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TOKIMEC » TOKYO KEIKI

The company name was changed to **TOKYO KEIKI INC.**

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Fixed Displacement Vane Pumps

VANE PUMPS(for Mineral Oil)

Model	Max.Working Press. MPa	Max. Speed min^{-1}	Delivery (Speed 1000 min^{-1}, Outlet Pressure 0.7 MPa) L/min	Series		Page
FIXED DISPLACEMENT VANE PUMPS			5 10 20 30 50 100 200			
SQP1− 2	14	1800	7.5		SQP1, SQPS1	B7
3			10.2			
4	17.5		12.8	Double	SQP21, SQPS21 SQP31, SQPS31	B18
5			16.7			
6			19.2			
7			22.9			
8			26.2	Triple	SQP211, SQP311	B30
9			28.3			
11			35.0	Triple	SQP211, SQP311 SQP321, SQP421 SQP431	
12	16		37.9			
14	14		44.2			
SQP2−10	17.5	1800	32.5		SQP2, SQPS2	B7
12			38.3	Double	SQP21, SQPS21	B18
14			43.3	Double	SQP32, SQPS32 SQP42, SQPS42	
15			46.7			
17			52.5	Triple	SQP211	B30
19			59.2	Triple	SQP321, SQP421	
21			65.0	Triple	SQP432	
SQP3−17	17.5	1800	53.3		SQP3, SQPS3	B7
21			66.7			
25			79.2	Double	SQP31, SQPS31 SQP32, SQPS32	B18
30			95.0	Double	SQP43, SQPS43	
32			100			
35			109	Triple	SQP311, SQP321	B30
38			118	Triple	SQP431, SQP432	
SQP4−30	17.5	1800	96		SQP4, SQPS4	B7
35			109			
38			128	Double	SQP41, SQPS41 SQP42, SQPS42 SQP43, SQPS43	B18
42			134			
50			156			
60			189	Triple	SQP431, SQP432	B30
20VQ5	※21	2700	16.7	Double	2520VQ, 3520VQ 4520VQ	B45
8			26.2			
11			35.0			
12	16		37.9			
14	14		44.2			
25VQ12	※21	2700	38.3		25VQ	B39
14			43.3	Double	2520VQ	B45
17		2500	52.5	Double	3525VQ, 4525VQ	
21			65.0			
35VQ25	※21	2500	79.2		35VQ	B39
30			95.0	Double	3520VQ, 3525VQ	B45
35		2400	109	Double	4535VQ	
38			118			
45VQ42	17.5	2200	134		45VQ	B39
50			156	Double	4520VQ, 4525VQ 4535VQ	B45
60			189			

Note: For triple pumps(SQP**1,SQP432),there may be speed limitations for small displ.side pumps See page B31.
Max. working pressure (Marked※) of VQ Series pumps are all owable pressure for mobile application. Consult TOKIMEC for industrial applications.

Model	Max.Working Press. MPa	Max. Speed min^{-1}	Delivery L/min (Speed 1000 min^{-1}, Outlet Pressure 0.7 MPa)	Series		Page
			5 10 20 30 50 100 200			
V-104/108-Y	7	1800	5.7		V-104	B52
E			8.5	Double	V-108	B55
G			11.7			
A			16.8	Double	V-108, V-128 V-138, V-148	
C		1500	25.8			
D		1200	36.3			
V-124/128	7	1500	48.6		V-124, V-134 V-144	B52
V-134/138			61.5			
V-134U/138U			72.6			
V-134X/138X		1200	94.2	Double	V-128, V-138 V-148	B55
V-144/148			119			
V20- 6	17.5	3400	18.9			B58
7		3000	22.1			
8		2800	25.8			
9			29.0			
11		2500	36.3			
12	15.4	2400	37.8			
13			42.6			
V30-15	17.5	2700	47.0			B58
17	15.4	2600	53.9			
21		2500	65.9			
24		2400	77.2			
28		2200	90.0			

