

Eaton Vickers V10 V20 Vane Pump

Vickers vane pump V10 V20 V2010 2020

Features

- V10 and V20 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.
- Interchangeable with original Vickers pump of the same model.



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.

V20(F) - 1P11S - 1C(8)-(H)-(L)

Model V10, V20

Cover

- Omit - Standard Cover
- F - Flow Control Cover
- P - Priority Valve Cover

Mounting

- 1 - 2-Bolt Flange

Inlet Port Connection

- S - 1.3125"-12 Str. thd. (V10)
- 1.625"-12 Str. thd. (V20)
- P - 1.00" NPT (V10)
- 1.25" NPT (V20)
- B - 1.00" BSP (V10)
- 1.25" BSP (V20)
- T - 1.1875"-12 Str. thd. (V10)

Delivery (USgpm at 1200 rpm)

- V10 - 1, 2, 3, 4, 5, 6, 7
- V20 - 6, 7, 8, 9, 11, 12, 13

Outlet Port Connection

V10 and V20

- S - .750"-16 Str. thd. (V10)
- 1.0625"-12 Str. thd. (V20)
- P - .500" NPT (V10)
- .750" NPT (V20)
- B - .500" BSP (V10)
- .750" BSP (V20)

V10F, V10P, V20F, and V20P

- S - .750"-16 Str. thd. for outlet and 1.0625"-12 Str. thd. for tank port (V20F)
- P - .750"-16 Str. thd. for outlet and .500" NPT for tank port (V10F and V20F)
- T - .750"-16 Str. thd. for outlet and tank port (V10F)
- .750"-16 Str. thd. for primary outlet and tank port and .875"-14 Str. thd. for secondary outlet (V20P)
- K - .5625"-18 Str. thd. for primary outlet and tank port and .750"-16 Str. thd. for secondary outlet (V10P)

Shaft Rotation

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

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 (2250)
- E - 86 (1250) K - 172 (2500)

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)

Outlet Port Position

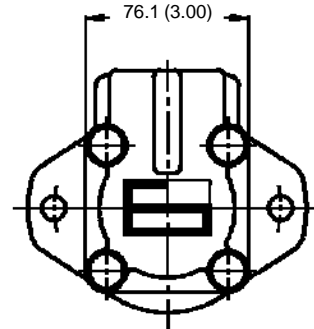
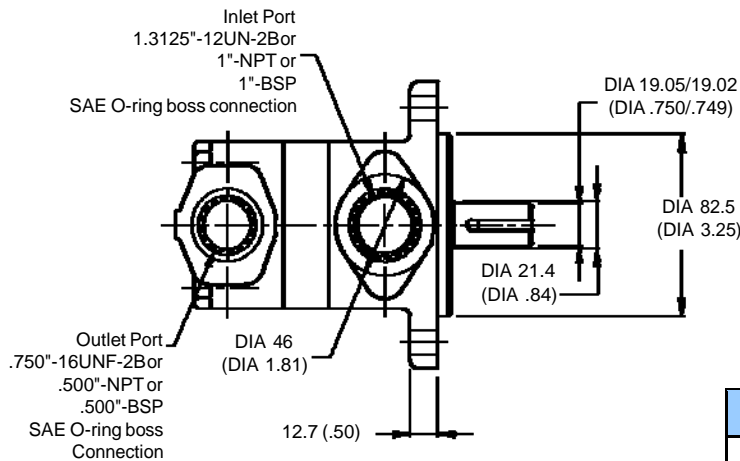
- (Viewed from cover end)
- A - Opposite inlet
- B - 90° CCW from inlet
- C - Inline with inlet
- D - 90° CW from inlet

Shaft

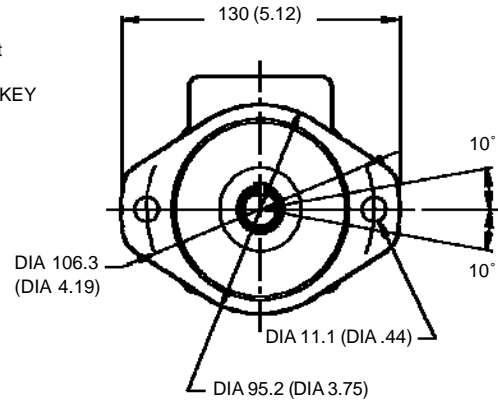
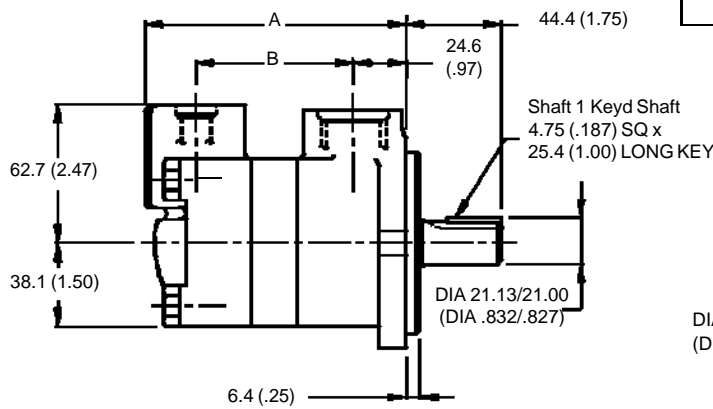
- 1 - Straight keyed
- 3 - Threaded with woodruff key
- 6 - Woodruff key stub (V20 only)
- 11 - Splined
- 12 - Splined (V10 only)
- 15 - Splined (V20 only)
- 38 - Splined

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)
V10 V10F V10P	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	
V20 V20F V20P	6	19.5 (1.19)	28.39 (7.50)	172 (2500)	3400	650	7.3 - 8.2 (16 - 18)
	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	
	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	

