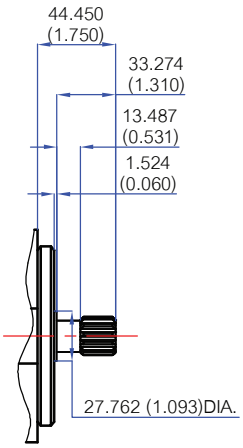
25HM



25M Series
No.1 Straight-keyed Shaft

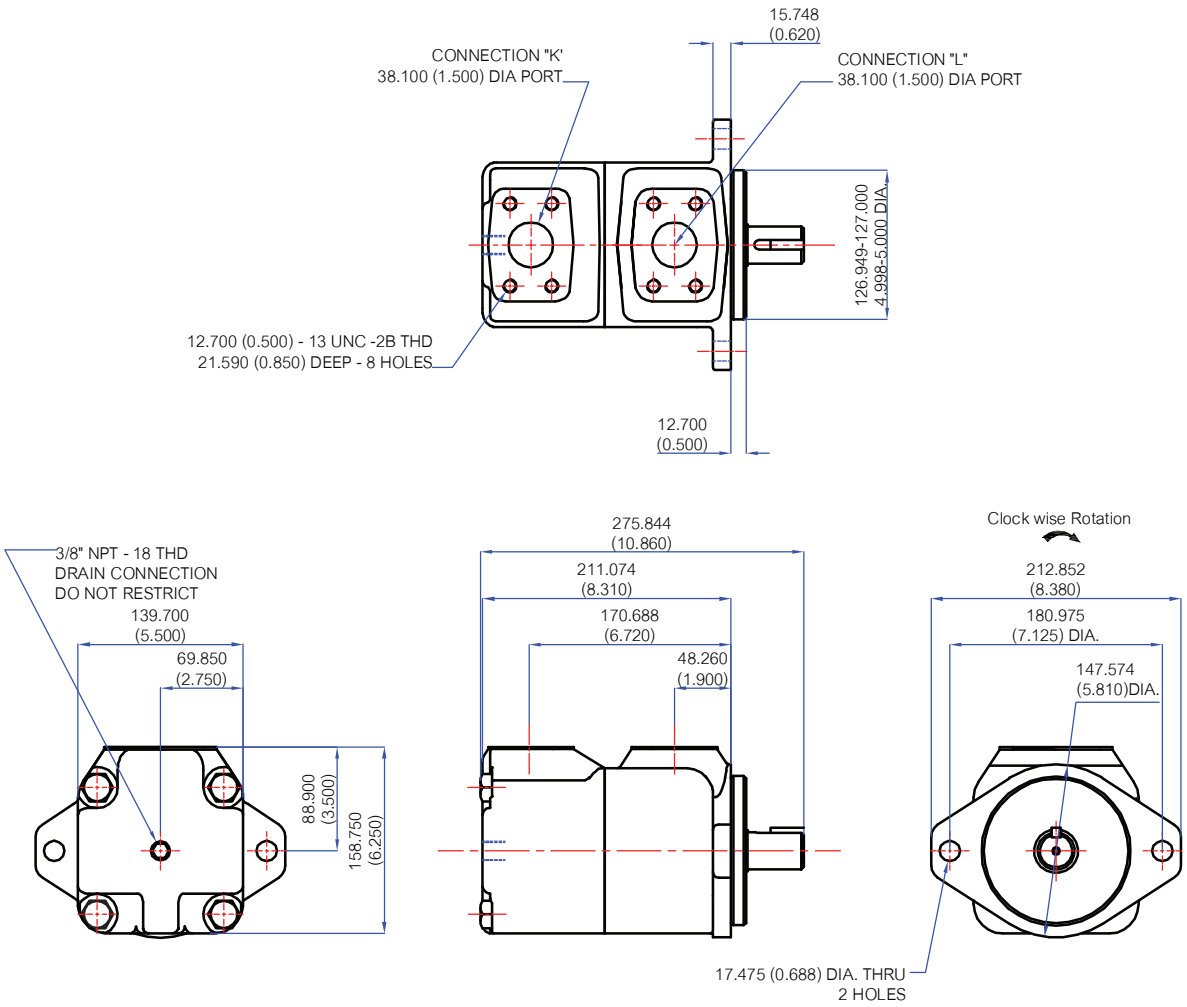


25M Series
No.11 SAE Involute Spline Shaft

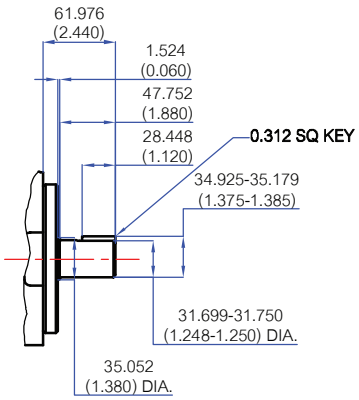


16/32" DIAMETRAL PITCH
13 TEETH 30° PRESSURE ANGLE
19.032 (0.7493) T.I.F. DIA
20.637 (0.8125) PITCH DIA
22.148-22.174 (0.872-0.873) MAJOR DIA.
18.351-18.630 (0.7225-0.7335) MINOR DIA.
CIR TOOTH THICKNESS:
MAX EFFECTIVE....2.456 (0.0967)
MIN EFFECTIVE....2.425 (0.0955)
MAX ACTUAL.....2.418 (0.0952)
MIN ACTUAL.....2.387 (0.0940)

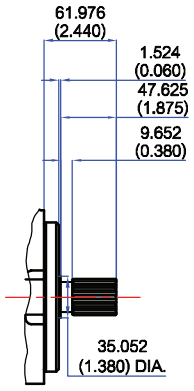
35HM



35M Series
No.1 Straight-keyed Shaft

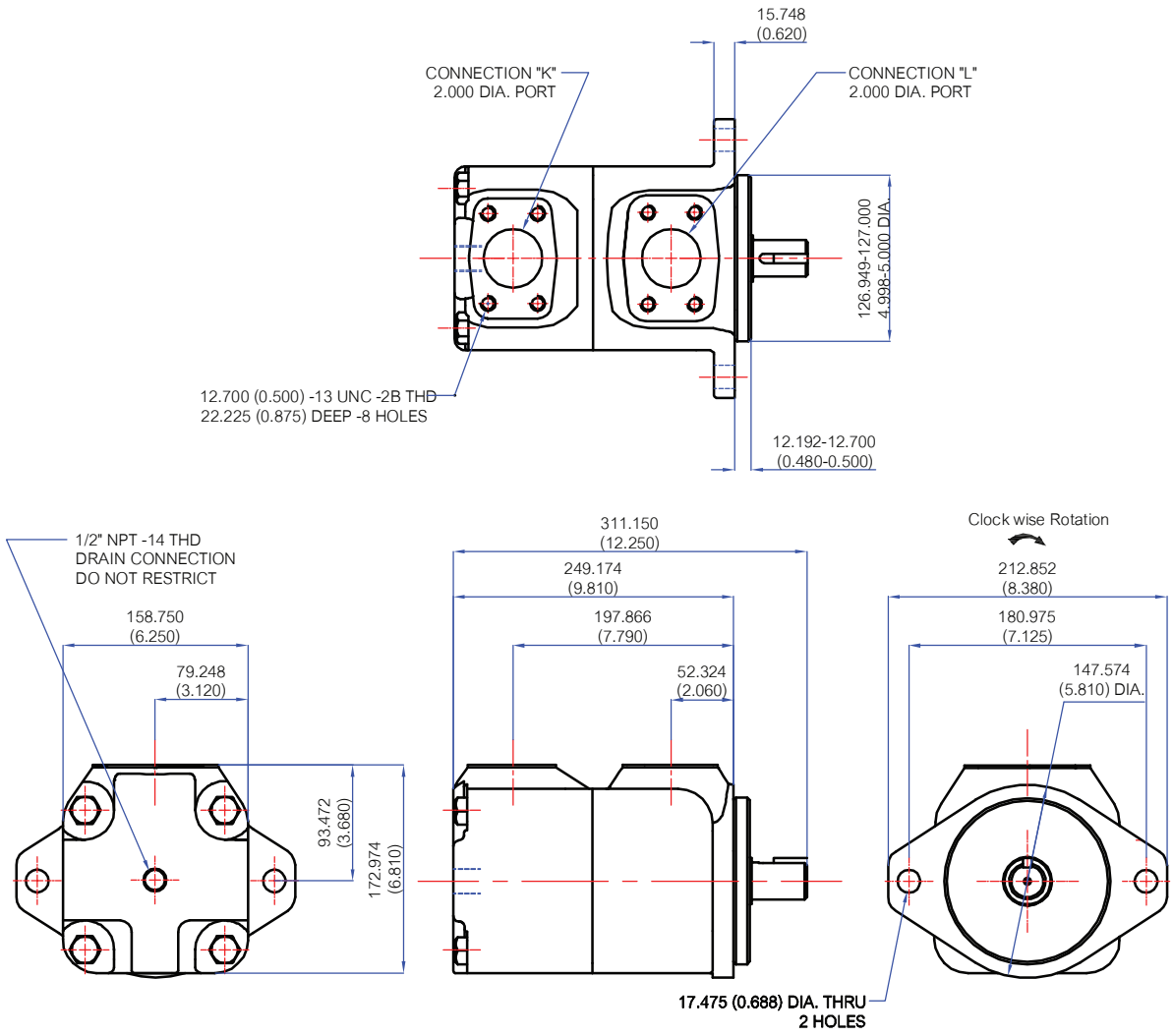


35M Series
No.11 SAE Involute Spline Shaft

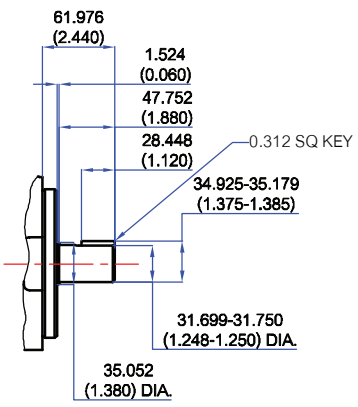


12/24" DIAMETRAL PITCH
14 TEETH 30° PRESSURE ANGLE
27.487 (1.0822) T.I.F. DIA
29.634 (1.1667) PITCH DIA
31.673-31.699 (1.247-1.248) MAJOR DIA.
26.662-26.992 (1.0497-1.0627) MINOR DIA.
CIR TOOTH THICKNESS:
MAX EFFECTIVE.....3.286 (0.1294)
MIN EFFECTIVE.....3.256 (0.1282)
MAX ACTUAL.....3.243 (0.1277)
MIN ACTUAL.....3.213 (0.1265)

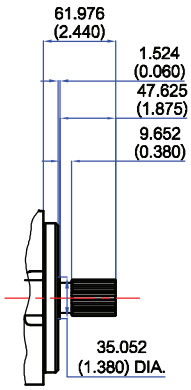
45HM



45M Series
No.1 Straight-keyed Shaft



45M Series
No.11 SAE Involute Spline Shaft



12/24" DIAMETRAL PITCH
14 TEETH 30° PRESSURE ANGLE
27.487 (1.0822) T.I.F. DIA
29.634 (1.1667) PITCH DIA
31.673-31.699 (1.247-1.248) MAJOR DIA.
26.662-26.992 (1.0497-1.0627) MINOR DIA.
CIR TOOTH THICKNESS:
MAX EFFECTIVE.....3.286 (0.1294)
MIN EFFECTIVE.....3.256 (0.1282)
MAX ACTUAL.....3.243 (0.1277)
MIN ACTUAL.....3.213 (0.1265)

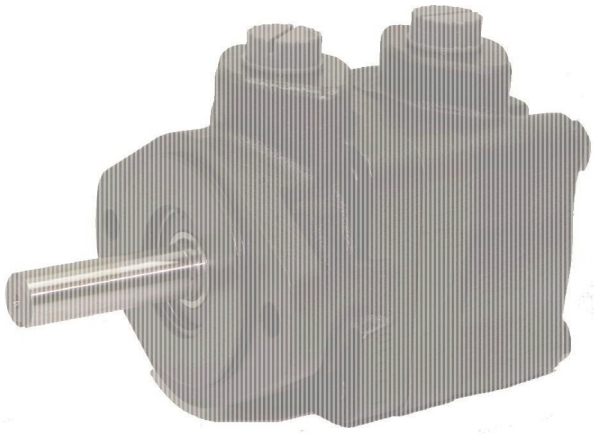
High Torque Vane Motor
HM2-210 Series

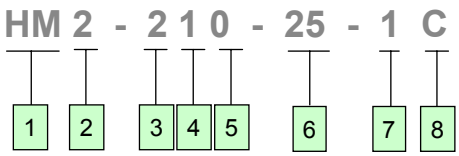
Features

HM2 spring loaded vane motors suitable for industrial and mobile applications. The wide range of speeds and pressure make them ideal for most motor applications.

Motors are constructed with spring loaded vanes offering smooth operation over a wide speed range.

Motors can be reversed or stalled underload without damage to the unit when proper relief protection is applied. A full size unrestricted drain line must be connected directly from case drain to reservoir return located below the lowest fluid level in the system.





1 Vane Type Motor

2 Series (bi-directional rotation)

3 Series frame size

2 - Small

4 Porting

1 - 3/4 NPT both ports

2 - 1 5/16"-12UN both ports

5 Mounting

0 - 2-bolt flange

6 Ring size-Nominal torque Rating

25 - 25 lb. in. Per 100 psi

35 - 35 lb. in. Per 100 psi

7 Shaft

1 - Straight keyed

3 - Woodruff keyed

6 - Straight stub

11 - Splined

8 Cover Port positions

(Viewed from cover end)

A - Opposite body port

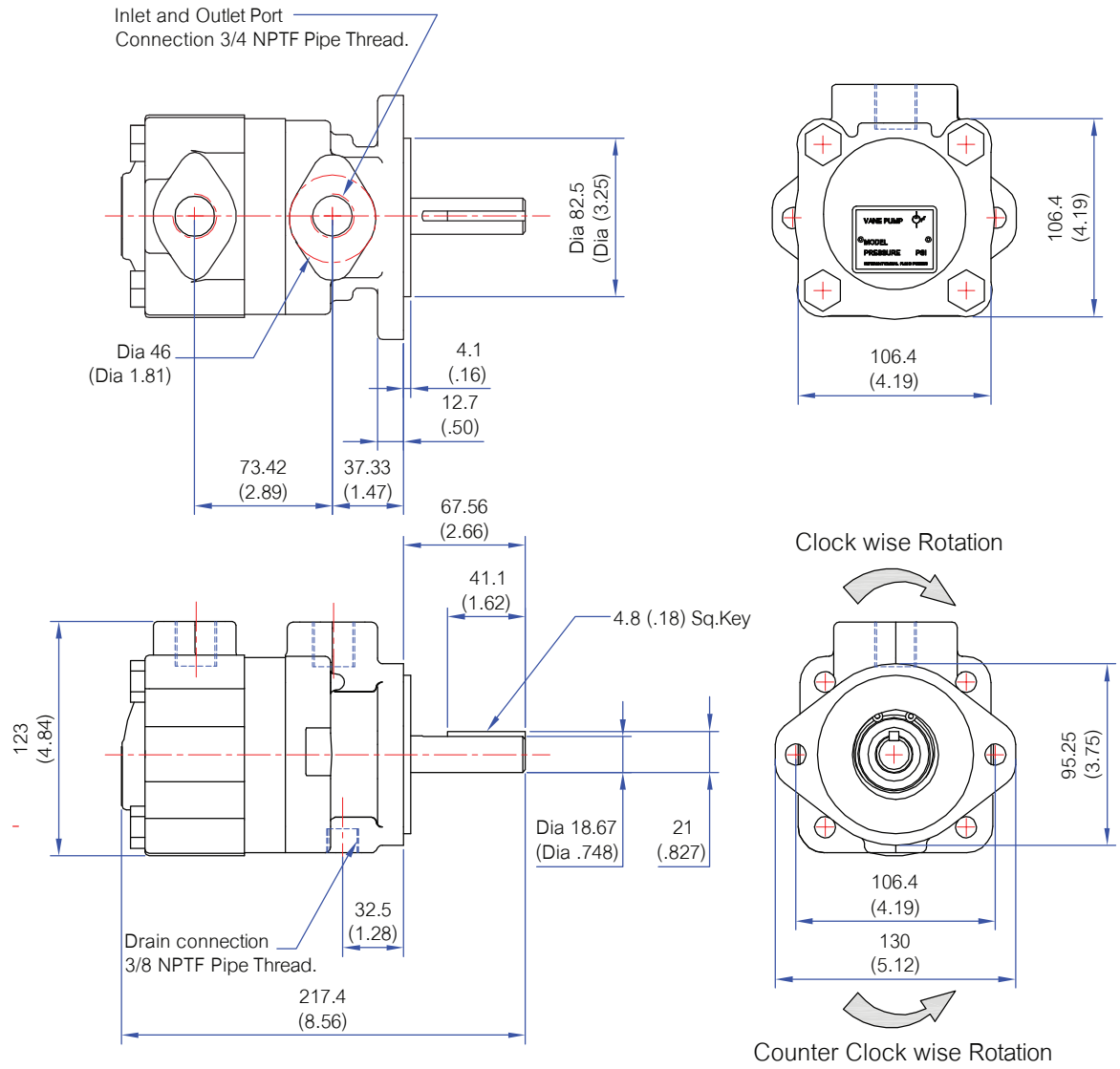
B - 90° CCW body port

C - Inline with body port

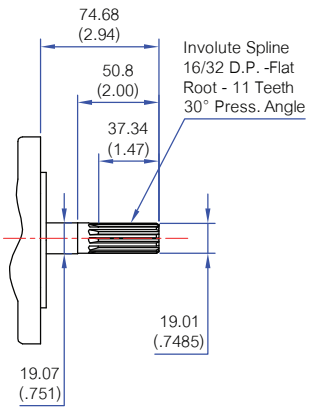
D - 90° CW from body port

Model Seies	Torque Nm/6, 9 bar (lb in/100 psi)	Displacement cm^3/r (in^3/r)	Maximum speeds & Pressure	Approx Weight kg (lb)
HM2-210 & HM2-220	2.0 (25)	24.7 (1.51)	2200 r/min @ 138 bar (2000 psi)	9.5 (21)
	4.0 (35)	35.4 (2.16)	1800 r/min @ 121 bar (1750 psi)	

HM2-210



Splined (No.11)

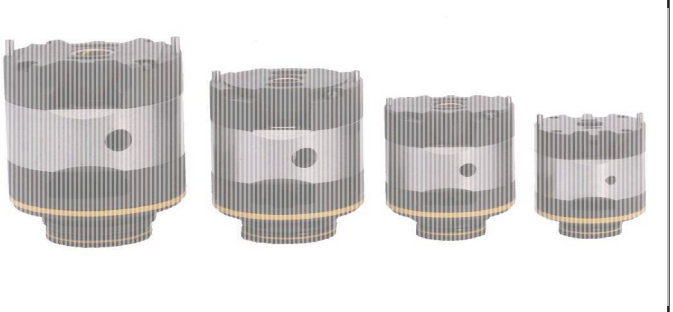


Weight :8.9 Kg (19.58 lb)

Cartridge Kit for Vane Pump
HV and HVQ Series

Features

- Replacement parts for fixed displacement vane pumps (single and double vane pump HV/HVQ series).
- Available in both 12 vanes design for industrial application with quiet operating and 10 vanes design for mobile application with higher pressure and wider range of speed.
- With the cartridge independent of the shaft, allowing for easy change of flow capacity and field servicing without removing the pump from its mounting.



