

# 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.

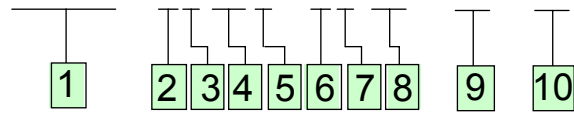


### Handling

- 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.*

**HV20F - 1P11S - 1C (8) - (H) - (L)**



**1 Model Series**

Standard Cover - HV10, HV20  
 Flow Control Cover(F) - HV10F, HV20F  
 Priority Valve Cover(P) - HV10P, HV20P

**2 Mounting**

1 - 2 - Bolt Flange

**3 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)

**4 Delivery (USgpm at 1200 rpm)**

HV10 - 1, 2, 3, 4, 5, 6, 7  
 HV20 - 5, 6, 7, 8, 9, 10, 11, 12, 13

**5 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 0.750"-16 Str.thd. for tank port (HV20F)

**6 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  
 123 - Threaded with woodruff Key (HV20 only)

**7 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 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)	

**9 Pressure 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)

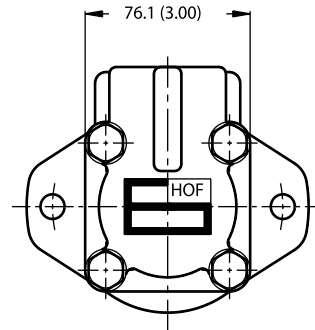
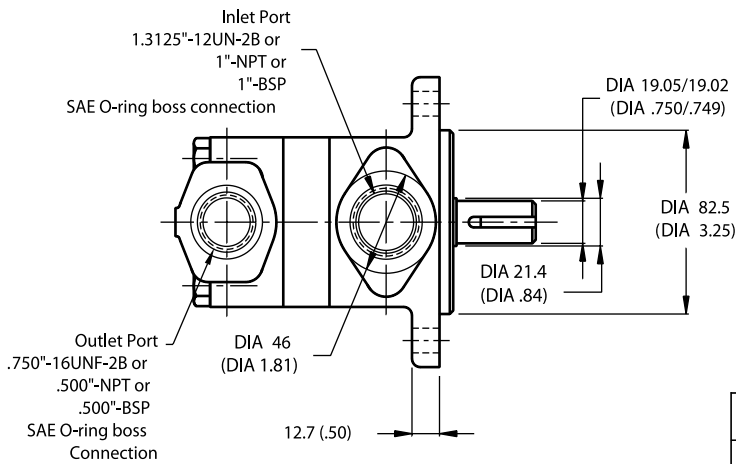
**10 Shaft Rotation**

(Viewed from shaft end)

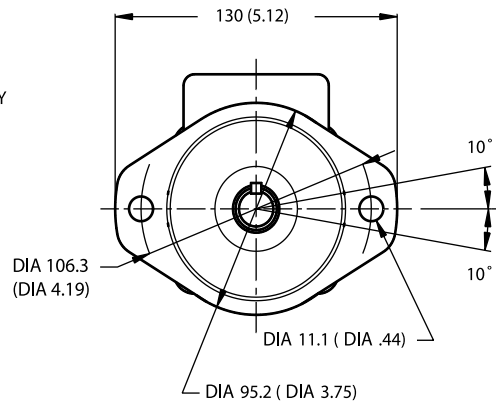
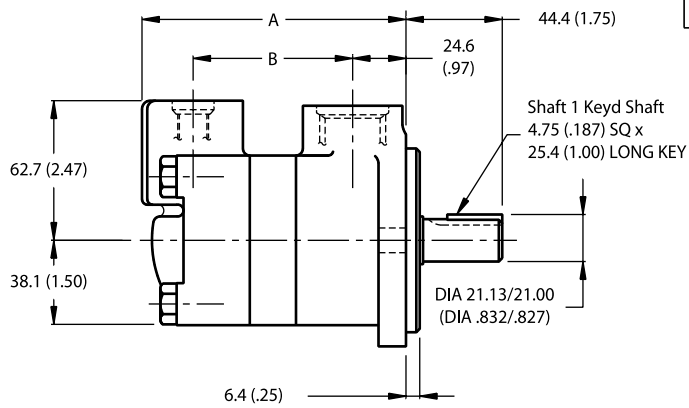
R - Turn right  
 L - Turn left

Model Series	Ring Size Delivery at 1200 r/min & 7 bar (100 psi) USgpm	Geometric Displacement  cm <sup>3</sup> /r (in <sup>3</sup> /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		

