Fixed Displacement Vane Pump

V and VQ Series

INTERMAGNUS

Features

- V and VQ 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 VQ 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 VQ 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.

25VQ - 21A - 11C(L) - (V)

Model 20,25,35,45

Series
V - Industrial
VQ - Mobile

Ring Size (USgallon)
20V/VQ - 5, 8, 11, 12, 14
25V/VQ - 12, 14, 17, 21
35V/VQ - 25, 30, 35, 38
45V/vQ - 42, 50, 60

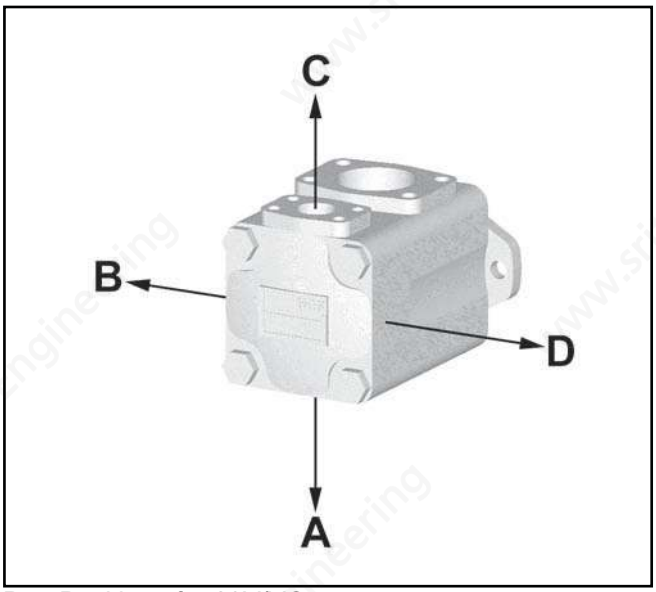
Port Connection
A - SAE 4-bolt with Inch threads
AM - SAE 4-bolt with Metric threads

Shaft
1 - Straight keyed
11 - Splined (25V/VQ, 35V/VQ, 45V/VQ)
86 - Heavy duty straight keyed (25V/VQ, 35V/VQ, 45V/VQ)
151 - Splined (20V/VQ only)

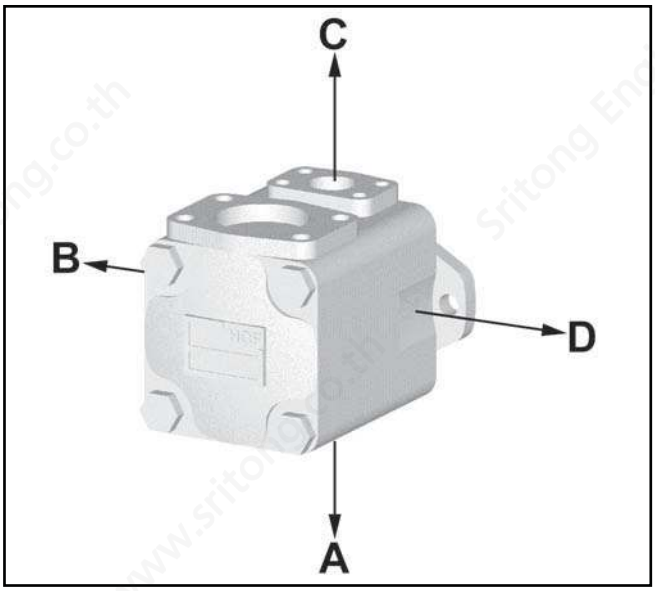
Outlet port position
(Viewed from cover end)
A - Opposite inlet
B - 90° CCW from inlet
C - Inline with inlet
D - 90° CW from inlet

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

Seal
Omit - Buna seal
V - Viton seal



Port Positions for 20V/VQ



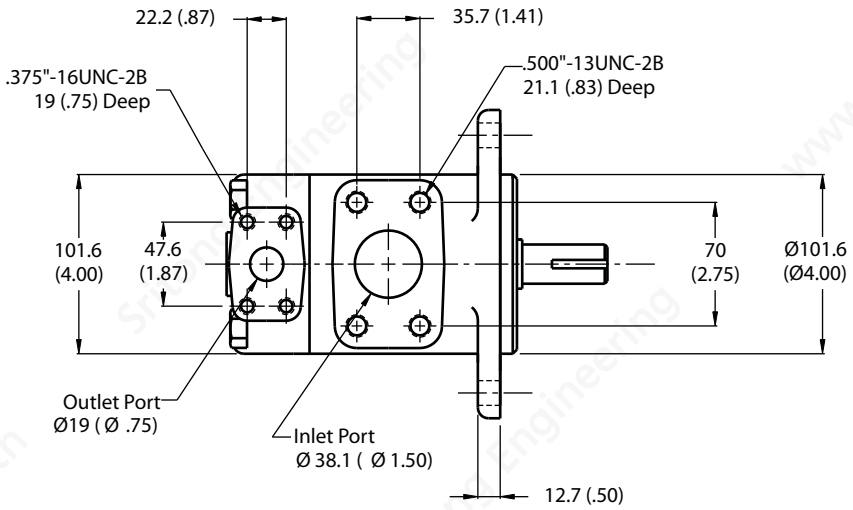
Port Positions for 25V/VQ, 35V/VQ, 45V/vQ

