

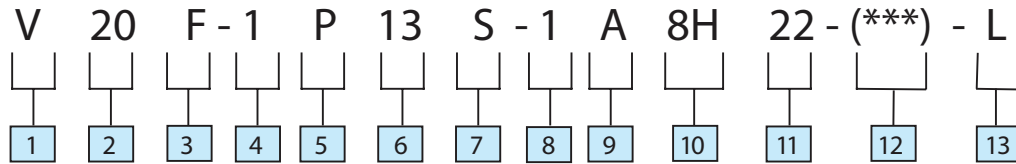
Itahydraulic

Power Technology



V10 & V20 Single Vane Pump

Model Codes



1 Vane pump

2 Series 10 or 20

3 Integral valve options (Omit if not required)

F – Flow control & relief

P – Priority valve & relief

NF – Flow control & relief w/internal drain

4 Mounting

1 – 2-bolt flange

6 – 2 bolt flange (SAE "B" size)

5 Inlet port connections

D – 1 5/16-12 str. thd. (V20 only)

P – 1" NPT thread (V10 only)

1 1/4" NPT thread (V20 only)

S – 1 5/16-12 str. thd. (V10 only)

1 5/8"-12 str. thd. (V20 only)

T – 1 3/16-12 str. thd. (V10 only)

6 SAE rated capacity – USgpm (1200 r/min & 100 psi)

- 1 – 4 L/min (1 USgpm)
- 2 – 8 L/min (2 USgpm)
- 3 – 11 L/min (3 USgpm)
- 4 – 15 L/min (4 USgpm)
- 5 – 19 L/min (5 USgpm)
- 6 – 23 L/min (6 USgpm)
- 7 – 27 L/min (7 USgpm)

V10
series

- 6 – 23 L/min (6 USgpm)
- 7 – 27 L/min (7 USgpm)
- 8 – 30 L/min (8 USgpm)
- 9 – 34 L/min (9 USgpm)
- 10 – 39 L/min (10 USgpm)
- 11 – 42 L/min (11 USgpm)
- 12 – 45 L/min (12 USgpm)
- 13 – 49 L/min (13 USgpm)

V20
series

7 Outlet port connections

Code	Std. cover		Flow control cover		Priority valve cover		
	Pressure	Tank	Primary outlet	Secondary outlet	Tank		
K	–	–	–	–	–	9/16-18 St. thd. (V10P)	3/4-16 St. thd. (V10P)
	1/2" NPT thd. (V10 only)	–	–	–	–		
P	3/4" NPT thd. (V20 only)	3/4-16 St. thd. (V10F & V20F)	1/2" NPT thd. (V10F & V20F)	–	–	–	–
R	1-1/16"-12 St. thd. (V10 only)	–	–	–	–	–	–
	1-3/16"-12 St. thd. (V20 only)	–	–	–	–	–	–
S	3/4"-16 St. thd. (V10 only)	–	–	–	–	–	–
	1-1/16-12 St. thd. (V20 only)	3/4-16 St. thd. (V20F)	1-1/16-12 St. thd. (V20F)	–	–	–	–
T	–	3/4-16 St. thd. (V10F)	3/4-16 St. thd. (V10F)	3/4-16 St. thd. (V20P)	7/8-14 St. thd. (V20P)	3/4-16 St. thd. (V20P)	
(NF only option)		3/4-16 St. thd. (V10NF & V20NF)	–				

8 Shafts

- 1 – Straight keyed
- 3 – Threaded with woodruff key
- 11 – Splined
- 12 – Splined (V10 only)
- 38 – Splined
- 62 – SAE A Spline (V20 only)

11 Design

Subject to change. Installation dimensions remain the same for designs –20 through –29.

9 Position of outlet or primary outlet port

(Viewed from cover end of pump)
A – Opposite inlet port
B – 90° CCW from inlet
C – In line with inlet
D – 90° CW from inlet

12 Special Suffix Feature (Omit if not required)

13 Shaft Rotation

(Viewed from shaft end of pump)
L – Left hand for counterclockwise.
R – Right hand or (Omit)

10 Integral valves

Flow rate	Relief valve setting	
2 – 8 L/min (2 USgpm)	A – 17 bar (250 psi)	H – 140 bar (2000 psi)
3 – 11 L/min (3 USgpm)	B – 35 bar (500 psi)	J – 155 bar (2250 psi)
4 – 15 L/min (4 USgpm)	C – 52 bar (750 psi)	K – 175 bar (2500 psi)
5 – 19 L/min (5 USgpm)	D – 70 bar (1000 psi)	L – 190 bar (2750 psi)
6 – 23 L/min (6 USgpm)	E – 86 bar (1250 psi)	0 – Custom Setting (Noted by Suffix)
7 – 27 L/min (7 USgpm)	F – 100 bar (1500 psi)	
8 – 30 L/min (8 USgpm)	G – 121 bar (1750 psi)	

V10 & V20 Single Vane Pump

Versatile

High flow, pressure and speed capabilities enable these pumps to meet the needs of modern vehicle hydraulic circuits. Optional flow control and priority valve covers offer even more versatility.

Flow Control

The flow control cover limits flow to the operating system to the desired maximum. Excess flow is diverted to tank. On double pumps, shaft-end pump delivery is proportional to speed.

The flow control cover also includes a relief valve to limit maximum system pressure.

A typical application of a flow control is in a power steering unit where it provides a constant supply of oil over the engine's mid to high speed range.

Priority Valve

The priority valve cover maintains nearly a constant flow to a primary circuit and diverts the remaining flow to a secondary circuit. Flow going to the secondary circuit is determined by pump delivery. The primary circuit is protected by an integral relief valve but an external relief valve must be provided for the secondary circuit.

Reliable

The superior design of these units makes them last longer ... they've proven they'll hold up in rugged applications such as trenchers, backhoes and tractors.

Hydraulic Balance

Internal inlet and outlet pressure chambers are diametrically opposed.

As a result, pressure-induced radial loads are balanced ... bearings have to carry the external load only.

