

Eaton Vickers V VQ Vane Pump Cartridge

Features

- Replacement parts for fixed displacement vane pumps (single and double vane pump V/VQ 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.



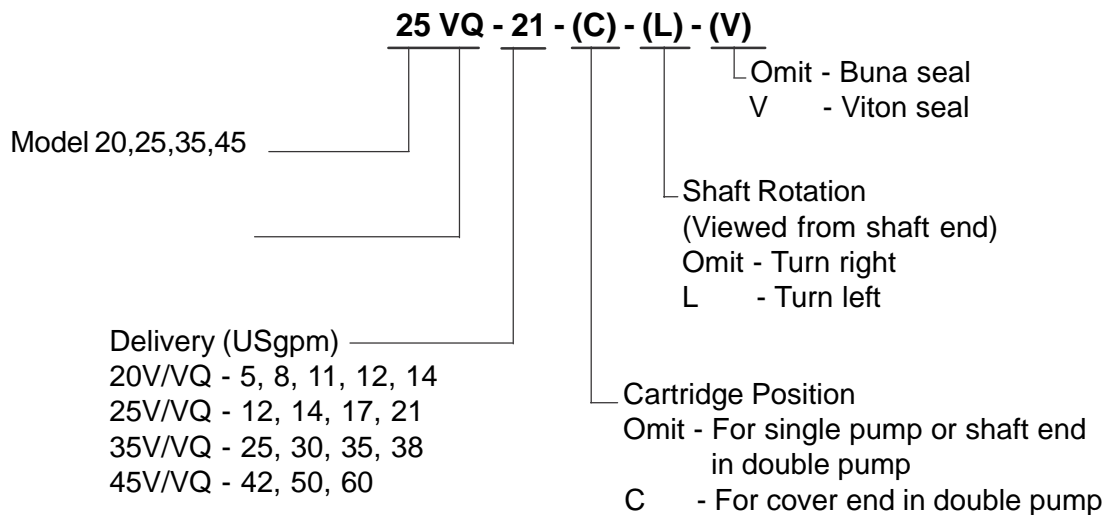
Handling

- 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

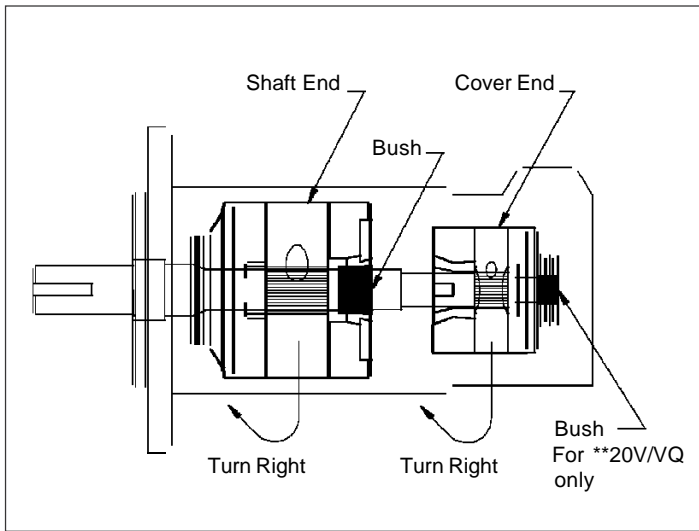
and rotor may cause scratches in the soft brass surface.) Make sure that the sharp edge of Vane leads direction of rotation. Re-install the two screws hand tight. Use pump cover to align all sections of the cartridge. Carefully remove the cover and tighten the screws.

- 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.