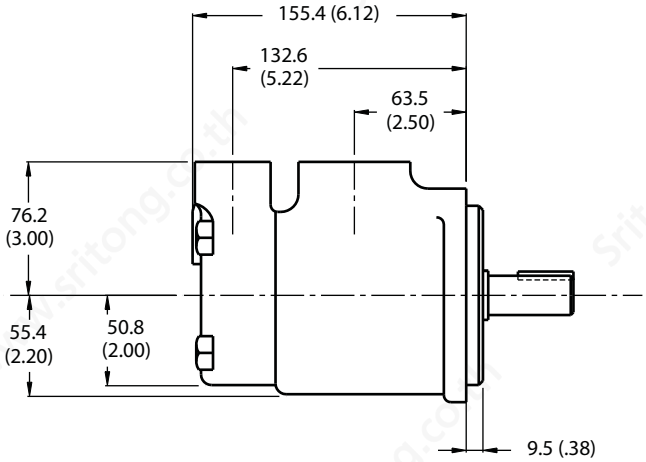
Specifications — *Single Pump V Series*

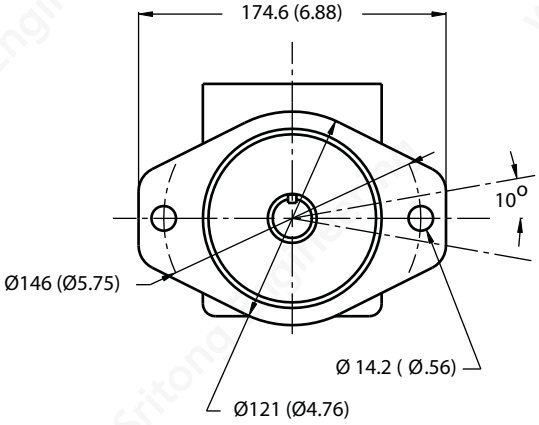
Model	Delivery @ 1200 rpm & 7 bar (100 psi) USgpm	Displacement cm³/r (in³/r)	Maximum Speed rpm	Maximum Pressure bar (psi)	Typical Delivery @ max speed & pressure L/min (USgpm)	Typical Input Power @ max speed & pressure kW (hp)	Weight kg (lb)
20V	5	18 (1.10)	1800	206 (3000)	28.4 (7.5)	11.2 (15.0)	11.8 (26)
	8	27 (1.67)		206 (3000)	45.4 (12.0)	17.0 (22.8)	
	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)	
25V	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)	
	21	67 (4.13)			106.0 (28.0)	34.0 (45.6)	
35V	25	81 (4.94)	1800	172 (2500)	124.9 (33.0)	45.5 (61.0)	22.7 (50)
	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)	
45V	42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	34.0 (75)
	50	162 (9.85)			253.6 (67.0)	87.3 (117.0)	
	60	193 (11.75)			310.4 (82.0)	103.7 (139.0)	

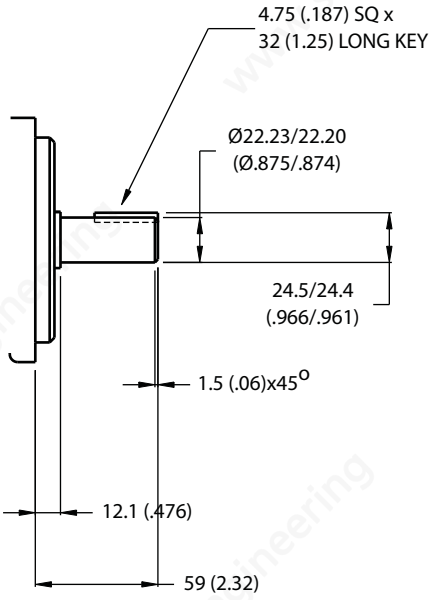
Specifications — *Single Pump VQ Series*

Model	Delivery @ 1200 rpm & 7 bar (100 psi) USgpm	Displacement cm³/r (in³/r)	Maximum Speed rpm	Maximum Pressure bar (psi)	Typical Delivery @ max speed & pressure L/min (USgpm)	Typical Input Power @ max speed & pressure kW (hp)	Weight kg (lb)
20VQ	5	18 (1.10)	2700	206 (3000)	41.6 (11.0)	17.9 (24.0)	11.8 (26)
	8	27 (1.67)		206 (3000)	64.3 (17.0)	26.1 (35.0)	
	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)	
25VQ	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)	
	21	67 (4.12)	2500		143.8 (38.0)	61.9 (83.0)	
35VQ	25	81 (4.98)	2500	206 (3000)	170.3 (45.0)	75.3 (101.0)	22.7 (50)
	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)	
45VQ	42	138 (8.46)	2200	172 (2500)	251.7 (66.5)	91.4 (122.5)	34.0 (75)
	50	162 (9.90)			299.0 (79.0)	105.2 (141.0)	
	60	193 (11.80)			363.4 (96.0)	126.8 (170.0)	