Performance

Low vane tip/ring loading allows high pressure operation. High speeds are possible because the inlet flow paths are designed to give uniform oil acceleration - thus better filling - particularly at low inlet pressures.

Low Cost

Fluid Power's efficient design produces extra horsepower per dollar of pump investment - providing industry with low pump cost per horsepower capacity.

Single Pump Operating Specifications

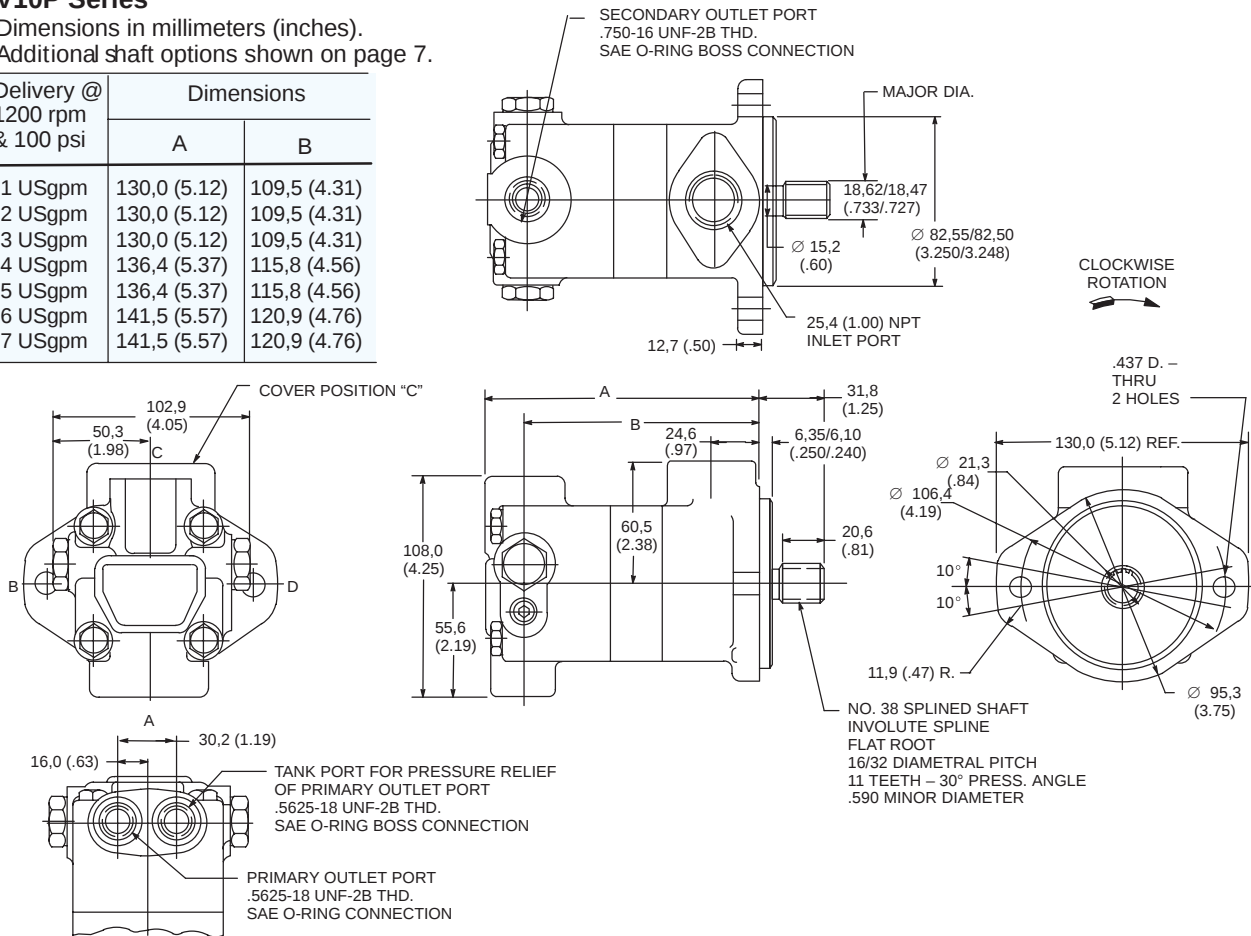
Model Series	Delivery USgpm @ 1200 rpm 7 bar (100 psi)	Displ. cm ³ /r (in ³ /r)	Max. r/min	Max. bar (psi)	Typical del.. L/min (USgpm) @ max. speed & pressure	Typical input kW (hp) @ max. speed & pressure	Wt. kg (lb.)
V10 V10(N)F V10P	1	3,3 (.20)	4800	172 (2500)	13,6 (3.6)	5,2 (7)	4,5 - 6,8 (10 - 15)
	2	6,6 (.40)	4500	172 (2500)	27,7 (7.3)	10,1 (13.6)	
	3	9,8 (.60)	4000	172 (2500)	35,6 (9.4)	13,3 (17.8)	
	4	13,1 (.80)	3400	172 (2500)	41,3 (10.9)	15,2 (20.4)	
	5	16,4 (1.00)	3200	172 (2500)	48,5 (12.8)	17 (22.8)	
	6	19,5 (1.19)	3000	152 (2200)	55,3 (14.6)	18,3 (24.5)	
	7	22,8 (1.39)	2800	138 (2000)	60,6 (16)	17,9 (24)	
V20 V20F V20NF V20P	6	19,5 (1.19)	3400	172 (2500)	61,0 (16.1)	21,6 (29)	7,3 - 8,2 (16 - 18)
	7	22,8 (1.39)	3000	172 (2500)	63,3 (16.7)	22 (29.5)	
	8	26,6 (1.62)	2800	172 (2500)	67,1 (17.7)	24,2 (32.5)	
	9	29,7 (1.81)	2800	172 (2500)	75,0 (19.8)	26,5 (35.5)	
	10	31,5 (1.93)	2500	172 (2500)	81,0 (21.4)	27,3 (36.6)	
	11	36,4 (2.22)	2500	172 (2500)	86,8 (22.9)	28 (37.5)	
	12	39,0 (2.38)	2400	152 (2200)	87,2 (23)	26,8 (36)	
	13	42,5 (2.59)	2400	152 (2200)	98,1 (25.9)	29,1 (39)	

Installation Dimensions

V10P Series

Dimensions in millimeters (inches).
Additional shaft options shown on page 7.