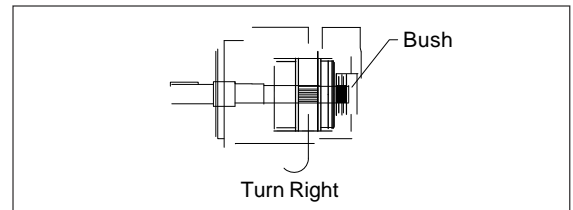
Ordering Code



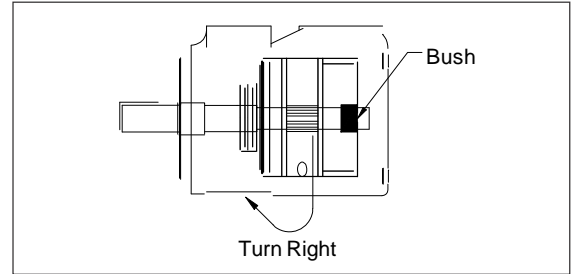
Cartridge Kit Position and Rotation



Double Pump

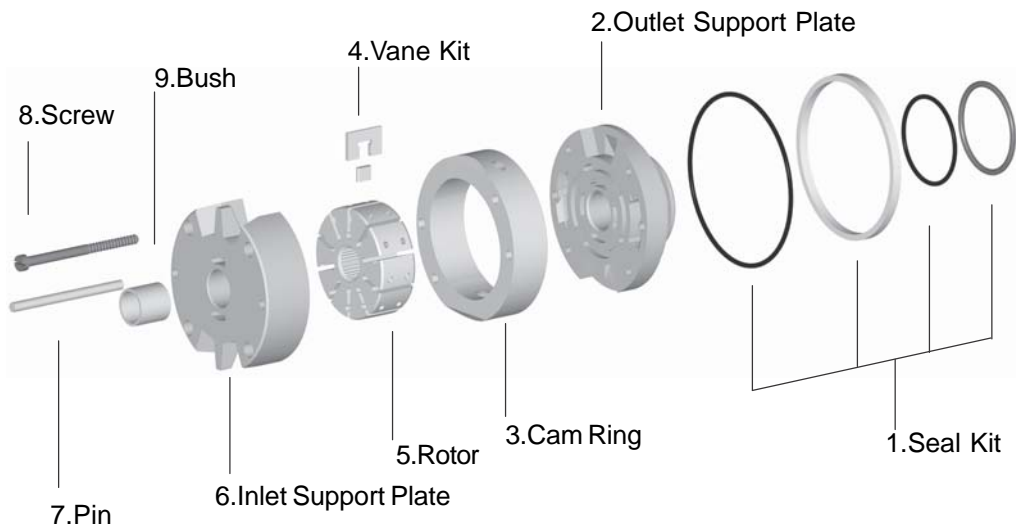


Single Pump, 20V/VQ

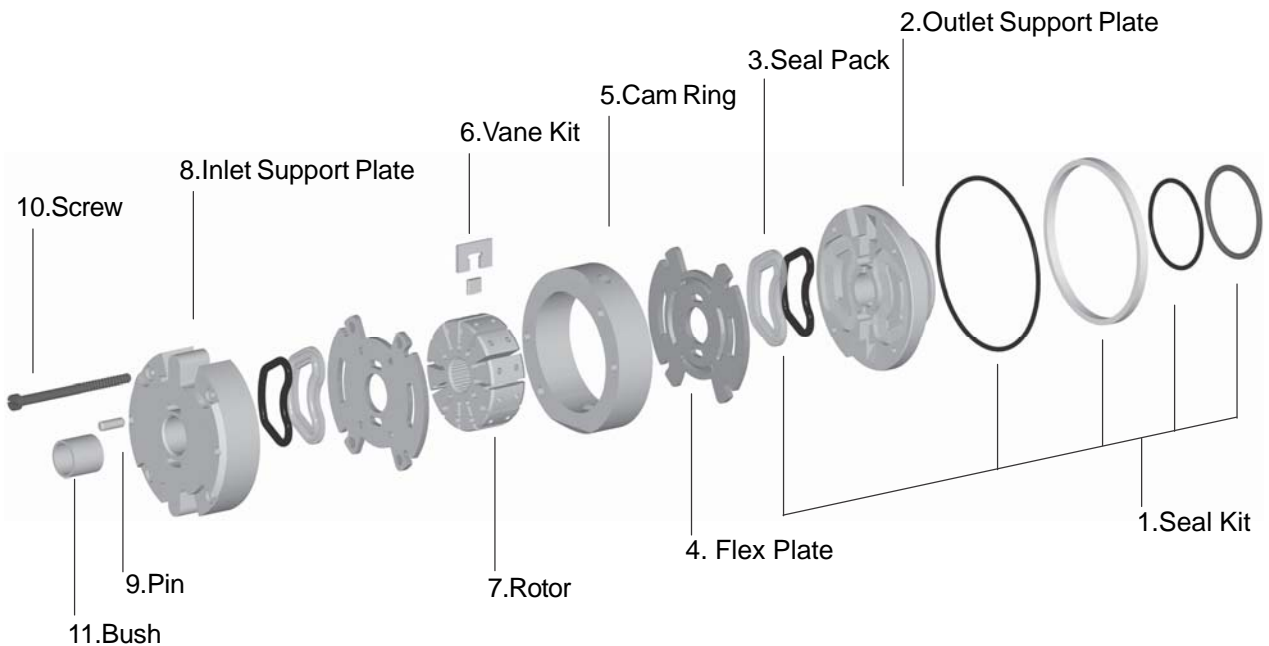


Single Pump, 25V/VQ, 35V/VQ, 45V/VQ

Cartridge Kit Components (V Series)



Cartridge Kit Components (VQ 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 V Series), and flex plates (for VQ 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 necessary. 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.
20V/VQ	48-55	65-75
25V/VQ	48-55	65-75
35V/VQ	102-118	140-160
45V/VQ	188-203	255-275

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

Instruction for Cartridge Replacement in Single Pump