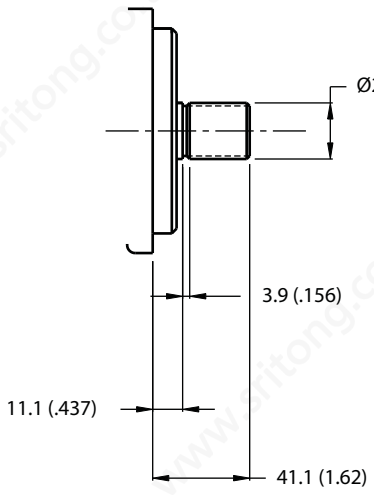






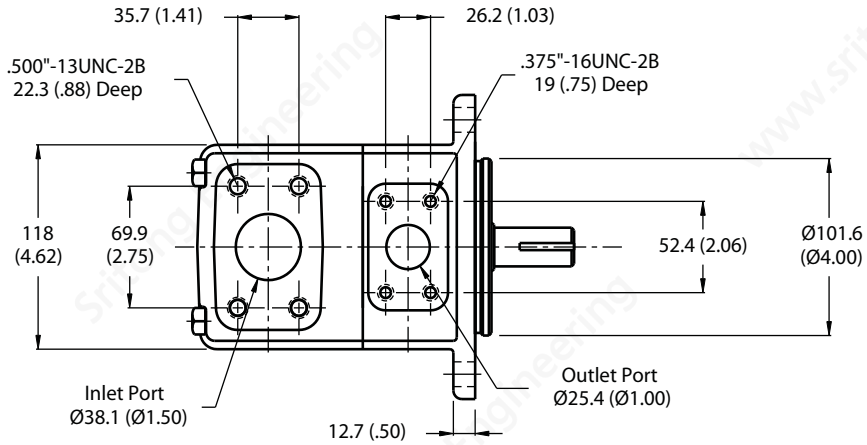


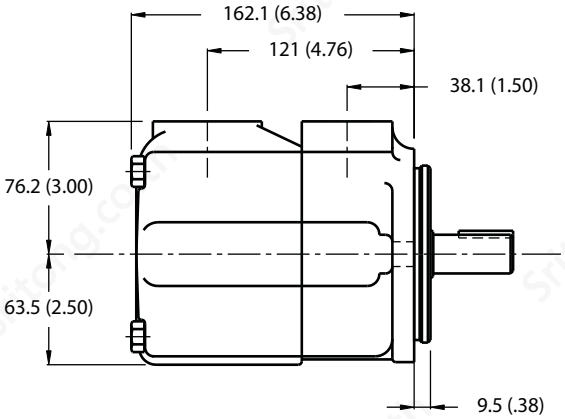
Shaft 1
Keyed Shaft

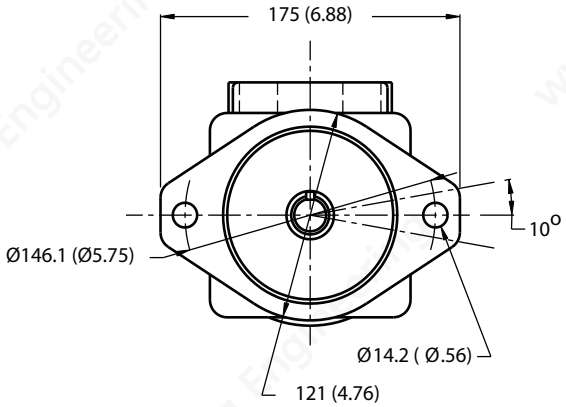


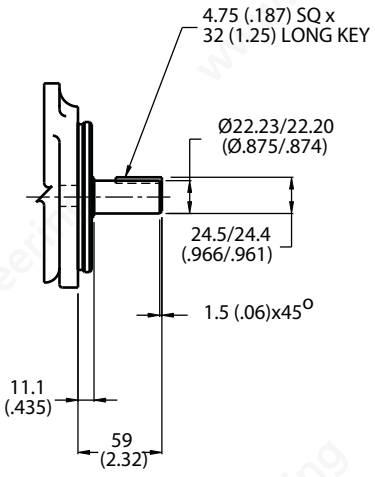
13 Teeth - 30° Press. Angle
Pitch 16/32
Major Diameter
22.17/22.15 (.873/.872)
Form Diameter
19.03 (.749)
Minor Diameter
18.63/18.35 (.734/.723)
Major Diameter Fit