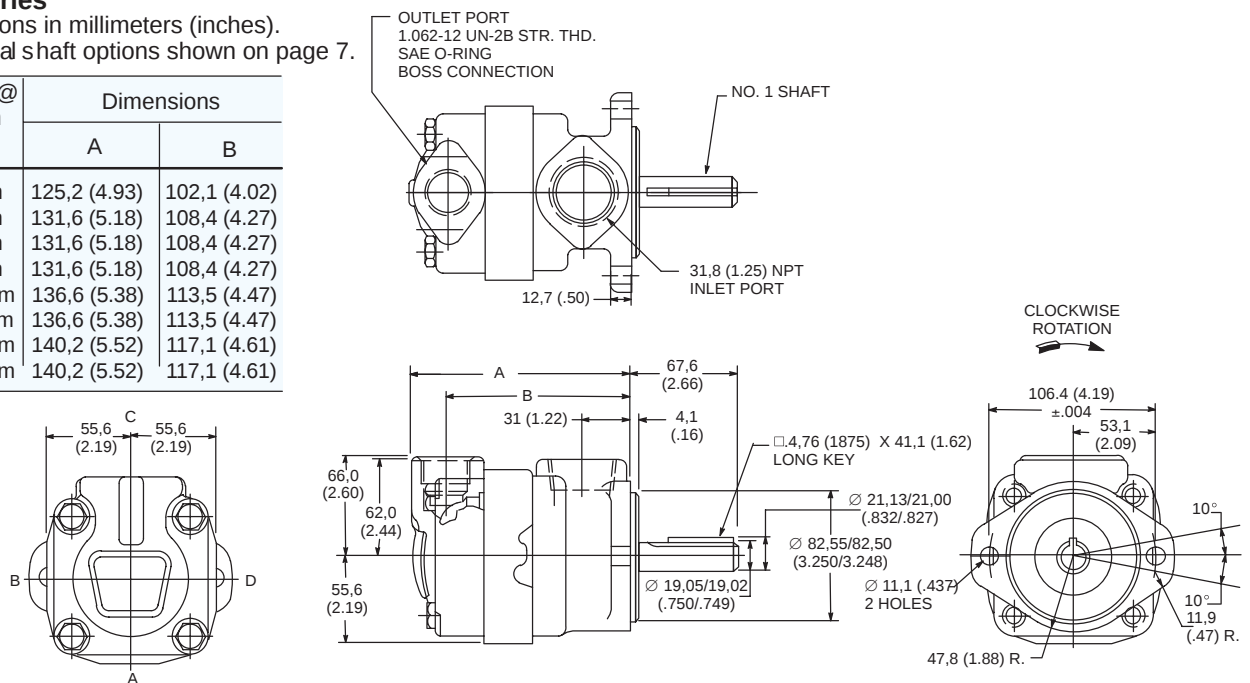
Delivery @ 1200 rpm & 100 psi	Dimensions	
	A	B
1 USgpm	130,0 (5.12)	109,5 (4.31)
2 USgpm	130,0 (5.12)	109,5 (4.31)
3 USgpm	130,0 (5.12)	109,5 (4.31)
4 USgpm	136,4 (5.37)	115,8 (4.56)
5 USgpm	136,4 (5.37)	115,8 (4.56)
6 USgpm	141,5 (5.57)	120,9 (4.76)
7 USgpm	141,5 (5.57)	120,9 (4.76)



V20 Series

Dimensions in millimeters (inches).
Additional shaft options shown on page 7.

Delivery @ 1200 rpm & 100 psi	Dimensions	
	A	B
6 USgpm	125,2 (4.93)	102,1 (4.02)
7 USgpm	131,6 (5.18)	108,4 (4.27)
8 USgpm	131,6 (5.18)	108,4 (4.27)
9 USgpm	131,6 (5.18)	108,4 (4.27)
10 USgpm	136,6 (5.38)	113,5 (4.47)
11 USgpm	136,6 (5.38)	113,5 (4.47)
12 USgpm	140,2 (5.52)	117,1 (4.61)
13 USgpm	140,2 (5.52)	117,1 (4.61)