VANE PUMPS (for Fire-Resistant Fluids)

Water-Glycol Fluids			Phosphate-Ester Fluids		
Model	Max. Working Press. MPa	Max. Speed min^{-1}	Model	Max. Working Press. MPa	Max. Speed min^{-1}
F11-SQP Series F11-SQPS Series	※1 17.5	※2 1200	F3-SQP Series	14	※2 1200
SQP Series SQPS Series	12.5	※2 1200	F3-SQPS Series		
VQ Series	12.5	1200	F3-VQ Series	14	※3 1600
V-1＊4 Series *4	5.5	1200	F3-V-1＊4 Series *5	7	1200
V20 Series	※6 12.5	1800	F3-V20 Series	※7 14	※8 1800
V30 Series	※6 10	1200	F3-V30 Series	※7 11.5	1200

Note:
*1: F11-SQP1, F11-SQP*1 displacements 2, 3, and 14 are 14MPa, displacement 12 is 16MPa
*2: For triple SQP pumps, depending on the small size displacement, max. speed may be limited to 100 min^{-1}.
*3: 25VQ displacements 12, 14 are 1800 min^{-1}, 45VQ is 1500 min^{-1}
*4: V-104-D, V-144 cannot be used with water glycol fluids
*5: V-104-D, V-134X, V-144 cannot be used with phosphate ester fluids
*6: V20 displacements greater than 9 and V30 displacements greater than 15 are 11MPa
*7: V20 displacements, 12, 13 and V30 displacement 15 is 12.5 Mpa
*8: V20 displacements greater than 9 are 1500 min^{-1}

NOTES ON USING VANE PUMPS

Installation and Pump-Prime Mover Alignment

- The base or platform for mounting of the electricmotor and pump should be of sufficient rigidity. It should be of construction which minimizes vibrations.
- As much as possible a flexible type coupling should be used to connect the shafts of the prime mover and pump. (However use of tire type couplings should be avoided.) Shafts should be aligned within recommended TIR (Total Indicator Reading) 0.05mm tolerance. However this may be affected by differences in connection methods and type of couplings. Please contact TOKIMEC in such case.
- Proper alignment is important as improper alignment of prime mover and pump may lead to shaft breakage, heat and wear of bearings, oil leakage, abnormal pump noise, vibrations, and other problems.
- In principle, there should be no external radial or thrust loads on shaft ends. Please consult TOKIMEC if belt, chain, or gear couplings are to be used.

Piping and Filtration

- Inlet suction pressure (gauge pressure)
  Proper inlet suction pressures are +35~-16.7 kPa for mineral oil fluids and +35~-10.1 kPa for water glycol and phosphate ester fluids.
- Suction pipe flow rate should be kept within 0.5~1.5 m/s.
- Filtration
  Please use 150μm level filtration tank filter (suction filter).Please use a 25 μm or smaller full flow filter or 10 μm or smaller bypass filter.
- Filter installation
  When using an immersion type tank filter, please install filter so it is about 50~70mm from the tank bottom to discourage ingress of contaminant precipitate. In the case of greatly fluctuating oil level, the installation should be designed so that air does not enter the filter.
- Suction, return piping
  –Determine prescribed suction pressure and, as much as possible, reduce suction resistance.
  1. If large diameter piping is used, please minimize number of bends.
  2. Suction port of pump should be located less than 1m from oil level reference in tank.

  – End of suction pipe should be more than 50mm from bottom of tank.
  – Air is easily sucked into the suction pipe so attention should be paid to the joints, etc.
  These should be sealed correctly as ingress of air leads to abnormal noise, vibration, and parts damage.
  –The end of the return pipe should always be below the oil level regardless of fluctuations in oil level.
  – Baffle plates should be installed in the tank between the suction and return pipes.
  –Using flexible rubber hose instead of steel piping for pump suction and delivery will .
  act to provide vibration dampening and also help reduce sound levels.