Shaft 151
Splined Shaft

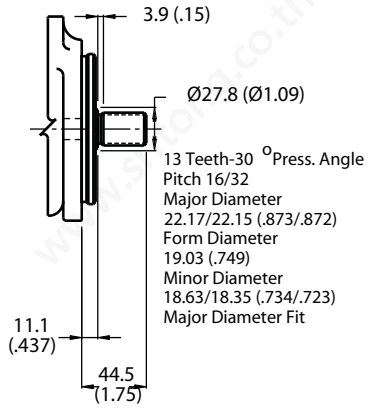




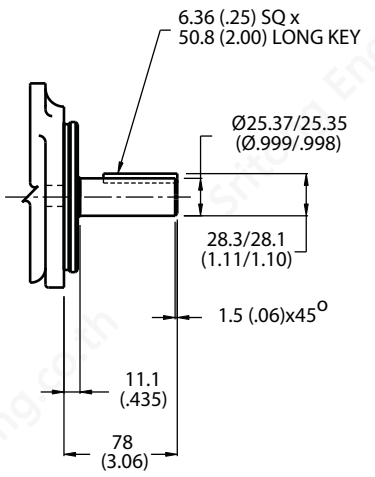




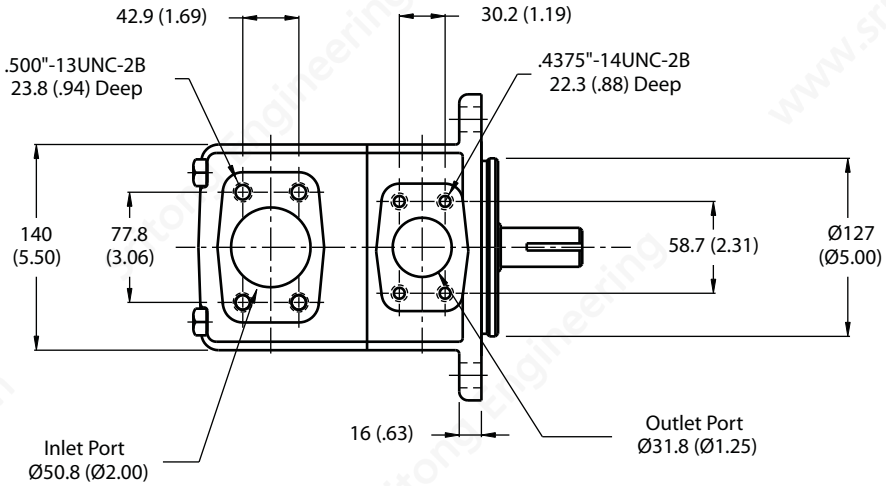
Shaft 1
Keyed Shaft

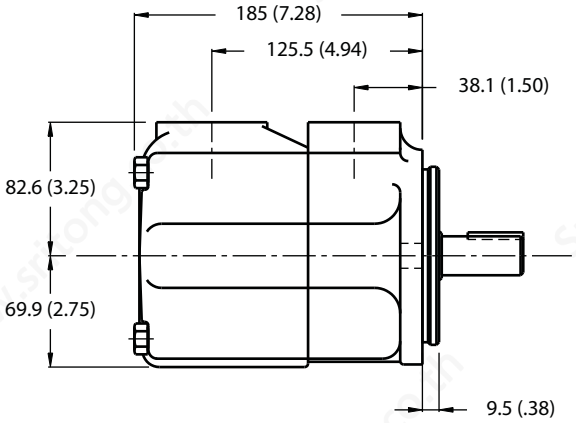


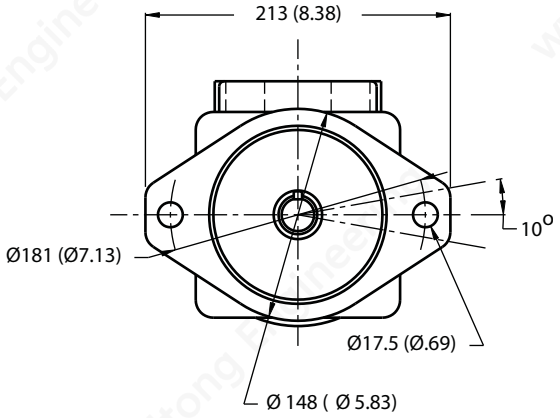
Shaft 11
Splined Shaft

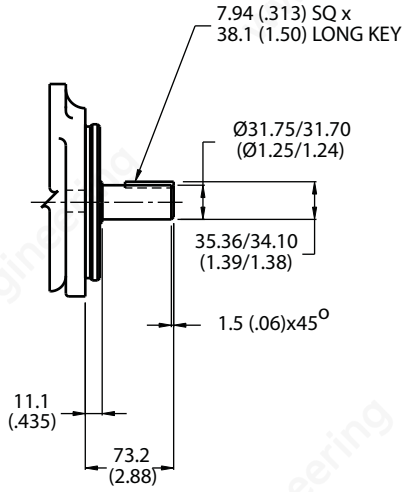


Shaft 86
Keyed Shaft

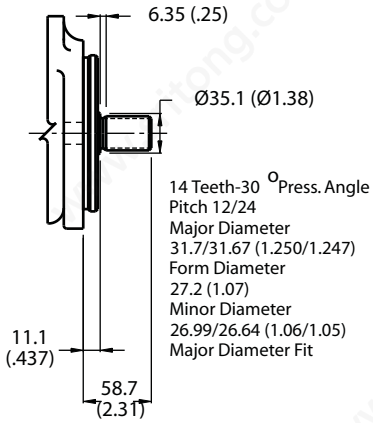




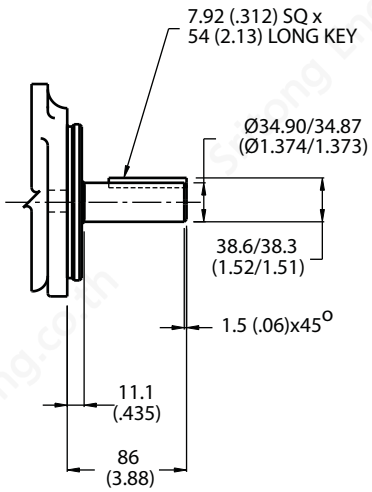




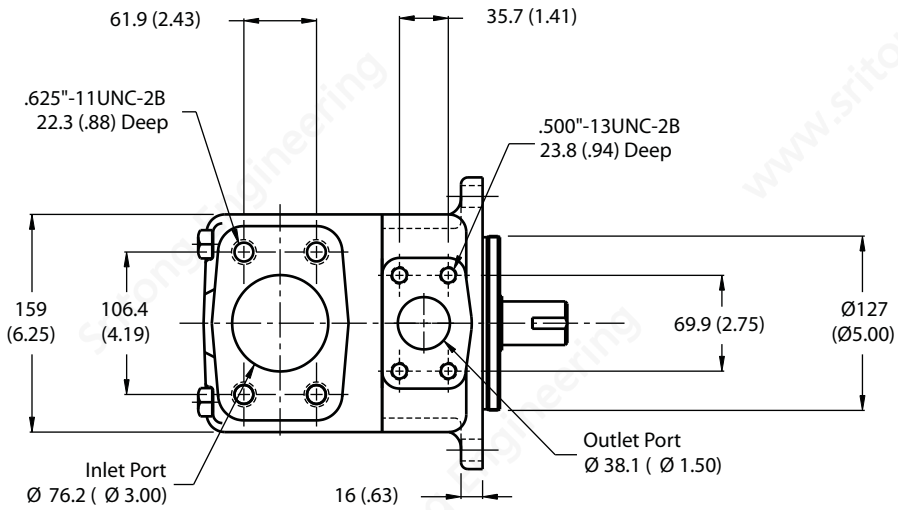
Shaft 1
Keyed Shaft

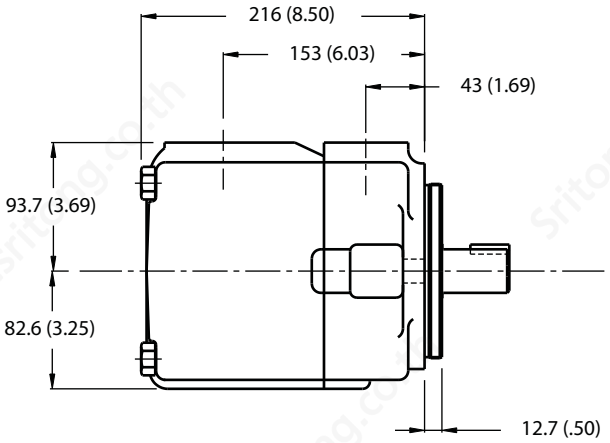


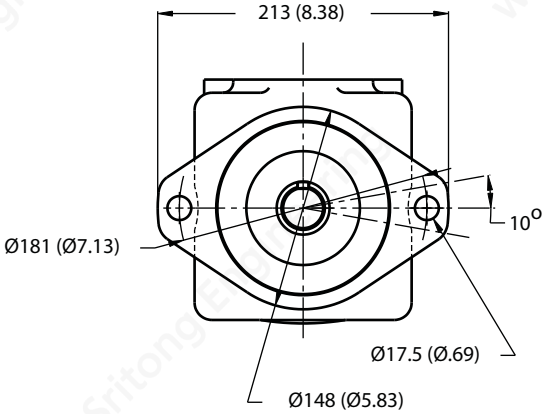
Shaft 11
Splined Shaft

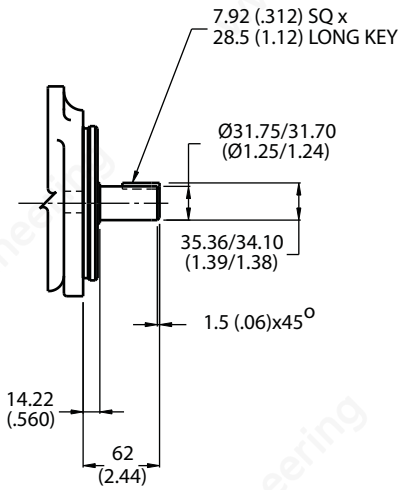


Shaft 86
Keyed Shaft

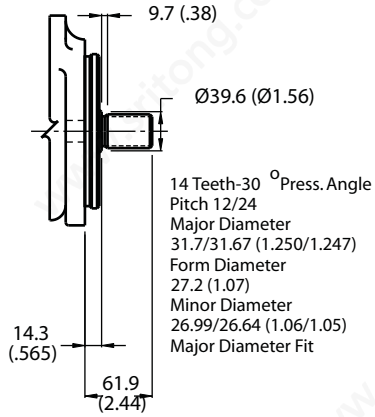




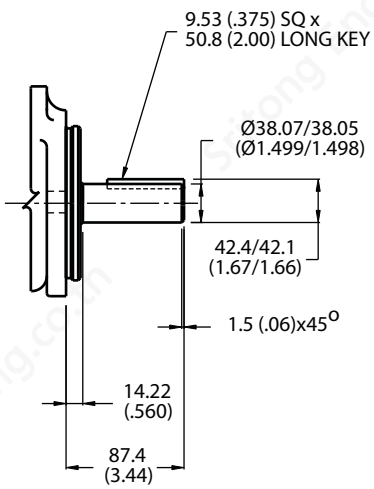




Shaft 1
Keyed Shaft



Shaft 11
Splined Shaft



Shaft 86
Keyed Shaft

2520VQ - 21 A 11 - 1 C B (L) - (V)

Model
2520, 3520, 4520
3525, 4525, 4535

Series
V - Industrial
VQ - Mobile

Shaft End Pump
Ring Size (USgallon)
25**V/VQ - 12, 14, 17, 21
35**V/VQ - 25, 30, 35, 38
45**V/VQ - 42, 50, 60

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

Cover End Pump
Ring Size (USgallon)
**20V/VQ - 5, 8, 11, 12, 14
**25V/VQ - 12, 14, 17, 21
**35V/VQ - 25, 30, 35, 38