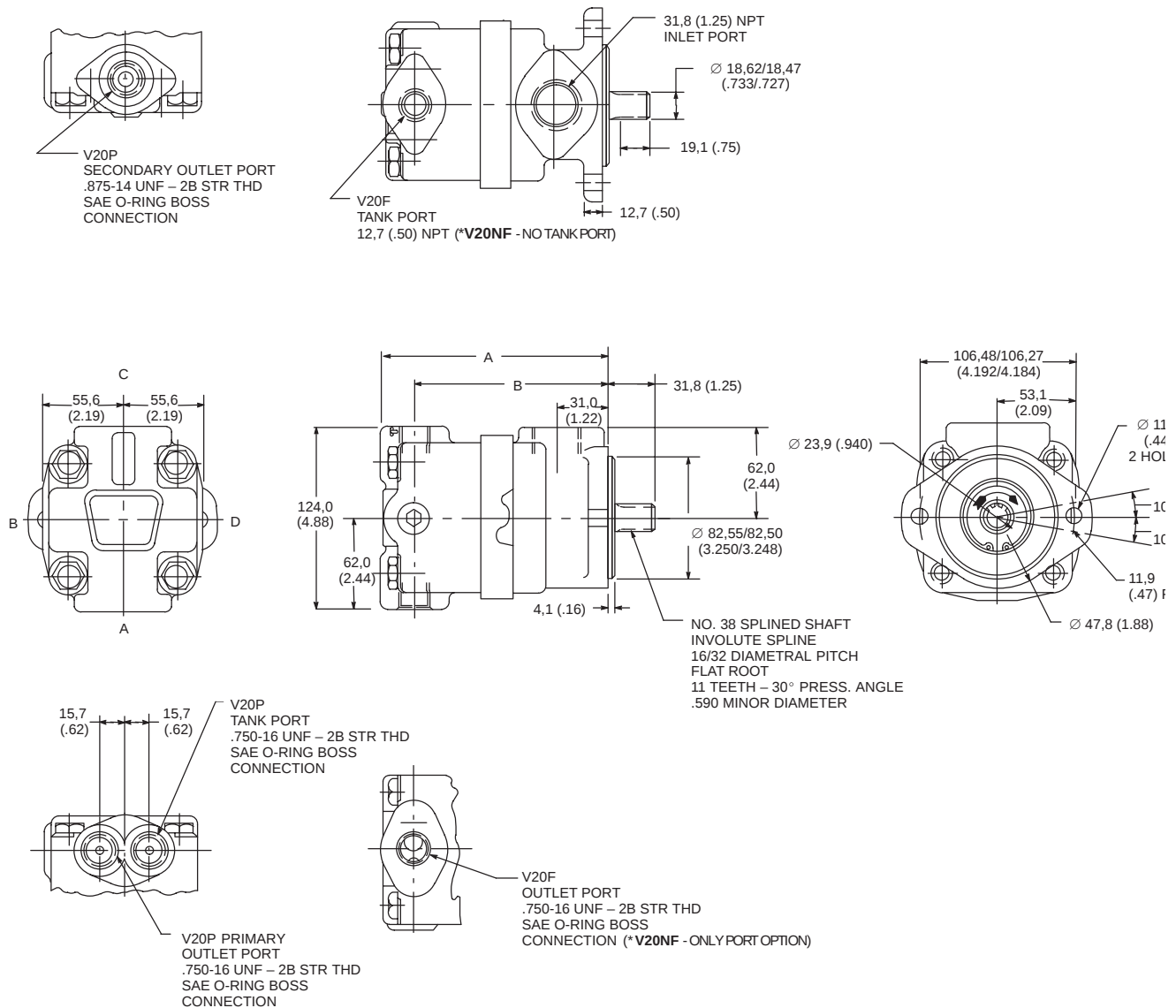
Installation Dimensions

V20F, V20NF, & V20P Series

Dimensions in millimeters (inches).

Additional shaft options shown on page 7.

Delivery @ 1200 rpm & 100 psi	Dimensions	
	A	B
6 USgpm	149,6 (5.89)	125,7 (4.95)
7 USgpm	156,0 (6.14)	132,1 (5.20)
8 USgpm	156,0 (6.14)	132,1 (5.20)
9 USgpm	156,0 (6.14)	132,1 (5.20)
10 USgpm	161,0 (6.34)	136,9 (5.39)
11 USgpm	161,0 (6.34)	136,9 (5.39)
12 USgpm	164,3 (6.47)	140,5 (5.53)
13 USgpm	164,3 (6.47)	140,5 (5.53)

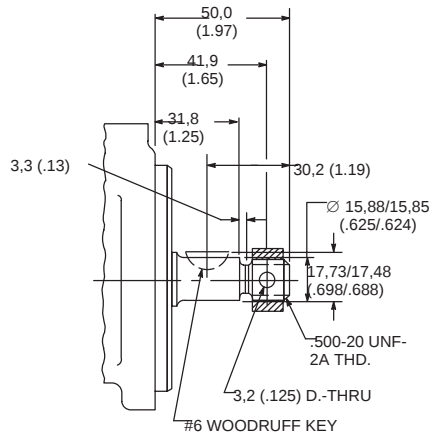


Optional Shafts

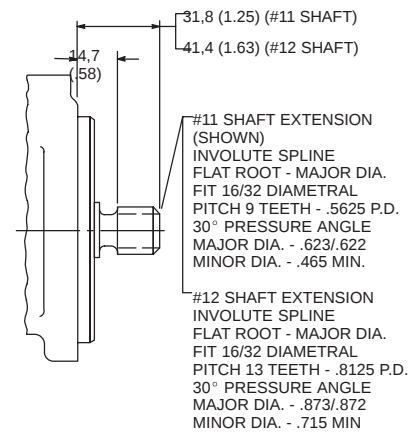
V10 Series

Dimensions in millimeters (inches)

Note: No. 1 keyed shaft and No. 38 splined shaft shown on page 4.



No. 3 shaft extension

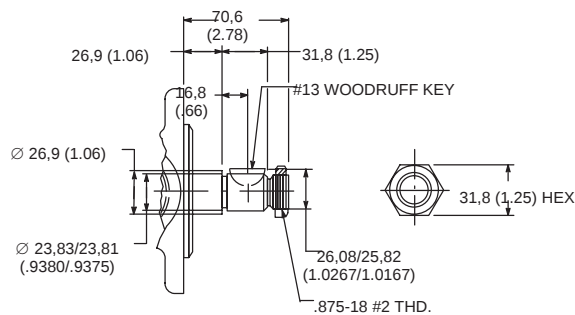


No. 11 & 12 shaft extension

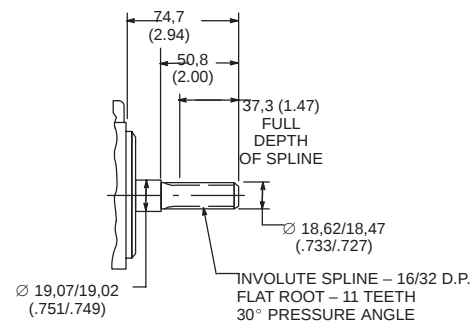
V20 Series

Dimensions in millimeters (inches)

Note: No. 1 keyed shaft and No. 38 splined shaft shown on pages 5 and 6 respectively. No. 62 splined shaft same as V10 #11 shaft shown above.