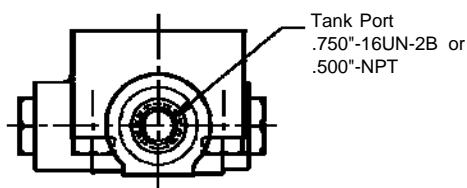
V10



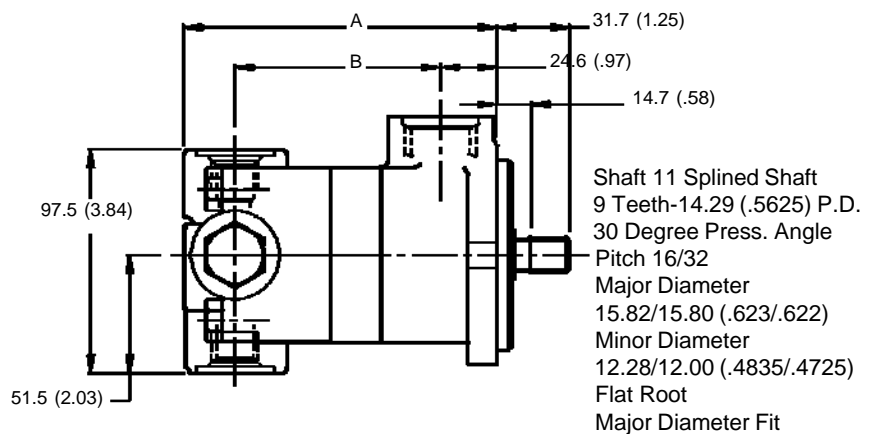
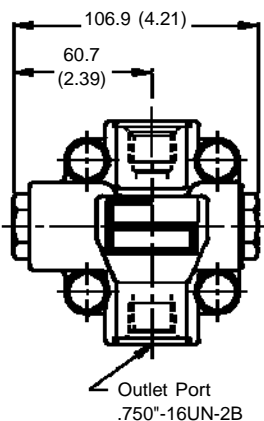
Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
1, 2, 3	115.6 (4.55)	67.3 (2.65)
4, 5	121.9 (4.80)	73.7 (2.90)
6, 7	127.0 (5.00)	78.7 (3.10)



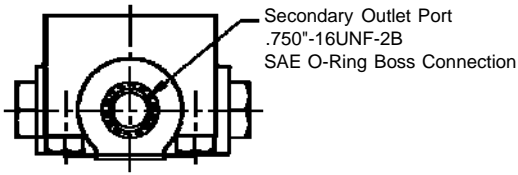
V10F



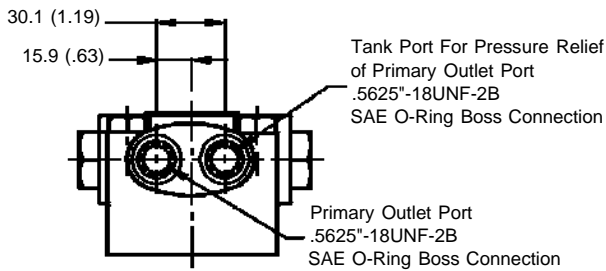
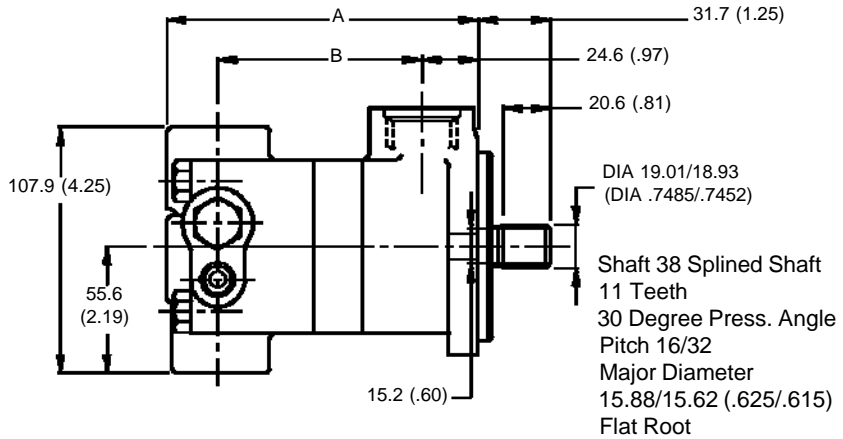
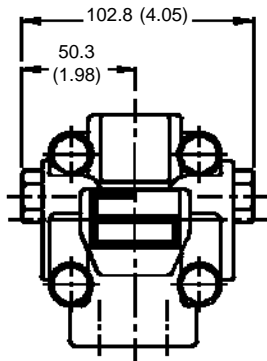
Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
1, 2, 3	128.8 (5.07)	84.8 (3.34)
4, 5	135.1 (5.32)	91.2 (3.59)
6, 7	140.2 (5.52)	96.3 (3.79)



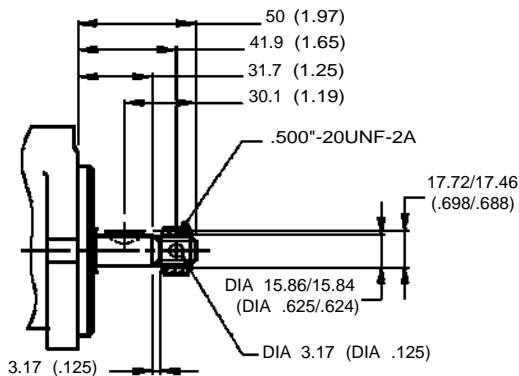
V10P



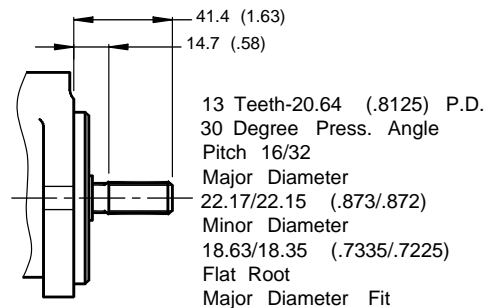
Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
1, 2, 3	130.0 (5.12)	84.8 (3.34)
4, 5	136.4 (5.37)	91.2 (3.59)
6, 7	141.5 (5.57)	96.3 (3.79)



Other shaft options for V10 Series

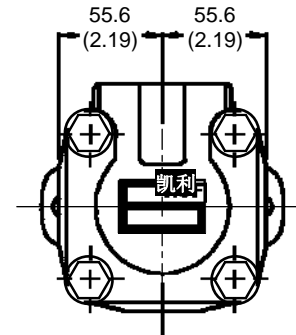
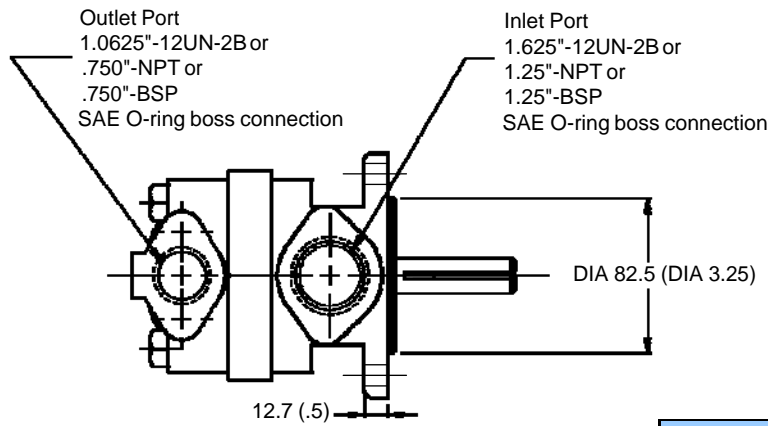