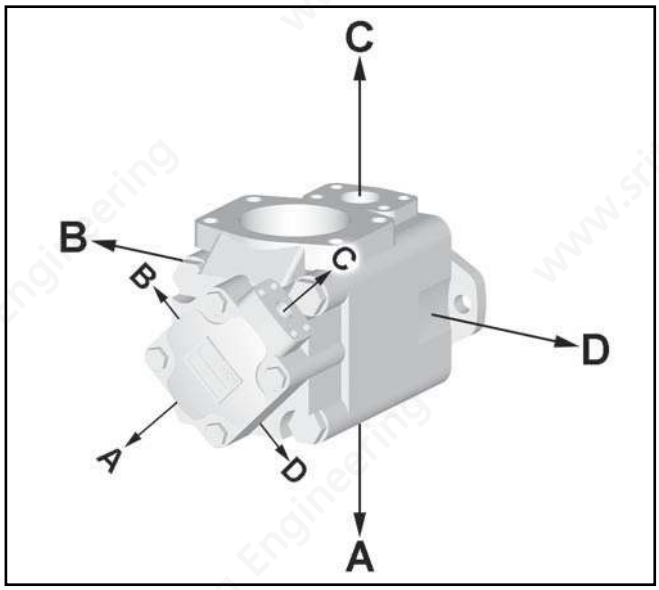
Shaft
1 - Straight keyed
11 - Splined
86 - Heavy duty straight keyed

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

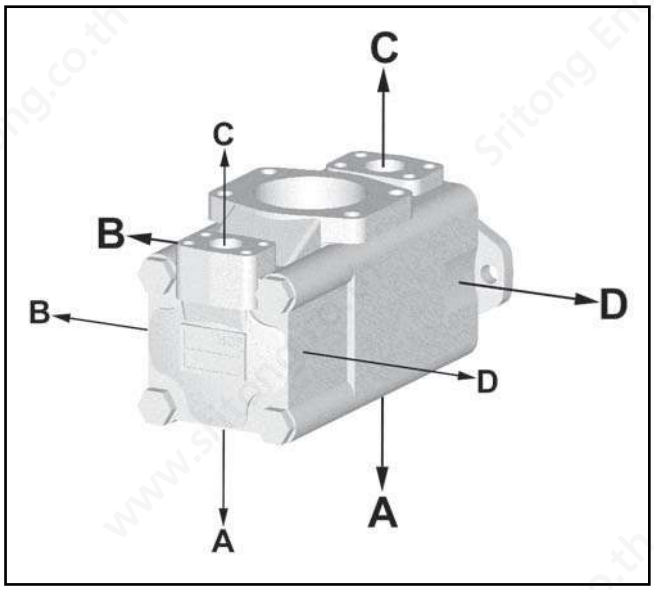
Cover End Outlet port position
(Viewed from cover end)
For all models except 4535V/VQ
A - 135° CCW from inlet
B - 45° CCW from inlet
C - 45° CW from inlet
D - 135° CW from inlet
For 4535V/VQ
A - Opposite inlet
B - 90° CCW from inlet
C - Inline with inlet
D - 90° CW from inlet