Handling

- When ordering, if left hand rotation, special seal, or a specific position of cartridge (shaft end or cover end) is required, it should be specified by ordering code.
- To reverse rotation of cartridge, remove the two screws and reverse the location of the inlet support plate and outlet support plate (for cartridge kit with flex side plates, Bronze faces must be installed toward the rotor. DO NOT allow the flex plate to slide across the ring and rotor. Rough edges on the ring and rotor may cause scratches in the soft brass surface.) Make sure that the sharp edge of Vane leads direction of rotation. Re-install the two screws hand tight. Use pump cover to align all sections of the cartridge. Carefully remove the cover and tighten the screws.
- When install the cartridge into the body, carefully move back and forth until the cartridge pins drop into the cover holes and one of the chamfers on the cam ring aligns with the cover inlet port.

Ordering Code

25HVQ - 21 - C - L

1 2 3 4 5

1 Model
20, 25, 30, 35, 45

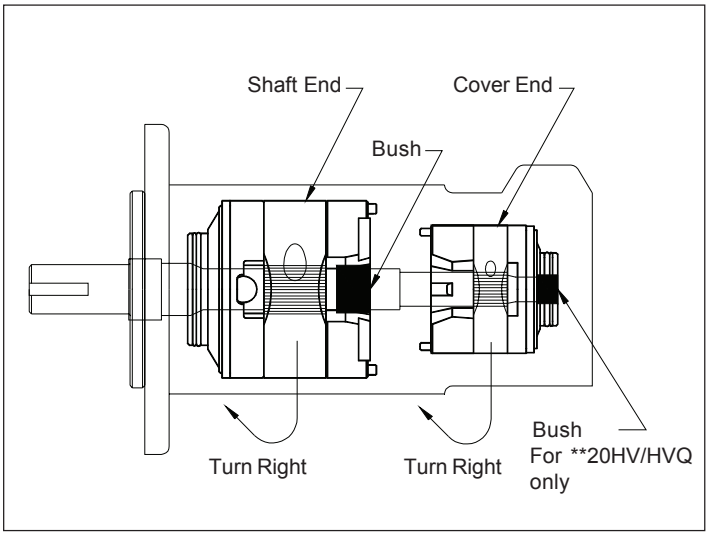
2 Series
HV - Industrial
HVQ - Mobile

3 Ring Size (USgpm)
20HV/HVQ - 2, 5, 8, 9, 11, 12, 14
25HV/HVQ - 12, 14, 17, 19, 21
30HV/HVQ - 24, 28
35HV/HVQ - 21, 25, 30, 35, 38
45HV/HVQ - 42, 47, 50, 57, 60

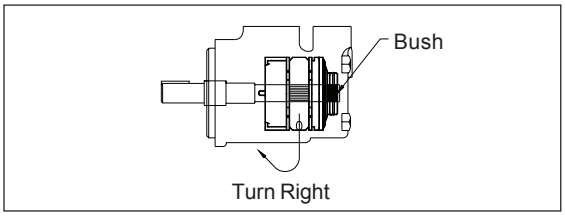
4 Cartridge Position
Omit - For single pump or shaft end in double pump
C - For cover end in double pump

5 Shaft Rotation
(Viewed from shaft end)
Omit - Turn right
L - Turn left

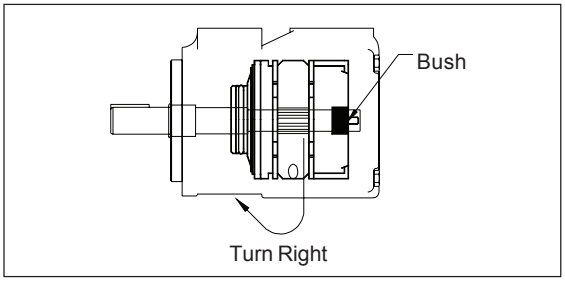
Cartridge Kit Position and Rotation



Double Pump

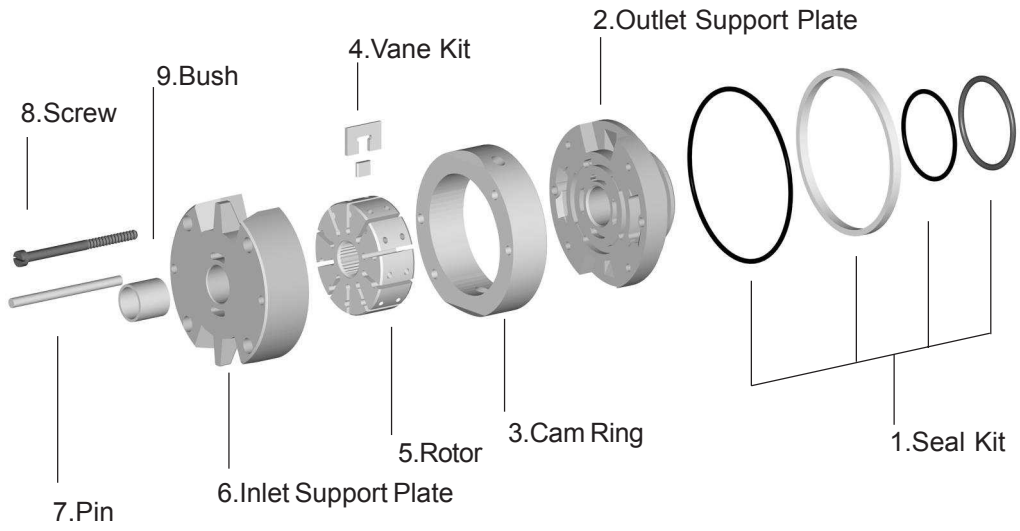


Single Pump, 20HV/HVQ

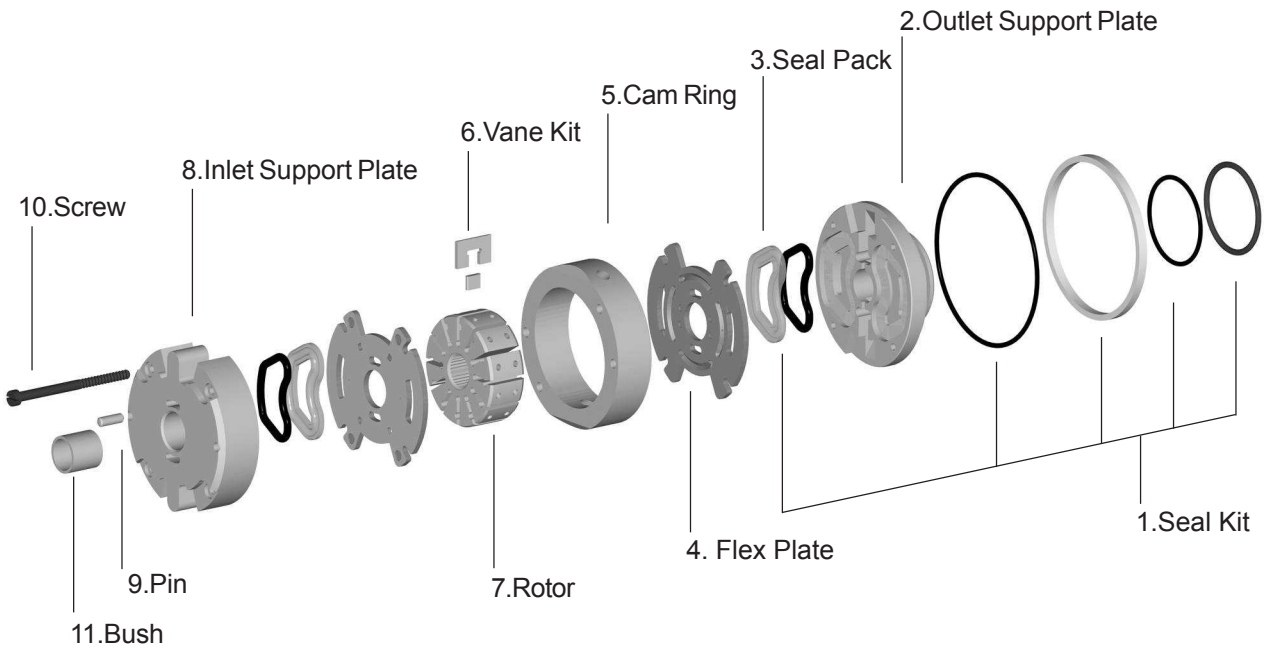


Single Pump, 25HV/HVQ, 35HV/HVQ, 45HV/HVQ

Cartridge Kit Components (HV Series)



Cartridge Kit Components (HVQ Series)



Instruction for Cartridge Replacement in Single Pump

1. Remove the four cover screws and lift the outlet cover. Pull out the old Cartridge. Discard the old large square cut seal and large O ring of the cartridge.

2. Check the wear surfaces of old cartridge. If the wear is normal just change oil in tank circuit and change or clean filters. If there is seizure or heavy wear in rotor, support plates (for HV Series), and flex plates (for HVQ Series), disassemble the pump completely. Check the shaft alignment and make sure that it is not twisted or crooked. The shaft may need to be changed and also check shaft seal and shaft bearing (remove the large lock ring to remove shaft seal and remove snap ring to remove bearing). Change them if neccessary. If these parts are defective or the oil is dirty, the new cartridge's service life will be shorter than normal.

3. Install square cut seal into the body. Install small O ring and back-up ring on the cartridge outlet support plate hub. Carefully install the cartridge into the body. Install the cover to the body with large O ring in the groove of the body. Install the cover in position; move back and forth until the cartridge pins drop into the alignment holes located within the cover. Install four screws and torque tighten to the values indicated.

Model	Torque Specification	
	N.m	lb.ft.
20HV/HVQ	48-55	65-75
25HV/HVQ	48-55	65-75
35HV/HVQ	102-118	140-160
45HV/HVQ	188-203	255-275

4. Turn the pump shaft to verify freedom of the cartridge.

Instruction for Cartridge Replacement in Double Pump

1. Remove the four cover screws and lift the outlet cover. Pull out the old Cover End Cartridge (Pry with screw-driver if necessary). Remove four screws from the inlet housing. Lift inlet housing from the outlet body. Rotate shaft to loosen Shaft End Cartridge and remove the cartridge from outlet body. Discard the old large square cut seals and large O rings of both cartridges.

2. Check the wear surfaces of old cartridges. If the wear is normal just change oil in tank circuit and change or clean filters. If there is seizure or heavy wear in rotors, support plates (for HV Series), and flex plates (for HVQ Series), disassemble the pump completely. Check the shaft alignment and make sure that it is not twisted or crooked. The shaft may need to be changed and also check shaft seal and shaft bearing (remove the large lock ring to remove shaft seal and remove snap ring to remove bearing). Change them if neccessary. If these parts are defective or the oil is dirty, the new cartridges' service life will be shorter than normal.

3. For new Shaft End Cartridge, install square cut seal into the body. Install small O ring and back-up ring on the cartridge outlet support plate hub. Carefully install the cartridge into the body. Install the inlet housing to the body with large O ring in the groove of the body. Install inlet housing in position; move back and forth until the cartridge pins drop into the alignment holes located within the housing. Install four screws and torque tighten to the values indicated.

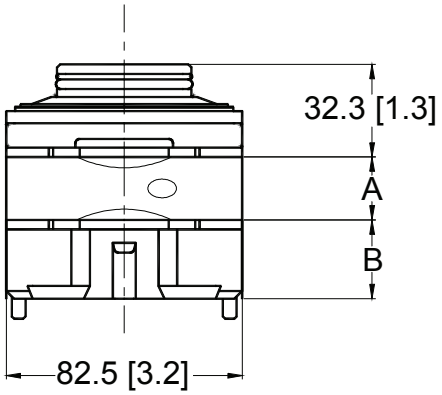
Model	N.m	lb.ft.
2520HV/HVQ	48-55	65-75
3520HV/HVQ	102-118	140-160
3525HV/HVQ	102-118	140-160
4520HV/HVQ	188-203	255-275
4525HV/HVQ	188-203	255-275

4. For new Cover End Cartridge, install a square cut seal into the cover. Install O ring and back-up ring on the cartridge outlet support plate hub. Carefully install cartridge over shaft and into the inlet housing. Turn cartridge slightly to bring into alignment the pin holes and cartridge alignment pins. Install the cover to inlet housing with O ring seal over the cartridge and up against the inlet housing. Make sure square cut seal is in place within the cover. Orient the cover to agree with the alignment. Install the cover with four screws and torque the screws to the value indicated.

Model	N.m	lb.ft.
2520HV/HVQ	54-68	40-50
3520HV/HVQ	54-68	40-50
3525HV/HVQ	88-102	65-75
4520HV/HVQ	54-68	40-50
4525HV/HVQ	88-102	65-75
4535HV/HVQ	188-203	255-275

5. Turn the pump shaft to verify freedom of both cartridges.

Cartridge Kit 20HV Installation Dimensions mm (inch)

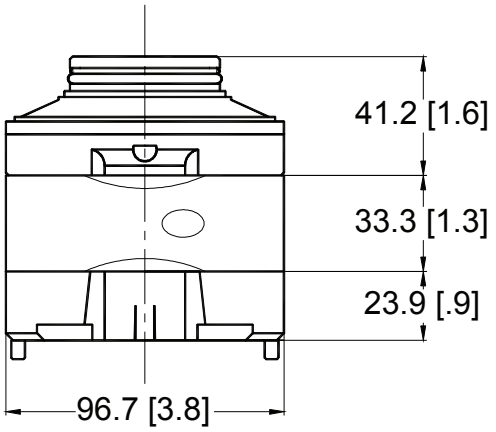


Delivery	A	B
2,5,8,9	21.95 [.86]	27.70 [1.09]
11,12,14	30.47 [1.20]	19.10 [0.75]

Specifications

Delivery at 1200 rpm & 7 bar (100 psi) *USgpm*	Displacement *cm^3/r (in^3/r)*	Maximum Speed *rpm*	Maximum Pressure *bar (psi)*	Typical Delivery at max speed & pressure *L/min (USgpm)*	Typical Input Power at max speed & pressure *kW (hp)*	Weight *kg (lb)*
2	7.0 (0.42)	1800	206 (3000)	11.3 (3.0)	5.2 (7.0)	2.4 (5.3)
5	18 (1.10)	1800	206 (3000)	28.4 (7.5)	11.2 (15.0)	2.4 (5.3)
8	27 (1.67)	1800	206 (3000)	45.4 (12.0)	17.0 (22.8)	2.4 (5.3)
9	30.2 (1.84)	1800	206 (3000)	51.0 (13.5)	23.5 (31.5)	2.3 (5.1)
11	36 (2.22)	1800	206 (3000)	56.8 (15.0)	22.6 (30.3)	2.3 (5.1)
12	40 (2.47)	1800	158 (2300)	62.1 (16.4)	25.1 (33.7)	2.3 (5.1)
14	45 (2.78)	1800	138 (2000)	69.6 (18.4)	28.3 (37.9)	2.3 (5.1)

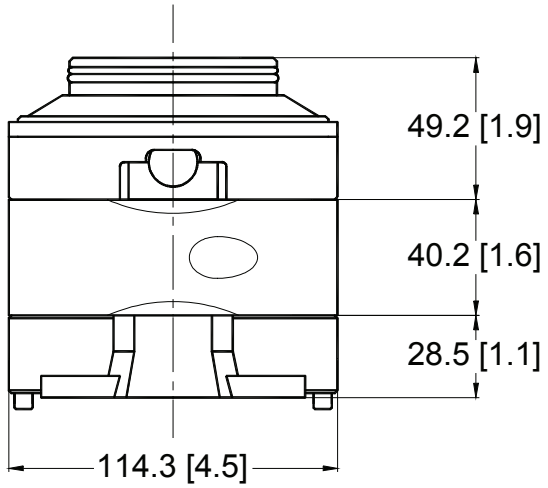
Cartridge Kit 25HV Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) *USgpm*	Displacement *cm^3/r (in^3/r)*	Maximum Speed *rpm*	Maximum Pressure *bar (psi)*	Typical Delivery at max speed & pressure *L/min (USgpm)*	Typical Input Power at max speed & pressure *kW (hp)*	Weight *kg (lb)*
12	39 (2.47)	1800	172 (2500)	62.1 (16.4)	22.9 (30.8)	3.6 (7.9)
14	45 (2.78)	1800	172 (2500)	69.6 (18.4)	25.7 (34.5)	3.6 (7.9)
17	55 (3.39)	1800	172 (2500)	86.3 (22.8)	29.8 (40.0)	3.6 (7.9)
19	60.8 (3.72)	1800	172 (2500)	96.1 (25.4)	32.5 (43.5)	3.6 (7.9)
21	67 (4.13)	1800	172 (2500)	106.0 (28.0)	34.0 (45.6)	3.6 (7.9)