Shaft 3 Threaded with #6 Woodruff Key

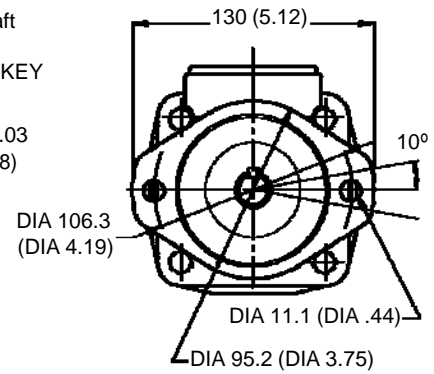
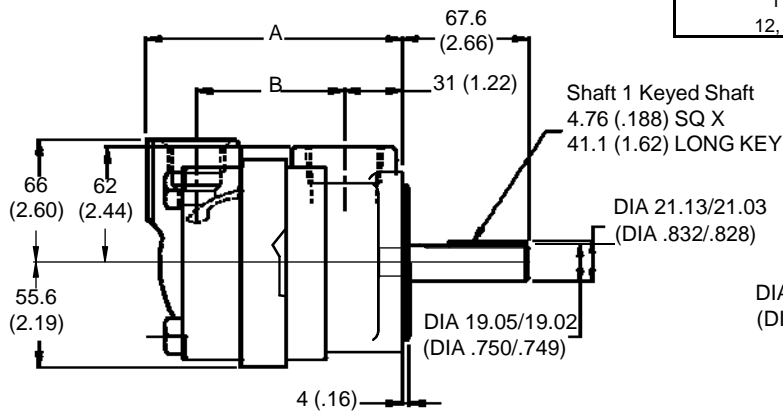


Shaft 12 Splined Shaft 13 Teeth

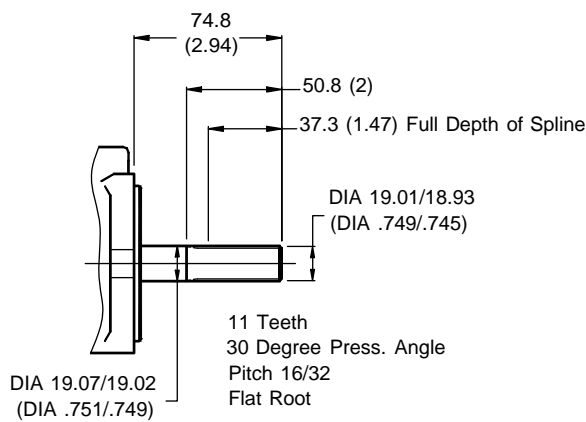
V20



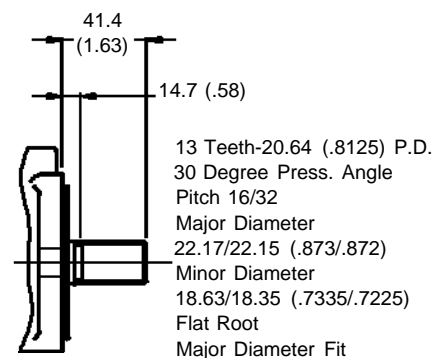
Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
6	125.2 (4.93)	71.1 (2.80)
7, 8, 9	131.6 (5.18)	77.5 (3.05)
11	136.7 (5.38)	82.6 (3.25)
12, 13	140.2 (5.52)	86.1 (3.39)



Other shaft options for V20 Series

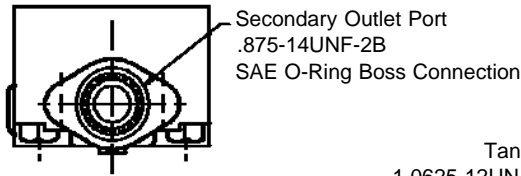


Shaft 11 Splined Shaft 11 Teeth

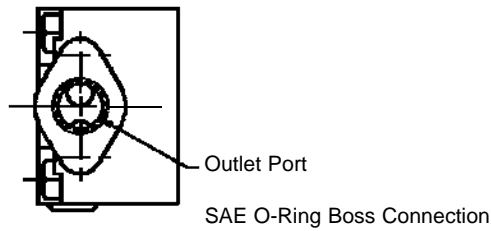
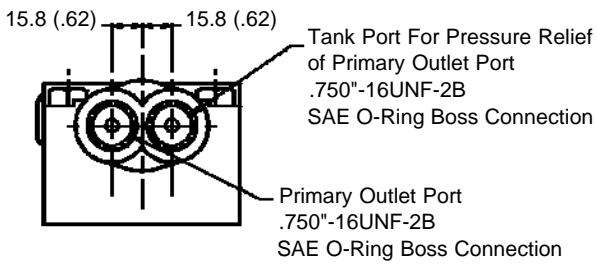
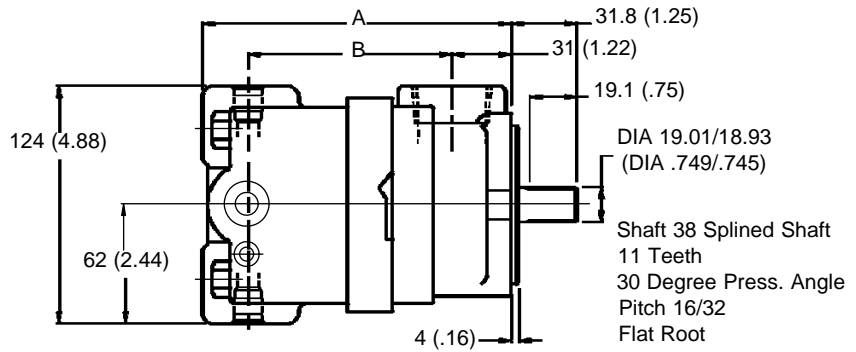
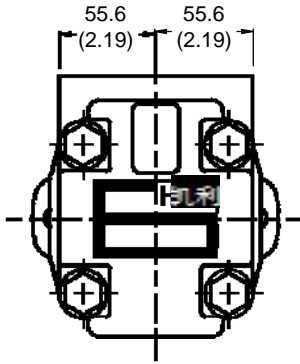


Shaft 15 Splined Shaft 13 Teeth

V20F and V20P



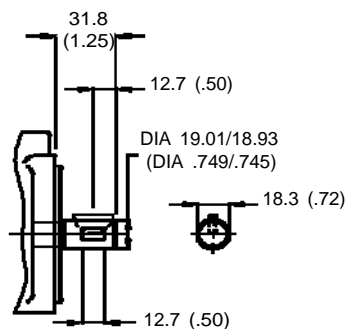
Delivery @ 1200 rpm & 7 bar (100 psi)	Dimension	
	A	B
6	149.6 (5.89)	94.7 (3.73)
7, 8, 9	156.0 (6.14)	101.1 (3.98)
11	161.0 (6.34)	105.9 (4.17)
12, 13	164.3 (6.47)	109.5 (4.31)