1. Remove the four cover screws and lift the outlet cover. Pull out the old Cover End Cartridge (Pry with screwdriver 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 V Series), and flex plates (for VQ 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 necessary. 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.

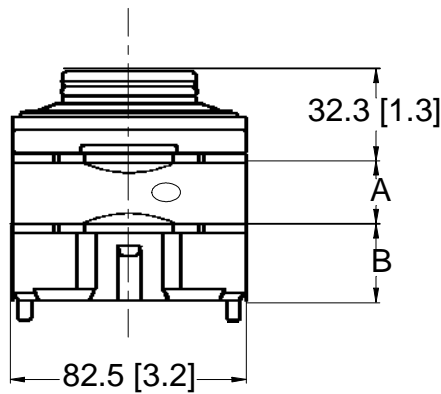
Model	N.m	lb.ft.
2520V/VQ	48-55	65-75
3520V/VQ	102-118	140-160
3525V/VQ	102-118	140-160
4520V/VQ	188-203	255-275
4525V/VQ	188-203	255-275

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.
2520V/VQ	54-68	40-50
3520V/VQ	54-68	40-50
3525V/VQ	88-102	65-75
4520V/VQ	54-68	40-50
4525V/VQ	88-102	65-75
4535V/VQ	188-203	255-275

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

Cartridge Kit 20V Installation Dimensions mm (inch)

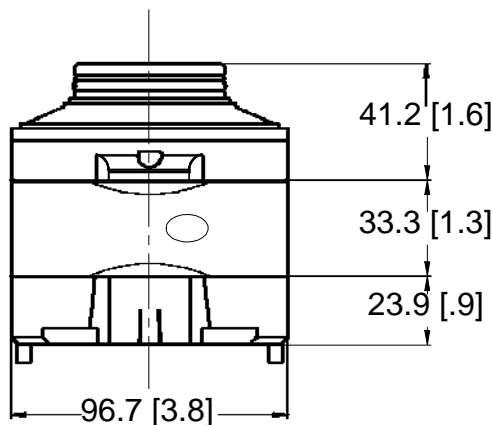


Delivery	A	B
5,8	21.95 [.86]	27.70 [1.09]
11,12,14	30.47 [1.20]	19.10 [0.75]