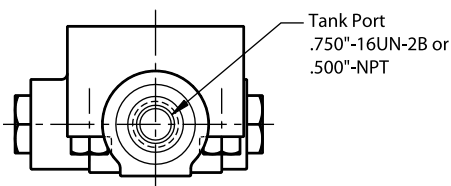
**HV10**



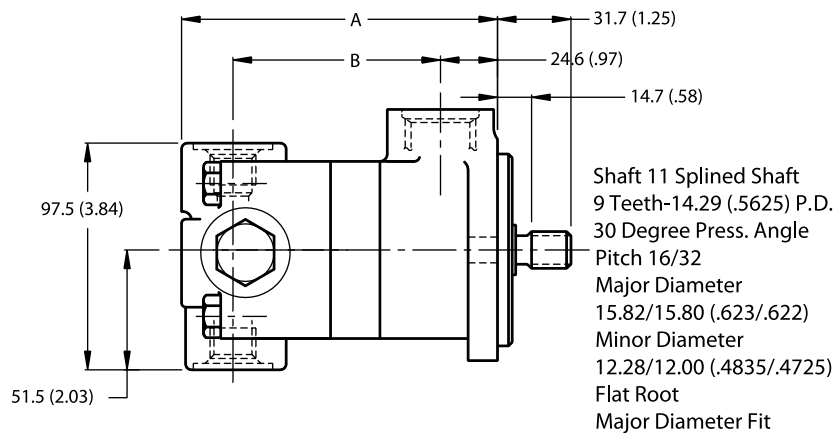
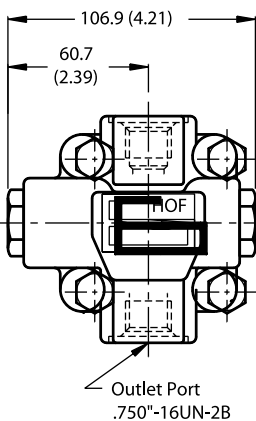
Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
1, 2, 3	115.6 (4.55)	67.3 (2.65)
4, 5	121.9 (4.80)	73.7 (2.90)
6, 7	127.0 (5.00)	78.7 (3.10)



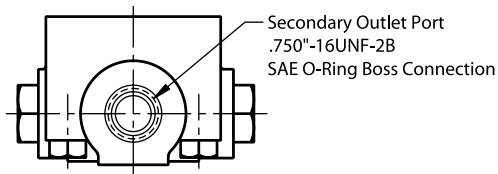
**HV10F**



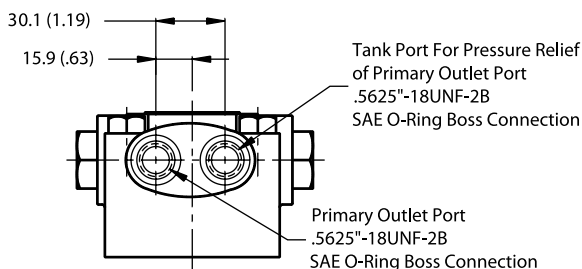
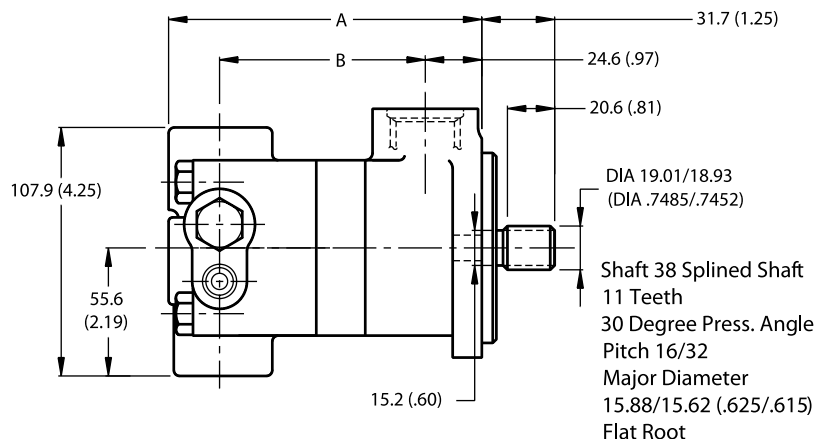
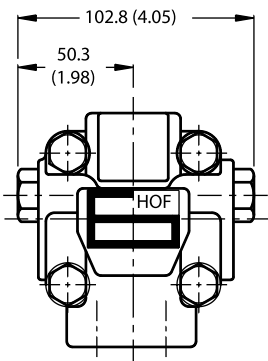
Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
1, 2, 3	128.8 (5.07)	84.8 (3.34)
4, 5	135.1 (5.32)	91.2 (3.59)
6, 7	140.2 (5.52)	96.3 (3.79)