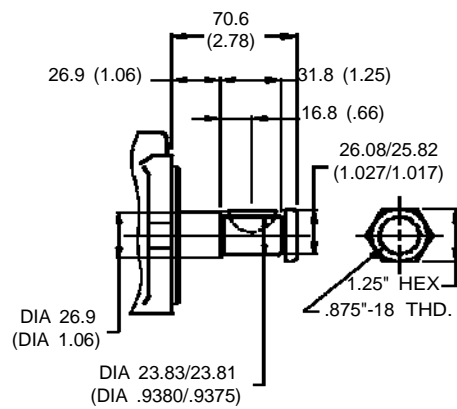
V20P

V20F

Other shaft options for V20 Series



Shaft 6 Straight Stub Keyed Shaft



Shaft 3 Threaded with #6 Woodruff Key

V2010(F) - 1F13S7S - 1CC-(8)(H)-(L)

Model V2010, V2020

Cover

- Omit - Standard Cover
- F - Flow Control Cover
- P - Priority Valve Cover

Mounting

- 1 - 2-Bolt Flange

Inlet Port Connection

- F - 4-bolt Flange Dia 1.5" (V2010)
- 4-bolt Flange Dia 2.0" (V2020)

Shaft End Pump Delivery (USgpm at 1200 rpm)

- 7, 8, 9, 11, 12, 13

Shaft End Outlet Port Connection

- S - 1.0625"-12 Str. thd.
- P - .750" NPT
- B - .750" BSP

Cover End Pump Delivery (USgpm at 1200 rpm)

- V2010 - 1, 2, 3, 4, 5, 6, 7
- V2020 - 6, 7, 8, 9, 11

Cover End Outlet Port Connection

V2010 and V2020

- S - .750"-16 Str. thd. (V2010)
- 1.0625"-12 Str. thd. (V2020)
- P - .500" NPT (V2010)
- .750" NPT (V2020)
- B - .500" BSP (V2010)
- .750" BSP (V2020)

V2010F, V2010P, V2020F, and V2020P

- S - .750"-16 Str. thd. for outlet and 1.0625"-12 Str. thd. for tank port (V2020F)
- P - .750"-16 Str. thd. for outlet and .500" NPT for tank port (V2010F and V2020F)
- T - .750"-16 Str. thd. for outlet and tank port (V2010F and V2020F)
- .750"-16 Str. thd. for main outlet and tank port and .875"-14 Str. thd. for secondary outlet (V2020P)
- K - .5625"-18 Str. thd. for main outlet and tank port and .750"-16 Str. thd. for secondary outlet (V2010P)

Shaft Rotation

(Viewed from shaft end)

- Omit - Turn right
- L - Turn left

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 (2250) |
| E - 86 (1250) | K - 172 (2500) |

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) | |

Cover End Outlet port position

(Viewed from cover end)
V 2010, V2010F, V2010P

- A - 135° CCW from inlet
- B - 45° CCW from inlet
- C - 45° CW from inlet
- D - 135° CW from inlet

V2020, V2020F, V2020P

- A - Opposite inlet
- B - 90° CCW from inlet
- C - Inline with inlet
- D - 90° CW from inlet

Shaft End Outlet Port Position

(Viewed from cover end)

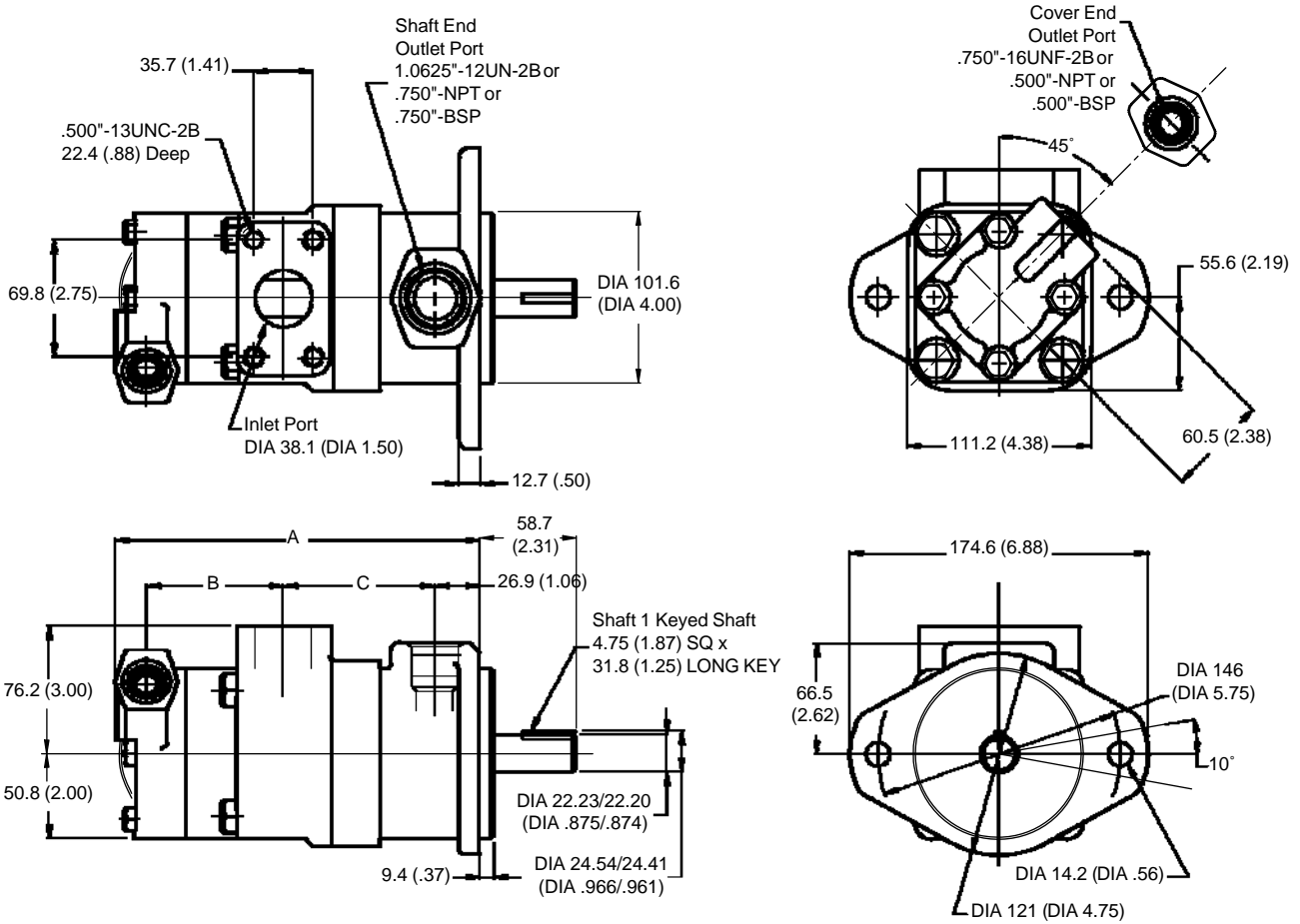
- A - Opposite inlet
- B - 90° CCW from inlet
- C - Inline with inlet
- D - 90° CW from inlet