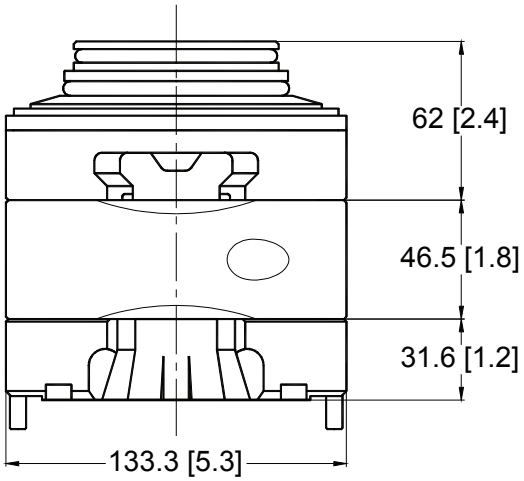
Cartridge Kit 35HV Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) *USgpm*	Displacement *cm^3/r (in^3/r)*	Maximum Speed *rpm*	Maximum Pressure *bar (psi)*	Typical Delivery at max speed & pressure *L/min (USgpm)*	Typical Input Power at max speed & pressure *kW (hp)*	Weight *kg (lb)*
21	68.3 (4.18)	1800	172 (2500)	106.3 (28.1)	34.0 (45.5)	6.5 (14.3)
25	81 (4.94)	1800	172 (2500)	124.9 (33.0)	45.5 (61.0)	6.5 (14.3)
30	97 (5.91)	1800	172 (2500)	154.4 (40.8)	54.5 (73.0)	6.5 (14.3)
35	112 (6.83)	1800	172 (2500)	181.7 (48.0)	61.5 (82.4)	6.5 (14.3)
38	121 (7.37)	1800	172 (2500)	193.8 (51.2)	65.9 (88.3)	6.5 (14.3)

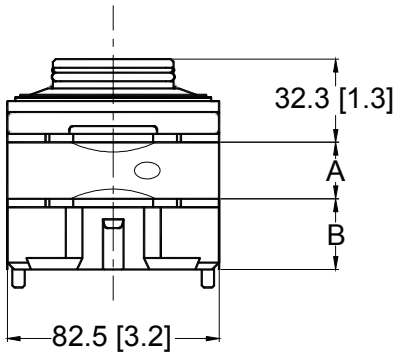
Cartridge Kit 45HV Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) *USgpm*	Displacement *cm^3/r (in^3/r)*	Maximum Speed *rpm*	Maximum Pressure *bar (psi)*	Typical Delivery at max speed & pressure *L/min (USgpm)*	Typical Input Power at max speed & pressure *kW (hp)*	Weight *kg (lb)*
42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	10.1 (22.3)
47	151.4 (9.26)	1800	172 (2500)	244.1 (64.5)	82.5 (110.6)	10.1 (22.3)
50	162 (9.85)	1800	172 (2500)	253.6 (67.0)	87.3 (117.0)	10.1 (22.3)
57	183.6 (11.23)	1800	172 (2500)	295.0 (77.8)	94.0 (126.0)	10.1 (22.3)
60	193 (11.75)	1800	172 (2500)	310.4 (82.0)	103.7 (139.0)	10.1 (22.3)

Cartridge Kit 20HVQ Installation Dimensions mm (inch)

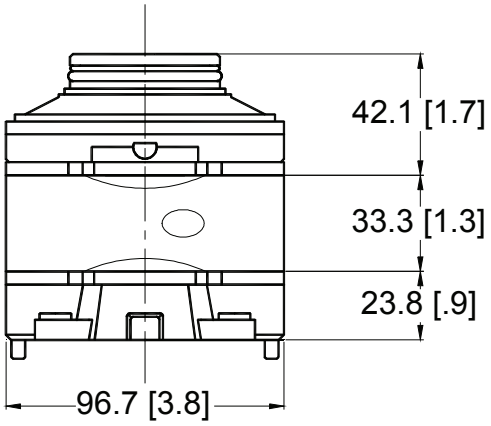


Delivery	A	B
2,5,8,9	21.95 [.86]	27.70 [1.09]
11,12,14	30.47 [1.20]	19.10 [0.75]

Specifications

Delivery at 1200 rpm & 7 bar (100 psi) *USgpm*	Displacement *cm^3/r (in^3/r)*	Maximum Speed *rpm*	Maximum Pressure *bar (psi)*	Typical Delivery at max speed & pressure *L/min (USgpm)*	Typical Input Power at max speed & pressure *kW (hp)*	Weight *kg (lb)*
2	7.0 (0.42)	2700	206 (3000)	15.9 (4.2)	7.3 (9.8)	2.4 (5.3)
5	18 (1.10)	2700	206 (3000)	41.6 (11.0)	17.9 (24.0)	2.4 (5.3)
8	27 (1.67)	2700	206 (3000)	64.3 (17.0)	26.1 (35.0)	2.4 (5.3)
9	30.2 (1.84)	2700	206 (3000)	71.5 (18.9)	32.9 (44.1)	2.4 (5.3)
11	36 (2.22)	2700	206 (3000)	87.1 (23.0)	35.4 (47.5)	2.3 (5.1)
12	39 (2.41)	2700	158 (2300)	96.5 (25.5)	28.3 (38.0)	2.3 (5.1)
14	45 (2.80)	2700	138 (2000)	113.6 (30.0)	29.1 (39.0)	2.3 (5.1)

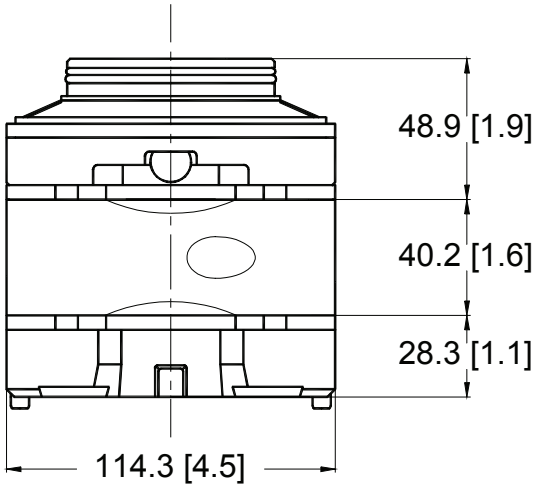
Cartridge Kit 25HVQ Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) *USgpm*	Displacement *cm^3/r (in^3/r)*	Maximum Speed *rpm*	Maximum Pressure *bar (psi)*	Typical Delivery at max speed & pressure *L/min (USgpm)*	Typical Input Power at max speed & pressure *kW (hp)*	Weight *kg (lb)*
12	40 (2.45)	2700	206 (3000)	87.1 (23.0)	41.0 (55.0)	3.6 (7.9)
14	45 (2.77)	2700	206 (3000)	102.2 (27.0)	46.6 (62.5)	3.6 (7.9)
17	55 (3.37)	2500	206 (3000)	117.3 (31.0)	51.8 (69.5)	3.6 (7.9)
19	60.8 (3.72)	2500	206 (3000)	130.5 (34.5)	55.0 (71.0)	3.6 (7.9)
21	67 (4.12)	2500	206 (3000)	143.8 (38.0)	61.9 (83.0)	3.6 (7.9)

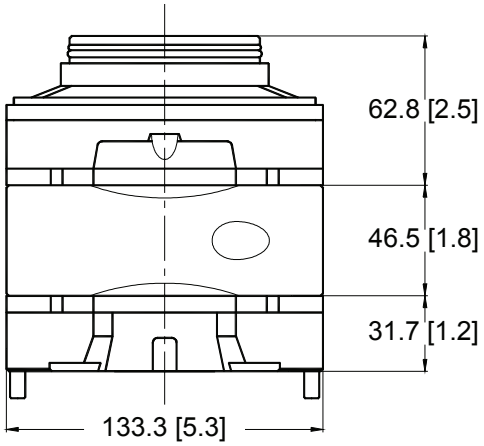
Cartridge Kit 35HVQ Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) *USgpm*	Displacement *cm^3/r (in^3/r)*	Maximum Speed *rpm*	Maximum Pressure *bar (psi)*	Typical Delivery at max speed & pressure *L/min (USgpm)*	Typical Input Power at max speed & pressure *kW (hp)*	Weight *kg (lb)*
21	68.3 (4.18)	2500	206 (3000)	143.8 (38.0)	55.0 (73.9)	6.5 (14.3)
25	81 (4.98)	2500	206 (3000)	170.3 (45.0)	75.3 (101.0)	6.5 (14.3)
30	97 (5.96)	2500	206 (3000)	208.2 (55.0)	87.7 (117.5)	6.5 (14.3)
35	112 (6.88)	2400	206 (3000)	227.1 (60.0)	98.5 (132.0)	6.5 (14.3)
38	121 (7.42)	2400	206 (3000)	246.0 (65.0)	104.4 (140.0)	6.5 (14.3)

Cartridge Kit 45HVQ Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) *USgpm*	Displacement *cm^3/r (in^3/r)*	Maximum Speed *rpm*	Maximum Pressure *bar (psi)*	Typical Delivery at max speed & pressure *L/min (USgpm)*	Typical Input Power at max speed & pressure *kW (hp)*	Weight *kg (lb)*
42	138 (8.41)	2200	172 (2500)	251.7 (66.5)	91.4 (122.5)	10.1 (22.3)
47	151.4 (9.26)	2200	172(2500)	280.8 (74.20)	95.0 (127.3)	10.1 (22.3)
50	162 (9.85)	2200	172 (2500)	299.0 (79.0)	105.2 (141.0)	10.1 (22.3)
57	183.6 (11.23)	2200	172 (2500)	342.5 (90.50)	109.3 (146.6)	10.1 (22.3)
60	193 (11.75)	2200	172 (2500)	363.4 (96.0)	126.8 (170.0)	10.1 (22.3)

Cartridge Kit for Vane Pump

HT Series

Features

The HT-series cartridge kit is interchangeable with DENISON. The balanced design and double lip vane technology are key features in providing a contamination resistant and reliable cartridge kit. High pressure and speed capabilities, extremely low noise make this fluid power source ideal for mobile and marine applications.
With these exceeding high qualities,our HT-series cartridges have satisfied many OEM clients around the world for more than 40 years.

Ordering Code

HT6CM - 022 - C - L

1 2 3 4 5

1 Model

HT6C, HT6D, HT7E

2 Series

Omit - Industrial

M - Mobile

3 Ring Size (USgpm)

HT6C - 003, 005, 006, 008, 010, 012, 014, 017, 020, 022, 025, 028, 031

HT6D - 014, 020, 024, 028, 031, 035, 038, 042, 045, 050, 061

HT7E - 042, 045, 050, 052, 054, 057, 062, 066, 072, 085

4 Cartridge Position

Omit - For single pump or shaft end in double pump

C - For cover end in double pump

5 Shaft Rotation

(Viewed from shaft end)

Omit - Turn right

L - Turn left

Specifications

Cartridge Kit HT6C

Delivery at 1200 rpm & 7 bar (100 psi)	Displacement	Maximum Speed	Maximum Pressure	Typical Delivery at max speed & pressure	Typical Input Power at max speed & pressure	Weight
USgpm	*cm^3/r 1(in^3/r)*	*rpm*	*bar (psi)*	*L/min(USgpm)*	*kW (hp)*	*kg (lb)*
003	10.0 (0.66)	2200	140 (2000)	16.7 (4.43)	5.5 (7.33)	4 (9)
005	17.2 (1.05)	2200	280 (4000)	23.0 (6.08)	87.0 (11.67)	4 (9)
006	21.3 (1.30)	2200	280 (4000)	34.1 (9.00)	21.5 (28.89)	4 (9)
008	26.4 (1.61)	2200	280 (4000)	43.1 (11.44)	26.7 (35.78)	4 (9)
010	34.1 (2.08)	2200	280 (4000)	63.0 (16.64)	34.5 (46.23)	4 (9)
012	37.1 (2.26)	2200	280 (4000)	63.5 (16.78)	37.4 (50.23)	4 (9)
014	46.0 (2.81)	2200	280 (4000)	88.1 (23.28)	46.5 (62.45)	4 (9)
017	58.3 (3.56)	2200	280 (4000)	121.4 (32.09)	59.0 (79.12)	4 (9)
020	63.8 (3.89)	2200	280 (4000)	125.0 (33.03)	64.5 (86.46)	4 (9)
022	70.3 (4.29)	2200	280 (4000)	140.0 (36.95)	71.1 (95.35)	4 (9)
025	79.3 (4.84)	2200	280 (4000)	158.7 (41.94)	80.2 (107.57)	4 (9)
028	88.8 (5.42)	2200	206 (3000)	182.7 (48.27)	67.4 (90.35)	4 (9)
031	100.0 (6.10)	2200	206 (3000)	210.8 (55.70)	75.8 (101.68)	4 (9)

Cartridge Kit HT6D

Delivery at 1200 rpm & 7 bar (100 psi)	Displacement	Maximum Speed	Maximum Pressure	Typical Delivery at max speed & pressure	Typical Input Power at max speed & pressure	Weight
USgpm	*cm^3/r 1(in^3/r)*	*rpm*	*bar (psi)*	*L/min(USgpm)*	*kW (hp)*	*kg (lb)*
014	47.6 (2.90)	2200	240 (3500)	83.1 (21.94)	42.1 (56.40)	7.6 (16.7)
020	66.0 (4.03)	2200	240 (3500)	123.2 (32.55)	58.4 (78.37)	7.6 (16.7)
024	79.5 (4.85)	2200	240 (3500)	154.7 (40.88)	70.3 (94.32)	7.6 (16.7)
028	89.7 (5.47)	2200	240 (3500)	172.3 (45.52)	79.3 (106.38)	7.6 (16.7)
031	98.3 (6.00)	2200	240 (3500)	189.8 (50.16)	87.0 (116.69)	7.6 (16.7)
035	111.0 (6.77)	2200	240 (3500)	217.7 (57.53)	98.1 (131.66)	7.6 (16.7)
038	120.3 (7.34)	2200	240 (3500)	238.1 (62.89)	106.4 (142.75)	7.6 (16.7)
042	136.0 (8.30)	2200	240 (3500)	278.9 (73.69)	120.5 (161.42)	7.6 (16.7)
045	145.7 (8.89)	2200	240 (3500)	300.6 (79.43)	128.9 (172.89)	7.6 (16.7)
050	158.0 (9.64)	2200	206 (3000)	324.3 (85.67)	119.8 (160.69)	7.6 (16.7)
061	190.5 (11.63)	2200	120 (1750)	407.8 (107.75)	84.3 (113.09)	7.6 (16.7)

Cartridge Kit HT7E

Delivery at 1200 rpm & 7 bar (100 psi)	Displacement	Maximum Speed	Maximum Pressure	Typical Delivery at max speed & pressure	Typical Input Power at max speed & pressure	Weight
USgpm	*cm^3/r 1(in^3/r)*	*rpm*	*bar (psi)*	*L/min(USgpm)*	*kW (hp)*	*kg (lb)*
042	132.3 (8.07)	2200	240 (3500)	259.5 (68.56)	117.0 (156.94)	11.7 (25.7)
045	142.4 (8.70)	2200	240 (3500)	283.4 (74.87)	126.2 (169.19)	11.7 (25.7)
050	158.5 (9.67)	2200	240 (3500)	319.0 (84.28)	140.2 (188.06)	11.7 (25.7)
052	164.8 (10.00)	2200	240 (3500)	331.2 (87.49)	145.0 (194.48)	11.7 (25.7)
054	173.8 (10.60)	2200	240 (3500)	352.8 (93.21)	153.7 (206.15)	11.7 (25.7)
057	180.7 (11.02)	2200	240 (3500)	370.1 (97.77)	159.8 (214.31)	11.7 (25.7)
062	196.7 (12.00)	2200	240 (3500)	403.7 (106.65)	174.0 (233.37)	11.7 (25.7)
066	213.3 (13.00)	2200	240 (3500)	448.4 (118.45)	188.5 (252.82)	11.7 (25.7)
072	227.1 (13.86)	2200	240 (3500)	468.5 (123.76)	201.0 (269.54)	11.7 (25.7)
085	269.8 (16.40)	2000	90 (1300)	495.6 (130.93)	80.3 (107.69)	11.7 (25.7)

Solenoid Operated Directional Valve

WE Series

Features and Handling

- WE Series is a direct solenoid operated directional spool valve. The valve porting pattern follows DIN 24 340 form A. The valves come with wet pin DC or AC solenoids with removeable coil which can be rotated through 90 degree.
- The standard valves come with DIN 43650 electrical connector with light and manual override to permit the spool to be moved without the solenoid being energized.
- For correct operation, ensure that the solenoid pressure chamber is filled with oil. Do not exceed permissible voltage range of the coil.
- Keep surge pressure below the maximum permissible back pressure port T. Keep hydraulic oil clean at ISO cleanliness code 19/16.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change at any time without notice.