No. 3 shaft extension



No. 11 shaft extension

NOTE:

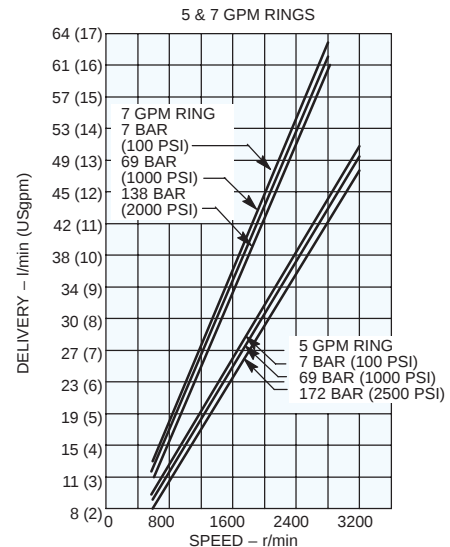
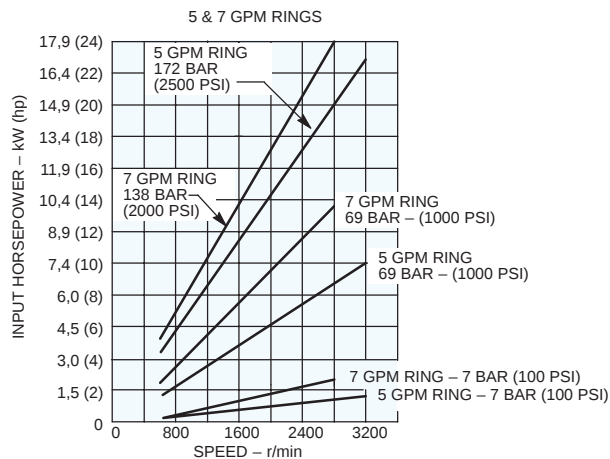
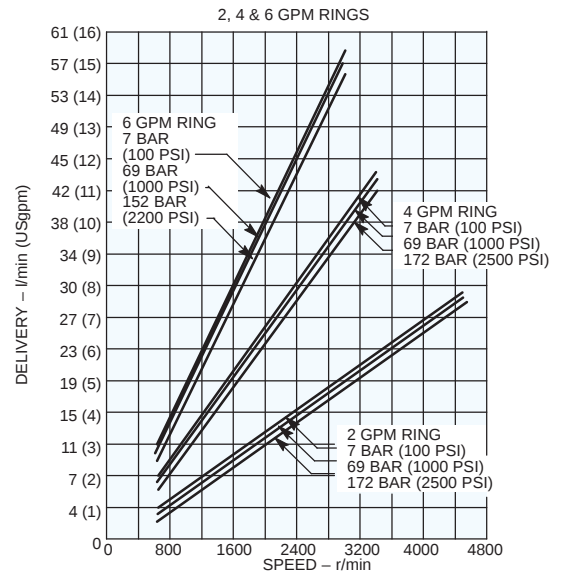
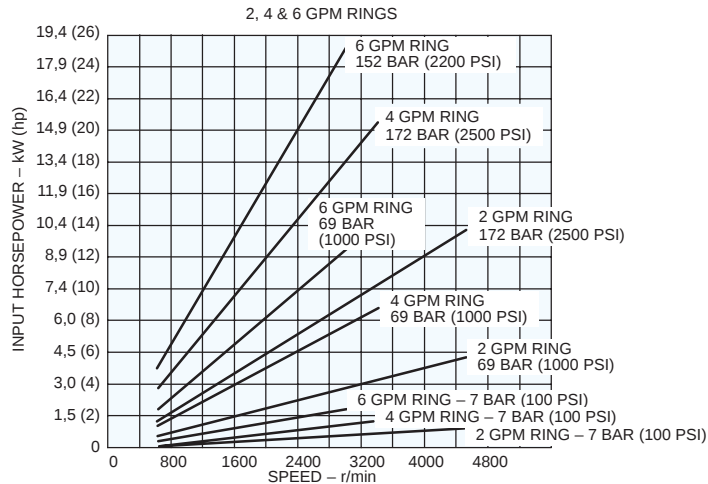
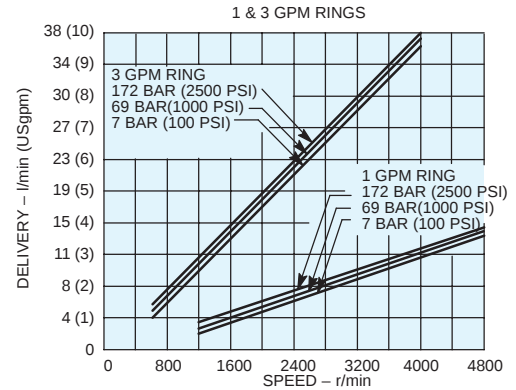
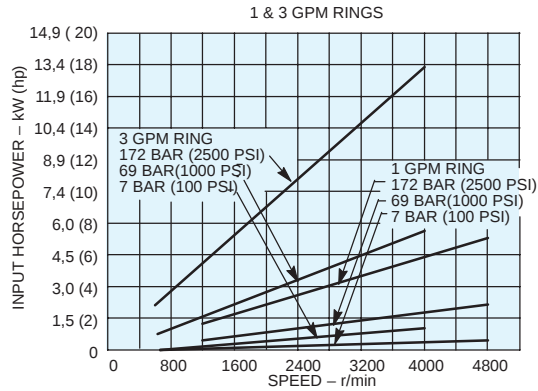
No. 3 shaft recommended nut torque 170 Nm (125 lb. ft.)