Specifications

Delivery at 1200 rpm & 7 bar (100 psi) <i>USgpm</i>	Displacement <i>cm³/r (in³/r)</i>	Maximum Speed <i>rpm</i>	Maximum Pressure <i>bar (psi)</i>	Typical Delivery at max speed & pressure <i>L/min (USgpm)</i>	Typical Input Power at max speed & pressure <i>kW (hp)</i>	Weight <i>kg (lb)</i>
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)
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)

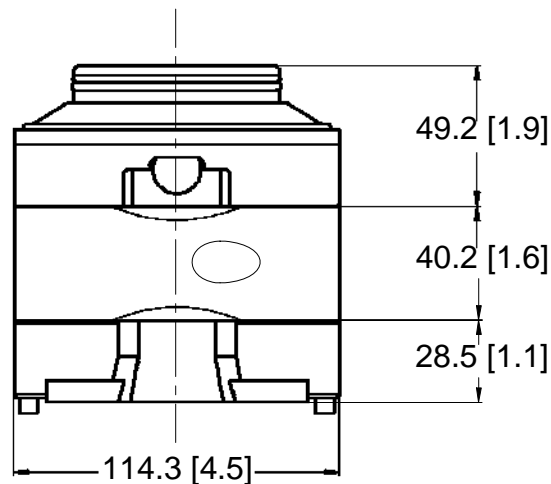
Cartridge Kit 25V Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) <i>USgpm</i>	Displacement <i>cm³/r (in³/r)</i>	Maximum Speed <i>rpm</i>	Maximum Pressure <i>bar (psi)</i>	Typical Delivery at max speed & pressure <i>L/min (USgpm)</i>	Typical Input Power at max speed & pressure <i>kW (hp)</i>	Weight <i>kg (lb)</i>
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)
21	67 (4.13)	1800	172 (2500)	106.0 (28.0)	34.0 (45.6)	3.6 (7.9)

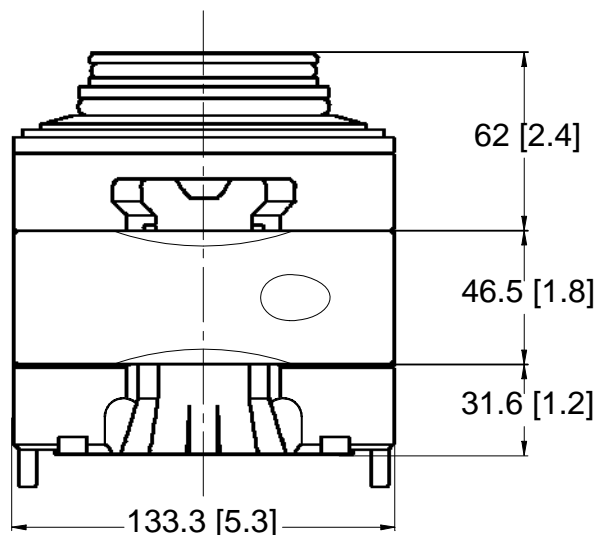
Cartridge Kit 35V Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) <i>USgpm</i>	Displacement <i>cm³/r (in³/r)</i>	Maximum Speed <i>rpm</i>	Maximum Pressure <i>bar (psi)</i>	Typical Delivery at max speed & pressure <i>L/min (USgpm)</i>	Typical Input Power at max speed & pressure <i>kW (hp)</i>	Weight <i>kg (lb)</i>
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)

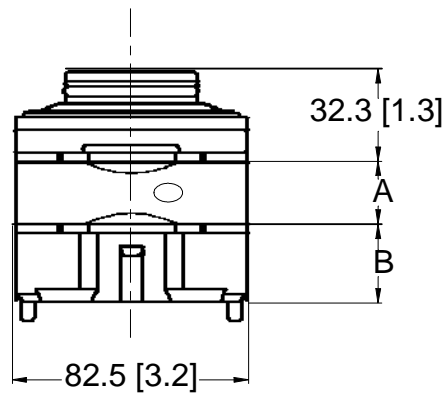
Cartridge Kit 45V Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) <i>USgpm</i>	Displacement <i>cm³/r (in³/r)</i>	Maximum Speed <i>rpm</i>	Maximum Pressure <i>bar (psi)</i>	Typical Delivery at max speed & pressure <i>L/min (USgpm)</i>	Typical Input Power at max speed & pressure <i>kW (hp)</i>	Weight <i>kg (lb)</i>
42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	10.1 (22.3)
50	162 (9.85)	1800	172 (2500)	253.6 (67.0)	87.3 (117.0)	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 20VQ Installation Dimensions mm (inch)