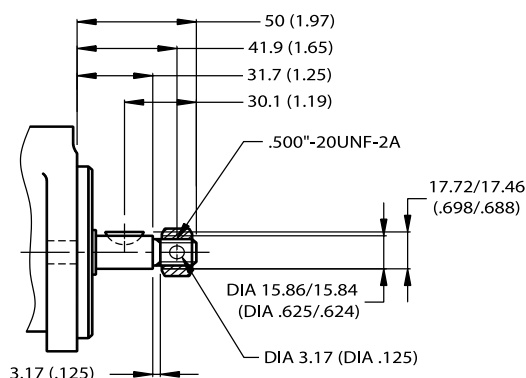
HV10P



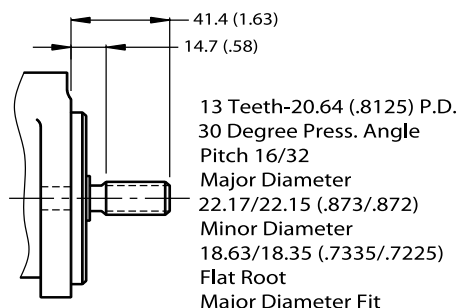
Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
1, 2, 3	130.0 (5.12)	84.8 (3.34)
4, 5	136.4 (5.37)	91.2 (3.59)
6, 7	141.5 (5.57)	96.3 (3.79)



Other shaft options for HV10 Series

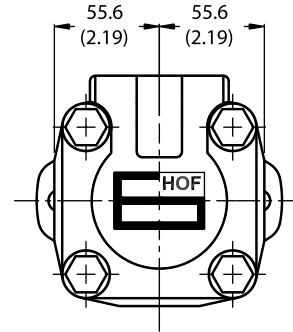
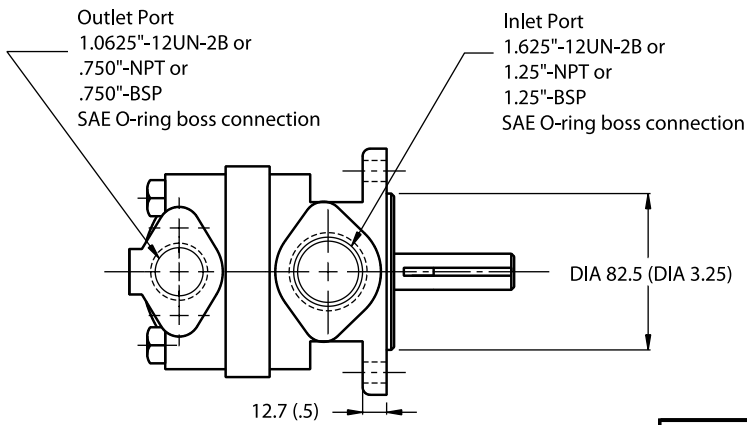


Shaft 3 Threaded with #6 Woodruff Key

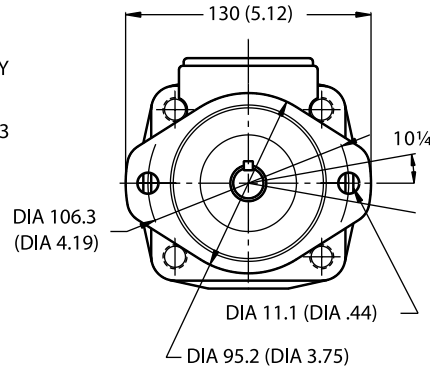
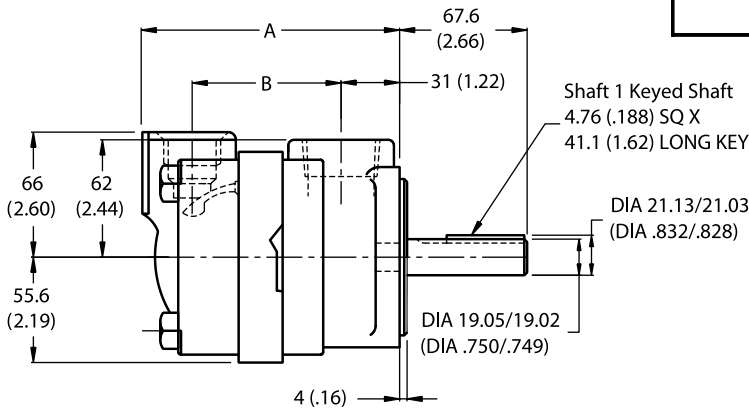