Shaft

- 1 - Straight keyed
- 11 - Splined

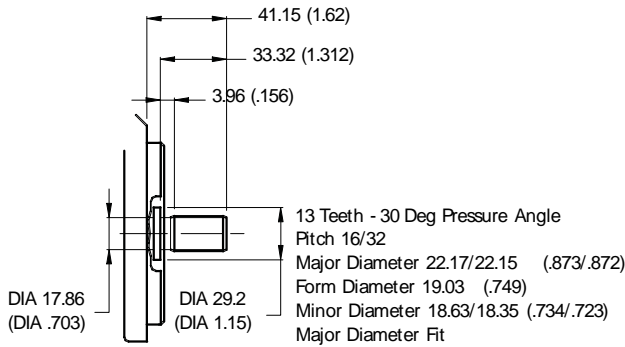
Specifications
Double Pump

Model Series	Cartridge Position	Ring Size Delivery at 1200 r/min & 7 bar (100 psi)	Geometric Displacement	Delivery at 1500 r/min & 7 bar (100 psi)	Maximum Pressure	Maximum Speed	Weight
		USgpm	cm ³ /r (in ³ /r)	L/min (USgpm)	bar (psi)	rpm	kg (lb)
V2010	Shaft End	7	22.8 (1.39)	33.11 (8.75)	172 (2500)	3000	13.6 (30)
		8	26.5 (1.62)	37.85 (10.00)	172 (2500)	2800	
		9	29.7 (1.81)	42.57 (11.25)	172 (2500)	2800	
		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	
		V2020	Shaft End	7	22.8 (1.39)	33.11 (8.75)	
8	26.5 (1.62)			37.85 (10.00)	172 (2500)	2800	
9	29.7 (1.81)			42.57 (11.25)	172 (2500)	2800	
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	6		19.5 (1.19)	28.39 (7.50)	172 (2500)	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	
	11		36.4 (2.22)	52.04 (13.75)		2500	

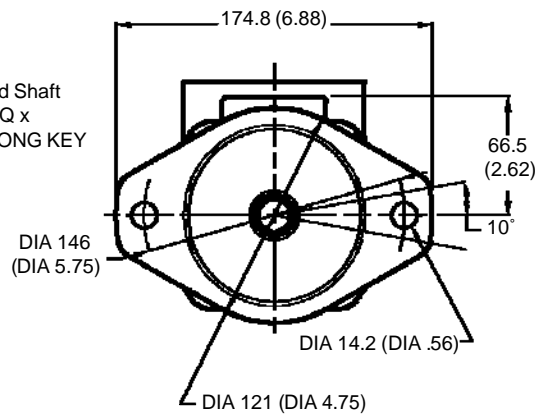
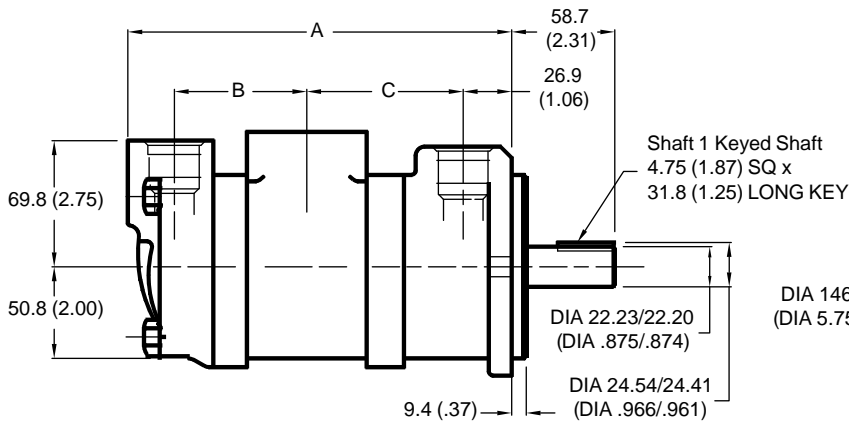
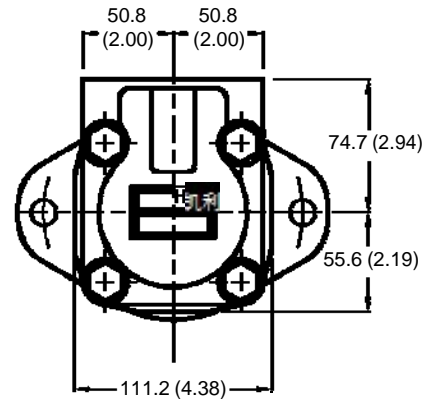
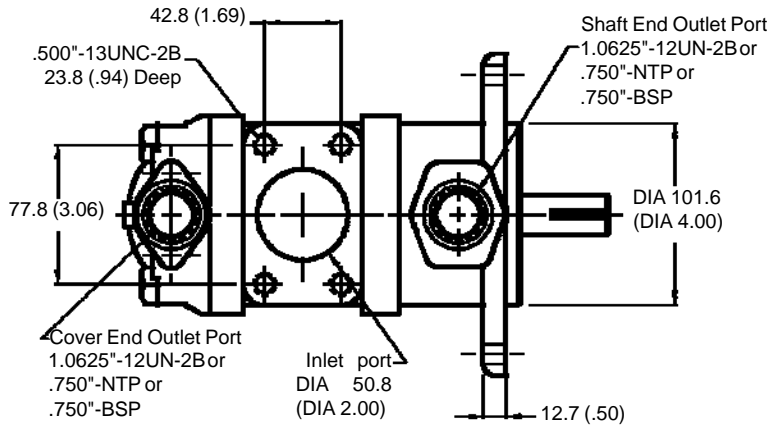


Delivery @ 1200 rpm & 7 bar (100 psi)		Dimension		
Shaft End	Cover End	A	B	C
7, 8, 9	1, 2, 3	213.1 (8.39)	75.9 (2.99)	86.4 (3.40)
7, 8, 9	4, 5	219.5 (8.64)	82.3 (3.24)	86.4 (3.40)
7, 8, 9	6, 7	224.5 (8.84)	87.4 (3.44)	86.4 (3.40)
11	1, 2, 3	218.2 (8.59)	75.9 (2.99)	91.2 (3.59)
11	4, 5	224.5 (8.84)	82.3 (3.24)	91.2 (3.59)
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 V2010 and V2020