4HWE6D - 60/OAW110 - 10

1 2 3 4 5 6 7 8

1 Number of Port

3 - 3 ports

4 - 4 ports

2 Valve Size

6 - NG6 (CETOP3)

10 - NG10 (CETOP5)

3 Spool type

4 Design

60 - for HWE6

30 - for HWE10

5 Spring and Detent

Omit - Spring return

O - Without Spring return

OF - Without Spring return with detent

6 Coil type

A - Wet pin oil immersed with removable coil

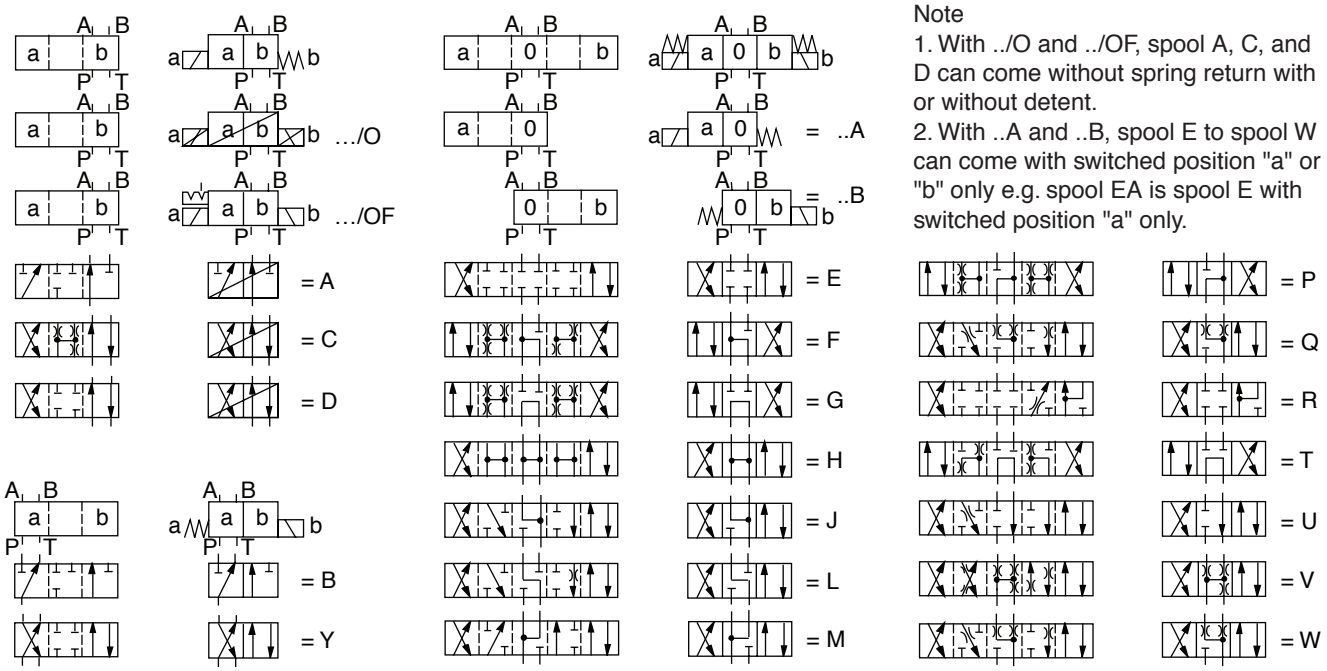
7 Coil Voltage

G24 - 24V DC

W220 - 220V AC 50/60 Hz

W110 - 110V AC 50/60 Hz

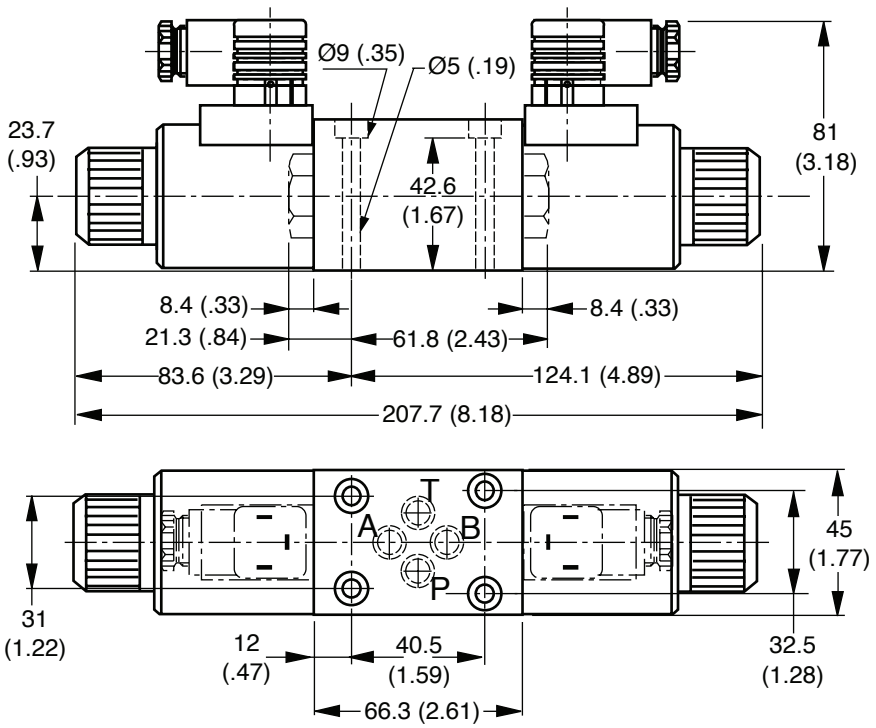
8 Further detail for future use



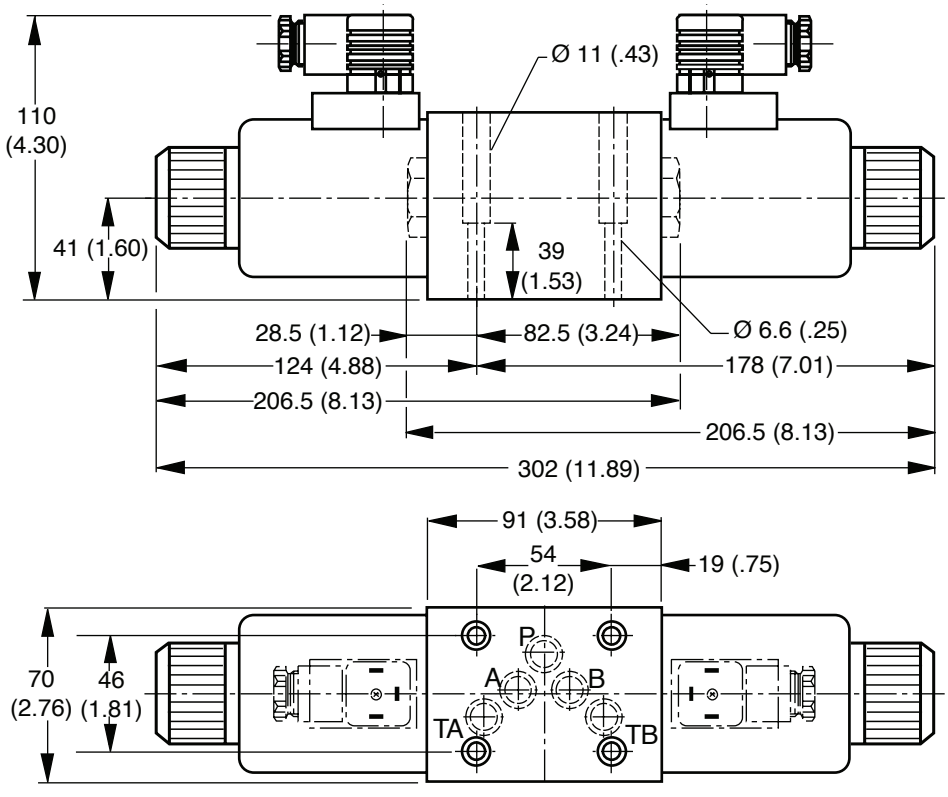
Note

1. With ../O and ../OF, spool A, C, and D can come without spring return with or without detent.
2. With ..A and ..B, spool E to spool W can come with switched position "a" or "b" only e.g. spool EA is spool E with switched position "a" only.

HWE6


Ø9 (.35)
Ø5 (.19)
23.7
(.93)
81
(3.18)
42.6
(1.67)
8.4 (.33)
8.4 (.33)
21.3 (.84)
61.8 (2.43)
83.6 (3.29)
124.1 (4.89)
207.7 (8.18)
T
A
B
P
45
(1.77)
31
(1.22)
12
(.47)
40.5
(1.59)
32.5
(1.28)
66.3 (2.61)

HWE10


Ø 11 (.43)
110
(4.30)
41 (1.60)
39
(1.53)
28.5 (1.12)
82.5 (3.24)
Ø 6.6 (.25)
124 (4.88)
178 (7.01)
206.5 (8.13)
206.5 (8.13)
302 (11.89)
91 (3.58)
54
(2.12)
19 (.75)
P
A
B
TA
TB
70
(2.76)
46
(1.81)

Pilot Operated Relief Valve
RB Series

Features and Handling

- RB Series are Balanced Piston type relief valves with three pressure ranges available. The valves come with optional Vent port and Gauge port. The valves can be controlled by Solenoid Opereated Directional Control valve with optional cover setting for mounting the Solenoid Operated Directional Control valve on top.
- To adjust the set pressure, loosen the lock nut of the valve and turn the handle to adjust the pressure. Maintain the back pressure at the tank port as low as possible, less than 2 bar (28 psi).

Ordering Code — *RB Series*

RB(E) - T06 - B - C

1 2 3 4 5 6

1 Model : RB

2 Cover

no code - Standard Cover

E - Cover for mounting CETOP3 or NG6 Solenoid Valve (size 06 and size 10 only)

3 Mounting

T - Threaded connections

G - Gasket mounting (size 03 and 06 only)

4 Valve size

03 - 3/8"

04 - 1/2"

06 - 3/4"

10 - 1-1/4"

5 Threaded size (Threaded connections only)

RB-T04

Code	Thread size
no code	1/2" BSPT
B	1/2" BSP

RB-T06 or RBE-T06

Code	Thread size
no code	3/4" NPT
B	3/4" BSP
S	SAE #12

RB-T10 or RBE-T10

Code	Thread size
no code	1-1/4" NPT
B	1-1/4" BSP
S	SAE #20

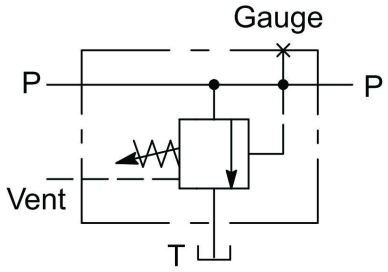
6 Pressure Range

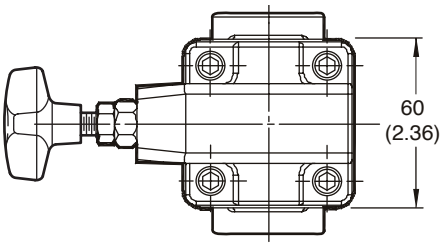
no code A - 7-70 bar (100-1000 psi)

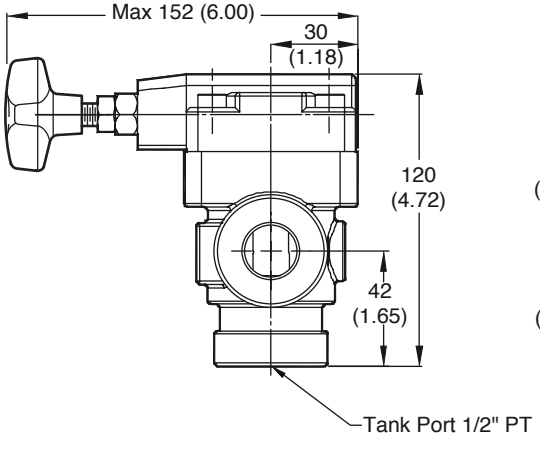
B - 35-140 bar (500-2000 psi)

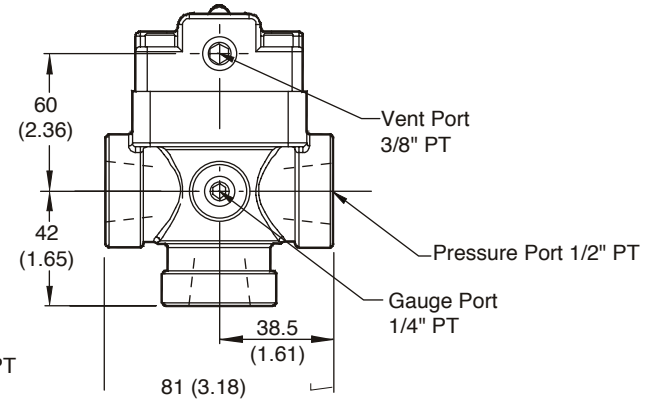
C - 70-210 bar (1000-3000 psi)

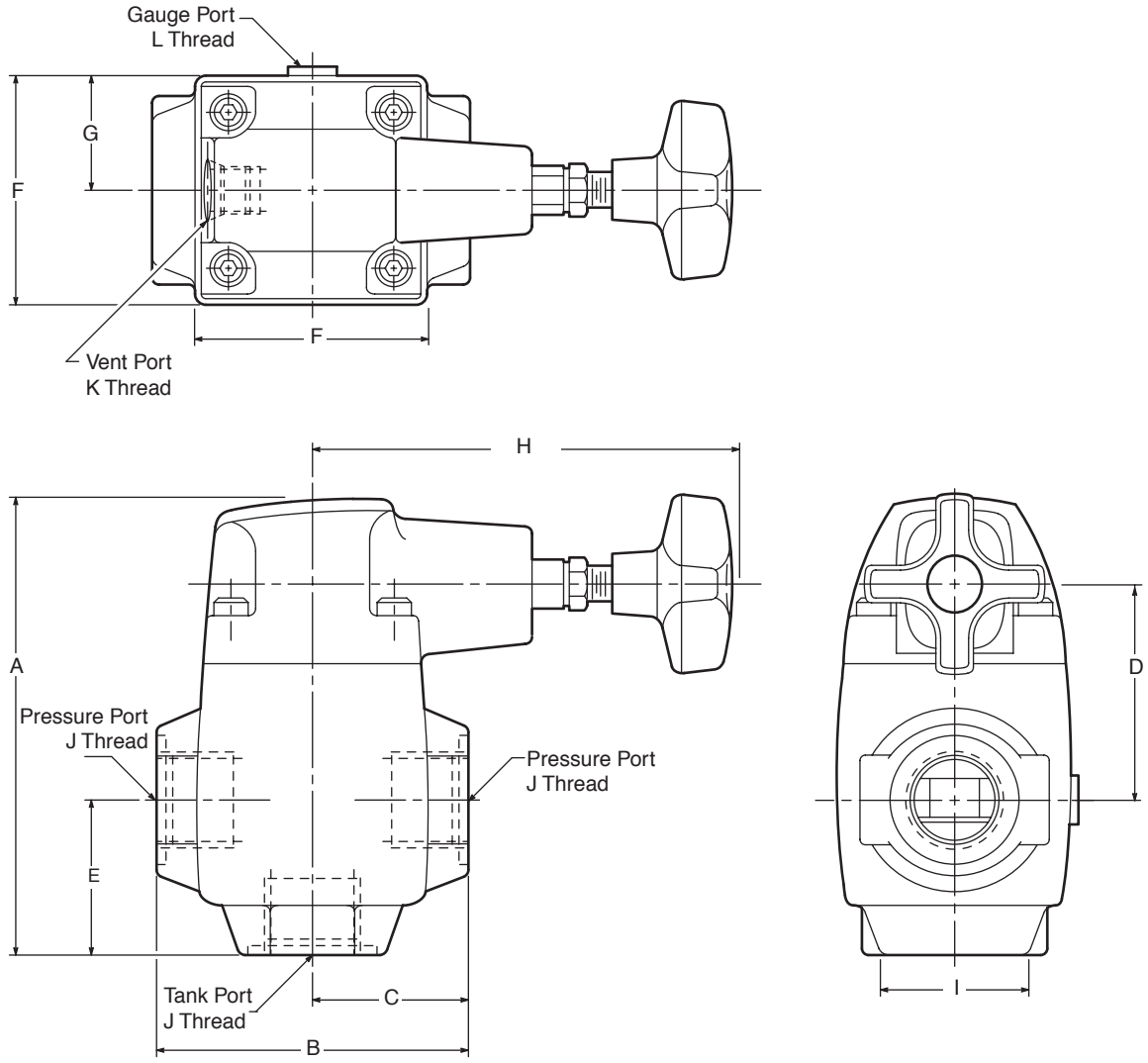
Model	Maximum Flow L/min (gpm)	Maximum Pressure bar (psi)	Weight kg (lb)
RB-T04	80 (21)	210 (3000)	2.5 (5.5)
RB-T06	175 (46)		4.0 (8.8)
RB-T10	454 (120)		6.5 (14.3)









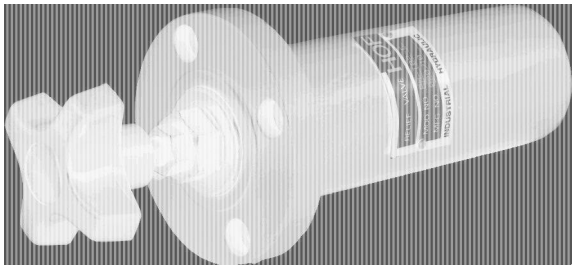


Model	A	B	C	D	E	F	G	H	I	J	K	L
RB-T06	128.8	92.5	46.3	63	45.5	73	36.5	134	57	3/4" NPT 3/4" BSP 1.0625"-12UN-2B	.5625"-12UNF-2B	1/4" PT
RB-T10	157.2	124	61.9	66.5	61.9	83.3	41.7	134	61.9	1-1/4" NPT 1-1/4" BSP 1.6250"-12UN-2B	.5625"-18UNF-2B	.4375"-20UNF-2B

Remote Control Relief Valve
RM Series

Features and Handling

- RM Series are Direct type relief valves with three pressure ranges available. They can be used as remote control relief valve when they are connected to the vent port of any balanced piston type relief valves.
- To adjust the set pressure, loosen the lock nut of the valve and turn the handle to adjust the pressure. Maintain the back pressure at the tank port as low as possible, less than 2 bar (28 psi).