Shaft 12 Splined Shaft 13 Teeth

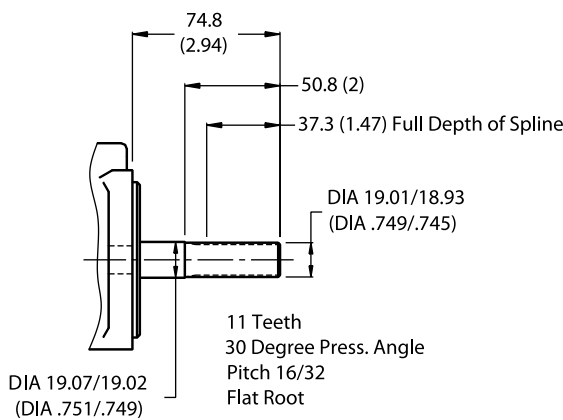
HV20



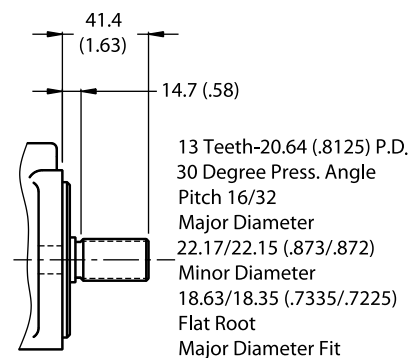
Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
5, 6	125.2 (4.93)	71.1 (2.80)
7, 8, 9	131.6 (5.18)	77.5 (3.05)
10, 11	136.7 (5.38)	82.6 (3.25)
12, 13	140.2 (5.52)	86.1 (3.39)