Shaft 11 Splined Shaft

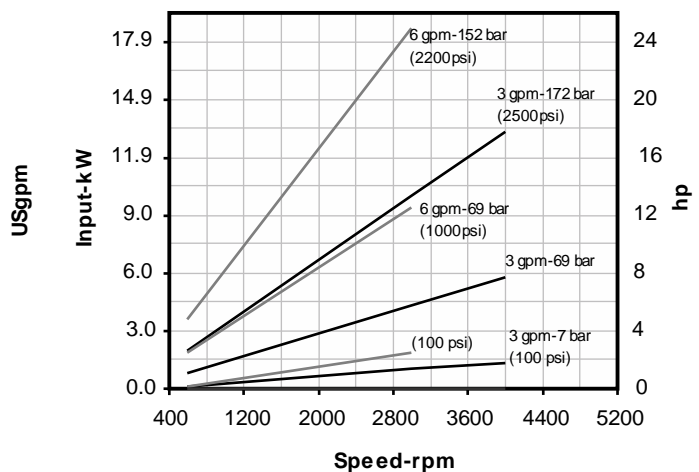
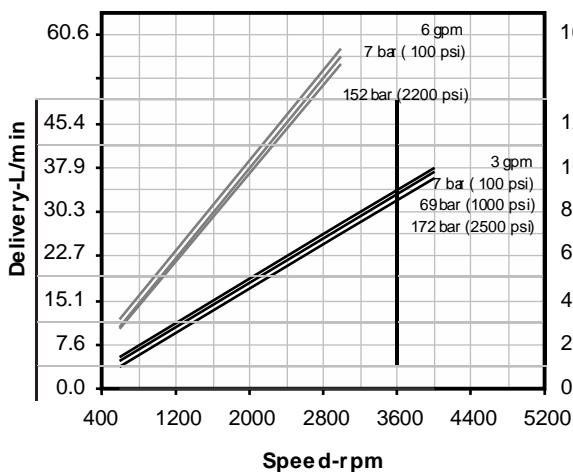
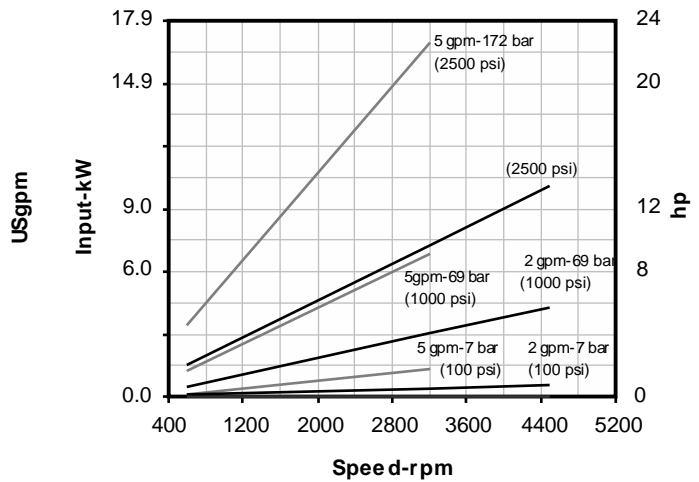
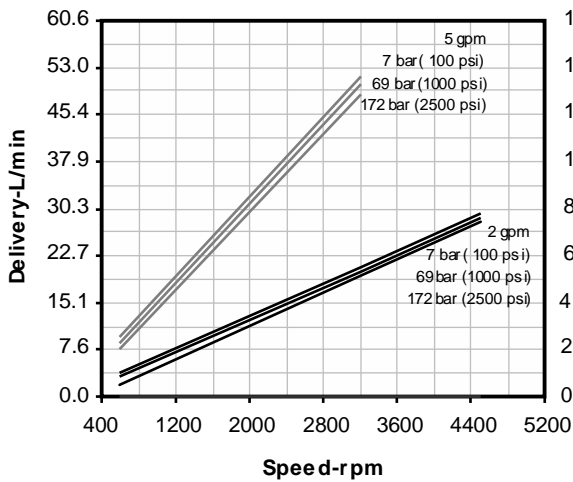
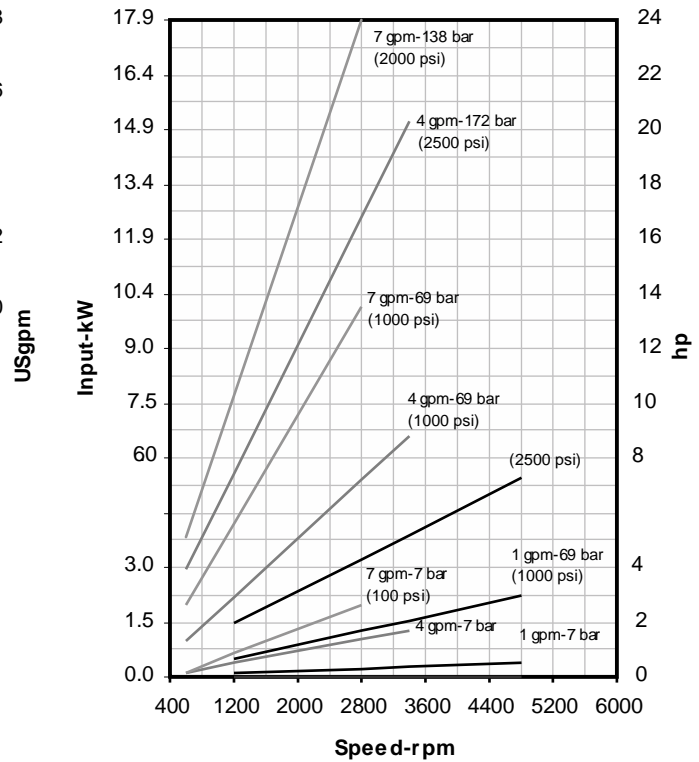
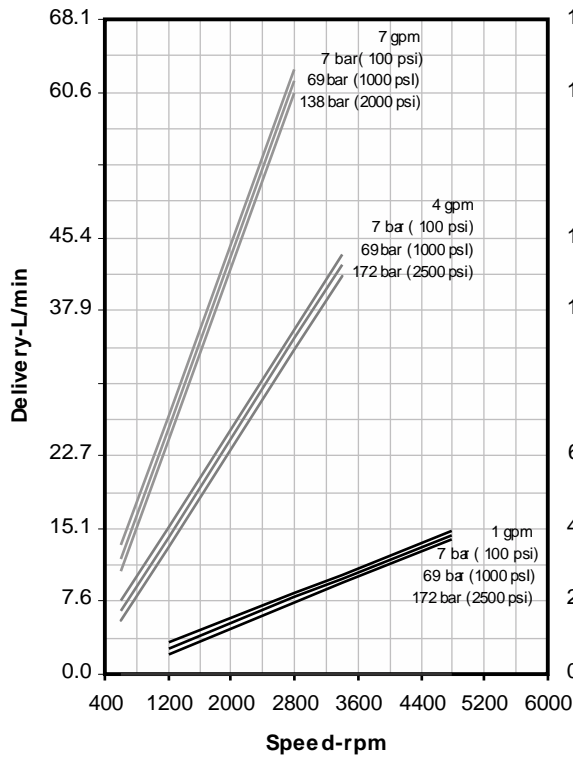