Typical Performance

V10 Single Pumps

Performance Constants:

Oil temp. 49°C (120°F), viscosity
32 cSt (150 SSU) @ 38°C (100°F),
inlet pressure zero

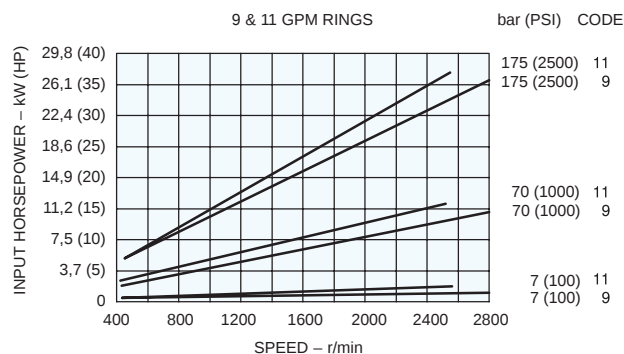
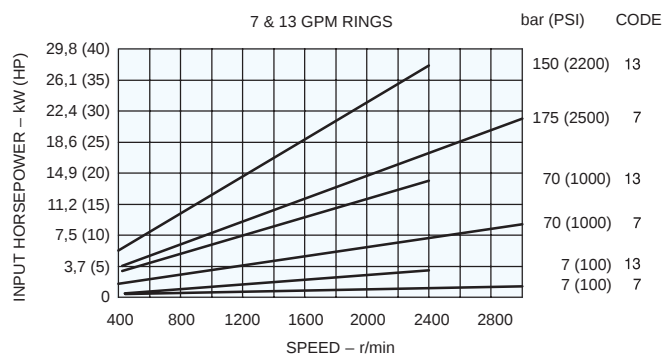
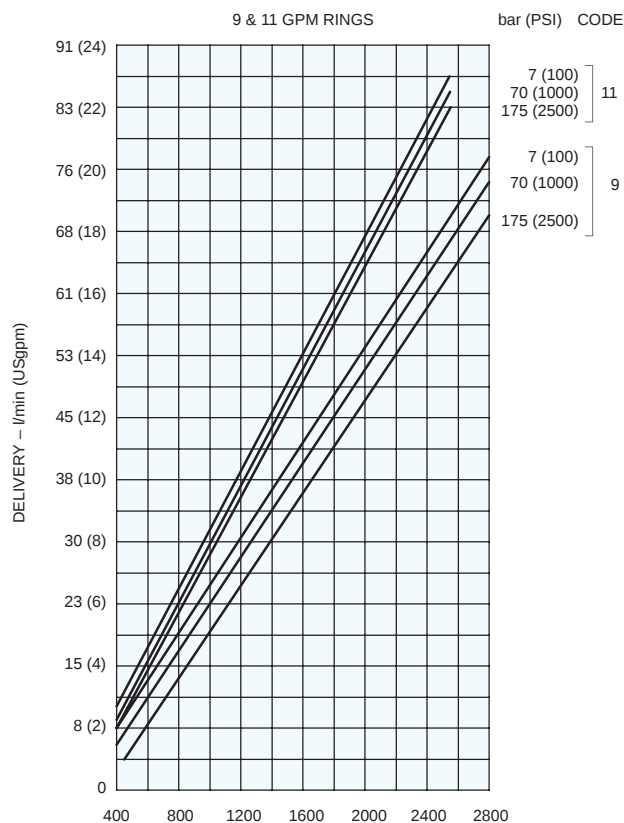
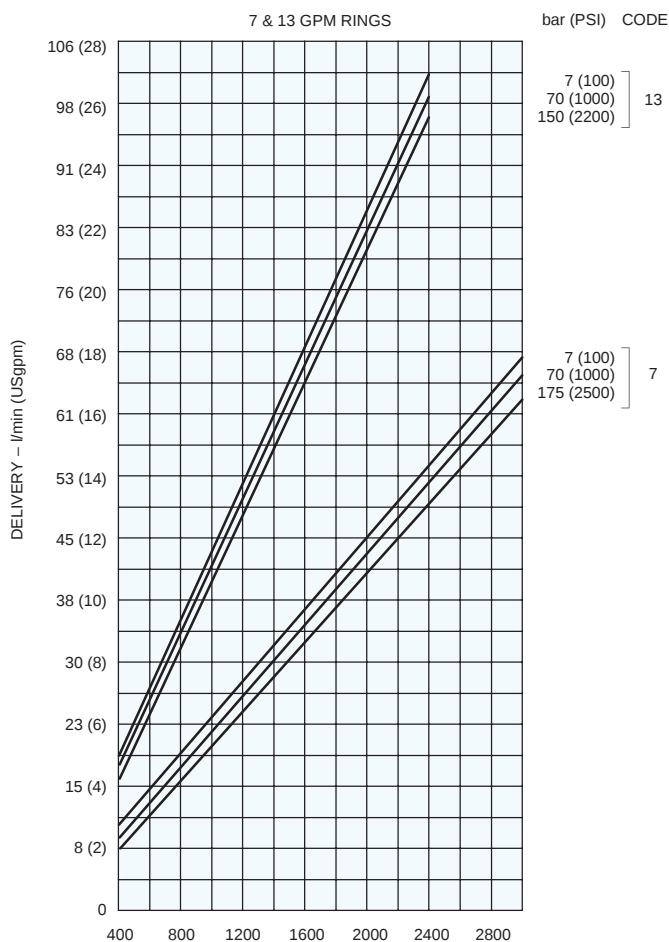


Typical Performance

V20 Single Pumps

Performance Constants:

Oil temp. 49°C (120°F), viscosity
32 cSt (150 SSU) @ 38°C (100°F),
inlet pressure zero