Other shaft options for HV20 Series

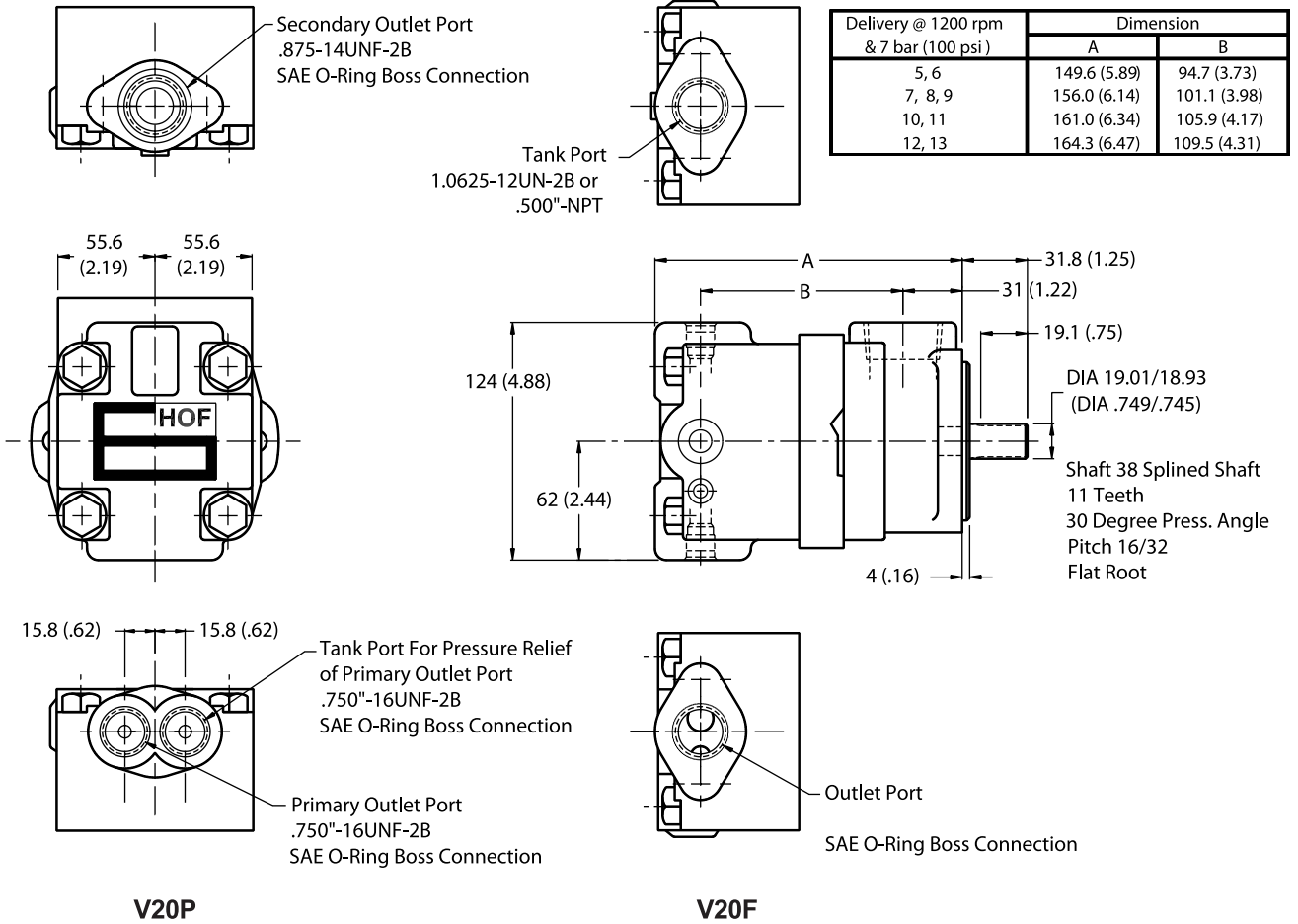


Shaft 11 Splined Shaft 11 Teeth

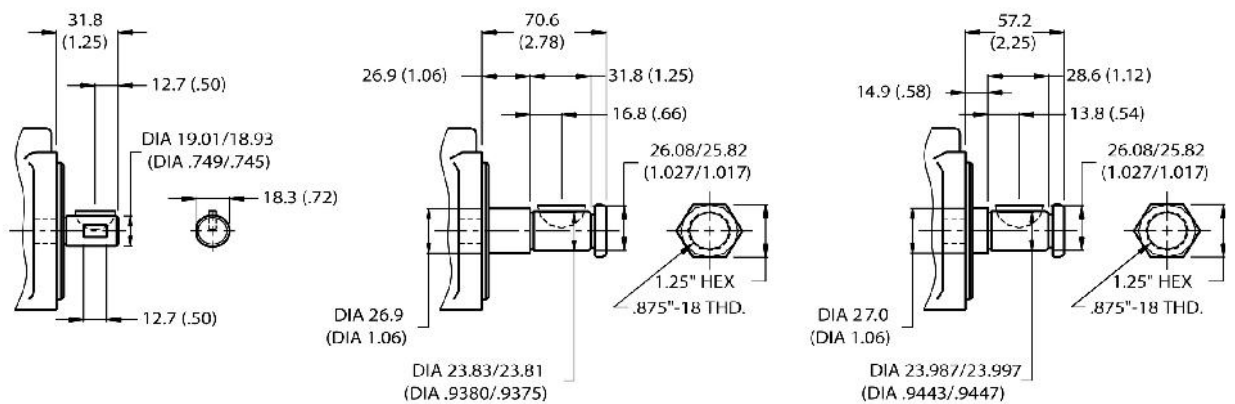