Ordering Code and Specification

RM - T02 - B - C

1 2 3 4 5

1 Model : RM

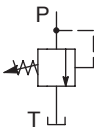
2 Mounting
T - Threaded connections
G - Gasket mounting

3 Valve size
02 - 1/4"

4 Threaded size (Threaded connectious only)
no code - 1/4" NPT
B - 1/4" BSP

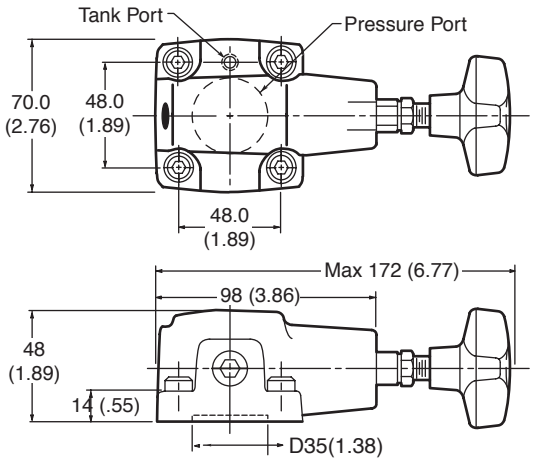
5 Pressure Range
no code C - 70-210 bar (1000-3000 psi)
B - 35-140 bar (500-2000 psi)
A - 7-70 bar (100-1000 psi)

Model	Maximum Flow L/min (gpm)	Maximum Pressure bar (psi)	Weight kg (lb)
RM-T02	12 (3.2)	210	1.5 (3.3)
RM-G02	2 (0.5)	(3000)	1.4 (3.1)

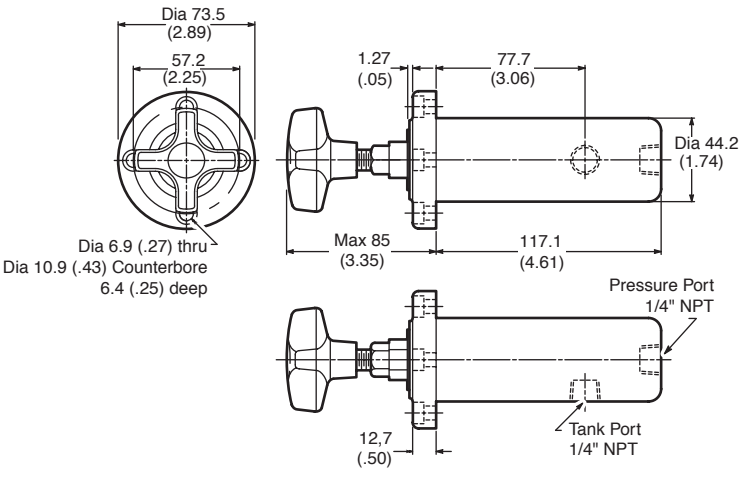


Installation Dimensions mm (inch) — *RM-T02, RM-G02*

RM-G02



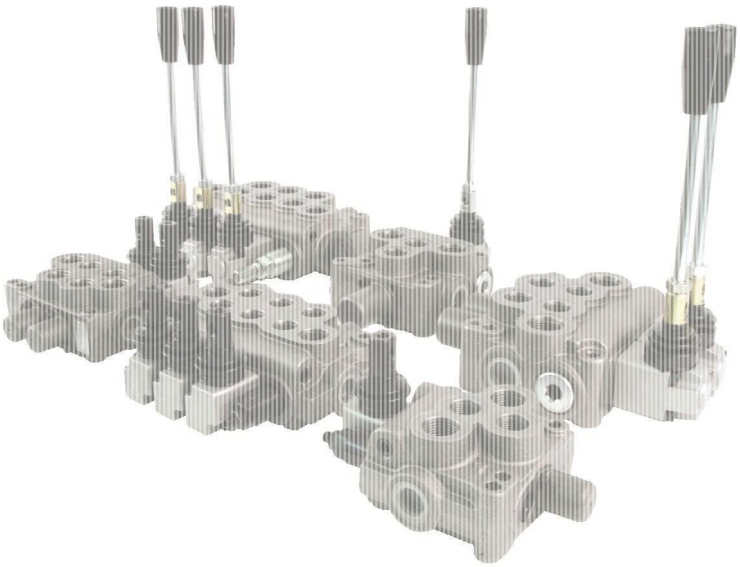
RM-T02



Monoblock Directional Control Valve
MCD20 and MCD50 Series

Features

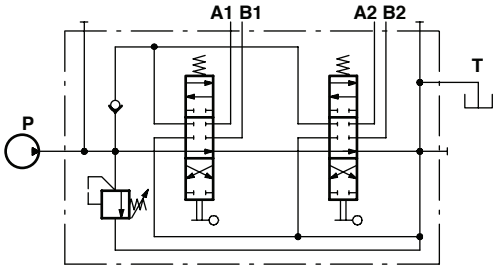
- MCD20 and MCD50 Series are monoblock directional control valves with parallel circuits. The standard valve comes with an adjustable main relief valve, check valve, and 4 mounting holes for standard and optional mounting. The carry over circuit, spool types, spool controls, and other options are available.
- The compact casting is made of high strenght cast iron. The spools are made of hardened and tempered steel.



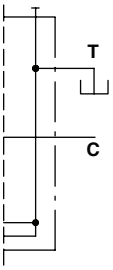
Specification

	Nominal Flow	Max. Pressure
	L/min (USgpm)	*bar (psi)*
MCD20	45 (12)	210 (3000)
MCD50	70 (18)	210 (3000)
*MCD100/3	100 (26)	350 (5100)

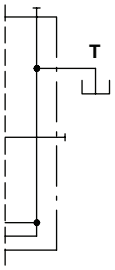
Standard - with open center



With carry over



With closed center



1st spool 2nd spool 3rd spool

MCD20 /3 - 140/ D2C / D2C / D2C / CO - B - TP

1 2 3 4 5 6 7 8 9

1 Model

MCD20, MCD50, MCD100

2 Number of Spool

1 - 3

3 Relief Valve Setting

no code - 210 bar

- 140 bar

4 Spool Control

no code - Spring retrurn to center

D - Detent in three positions

I - Detent in two positions

O - Detent out two positions

5 Spool Type

no code or 1 - Double acting, 3 position with Aand B closed in center (Cylinder spool) (Type.1)

2 - Double acting, 3 position with A and B to tank in center (Motor spool) (Type.2)

3 - Single acting on A, 3 position B plugged (Type.3)

4 - Single acting on B, 3 position A plugged (Type.4)

6 Service Valve (MCD20 only)

no code - Without valve

P - Without valve,but with pre-arranged holes

C - With pilot operated check valves on port A and B

*With Service Valve,the main valve body will come without Port P and T on top and Port A and B can be BSPT 3/8" only, but Port A and B on check valve can be any threads as specified in Ordering Code

7 Circuit Option

no code or OC - With open center plug

CO - With carry over plug

CC - With closed center plug

8 Port Thread

MCD20

Code	Thread	Port A-B	Port P	Port T	Port CO
no code	BSP	3/8"	3/8"	3/8"	3/8"
B	BSP	1/2"	1/2"	1/2"	3/8"
S	SAE	SAE 8	SAE 10	SAE 10	SAE 8

MCD50

Code	Thread	Port A-B	Port P	Port T	Port CO
no code	BSP	1/2"	1/2"	3/4"	1/2"
B	BSP	3/4"	3/4"	3/4"	1/2"
S	SAE	SAE 10	SAE 12	SAE 12	SAE 12

*Only for MCD100/3

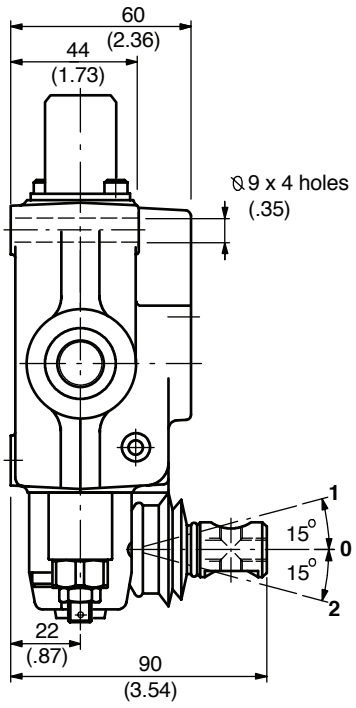
no code	BSP	3/4"	3/4"	3/4"	3/4"

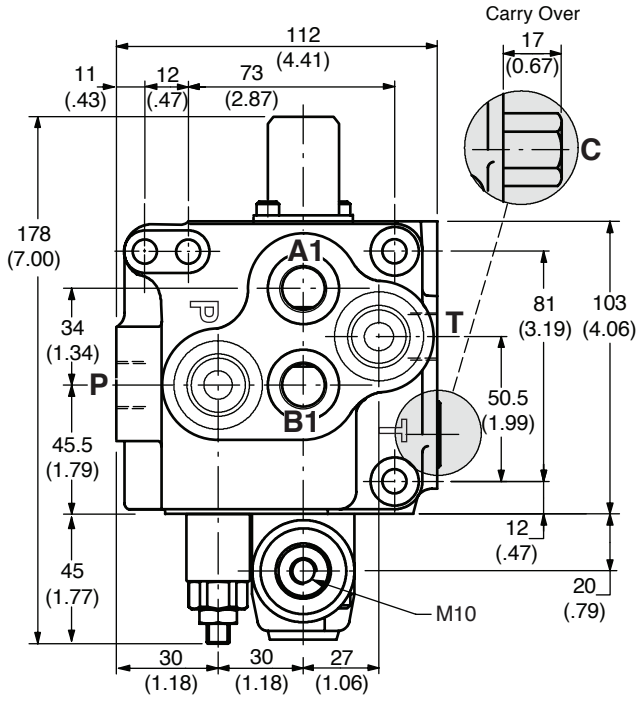
9 Optional Port Connection

no code - Port P and T at side with optional Port P and T pluged on top

TP - Port P and T on top with optional Port P and T pluged at side

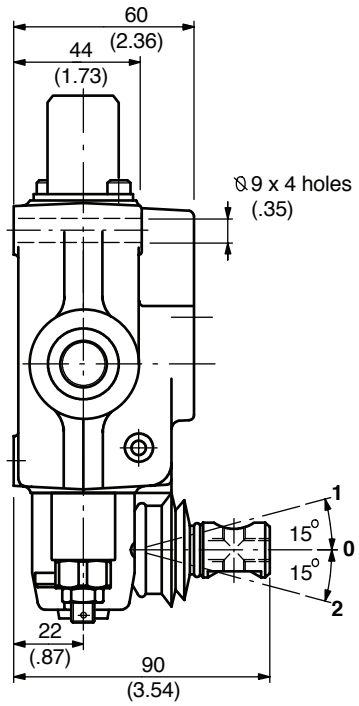
MCD20/1

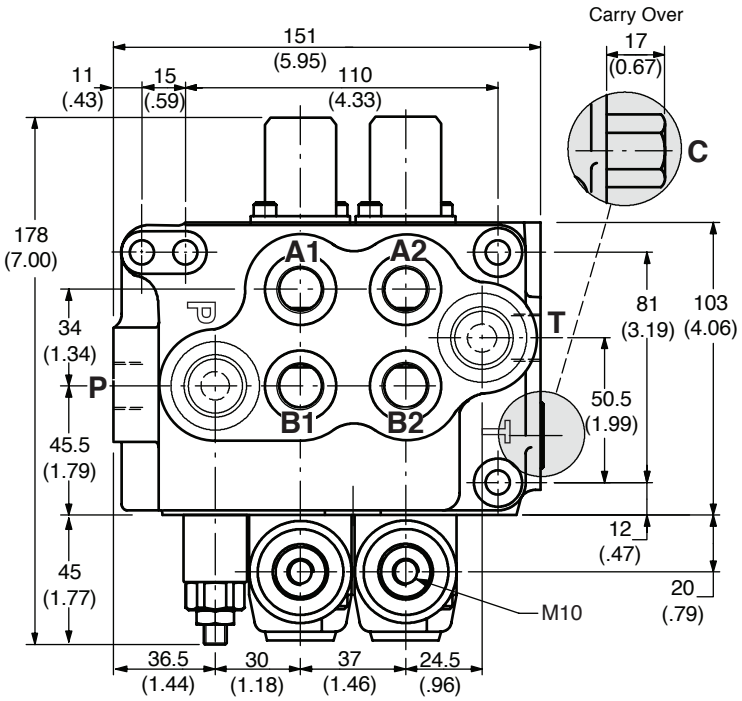




Weight: 3.6 kg (7.9 lb)

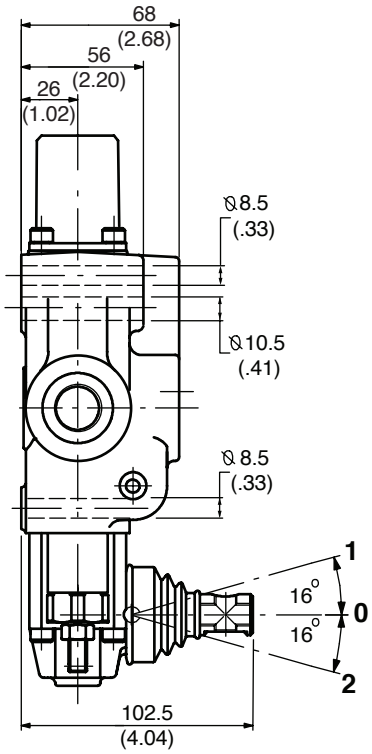
MCD20/2

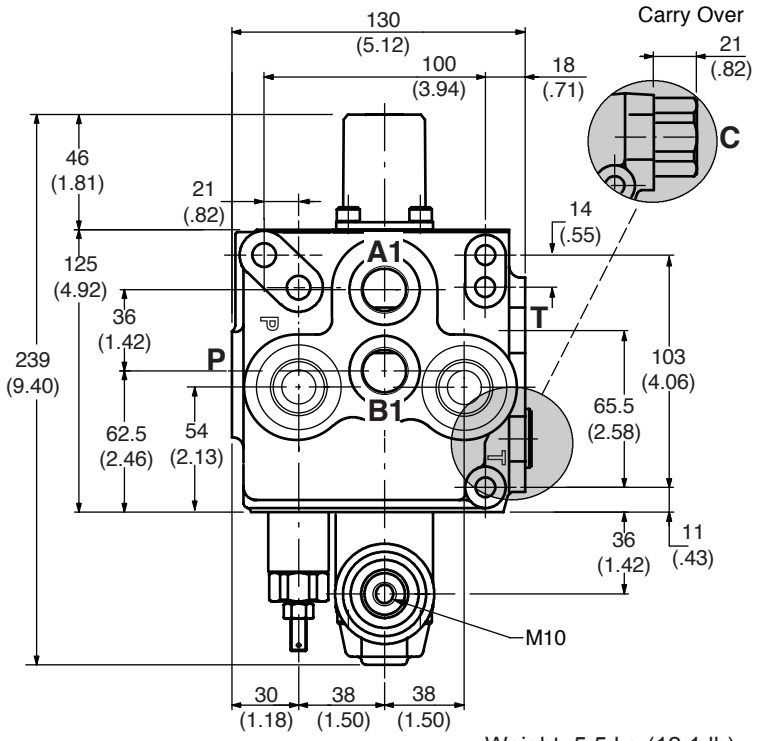




Weight: 5.1 kg (11.2 lb)

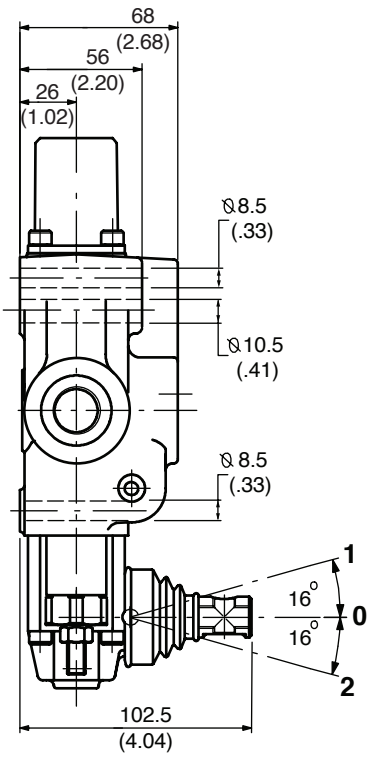
MCD50/1

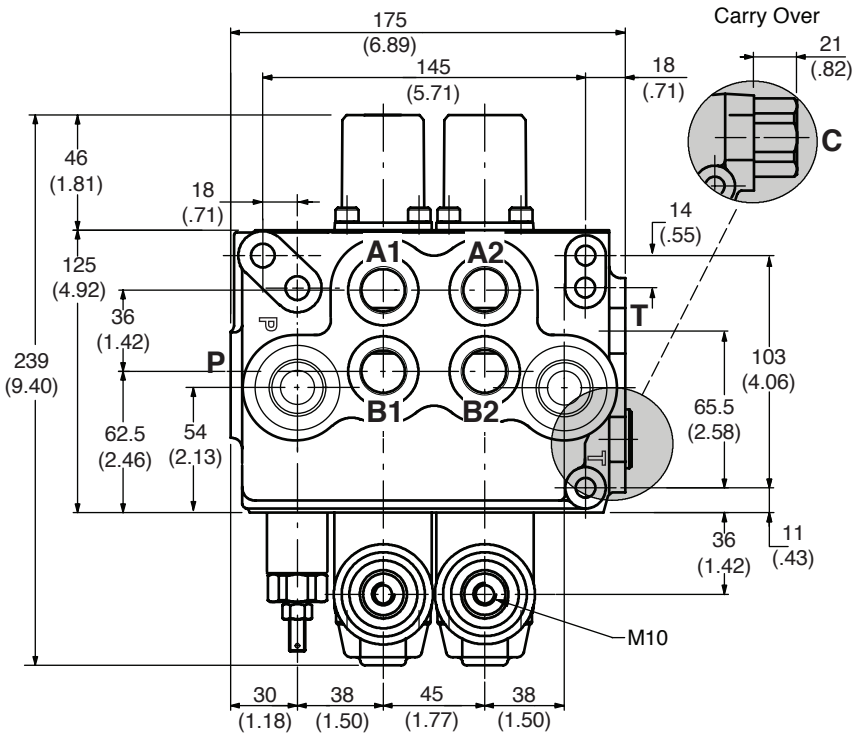




Weight: 5.5 kg (12.1 lb)

MCD50/2





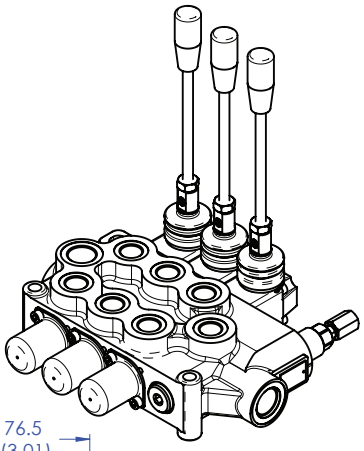
Weight: 8.5 kg (18.7 lb)