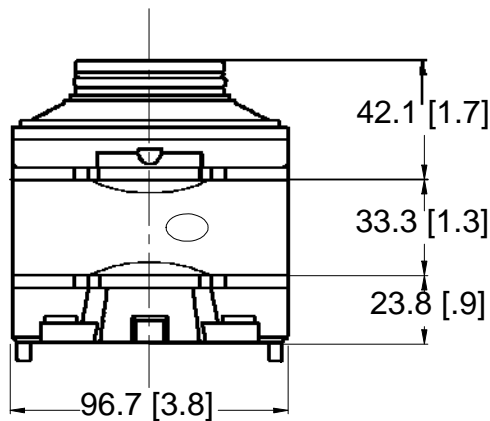


Delivery	A	B
5,8	21.95 [.86]	27.70 [1.09]
11,12,14	30.47 [1.20]	19.10 [0.75]

Specifications

Delivery at 1200 rpm & 7 bar (100 psi) <i>USgpm</i>	Displacement <i>cm³/r (in³/r)</i>	Maximum Speed <i>rpm</i>	Maximum Pressure <i>bar (psi)</i>	Typical Delivery at max speed & pressure <i>L/min (USgpm)</i>	Typical Input Power at max speed & pressure <i>kW (hp)</i>	Weight <i>kg (lb)</i>
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)
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)

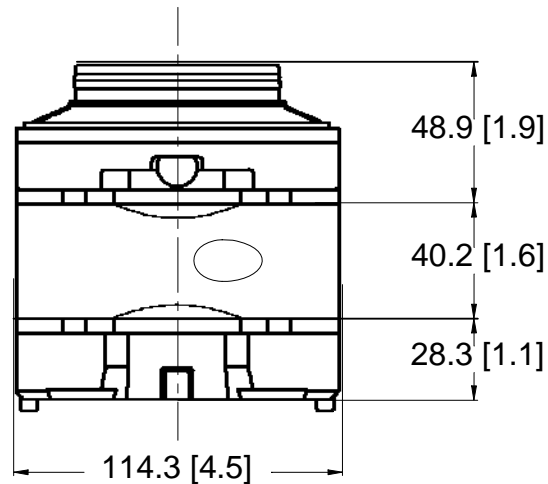
Cartridge Kit 25VQ Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) <i>USgpm</i>	Displacement <i>cm³/r (in³/r)</i>	Maximum Speed <i>rpm</i>	Maximum Pressure <i>bar (psi)</i>	Typical Delivery at max speed & pressure <i>L/min (USgpm)</i>	Typical Input Power at max speed & pressure <i>kW (hp)</i>	Weight <i>kg (lb)</i>
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)
21	67 (4.12)	2500	206 (3000)	143.8 (38.0)	61.9 (83.0)	3.6 (7.9)

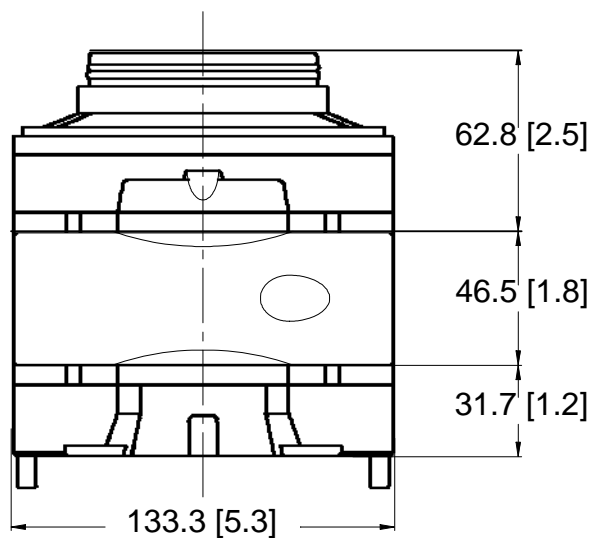
Cartridge Kit 35VQ Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) <i>USgpm</i>	Displacement <i>cm³/r (in³/r)</i>	Maximum Speed <i>rpm</i>	Maximum Pressure <i>bar (psi)</i>	Typical Delivery at max speed & pressure <i>L/min (USgpm)</i>	Typical Input Power at max speed & pressure <i>kW (hp)</i>	Weight <i>kg (lb)</i>
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 45VQ Installation Dimensions mm (inch)