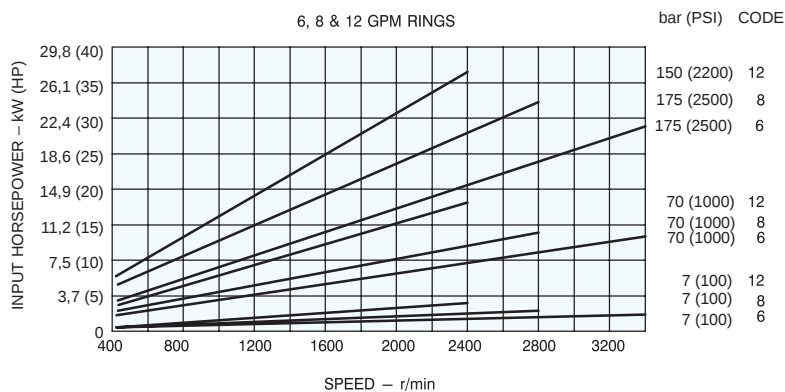
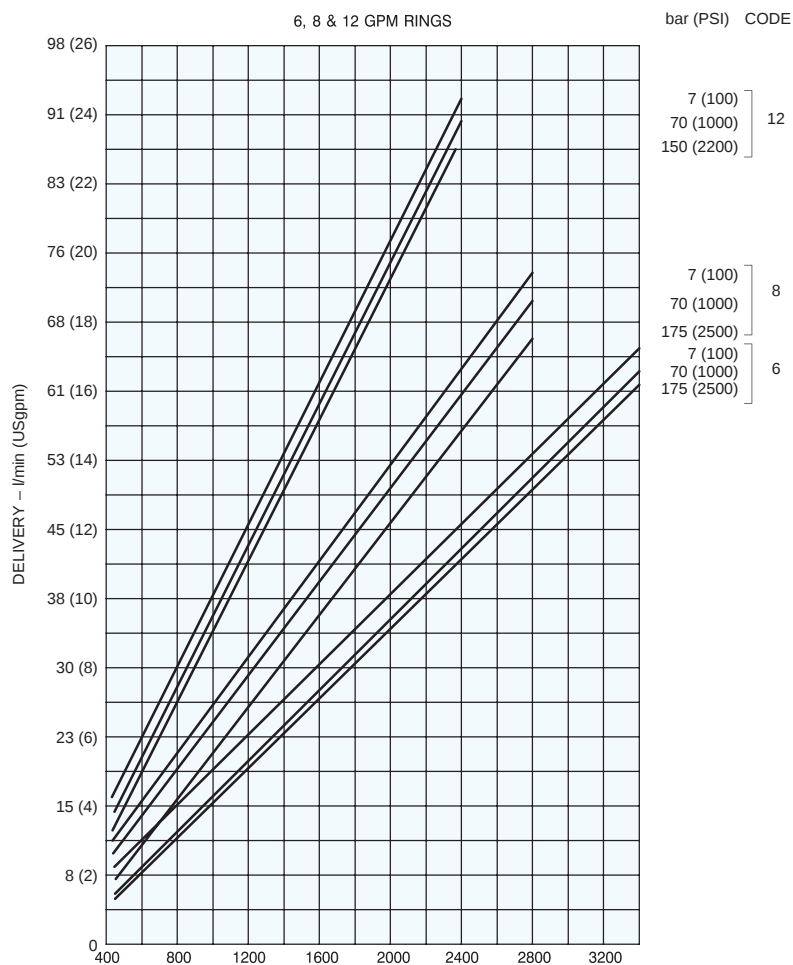


Typical Performance

V20 Single Pumps

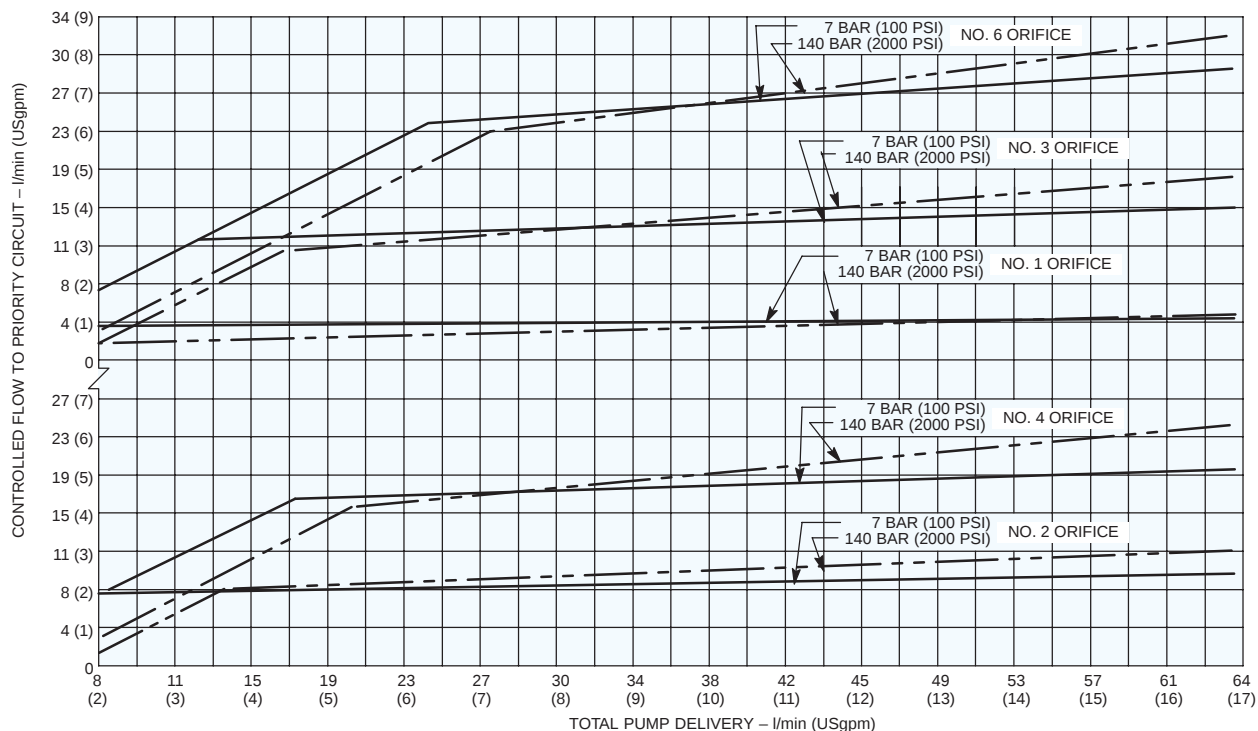
Performance Constants:

Oil temp. 49°C (120°F), viscosity
32 cSt (150 SSU) @ 38°C (100°F),
inlet pressure zero