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

Seal
Omit - Buna seal
V - Viton seal



Port Positions for 2520V/VQ, 3520V/VQ
4520V/VQ, 3525V/VQ, 4525V/VQ

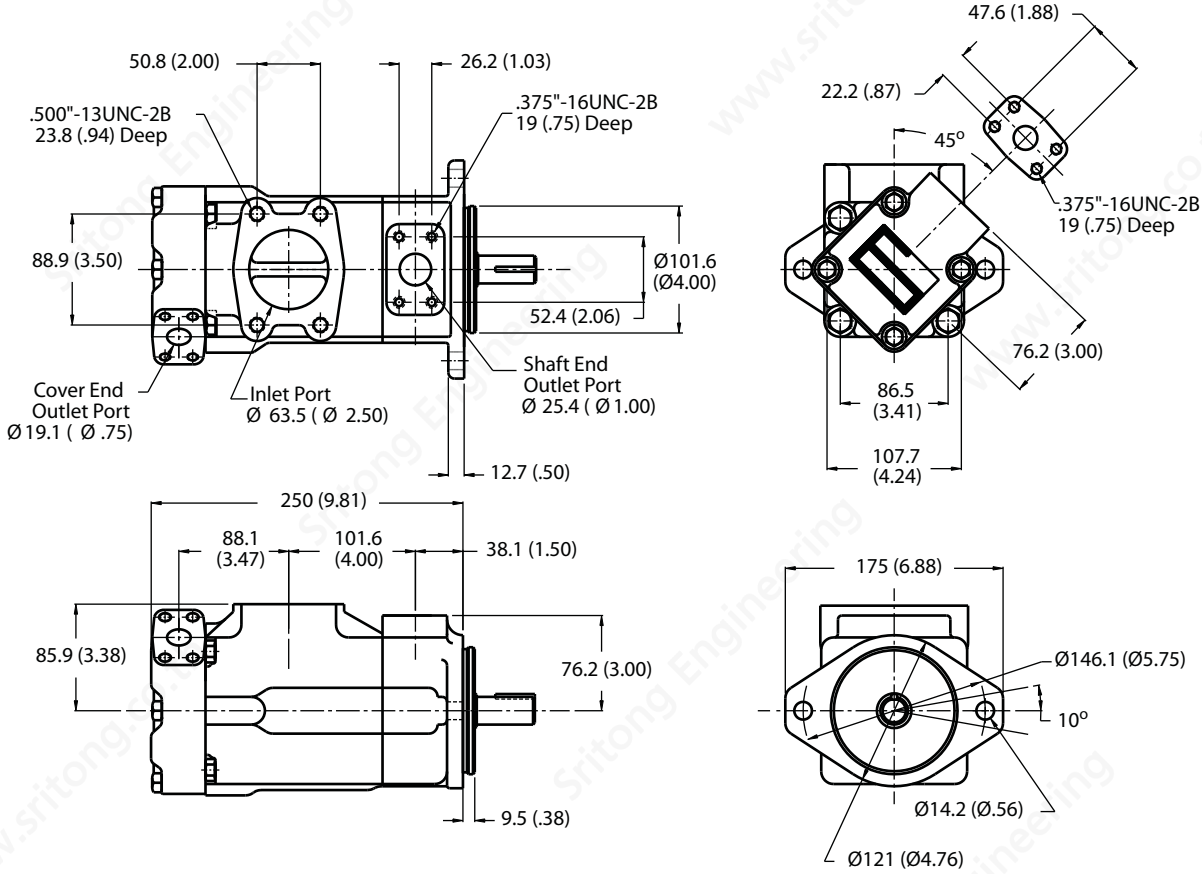


Port Positions for 4535V/VQ

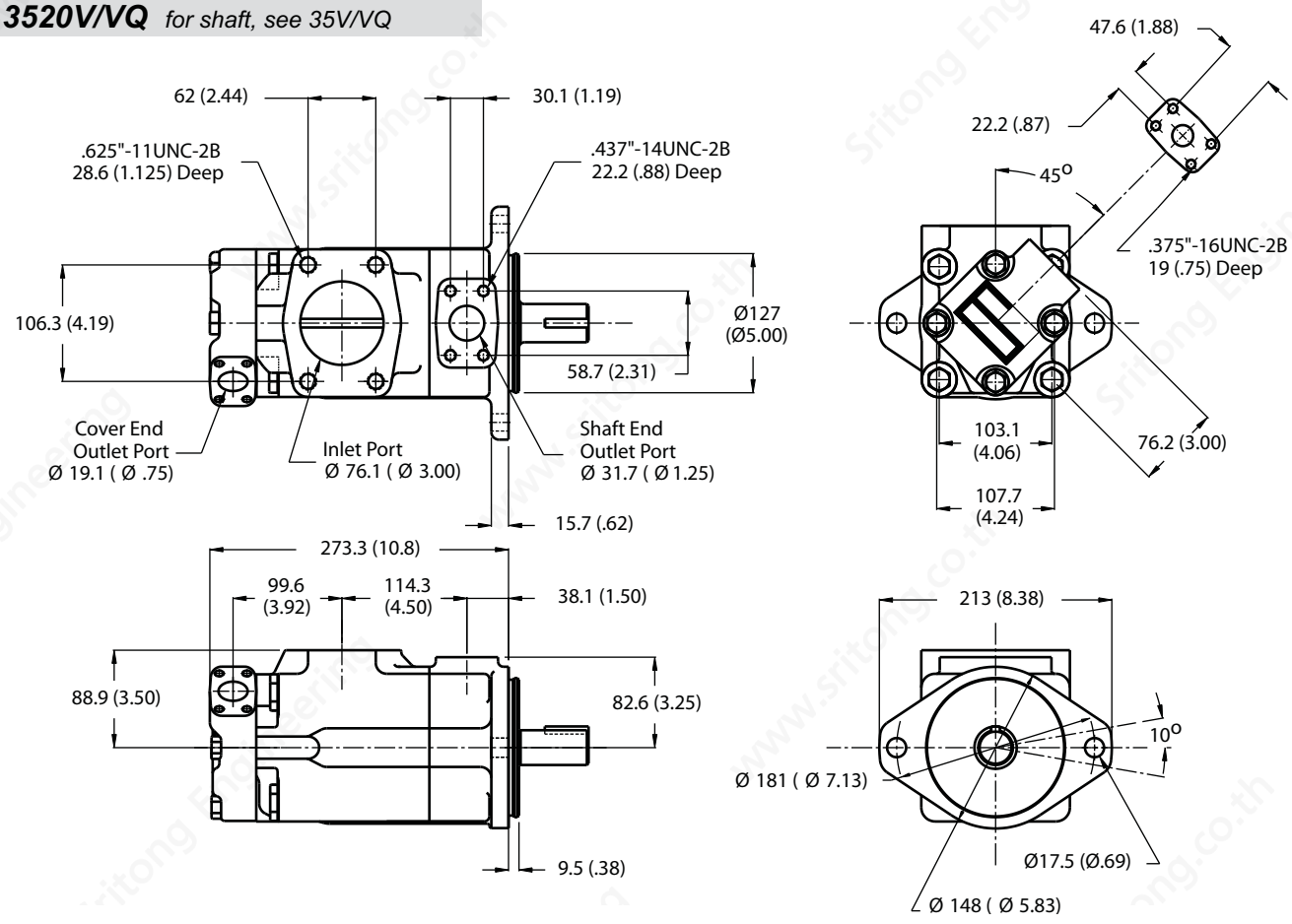
Model	Cartridge Position	Delivery @ 1200 rpm & 7 bar (100 psi) USgpm	Displacement cm^3/r (in^3/r)	Maximum Speed rpm	Maximum Pressure bar (psi)	Typical Delivery @ max speed & pressure L/min (USgpm)	Typical Input Power @ max speed & pressure kW (hp)	Weight kg (lb)
2520V	Shaft End	12	39 (2.47)	1800	172 (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)	
		21	67 (4.13)			106.0 (28.0)	34.0 (45.6)	
	Cover End	5	18 (1.10)	1800	206 (3000)	28.4 (7.5)	11.2 (15.0)	
		8	27 (1.67)		206 (3000)	45.4 (12.0)	17.0 (22.8)	
		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)	
3520V	Shaft End	25	81 (4.94)	1800	172 (2500)	124.9 (33.0)	45.5 (61.0)	34 (75)
		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	5	18 (1.10)	1800	206 (3000)	28.4 (7.5)	11.2 (15.0)	
		8	27 (1.67)		206 (3000)	45.4 (12.0)	17.0 (22.8)	
		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)	
3525V	Shaft End	25	81 (4.94)	1800	172 (2500)	124.9 (33.0)	45.5 (61.0)	34.5 (76)
		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)	
		21	67 (4.13)			106.0 (28.0)	34.0 (45.6)	
4520V	Shaft End	42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	43 (94)
		50	162 (9.85)			253.6 (67.0)	87.3 (117.0)	
		60	193 (11.75)			310.4 (82.0)	103.7 (139.0)	
	Cover End	5	18 (1.10)	1800	206 (3000)	28.4 (7.5)	11.2 (15.0)	
		8	27 (1.67)		206 (3000)	45.4 (12.0)	17.0 (22.8)	
		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)	
4525V	Shaft End	42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	46 (101)
		50	162 (9.85)			253.6 (67.0)	87.3 (117.0)	
		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)	
		21	67 (4.13)			106.0 (28.0)	34.0 (45.6)	
4535V	Shaft End	42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	54 (118)
		50	162 (9.85)			253.6 (67.0)	87.3 (117.0)	
		60	193 (11.75)			310.4 (82.0)	103.7 (139.0)	