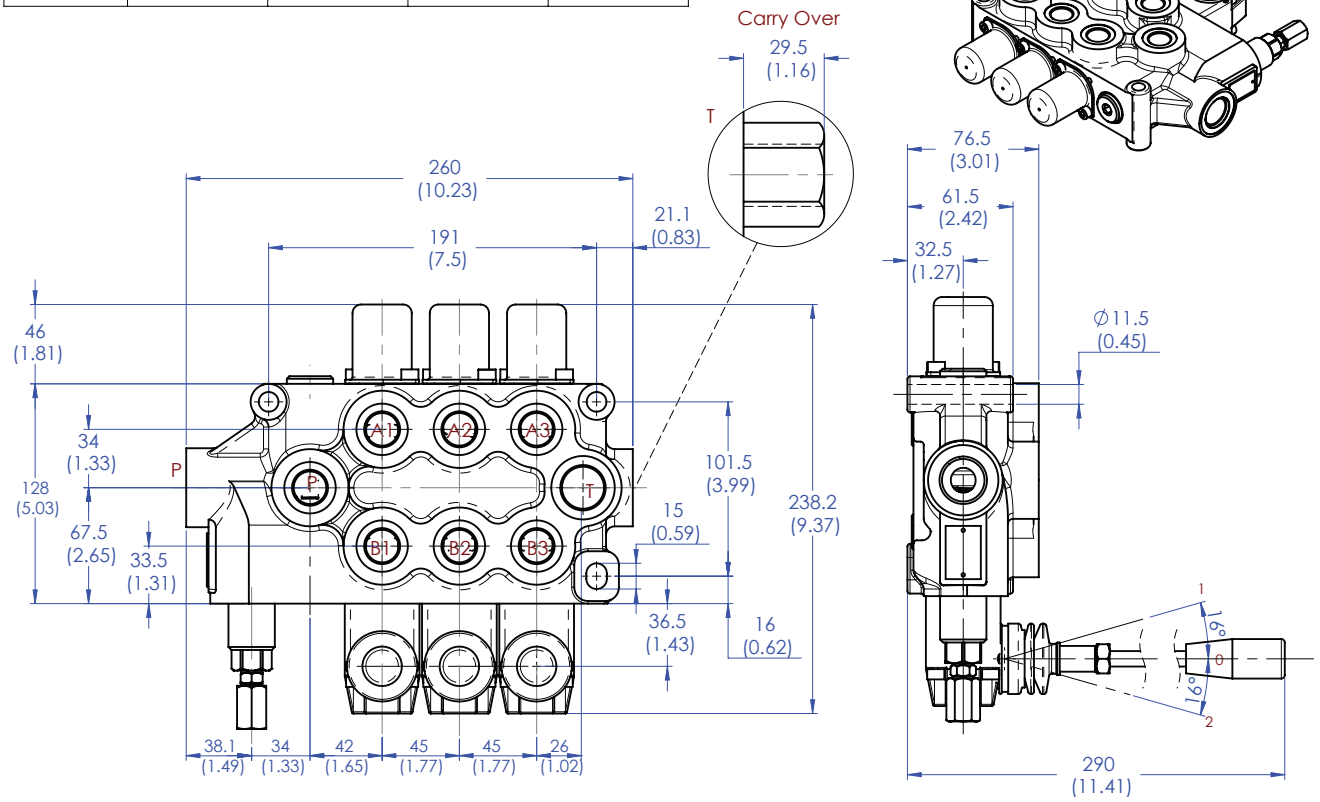
MCD100/3

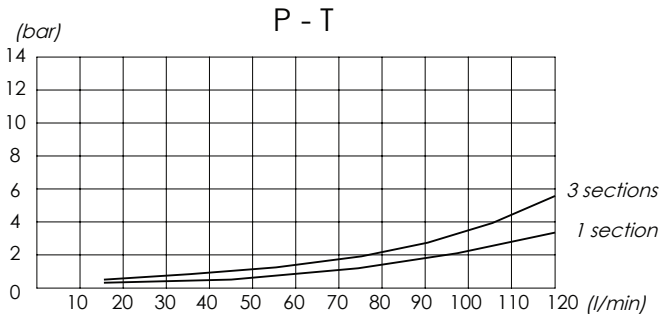
Standard working conditions

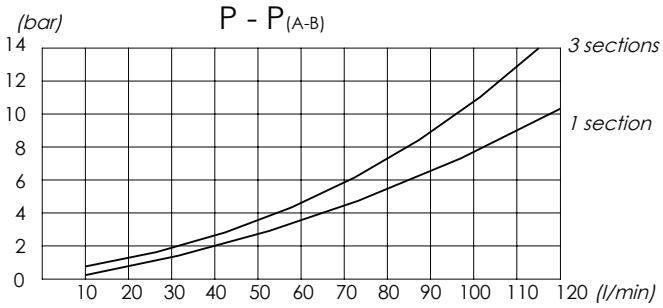
Max. recommended flow	100 l/min	(26 GPM)
Max. pressure	350 bar	(5100 PSI)
Max. backpressure	80 bar	(1160 PSI)

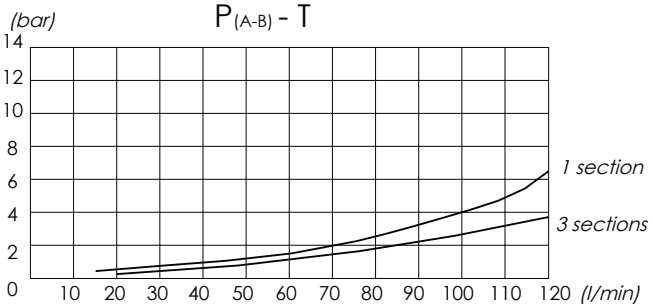
Thread	Port A-B	Port P	Port T	Carry Over
BSP	3/4"	3/4"	3/4"	3/4"
SAE	SAE12	SAE12	SAE12	SAE10











PRESSURE DROP

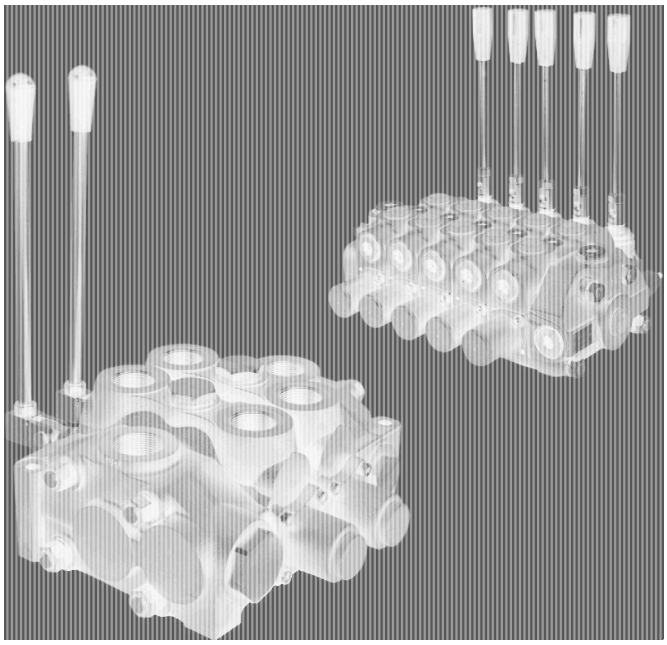
Weight: 11.8 kg (26.0 lb)

Sectional Directional Control Valve

MCD10 and MCD25 Series

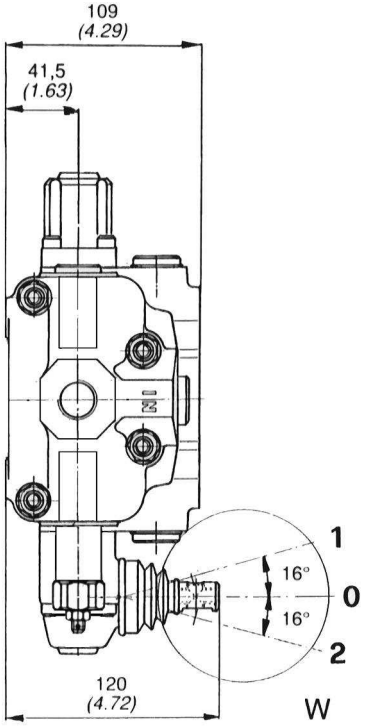
Features

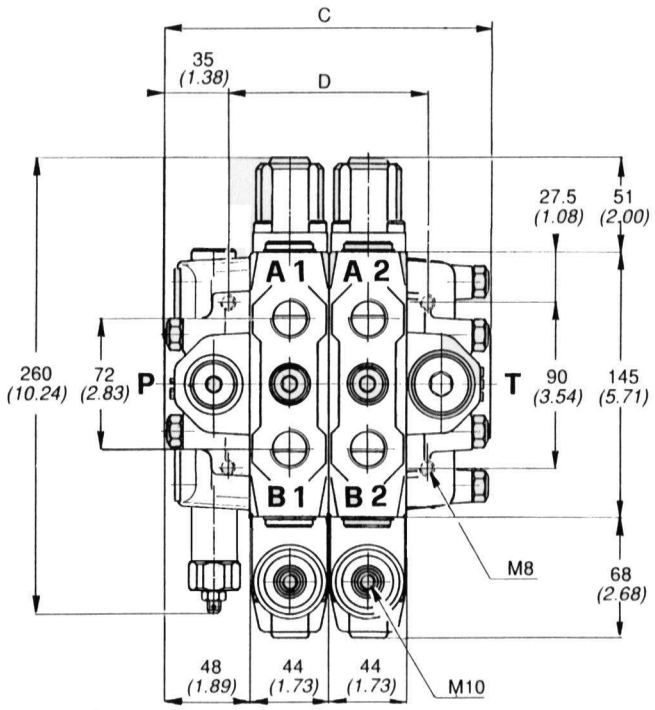
MCD10 and MCD25 are modular sectional directional control valves, capable of working with 90 liters / min (MCD10) and 380 liters/min at 350 bar operating pressure. Both valves are highly flexible and easily adaptable to most application. A wide range of options is available to cater widest range of application.



Specification

Nominal Flow	80 L/min (21 USgpm)
Max. Pressure	210 bar (3000 psi)
Port A-B	BSP 1/2", SAE8, BSP 3/4"
Port P	BSP 1/2", SAE10, BSP 3/4"
Port T	BSP 3/4", SAE10, BSP 3/4"





	C		D		Weight	
	mm	inch	mm	inch	kg	lb
MCD 10/1	144	5.67	70	2.76	10.2	22.4
MCD 10/2	188	7.40	114	4.49	14.9	32.8
MCD 10/3	232	9.13	158	6.22	19.6	43.1
MCD 10/4	276	10.87	202	7.95	24.3	53.5
MCD 10/5	320	12.60	246	9.69	29.0	63.8
MCD 10/6	364	14.33	290	11.42	33.7	74.1
MCD 10/7	408	16.06	334	13.15	38.4	84.5
MCD 10/8	452	17.80	378	14.88	43.1	94.8
MCD 10/9	496	19.53	422	16.61	47.8	105.2
MCD 10/10	540	21.26	466	18.35	52.5	115.5

1st spool | 2nd spool | 3rd spool | 12th spool

MCD25/12 - 140/ D2P / D2P / D2P……...D2P / CO-TS-TP

1 2 3 4 5 6 7 8 9

1 Model

MCD10, MCD25

2 Number of Spool

1 - 12

3 Relief Valve Setting (Inlet cover)

no code - 210 bar

- 140 bar

4 Spool Control

no code - Spring retrurn to center

D - Detent in three positions

I - Detent in two positions

O - Detent out two positions

5 Spool Type

no code or 1 - Double acting, 3 position with Aand B closed in center (Cylinder spool) (Type.1)

2 - Double acting, 3 position with A and B to tank in center (Motor spool) (Type.2)

3 - Single acting on A, 3 position B plugged (Type.3)

4 - Single acting on B, 3 position A plugged (Type.4)

6 Service Valve (Intermediate section)

no code - Without valve

P - Without valve,but with pre-arranged holes

A - With Anti-cavitation valves on port A and B

W - With Work port relife valves on port A and B

AW - With Anti-cavitation valve on port A or B and with Work port relife valve on port A or B

7 Circuit Option (Outlet cover)

no code or OC - With open center plug

CO - W ith carry over plug

CC - W ith closed center plug

8 Port Connection

T - Threaded Port

MCD10

Code	Thread	Port A-B	Port P	Port T	Port CO
no code	BSP	1/2"	1/2"	3/4"	3/4"
B	BSP	3/4"	3/4"	3/4"	3/4"
S	SAE	SAE 8	SAE 10	SAE 10	SAE 10

MCD25

Code	Thread	Port A-B	Port P	Port T	Port CO
no code	BSP	1"1/4	1"1/4	1"1/2	1"1/2
B	BSP	1"1/2	1"1/2	1"1/2	1"1/2
S	SAE	SAE 20	SAE 20	SAE 20	SAE 20

F - Flange Connection (MCD25 only)

no code or 1.25 - SAE port 1"1/4-11.5 NPTF

1.50 - SAE port 1"1/2-11.5 NPTF

9 Optional Port Connection

MCD10

no code - Port P and T at side with optional Port P and T pluged on top

TP - Port P and T on top with optional Port P and T pluged at side

MCD25

no code - Port P and T on top without optional

TP - Port P and T on top with optional Port P and T pluged at side

SP - Port P and T at side with optional Port P and T pluged on top

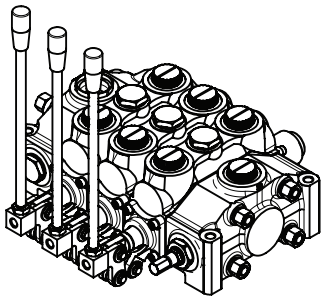
MCD25

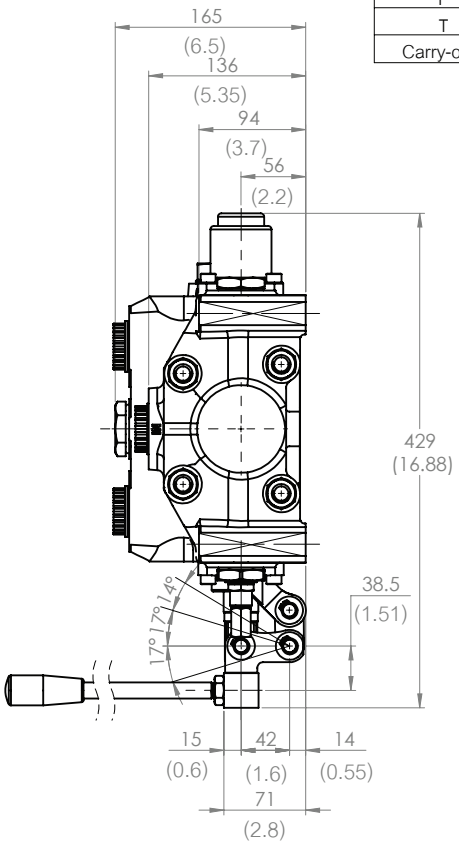
Standard working conditions

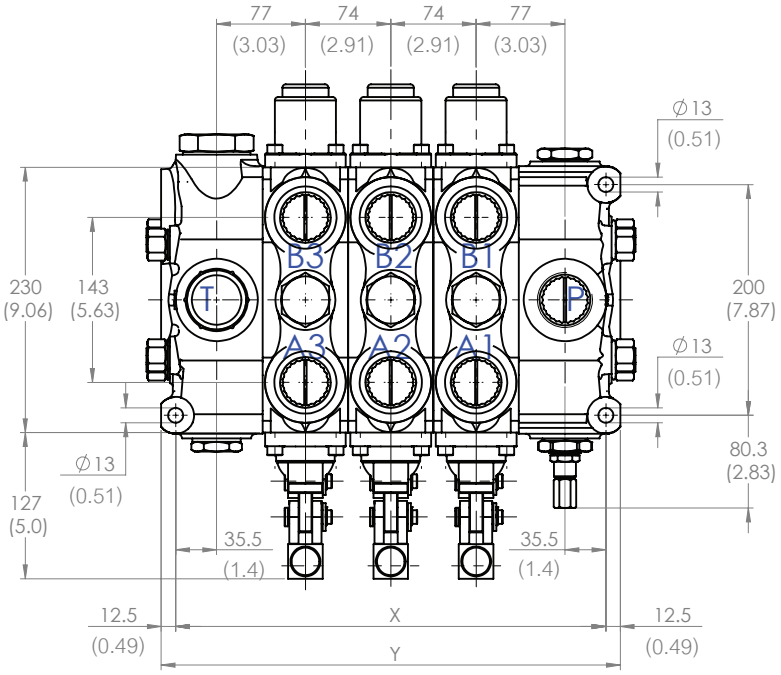
Max. recommended flow	380 l/min	(100 GPM)
Max. pressure	350 bar	(5100 PSI)
Max. backpressure	20 bar	(290 PSI)
Tie rod tightening torque	110 Nm	(81.13 lbft)

AVAILABLE THREADS		
PORTS	BSP	SAE
A-B	G 1"1/4	SAE 20
P	G 1"1/4	SAE 20
T	G 1"1/2	SAE 20
Carry-over	G 1"1/2	SAE 20

Installation Dimensions mm. (inch).