Shaft 15 Splined Shaft 13 Teeth

**HV20F and HV20P**

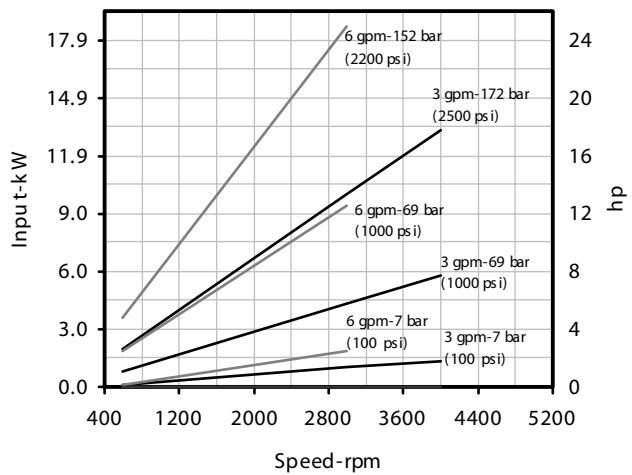
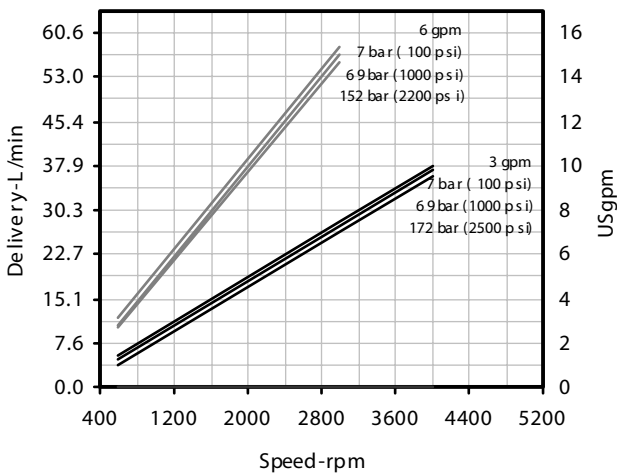