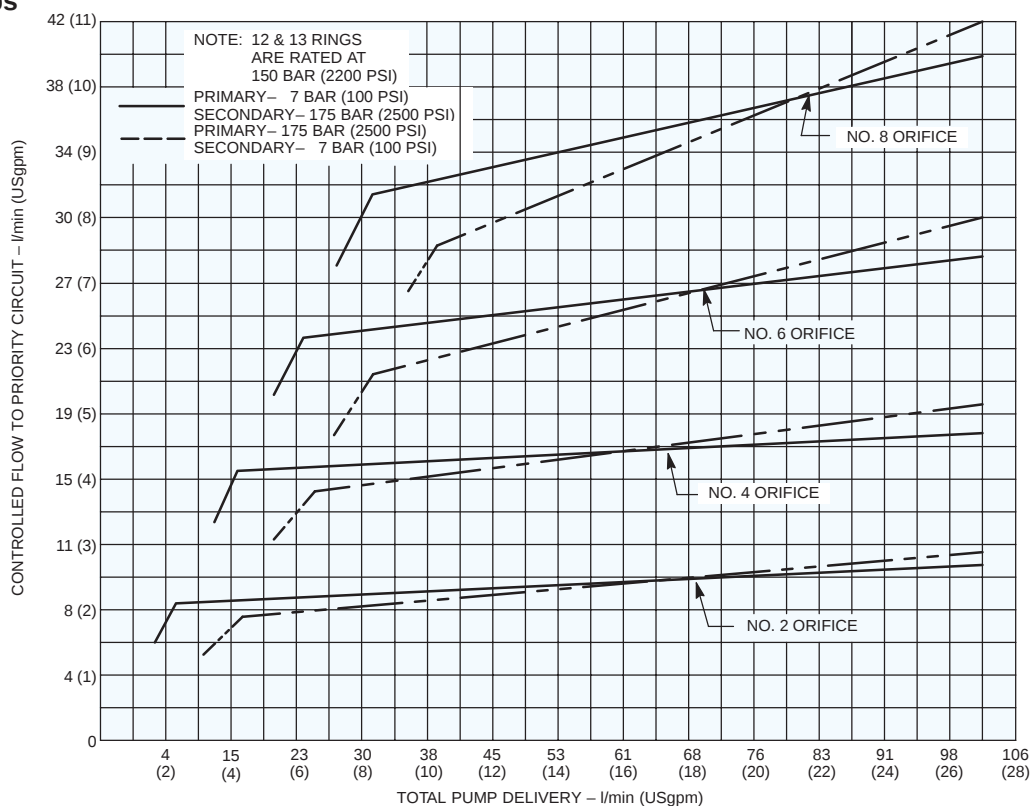


Priority Valve Models

V10P Single Pumps



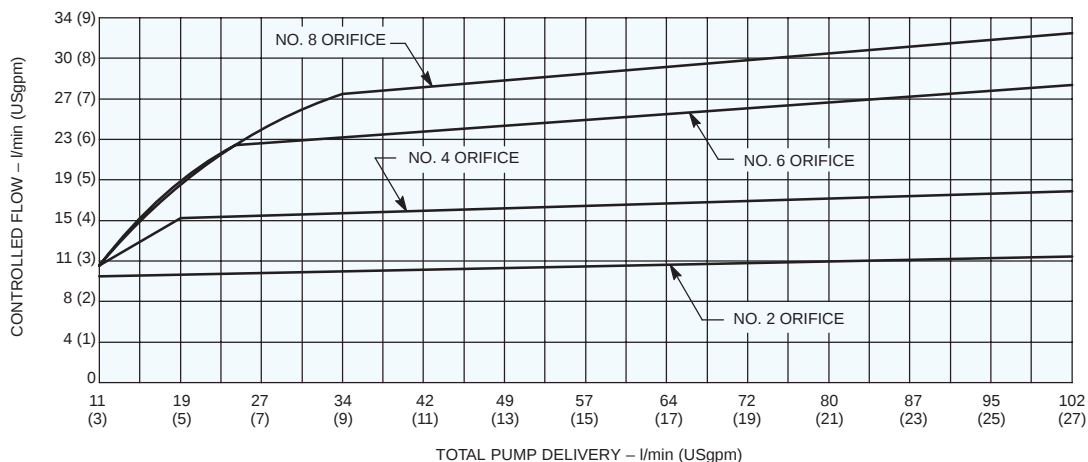
V20P Single Pumps



Typical Performance

Flow Control Models

V10(N)F & V20(N)F Single Pumps



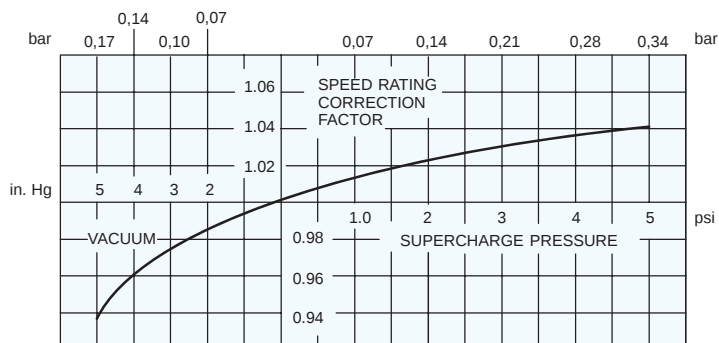
Speed Correction Curves

V10 & V20 Single Pumps

Maximum operating speeds shown on performance curves are for pumps operating at 0 psi inlet condition. To compute maximum operating speeds at other inlet conditions, use appropriate speed rating correction factor.

Example:

Max. speed @ 0 psi inlet 2700 r/min
Correction factor @ 5 in. Hg $\times .93$
Max. speed @ 5 in. Hg inlet 2511 r/min



Pump inlet suction should not exceed 5 in. Hg vacuum. Positive pressure on inlet should not exceed 0,7 bar (10 psi).