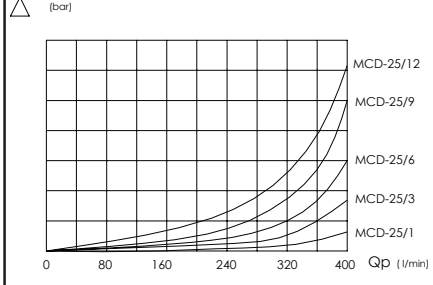
Variable Dimension

Type	/1	/2	/3	/4	/5	/6	/7	/8	/9	/10	/11	/12
X(mm)	225	299	373	447	521	595	669	743	817	891	965	1039
X(in)	8.9	11.8	14.7	17.6	20.5	23.4	25.6	28.5	31.4	34.3	37.2	40.1
Y(mm)	250	324	398	472	546	620	694	768	842	916	990	1064
Y(in)	9.84	12.8	15.7	18.6	21.5	24.4	27.3	30.2	33.1	36.1	38.9	41.8

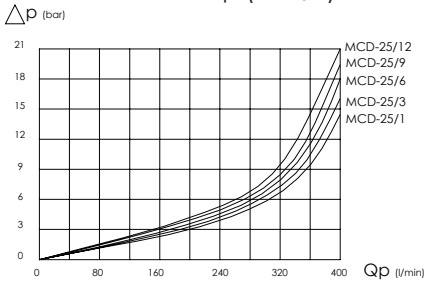
Weights

Type	/1	/2	/3	/4	/5	/6	/7	/8	/9	/10	/11	/12
Kg.	40.4	55.8	71.2	86.6	102	117.4	132.8	148.2	163.6	179	194.4	209.8
lb	89.06	123.0	156.9	190.9	224.8	258.8	292.7	326.7	360.6	394.6	428.5	462.5

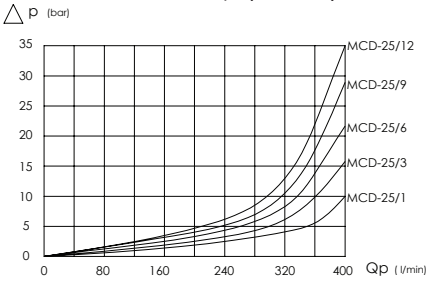
Pressure drop (P -T)



Pressure drop (P -A/B)



Pressure drop (A/B - T)



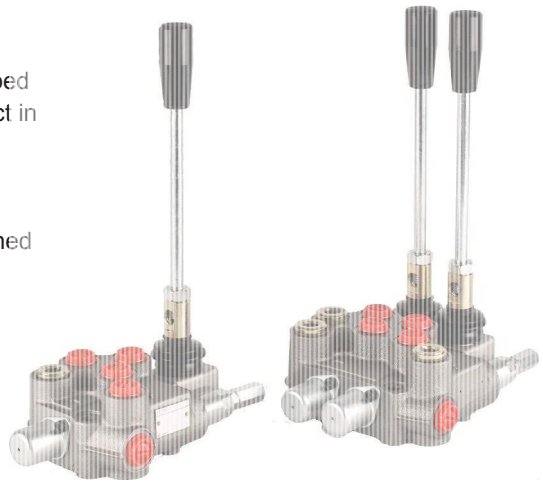
Compact Monoblock Directional Control Valve

MB20 Series

Features

MB20 Series is a monoblock directional control valves entirely developed to perform equivalent basic function as MCD20. MB20 is very compact in size yet comes with all standard feature such as adjustable main relief valve, check valve , carry over circuit, and 2 mounting holes.

MB20 made of high strenght cast iron. The spools are made of hardened and tempered steel with varieties of spool types and controls.



Specification

	Nominal Flow L/min(USgpm)	Max. Pressure bar(psi)
MB20	45(12)	210(3000)

Ordering Code — MB20 Series

1st spool | 2nd spool | 3rd spool

MB20 / 3 - 140/ D2 / D2 / D2 / CO - S - TP

1 2 3 4 5 6 7 8

1 Model

MB20

2 Number of Spool

1 - 3

3 Relief Valve Setting

no code - 210 bar

- 140 bar

4 Spool Control

no code - Spring retrurn to center

D - Detent in three positions

I - Detent in two positions

O - Detent out two positions

5 Spool Type

no code or 1 - Double acting, 3 position with Aand B closed in center (Cylinder spool) (Type.1)

2 - Double acting, 3 position with A and B to tank in center (Motor spool) (Type.2)

3 - Single acting on A, 3 position B plugged (Type.3)

4 - Single acting on B, 3 position A plugged (Type.4)

6 Circuit Option

no code or OC - With open center plug

CO - With carry over plug

CC - With closed center plug

7 Port Thread

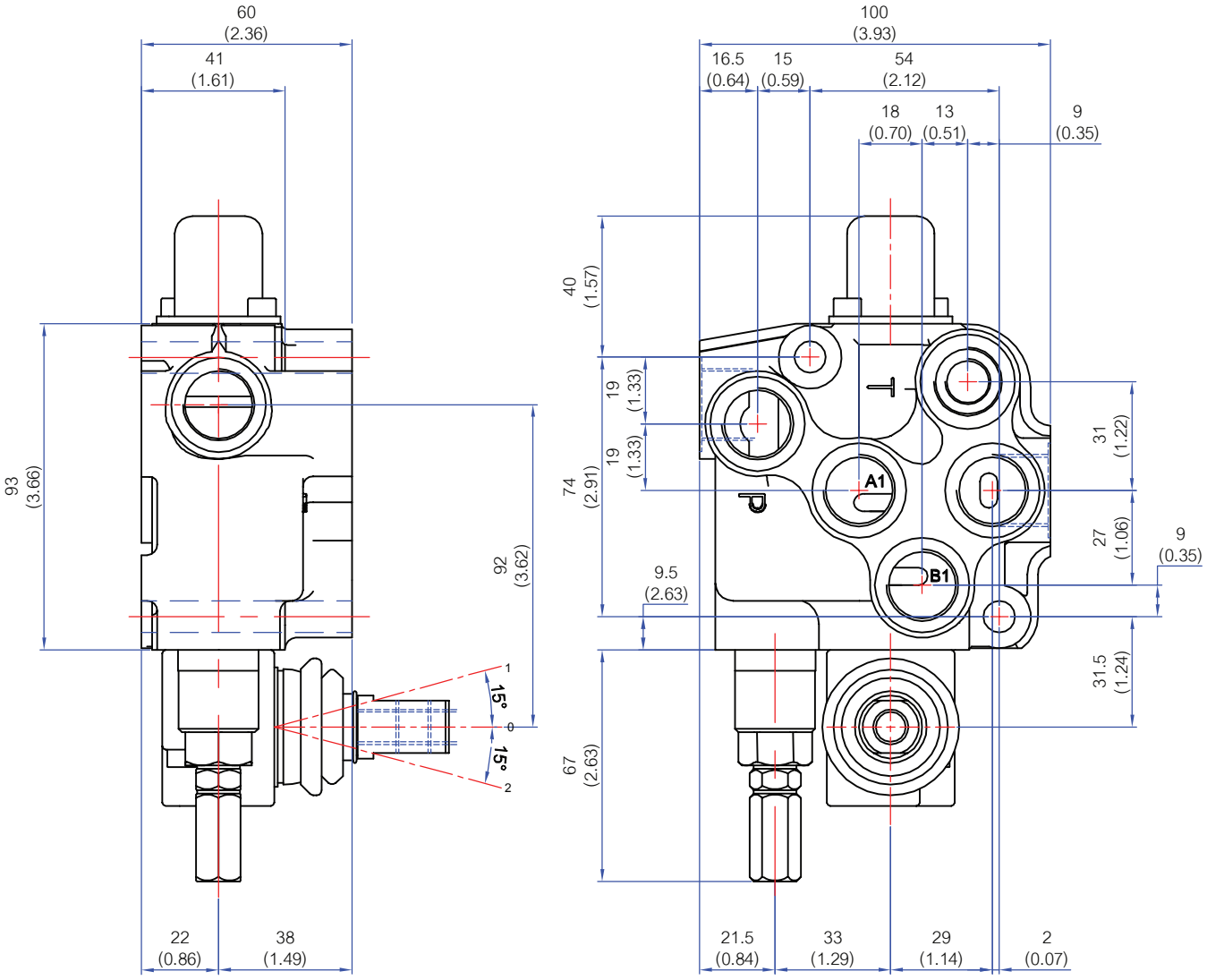
Code	Thread	Port A-B	Port P	Port T	Port CO
no code	BSP	3/8"	3/8"	3/8"	3/8"
S	SAE	SAE 8	SAE 8	SAE 8	SAE 8

8 Optional Port Connection

no code - Port P and T at side with optional Port P and T pluged on top

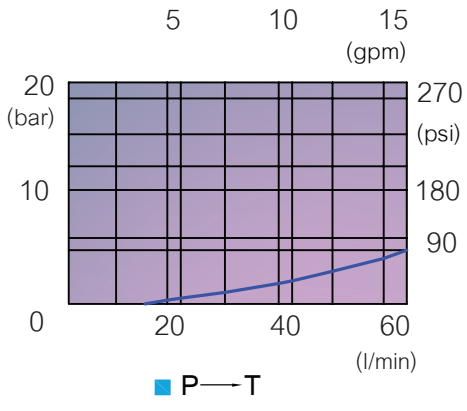
TP - Port P and T on top with optional Port P and T pluged at side

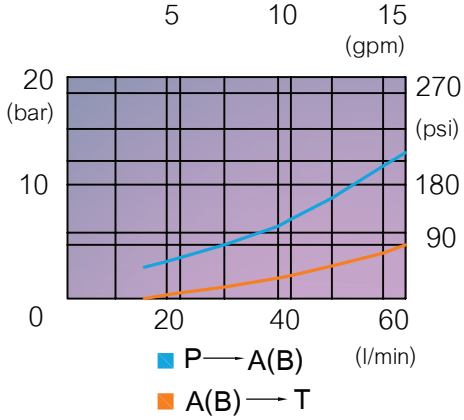
MB20/1



PRESSURE DROP

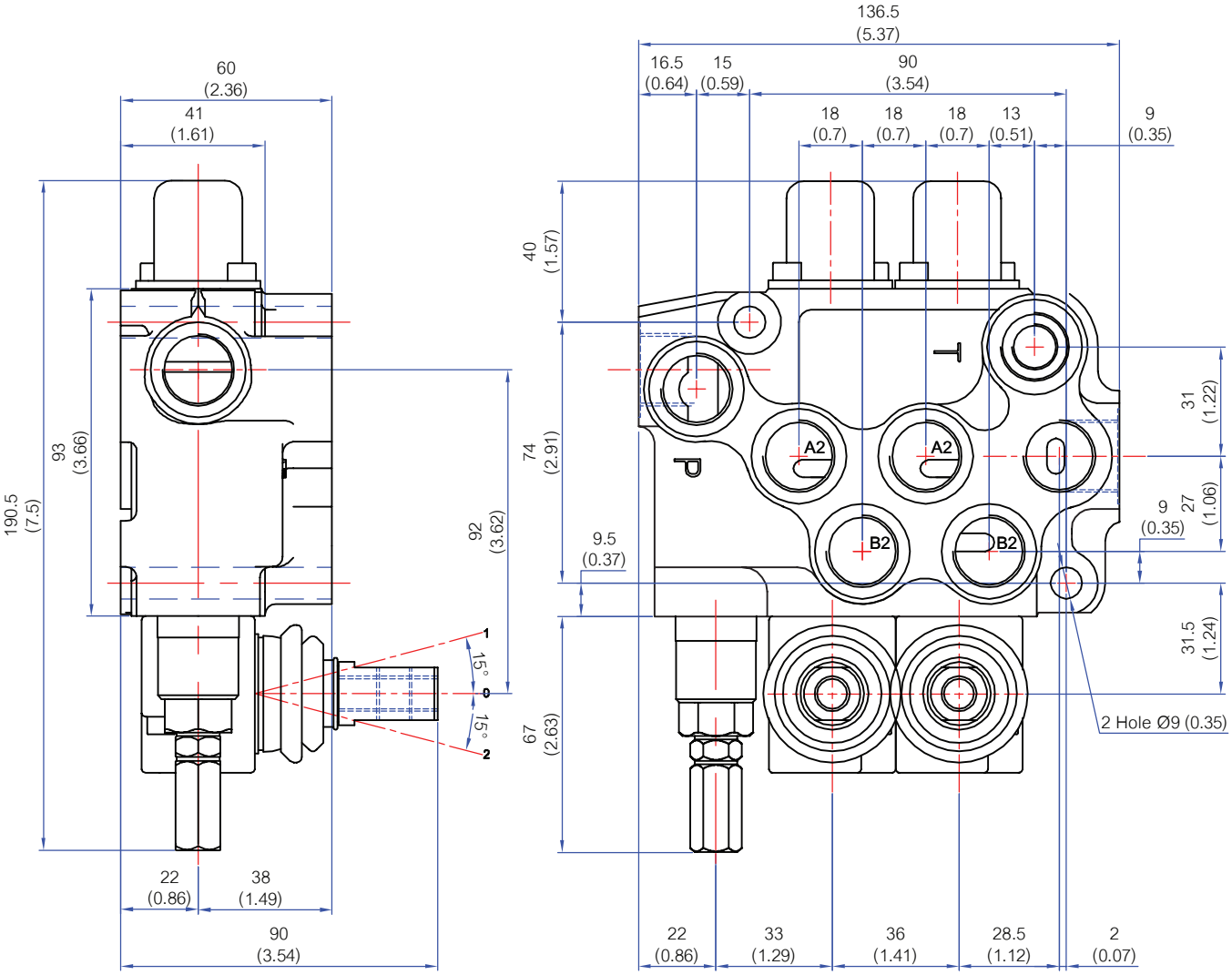
50° C-122°F 33mm²/s-150sus





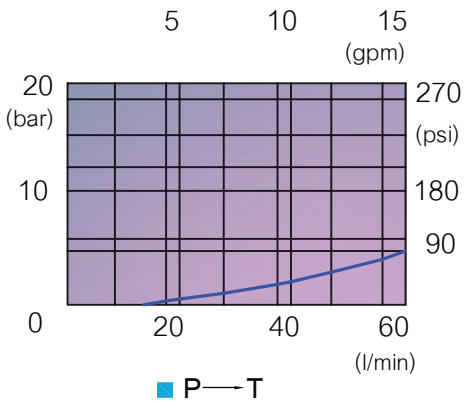
Weight: 3.0 kg (6.61 lb)

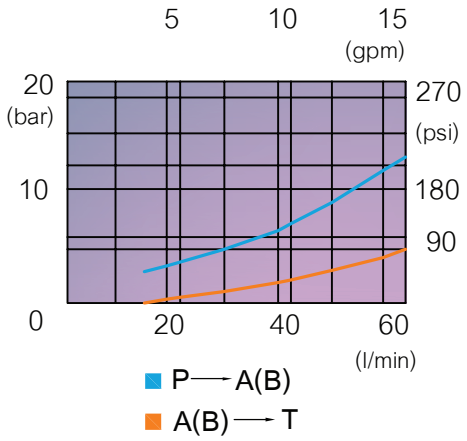
MB20/2



PRESSURE DROP

50° C-122°F 33mm²/s-150sus





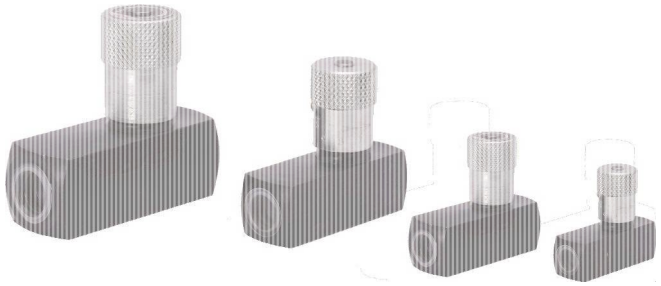
Weight: 4.5 kg (9.92 lb)

Flow Control Valve
CF Series

HOF

Features and Handling

- CF Series are flow control valves with check valve. The valves control the flow in one direction and allow free flow in the other direction. With two step control range, the first three turns of the knob can control fine adjustment of low flow and the next three turns can open the valve to full flow. The knob comes with color bands for easy reading.



Ordering Code

CF - T04 - B

1 2 3 4

1 Model : CF

2 Mounting
T - Threaded connections

3 Valve size
02 - 1/4" 03 - 3/8"
04 - 1/2" 06 - 3/4"

4 Threaded size

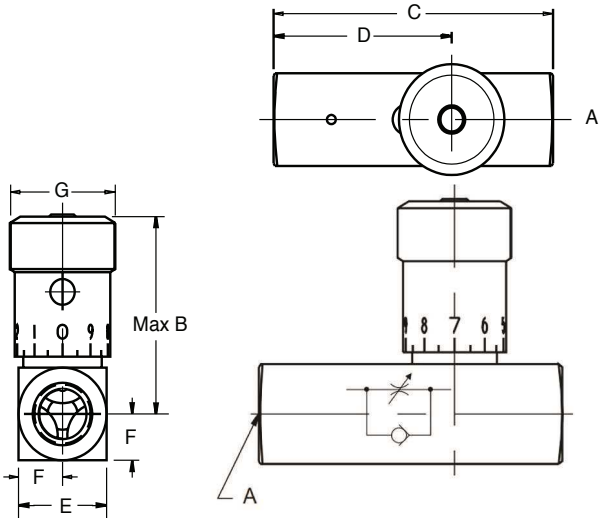
CF-T02
no code - 1/4" NPT
B - 1/4" BSP

CF-T03
no code - 3/8" NPT
B - 3/8" BSP

CF-T04
no code - 1/2" NPT
B - 1/2" BSP

CF-T06
no code - 3/4" NPT
B - 3/4" BSP

Specification and Installation Dimensions mm (inch) *CF*

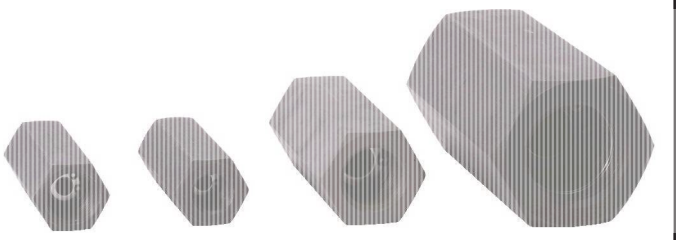


Model	Maximum Flow L/min (USgpm)	Maximum Pressure bar (psi)	Dimensions mm (inch)							Weight
			A Thread	B	C	D	E	F	G	kg (lb)
CF-T02	19 (5)	345 (5000)	1/4" NPT	40.4 (1.59)	68.8 (2.63)	42.2 (1.68)	20.6 (0.81)	10.4 (0.41)	20.6 (0.81)	0.2 (0.44)
CF-T03	30 (8)		3/8" NPT	55.4 (2.18)	69.9 (2.75)	44.5 (1.75)	25.4 (1.00)	12.7 (0.50)	25.4 (1.00)	0.3 (0.66)
CF-T04	57 (15)		1/2" NPT	68.6 (2.70)	87.4 (3.44)	56.6 (2.23)	31.8 (1.25)	16 (0.63)	30.2 (1.19)	0.7 (1.54)
CF-T06	95 (25)		3/4" NPT	85.9 (3.38)	98.6 (3.88)	65.5 (2.58)	38.1 (1.50)	19.1 (0.75)	35.1 (1.38)	1.2 (2.64)

Check Valve
CNT and DT Series

Features and Handling

- CNT and DT Series are check valve with optional cracking pressure. The valves allow free flow in one direction and shut-off in the other direction. The valves come with flow rate ranges from 25L/min to 190 L/min and port size from 3/8” to 1-1/4”.