Air Bleed

- During initial system startup (and startups after long period of storage), pump may have difficulty drawing fluid. By pre-installing an air bleed valve (ABT-03) or by loosing a fitting in the delivery pipe, air can be bled from the system.
- During air bleed of pump and piping, pump should be run at no load.

Warm Up

During startup, if viscosity is higher than proper viscosity (54 mm^2/s), system should be warmed up with pressure less than half of maximum working pressure until viscosity falls below 54 mm^2/s.

Hydraulic Fluids

- Maximum operating pressures, maximum speeds, etc. specifications may differ according to the hydraulic fluid used. Please refer to the Appendix 1 regarding fluid selection.
- Mineral oils
  –Please use general industrial use anti-wear fluids.
- Fire resistant fluids
  –Water glycols may be used with TOKIMEC standard type pumps.
  However maximum operating pressures, maximum speeds, etc., specifications will differ from those of mineral oil fluids.
  Please refer to specifications of each pump for details.
  –Fluorine seals are used with pumps that operate on phosphate ester fluids. An “F3-” suffix is used to designate such pumps. However specifications for maximum operating pressures, maximum speeds, etc., will differ from those of mineral oil fluids.
  –Please consult TOKIMEC regarding other fire resistant fluids.

Hydraulic Fluid Viscosity and Temperature

- Please operate pump with viscosity level within 13~54 mm^2/s range. Maximum viscosity allowed is 860 mm2/s (220 mm^2/s for V20, V30 Series), but warm up and operation should be done in accordance with the paragraph on “Warm Up”.

- Fluid temperature should be maintained below 65°C.

SQP/SQPS Series Features

The SQP Series vane pumps feature low noise and are offered in 4 frame sizes, 16 series, 32 models of different displacements and as triple pumps which allow the user to select the combination which best matches their circuit for optimum energy efficiency.

SQP Series

1. Offers very quiet and “soft” operational noise levels.
2. Multiple pump combinations of differing displacements permits simpler circuit design compared to systems using one large displacement pump and provides greater flexibility in circuit design with the benefit of low noise levels.
3. Rotating element is in cartridge kit form which allows simple maintenance.

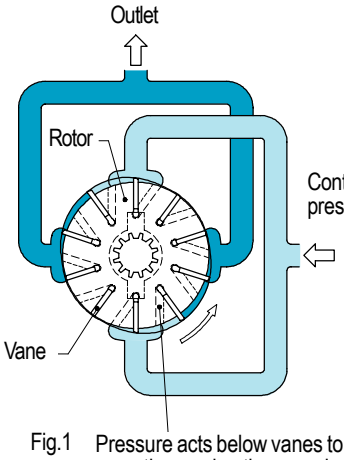


Fig.1 Pressure acts below vanes to push vane tips agains the cam ring and provides optimum sealing of vane chambers.

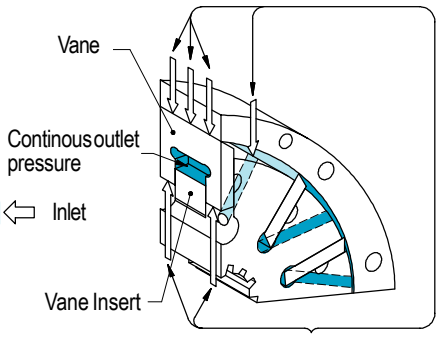
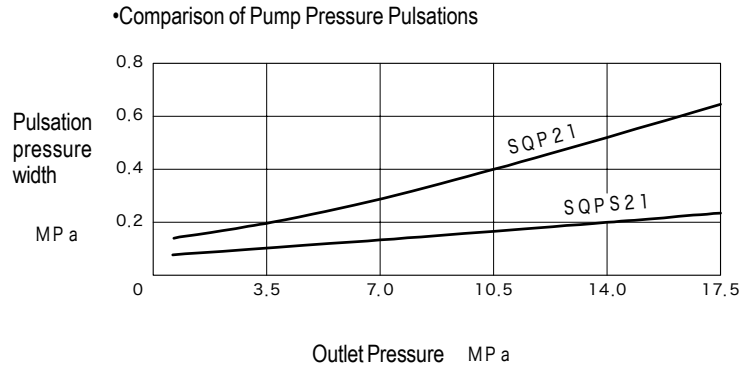


Fig.2 Shaft rotation causes alternate quadrant shifts in delivery load pressure and inlet suction pressures.