Delivery @ 1200 rpm & 7 bar (100 psi)		Dimension		
Shaft End	Cover End	A	B	C
7, 8, 9	6	213.6 (8.41)	73.7 (2.90)	87.1 (3.43)
7, 8, 9	7, 8, 9	220.0 (8.66)	80.0 (3.15)	87.1 (3.43)
11	6	218.7 (8.61)	73.7 (2.90)	92.2 (3.63)
11	7, 8, 9	225.0 (8.86)	80.0 (3.15)	92.2 (3.63)
11	11	229.9 (9.05)	85.1 (3.35)	92.2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

Performance Characteristics

V10, Cover End of V2010

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

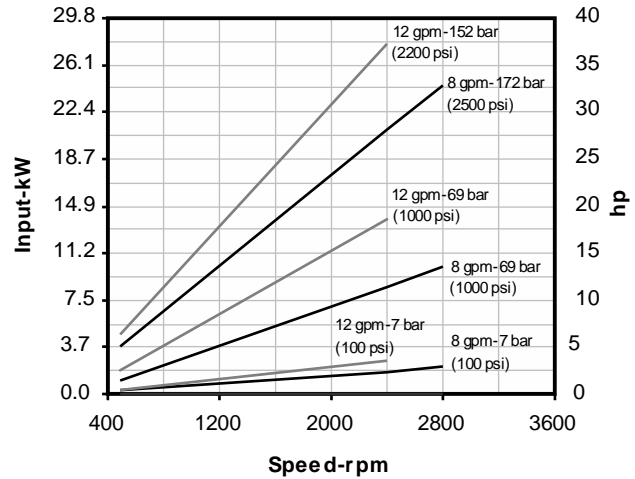
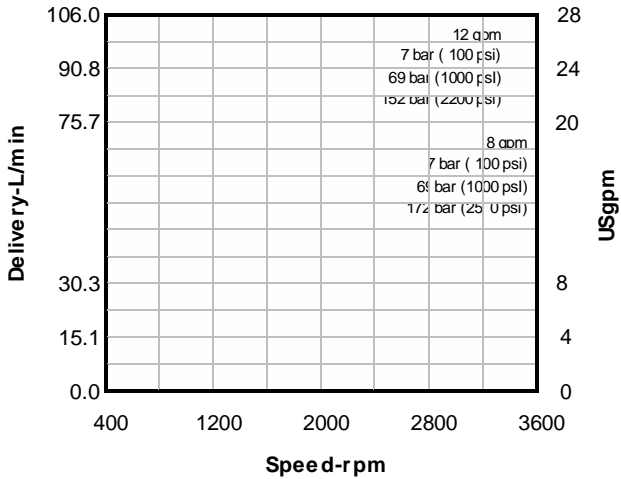
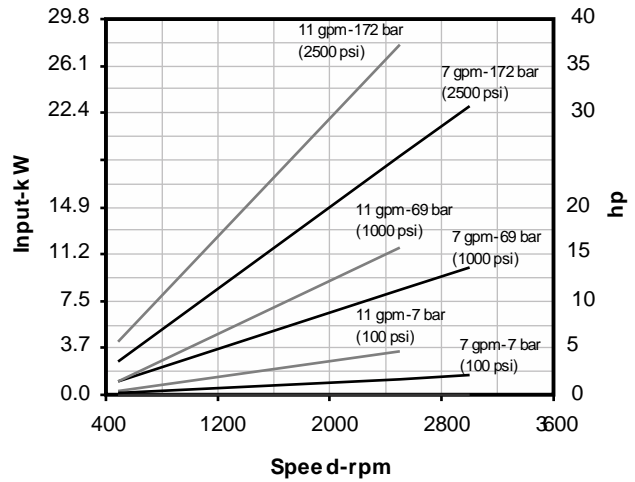
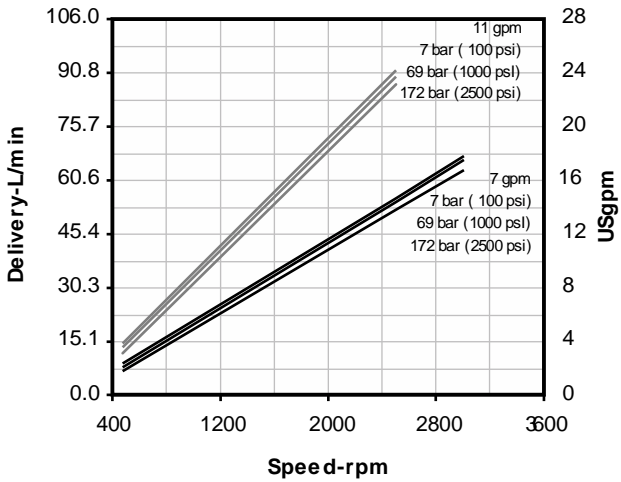
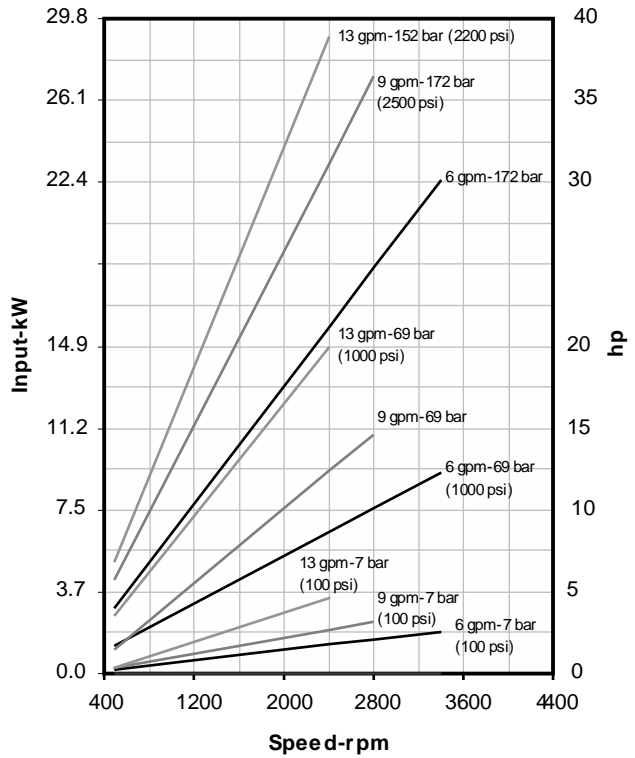
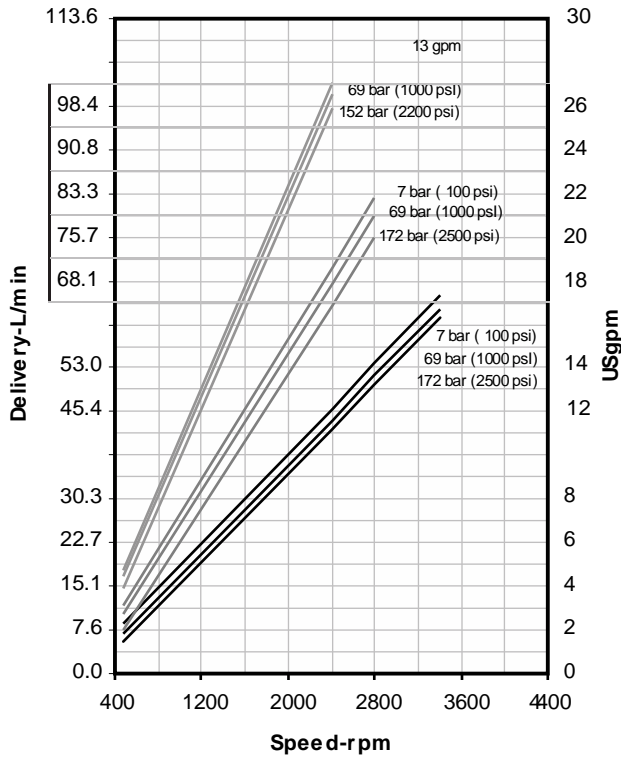