Specifications

Delivery at 1200 rpm & 7 bar (100 psi) <i>USgpm</i>	Displacement <i>cm³/r (in³/r)</i>	Maximum Speed <i>rpm</i>	Maximum Pressure <i>bar (psi)</i>	Typical Delivery at max speed & pressure <i>L/min (USgpm)</i>	Typical Input Power at max speed & pressure <i>kW (hp)</i>	Weight <i>kg (lb)</i>
42	138 (8.41)	1800	172 (2500)	208.2 (55.0)	75.3 (101.0)	10.1 (22.3)
50	162 (9.85)	1800	172 (2500)	253.6 (67.0)	87.3 (117.0)	10.1 (22.3)
60	193 (11.75)	1800	172 (2500)	310.4 (82.0)	103.7 (139.0)	10.1 (22.3)

Hydraulic Kits V VQ Vickers Vane Pump Cartridge

20VQ series: 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14

25VQ series: 10, 12, 14, 17, 19, 21

35VQ series: 21, 25, 30, 35, 38

45VQ series: 42, 45, 50, 57, 60, 66, 75

Vickers cartridge	Vickers code
20VQ5 gpm	417053
20VQ5 gpm - Viton	421588
20VQ8 gpm	417054
20VQ8 gpm - Viton	421589
20VQ9 gpm	423096
20VQ9 gpm - Viton	423097
20VQ11 gpm	416427
20VQ11 gpm - Viton	423097
20VQ12 gpm	416428
20VQ12 gpm - Viton	421590
20VQ14 gpm	416429
20VQ14 gpm - Viton	421592

20VQ

Vickers 20VQ cartridge 6 lbs		20VQ5	20VQ8	20VQ11	20VQ12	20VQ14
Displacement	Cu.in./rev. (cc/ rev.)	1.1 (18)	1.7 (27)	2.2 (36)	2.4 (39)	2.8 (46)
Max. Pressure	Continuous psi (Bar)	3000 (206)	3000 (206)	3000 (206)	2300 (159)	2000 (138)
Min. Speed	Below 1000 psi Above 1000 psi	600 1000	600 1000	600 1000	600 1000	600 1000
Max. Speed,	RPM	2700	2700	2700	2700	2700
Flow at Max. Speed & Pressure	GPM (Liters/ Min)	11 (43)	17 (64)	23 (86)	23 (86)	24 (90)
Input HP at Max. Speed & Pressure	HP (KW)	25 (18)	32 (24)	49 (37)	32 (24)	36 (27)

Vickers cartridge	Vickers code
25VQ12 gpm	416439
25VQ12 gpm - Viton	421570
25VQ14 gpm	416440
25VQ14 gpm - Viton	421571
25VQ17 gpm	416441
25VQ17 gpm - Viton	421572
25VQ19 gpm	421232
25VQ19 gpm - Viton	421573
25VQ21 gpm	416442
25VQ21 gpm - Viton	421574