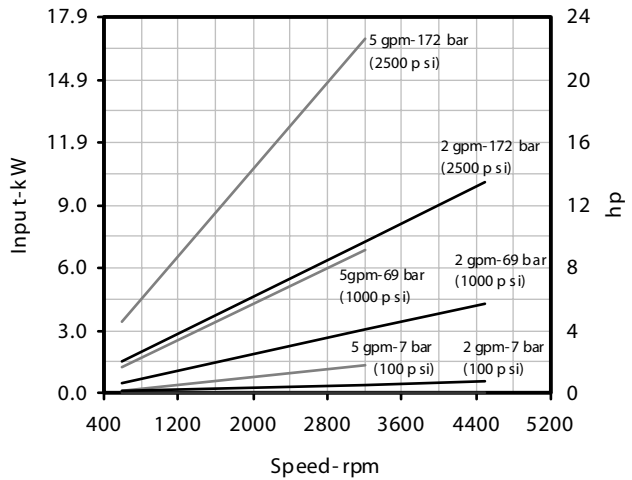
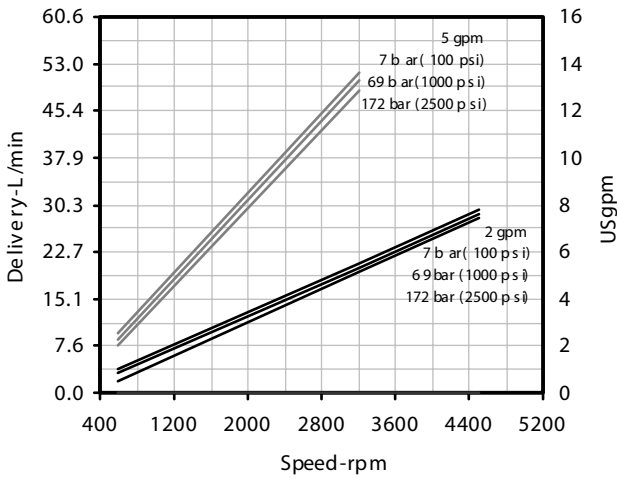
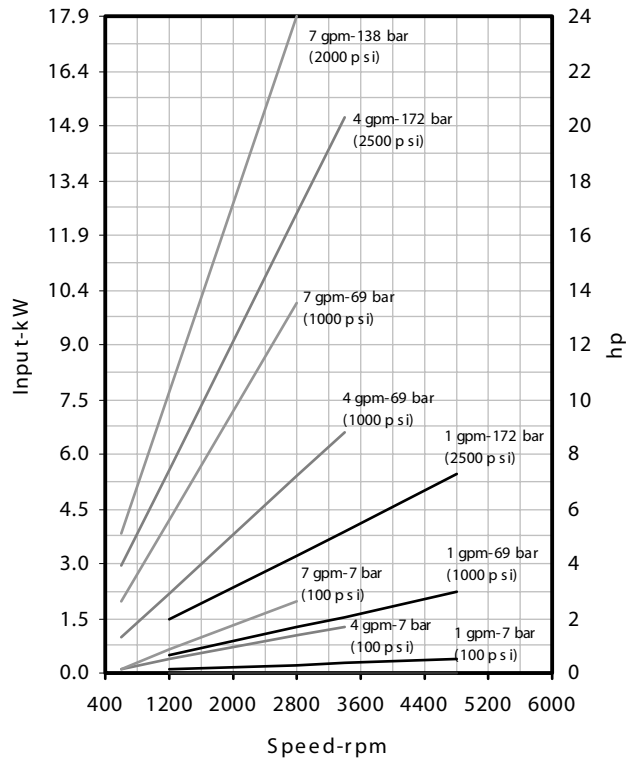
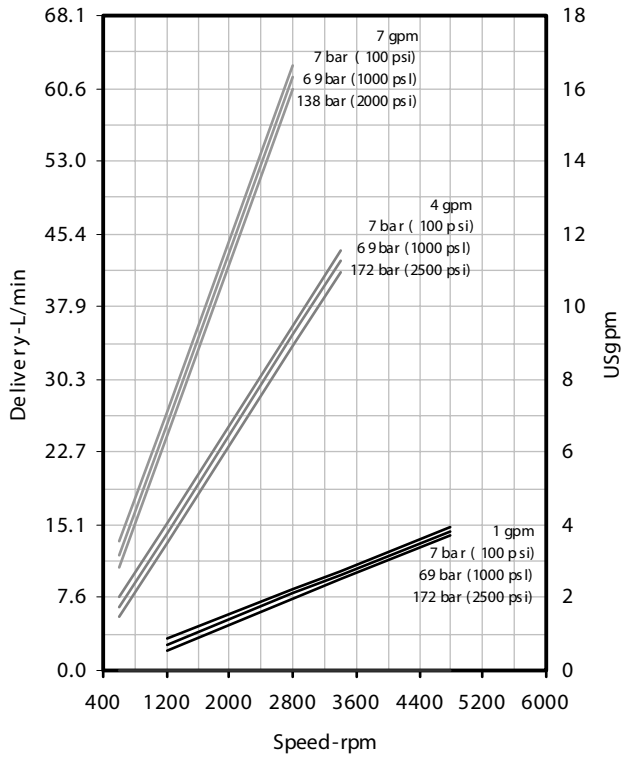