	Cover End	25	81 (4.94)	1800	172 (2500)	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 @ 1200 rpm & 7 bar (100 psi) USgpm	Displacement cm^3/r (in^3/r)	Maximum Speed rpm	Maximum Pressure bar (psi)	Typical Delivery @ max speed & pressure L/min (USgpm)	Typical Input Power @ max speed & pressure kW (hp)	Weight kg (lb)
2520VQ	Shaft End	12	40 (2.45)	2700	206 (3000)	87.1 (23.0)	41.0 (55.0)	20 (45)
		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)	
		21	67 (4.12)	2500		143.8 (38.0)	61.9 (83.0)	
	Cover End	5	18 (1.10)	2700	206 (3000)	41.6 (11.0)	17.9 (24.0)	
		8	27 (1.67)		206 (3000)	64.3 (17.0)	26.1 (35.0)	
		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)	
3520VQ	Shaft End	25	81 (4.98)	2500	206 (3000)	170.3 (45.0)	75.3 (101.0)	34 (75)
		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)	
	Cover End	5	18 (1.10)	2500	206 (3000)	37.9 (10.0)	16.4 (22.0)	
		8	27 (1.67)		206 (3000)	60.6 (16.0)	24.2 (32.5)	
		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)	
3525VQ	Shaft End	25	81 (4.98)	2500	206 (3000)	170.3 (45.0)	75.3 (101.0)	34.5 (76)
		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)	
	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)	
		21	67 (4.12)			143.8 (38.0)	61.9 (83.0)	
4520VQ	Shaft End	42	138 (8.46)	2200	172 (2500)	251.7 (66.5)	91.4 (122.5)	43 (94)
		50	162 (9.90)			299.0 (79.0)	105.2 (141.0)	
		60	193 (11.80)			363.4 (96.0)	126.8 (170.0)	
	Cover End	5	18 (1.10)	2200	206 (3000)	32.2 (8.5)	14.5 (19.5)	
		8	27 (1.67)		206 (3000)	51.1 (13.5)	21.3 (28.5)	
		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)	
4525VQ	Shaft End	42	138 (8.46)	2200	172 (2500)	251.7 (66.5)	91.4 (122.5)	46 (101)
		50	162 (9.90)			299.0 (79.0)	105.2 (141.0)	
		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)	
		21	67 (4.12)			124.9 (33.0)	54.5 (73.0)	
4535VQ	Shaft End	42	138 (8.46)	2200	172 (2500)	251.7 (66.5)	91.4 (122.5)	54 (118)
		50	162 (9.90)			299.0 (79.0)	105.2 (141.0)	
		60	193 (11.80)			363.4 (96.0)	126.8 (170.0)	
	Cover End	25	81 (4.98)	2200	206 (3000)	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)	