25VQ

Vickers 25VQ cartridge 8 lbs		25VQ12	25VQ14	25VQ17	25VQ19	25VQ21
Displacement	Cu.in./rev. (cc/ rev.)	2.4 (40)	2.8 (45)	3.4 (55)	3.7 (60)	4.1 (68)
Max. Pressure	Continuous psi (Bar)	3000 (206)	3000 (206)	3000 (206)	2300 (159)	2000 (138)
Min. Speed	Below 1000 psi Above 1000 psi	600 1000	600 1000	600 1000	600 1000	600 1000
Max. Speed,	RPM	2700	2700	2500	2500	2500
Flow at Max. Speed & Pressure	GPM (Liters/ Min)	25 (96)	28 (108)	32 (122)	36 (137)	40 (153)
Input HP at Max. Speed & Pressure	HP (KW)	25 (40)	32 (50)	49 (51)	32 (56)	36 (63)

Vickers 30VQ cartridge

Vickers cartridge	Vickers code
35VQ21gpm	413420
35VQ25 gpm	413421
35VQ25 gpm - Viton	421583

35VQ

Vickers cartridge	Vickers code
35VQ21gpm	413420
35VQ25 gpm	413421
35VQ25 gpm - Viton	421583
35VQ30 gpm	413422
35VQ30 gpm - Viton	421584
35VQ35 gpm	413418
35VQ35gpm - Viton	421585
35VQ38 gpm	413419
35VQ38 gpm - Viton	421586
35VQ21 gpm - Viton	-

Vickers 35VQ cartridge 4 lbs		35VQ21	35VQ25	35VQ30	35VQ35	35VQ38
Displacement	Cu.in./rev. (cc/ rev.)	4.2 (69)	5.0 (82)	6.0 (98)	6.9 (113)	7.4 (122)
Max. Pressure	Continuous psi (Bar)	3000 (206)	3000 (206)	3000 (206)	2300 (206)	2000 (206)
Min. Speed	Below 1000 psi Above 1000 psi	600 1000	600 1000	600 1000	600 1000	600 1000
Max. Speed,	RPM	2500	2500	2500	2400	2400
Flow at Max. Speed & Pressure	GPM (Liters/ Min)	27 (101)	47 (178)	57 (215)	64 (242)	69 (263)
Input HP at Max. Speed & Pressure	HP (KW)	92 (68)	98 (73)	122 (91)	129 (96)	142 (106)

Vickers cartridge	Vickers code
45VQ42 gpm	416435
45VQ42 gpm - Viton	419511
45VQ47 gpm	421234
45VQ47 gpm - Viton	421954
45VQ50 gpm	416436
45VQ50 gpm - Viton	419510
45VQ57 gpm	421233
45VQ57 gpm - Viton	421955
45VQ60 gpm	416437
45VQ60 gpm - Viton	419509

45VQ

Vickers 45VQ cartridge 22 lbs		45VQ42	45VQ47	45VQ50	45VQ57	45VQ60
Displacement	Cu.in./rev. (cc/ rev.)	8.5 (69)	9.4 (82)	9.9 (98)	11.2 (113)	11.8 (122)
Max. Pressure	Continuous psi (Bar)	2500 (172)	2500 (172)	2500 (172)	2500 (172)	2500 (172)
Min. Speed	Below 1000 psi Above 1000 psi	600 1000	600 1000	600 1000	600 1000	600 1000
Max. Speed,	RPM	2200	2200	2200	2200	2200
Flow at Max. Speed & Pressure	GPM (Liters/ Min)	69 (263)	77 (294)	82 (313)	96 (364)	99 (375)
Input HP at Max. Speed & Pressure	HP (KW)	126 (94)	137 (102)	146 (109)	158 (118)	168 (125)

Hydraulic Vickers V cartridge 20V, 25V, 35V, 45V

20V series: 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14

25V series: 10, 12, 14, 17, 19, 21

35V series: 21, 25, 30, 35, 38

45V series: 42, 45, 50, 57, 60, 66, 75

Vickers cartridge	Vickers code
20V5 gpm	102507
20V5 gpm - Viton	102507
20V8 gpm	102508
20V8 gpm - Viton	102508
20V11 gpm	102509
20V11 gpm - Viton	102509
20V12 gpm	102510
20V12 gpm - Viton	102510
20V14 gpm	102511
20V14 gpm - Viton	102511