For the Cover End Cartridge, the speed could not exceed the maximum speed of the Shaft End Cartridge.

Performance Characteristics

V20, Shaft End of V20**, Cover End of V2020

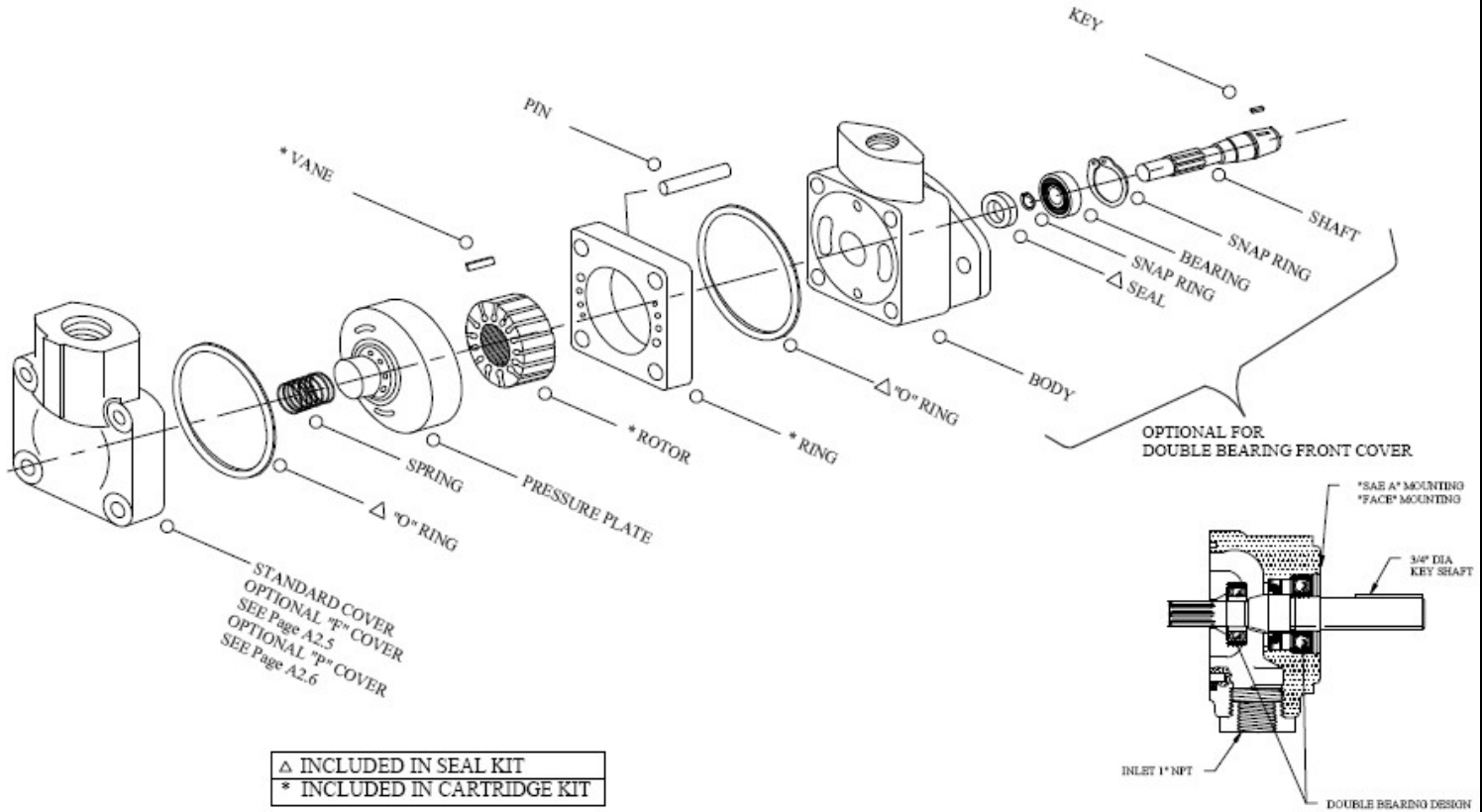
Based on viscosity 32 cSt (150 SSU) oil at 49 °C (120 °F) and pump inlet at 0 PSIG (14.7 PSIA)



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



Parts information



Vickers vane pump			
V2020P1F8S7T11BC3H21087	V20F1S11S11A8G11L	V101B5B41B20R	V101B6B11C20L
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V206E7S20B11	V101P2S0A20024	V20F1S7S38C6K22L	V101B4B11A20
V201S7R11A11	V101P2S0B20024	V101B5B41B20090	V101B4B11C20
V10F1B5T3C3F20L	V201P7P15C11	V101B5B41B20L090	F3V101B6B1A20R
F3V101S6S1A20	V201S7S1A11	V20F1S9S38C7K22L	V20101F8B7B1AA10
F3V20F1P13P38C8H22L	V201P12S1D11	V20101F11B2B11CC12	V101B7B11A20
V20F1P11P11C8G22L	V201P12P1C11	V20F1S6P38A6G22	V101B7B11B20
V20101F11B3B11CC12	V201P7P1A11	V201SM13SM1C11	V101B7B11C20
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V20F1P11P38C6E22	V201S10S23C11	V101B1B11C20L	V101B3B38A20
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