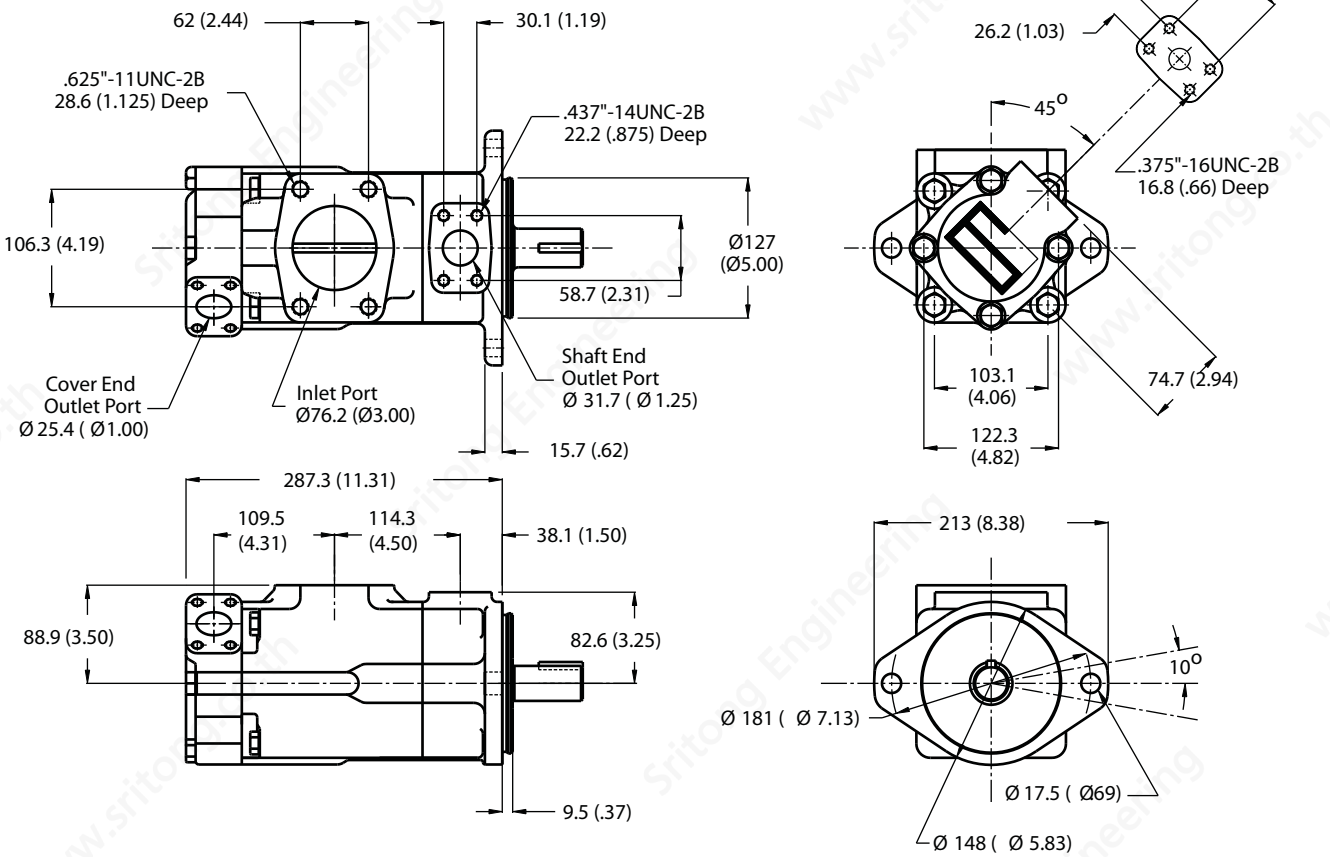
2520V/VQ *for shaft, see 25V/VQ*



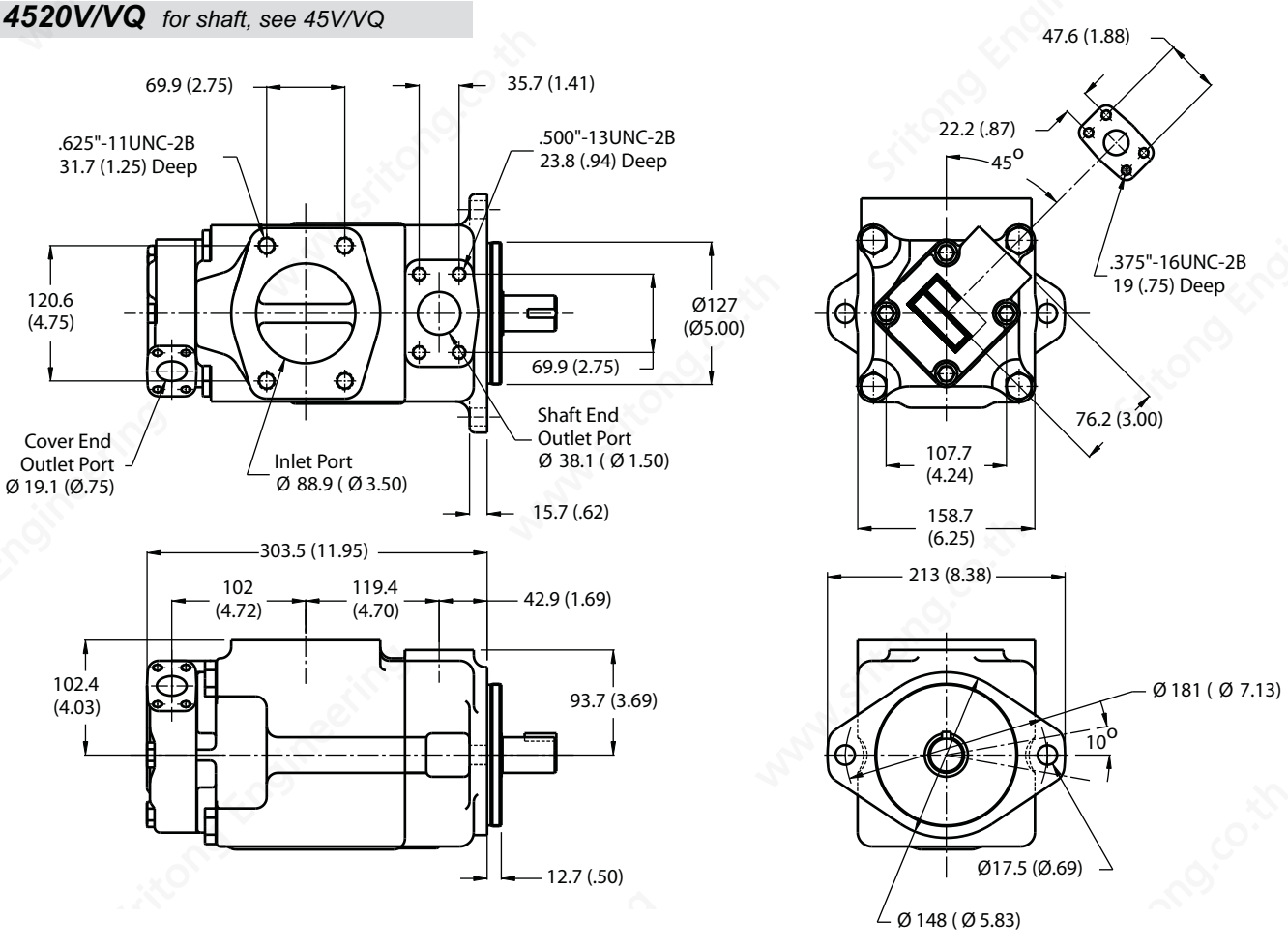
3520V/VQ *for shaft, see 35V/VQ*



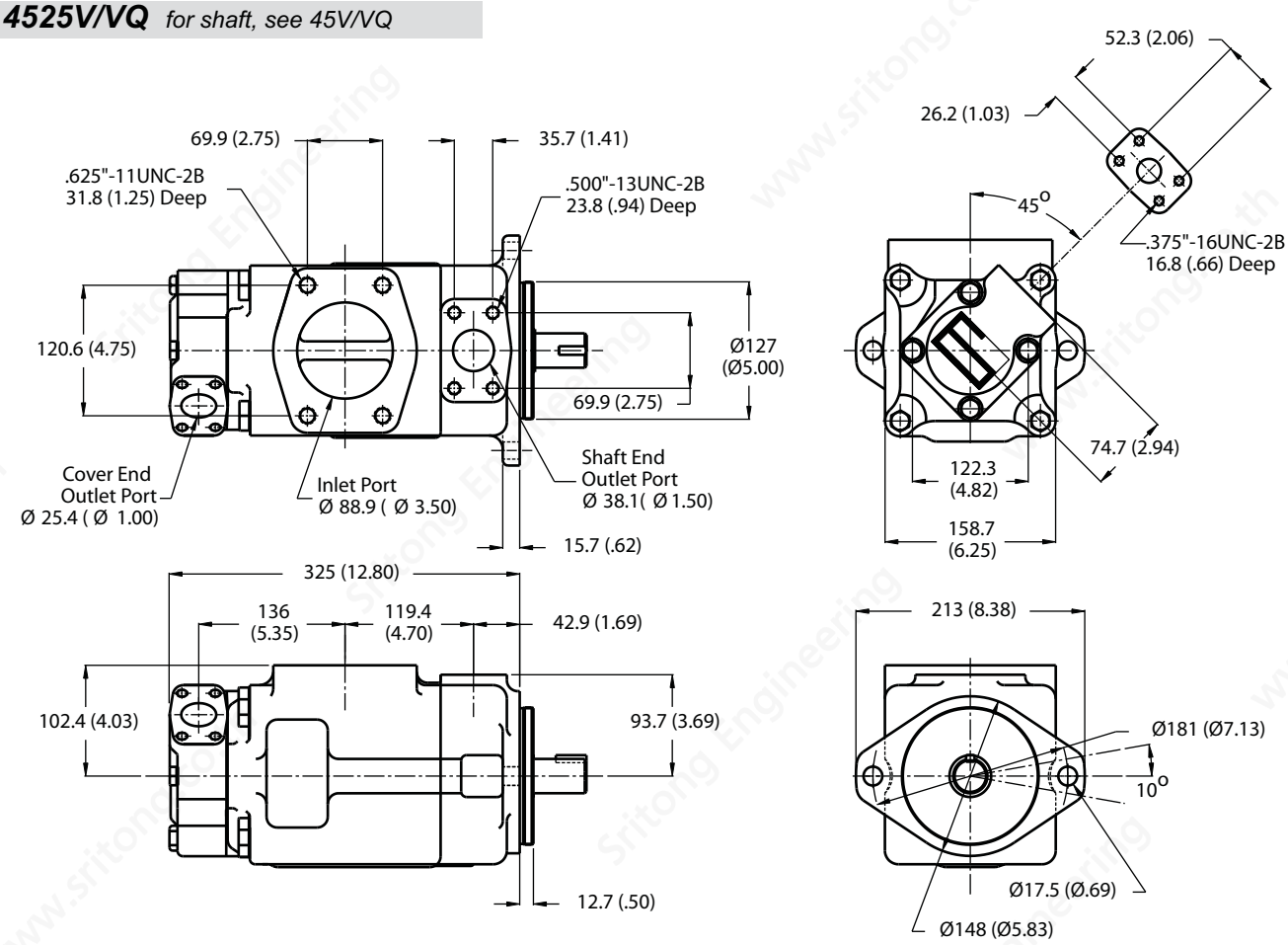
3525V/VQ *for shaft, see 35V/VQ*



4520V/VQ *for shaft, see 45V/VQ*



4525V/VQ *for shaft, see 45V/VQ*



4535V/VQ *for shaft, see 45V/VQ*