20V

Vickers 20V cartridge 6 lbs		20V5	20V8	20V11	20V12	20V14
Displacement	Cu.in./rev. (cc/ rev.)	1.0 (16)	1.5 (25)	2.1 (35)	2.3 (38)	2.7 (44)
Max. Pressure	Continuous psi (Bar)	3000 (206)	3000 (206)	3000 (206)	2500 (172)	2200 (138)
Min. Speed	Below 1000 psi Above 1000 psi	600 1000	600 1000	600 1000	600 1000	600 1000
Max. Speed,	RPM	1800	1800	1800	1800	1800
Flow at Max. Speed & Pressure	GPM (Liters/ Min)	7 (27)	11 (43)	13 (50)	16 (59)	20 (74)
Input HP at Max. Speed & Pressure	HP (KW)	13 (17)	21 (28)	29 (39)	26 (35)	25 (34)

Vickers cartridge	Vickers code
25V12 gpm	102532
25V12 gpm- Viton	102532
25V14 gpm	102533
25V14 gpm- Viton	102533
25V17 gpm	102534
25V17 gpm- Viton	102534
25V21 gpm	102535
25V21 gpm- Viton	102535

25V

Vickers 25V cartridge 8 lbs		25V12	25V14	25V17	25V19	25V21
Displacement	Cu.in./rev. (cc/ rev.)	2.3 (38)	2.7 (44)	3.3 (54)	4.0 (66)	2.3 (38)
Max. Pressure	Continuous psi (Bar)	2500 (206)	2500 (206)	2500 (206)	2500 (159)	2500 (206)
Min. Speed	Below 1000 psi Above 1000 psi	600 1000	600 1000	600 1000	600 1000	600 1000
Max. Speed,	RPM	1800	1800	1800	1800	1800
Flow at Max. Speed & Pressure	GPM (Liters/ Min)	14 (54)	17 (64)	23 (87)	27 (101)	14 (54)
Input HP at Max. Speed & Pressure	HP (KW)	26 (35)	31 (42)	37 (50)	46 (62)	26 (35)

Vickers cartridge	Vickers code
35V25 gpm	102552
35V25 gpm – Viton	102552
35V30 gpm	102553
35V30 gpm – Viton	102553
35V35 gpm	102554
35V35 gpm – Viton	102554
35V38 gpm	102555
35V38 gpm – Viton	102555

35V

Vickers 35V cartridge		4 lbs	35V25	35V30	35V35	35V38
Displacement	Cu.in./rev. (cc/ rev.)		4.8 (79)	5.8 (95)	6.7 (110)	7.3 (120)
Max. Pressure	Continuous psi (Bar)		2500 (172)	2500 (172)	2500 (172)	2500 (172)
Min. Speed	Below 1000 psi Above 1000 psi		600 1000	600 1000	600 1000	600 1000
Max. Speed,	RPM		1800	1800	1800	1800
Flow at Max. Speed & Pressure	GPM (Liters/ Min)		32 (27)	40 (43)	48 (50)	51 (59)
Input HP at Max. Speed & Pressure	HP (KW)		55	66	77	83

Vickers cartridge	Vickers code
45V42 gpm	102572
45V42 gpm – Viton	102576
45V50 gpm	102574
45V50 gpm – Viton	102577
45V60 gpm	102575
45V60 gpm – Viton	102578

45V

Vickers 45V cartridge		22 lbs	45V42		45V50		45V60
Displacement	Cu.in./rev. (cc/ rev.)		8.1 (132)		9.6 (158)		11.6 (89)
Max. Pressure	Continuous psi (Bar)		2500 (172)		2500 (172)		2500 (172)
Min. Speed	Below 1000 psi Above 1000 psi		600 1000		600 1000		600 1000
Max. Speed	RPM		1800		1800		1800
Flow at Max. Speed & Pressure	GPM (Liters/ Min)		56 (211)		67 (252)		83 (310)
Input HP at Max. Speed & Pressure	HP (KW)		92		109		131