Ordering Code *CNT, DT*

CNT - T03 - N - C

1 2 3 4 5

1 Model: CNT

2 Mounting

T - Threaded connections

G - Gasket mounting (size 03,06 and 10 only)

3 Valve size

03 - 3/8"

04 - 1/2"

06 - 3/4"

08 - 1"

10 - 1-1/4"

4 Threaded size (Threaded connections only)

CNT-T03

Code	Thread size
N	3/8" NPT
S	SAE# 8

CNT-T04

Code	Thread size
N	1/2" NPT
S	SAE#10

CNT-T06

Code	Thread size
N	3/4" NPT
S	SAE #12

CNT-T08

Code	Thread size
N	1" NPT
S	SAE #16

CNT-T10

Code	Thread size
N	1-1/4" NPT
S	SAE #20

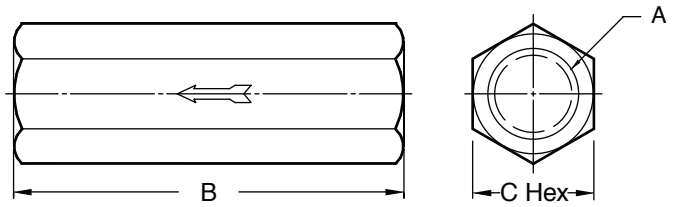
5 Cracking Pressure

A - 0.4 bar (5 psi)

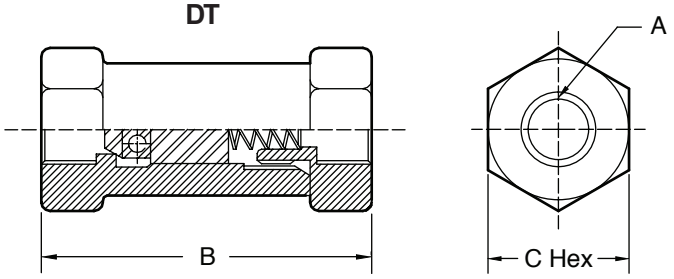
B - 3.5 bar (50 psi)

C - 5.0 bar (70 psi)

CNT



DT



Model	Maximum Flow L/min (USgpm)	Maximum Pressure bar (psi)	Dimensions mm (inch) A Thread	B	C	Weight kg (lb)
CNT-T03	30 (7.9)	210 (3000)	3/8" PT	70 (2.76)	27 (1.06)	0.20 (0.44)
CNT-T04	30 (7.9)		1/2" PT	70 (2.76)	27 (1.06)	0.40 (0.88)
CNT-T06	75 (19.8)		3/4" PT	95 (3.74)	38.6 (1.52)	0.78 (1.72)
CNT-T08	150 (39.6)		1" PT	113 (4.45)	53.6 (2.11)	1.20 (2.64)
CNT-T10	190 (50.1)		1-1/4" PT	130 (5.12)	63.5 (2.50)	2.80 (6.16)
DTP-03	25 (6.6)	315 (4500)	3/8" NPT	70 (2.76)	23.7 (0.93)	0.20 (0.44)
DTP-04	30 (7.9)		1/2" NPT	70 (2.76)	27 (1.06)	0.40 (0.88)
DTP-06	75 (19.8)		3/4" NPT	95 (3.74)	38.5 (1.52)	0.80 (1.76)
DTP-08	150 (39.6)		1" NPT	113.5 (4.47)	48 (1.89)	1.20 (2.64)
DTP-10	190 (50.1)		1-1/4" NPT	130 (5.12)	60 (2.36)	2.20 (4.84)
DTS-03	25 (6.6)	315 (4500)	3/8" SAE	70 (2.76)	23.7 (0.93)	0.20 (0.44)
DTS-04	30 (7.9)		1/2" SAE	70 (2.76)	27 (1.06)	0.40 (0.88)
DTS-06	75 (19.8)		3/4" SAE	95 (3.74)	38.5 (1.52)	0.80 (1.76)
DTS-08	150 (39.6)		1" SAE	113.5 (4.47)	48 (1.89)	1.20 (2.64)
DTS-10	190 (50.1)		1-1/4" SAE	130 (5.12)	60 (2.36)	2.20 (4.84)

Pressure Switch
P-02 Series

Features and Handling

- P-02 is a spring loaded piston type pressure switch. The pressure of hydraulic oil acts on the piston in the pressure switch. The piston acts against the infinitely adjustable force of the spring which transfers the movement of the piston to the switch to open or close the electrical contact.
- Knob Set Screw is available for panel mounting.
- For installation, the pressure switch should be mounted in such a way as to prevent them being subject to vibration.

Ordering Code

P - 02 - N - L

1 2 3 4

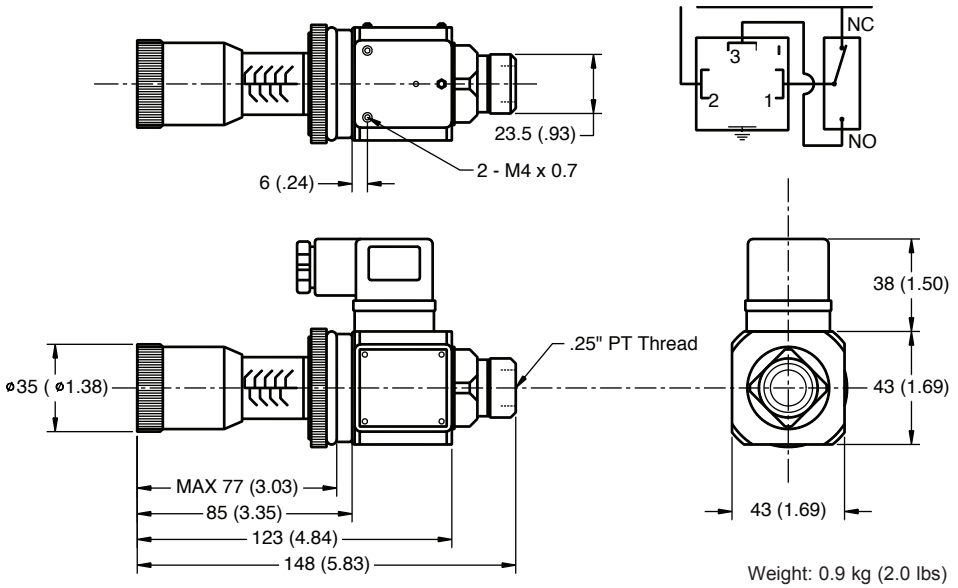
1 Model
Pressure Switch

2 Valve size
02 - 1/4"

3 Port size (Threaded connection)
no code - 1/4" BSPT
N - 1/4" NPT

4 Pressure Adjusting Rang
no code - 10-400 bar (140-5800 psi)
L - 1-70 bar (14-1000 psi)

Specification and Installation Dimensions mm (inch)



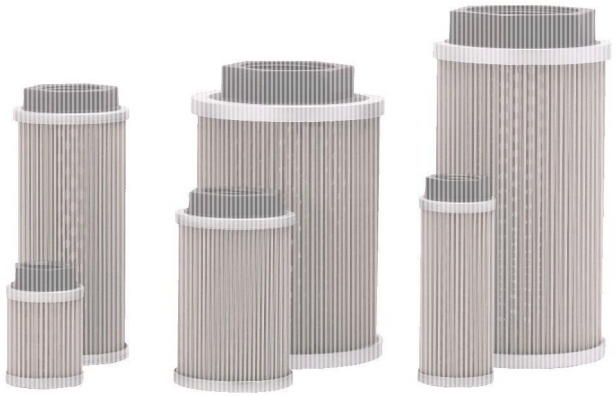
Weight: 0.9 kg (2.0 lbs)

Model	Valve Size	Pressure Range bar (psi)	Electrical Rating	Usage
P-02 (L)	1/4"	1 - 70 (14 - 1000)	DC 24V AC 110-250V/3A	Hydraulic Oil, Air, Water
P-02	1/4"	10 - 400 (140 - 5800)	DC 24V AC 110-250V/3A	Hydraulic Oil

Suction Filter
HF Series

Features and Handling

- Suction Filters are made from stainless steel mesh grade 125 micron reinforced with metal mesh and engineering resin for both ends. They are suitable for a wide variety of fluid system such as hydraulic systems, lubrication systems, and cutting-oil supply systems. They can protect components in system, extend life and reduce breakdown for continuous equipment operation.
- The direction of flow on filters is from outside to inside. Filters can be cleaned by blowing compressed air or liquid through the mesh from the inside during maintenance.



Ordering Code

HF - 26 - N

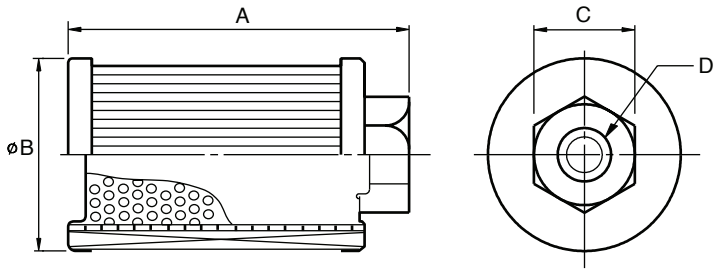
1 2 3

1 Model : HF

2 Flow (USgpm)
7, 13, 26, 53, 80, 92, 105

3 Threaded
no code - BSPT
N - NPT

Specification and Installation Dimensions mm (inch)



Model	Flow	Filteration	Dimensions mm (inch)				Weight
			A	B	C	D	
	L/min (USgpm)	Micron				Thread	kg (lb)
HF-7	25 (7)	125	90 (3-1/2)	58 (2-1/4)	45 (1-3/4)	1"	0.11 (0.24)
HF-13	50 (13)		157 (6-3/16)	58 (2-1/4)	45 (1-3/4)	1"	0.14 (0.30)
HF-26	100 (26)		145 (5-11/16)	89 (3-1/2)	67 (2-5/8)	1-1/2"	0.25 (0.55)
HF-53	200 (53)		212 (8-3/8)	89 (3-1/2)	67 (2-5/8)	1-1/2"	0.32 (0.70)
HF-80	300 (80)		213 (8-3/8)	102 (4.0)	77 (3.0)	2"	0.37 (0.82)
HF-92	350 (92)		222 (8-3/4)	149 (5-7/8)	91 (3-5/8)	2-1/2"	0.65 (2.42)
HF-105	400 (105)		277 (10-7/8)	135 (5-5/16)	105 (4-1/4)	3"	0.61 (1.34)

Drive Coupling
HC Series

Features and Handling

- Drive Couplings are made of steel reinforce Nylon sleeve with two steel drive hubs. The crowned teeth form gears permit axial and angular misalignment.
- Easy to assemble and no maintenance or lubrication needed.
- After years of experience, our drive coulping has been developed to withstand higher torgue than other coupling in the market.

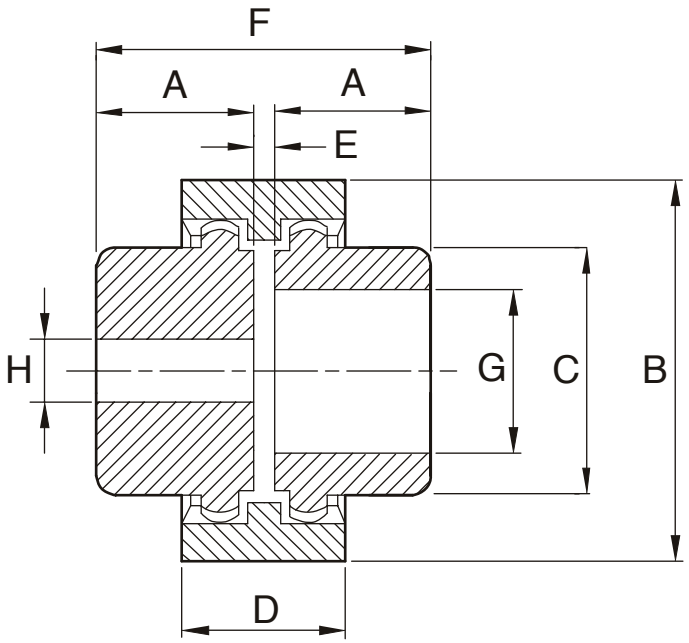
Ordering Code

HC - 28

1 Model : HC

2 Bore Size (mm)
28, 42, 55

Specification and Installation Dimensions mm (inch)



Model	Maximum Speed rpm	Maximum Power kW (hp)	Dimensions mm (inch) A	B	C	D	E	F	G Max Bore	G Min Bore	H Pilot Bore	Weight kg (lb)
HC-28	5000	3.7 (5)	40 (1.57)	67 (2.64)	44 (1.73)	38 (1.50)	4 (0.16)	84 (3.31)	28 (1.10)	10 (0.39)	10 (0.39)	1 (2.2)
HC-42	5000	7.5 (10)	42 (1.65)	87 (3.43)	60 (2.36)	52 (2.05)	4 (0.16)	88 (3.46)	42 (1.65)	10 (0.39)	10 (0.39)	2 (4.4)
HC-55	4000	14.9 (20)	60 (2.36)	121 (4.76)	80 (3.15)	64 (2.52)	4 (0.16)	124 (4.88)	55 (2.17)	19 (0.75)	19 (0.75)	5 (11.0)

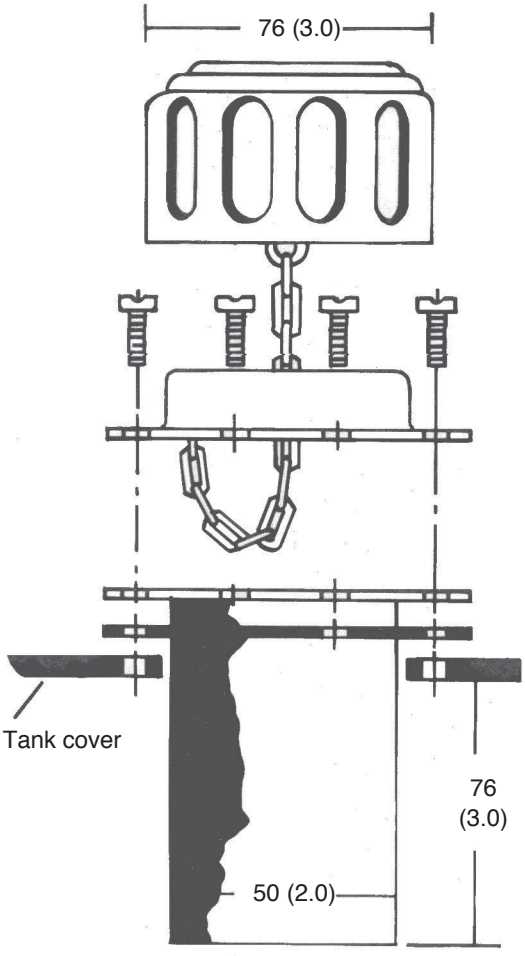
Filler Breather Filter

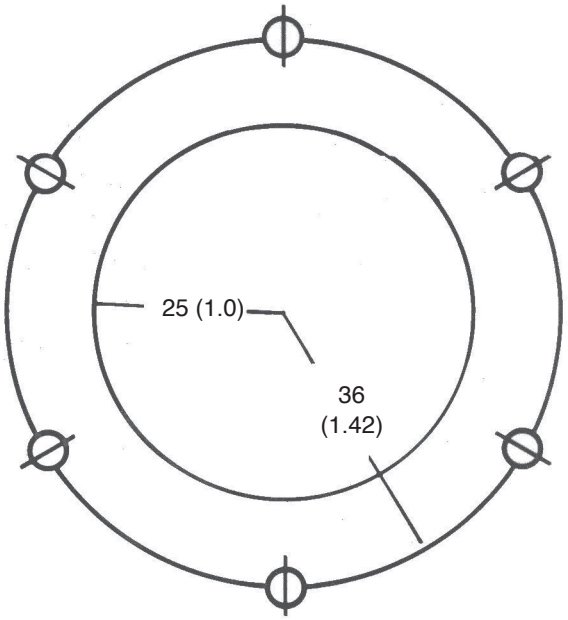
HB-55-72

Features and Handling

- Filler Breather with filter are intended primary for mounting directly on reservoir covers and are furnished complete with flange gaskets and ready for installation.

Specification and Installation Dimensions mm (inch)





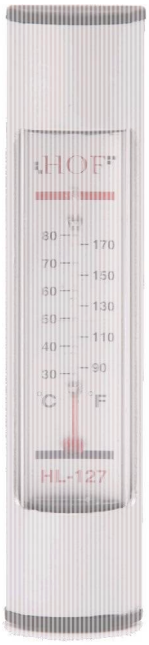
Weight: 0.25 kg (0.55 lbs)

Level and Temperature Gauge

HL-127

Features and Handling

- HL-127 is a level and temperature gauge for mounting on side of oil tank, fuel reservoirs, central lubrication unit, and etc. It is made of Aluminum casting, oil-resistant rubber gaskets, and plastic circular gauges for large sight area.



Ordering Code

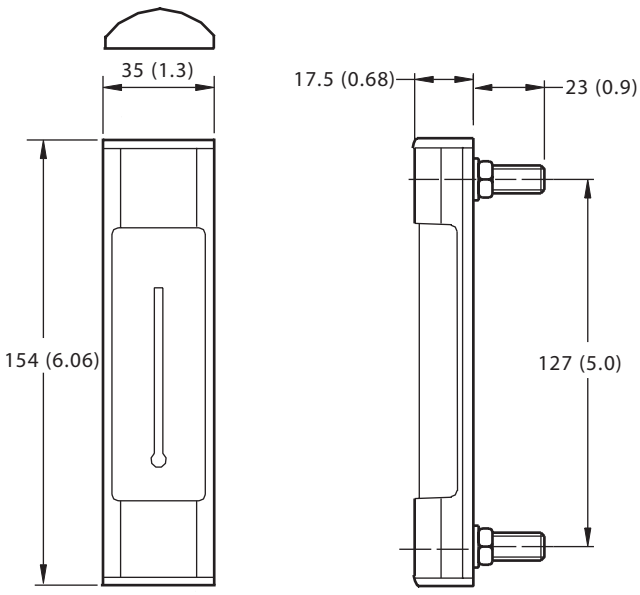
HL - 76

1 2

1 Model : HL

2 Mounting (mm)
76 - Small size
127 - Large size

Specification and Installation Dimensions mm (inch)



HL - 127

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