**Other shaft options for HV20 Series**



Shaft 6 Straight Stub Keyed Shaft    Shaft 3 Threaded with #6 Woodruff Key    Shaft 123 Threaded with #13 Woodruff Key

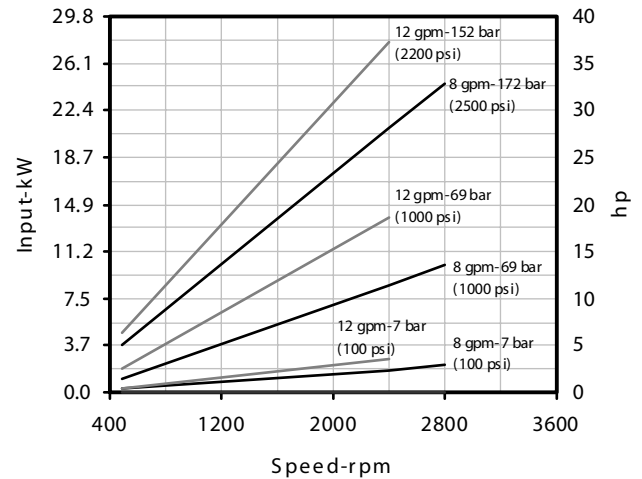
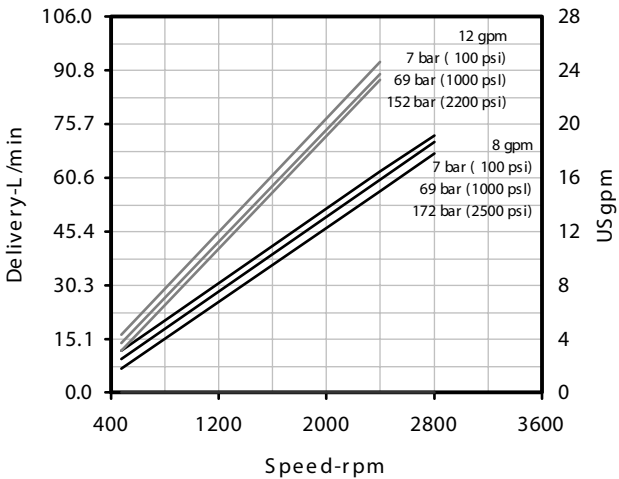
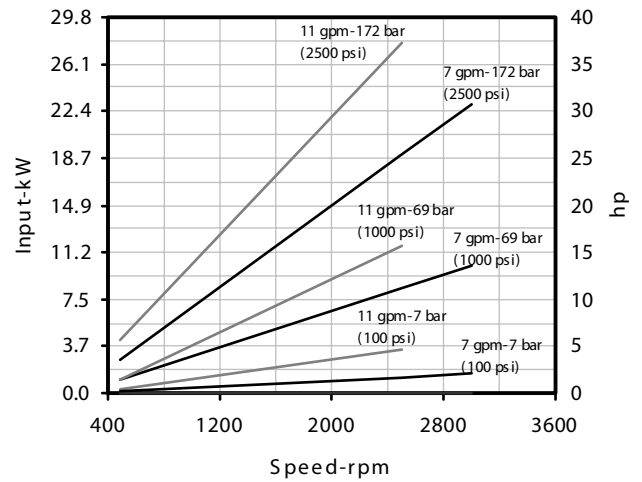
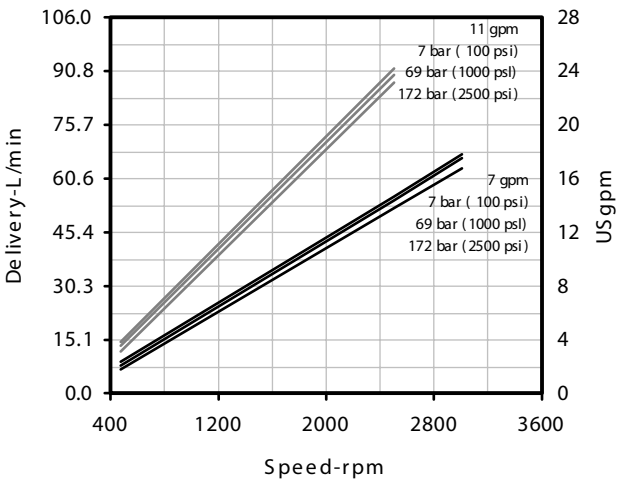
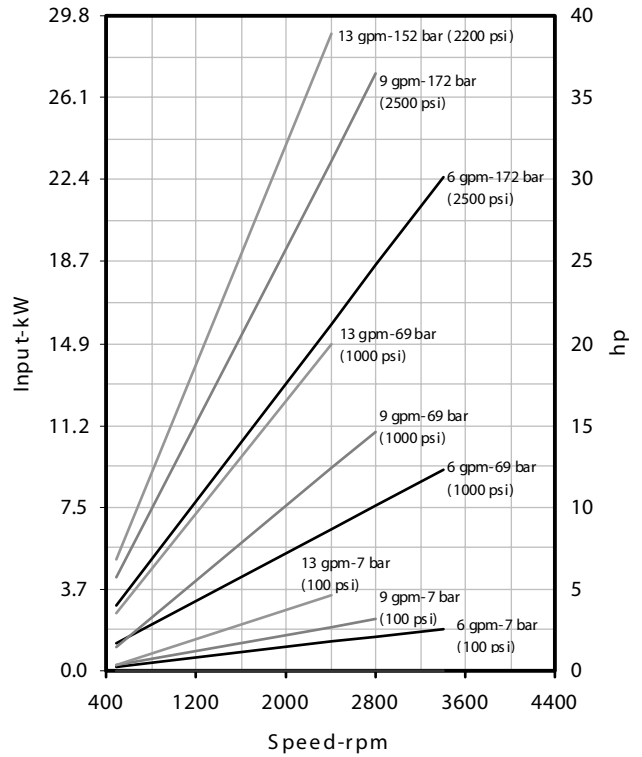
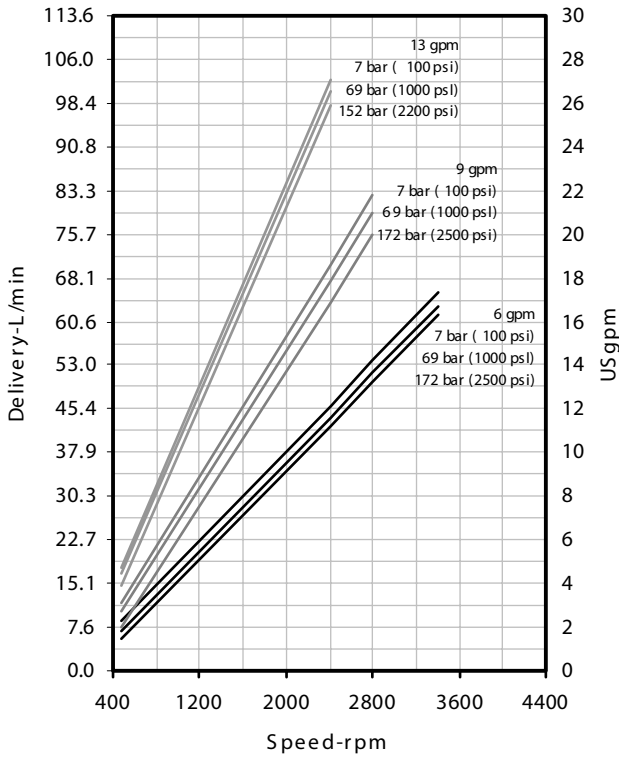
Based on viscosity 32 cSt (150 SSU) oil at 49 °C (120 °F) and pump inlet at 0 PSIG (14.7 PSIA)



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.