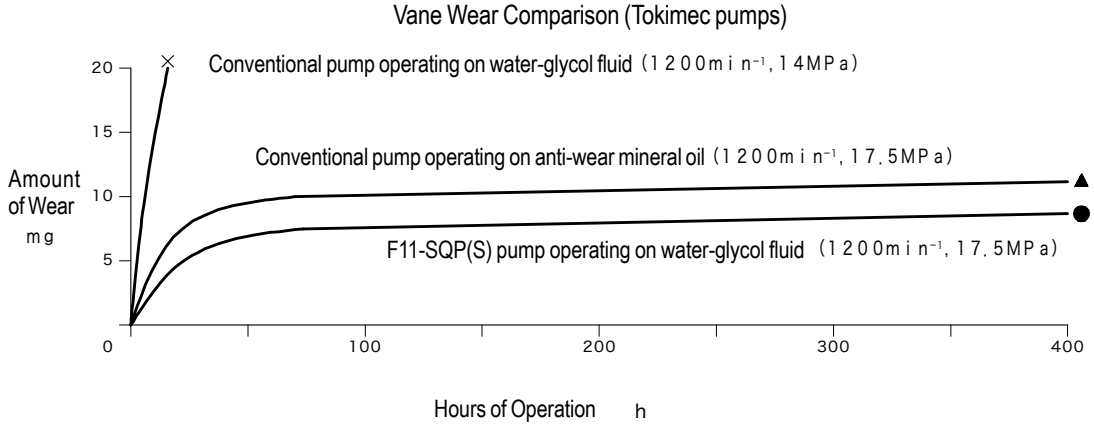
SQPS Series

The SQPS Series incorporate special pulsation damping chambers which minimize delivery pressure pulsation amplitude contributing to a great reduction in overall noise levels.

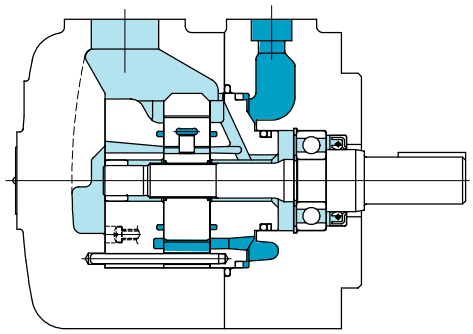


F11-SQP(S) Series

The F11-SQP(S) Series is designed for use with fire-resistant fluids such as 40% water, water-glycol fluids. The pumps are designed to provide long life using such fluids with good anti-wear characteristics. The below graphs shows the amount of wear is similar to pumps operating on anti-wear mineral oil.



Low noise single fixed displacement vane pumps SQP/SQPS series



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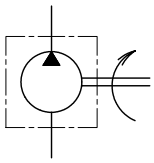


Model Code

(F3) - SQP(S)3 - 35 - 86 C (2) - (LH) - 18

1	2	3	4	5	6	7	8

1 Fluid
Omit for mineral oil
F3: phosphate ester
F11 : water glycol

2 Low noise fixed displ. vane pump
SQP(S)1 Series
SQP(S)2 Series
SQP(S)3 Series
SQP(S)4 Series

3 Pump displacement code

Series	Displacement
SQP (S) 1	2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14
SQP (S) 2	10, 12, 14, 15, 17, 19, 21
SQP (S) 3	17, 21, 25, 30, 32, 35, 38
SQP (S) 4	30, 35, 38, 42, 50, 60

4 Shaft

1 parallel sq. key — SQP(S)1, SQP(S)2

2 parallel sq. key — SQP(S)3, SQP(S)4

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

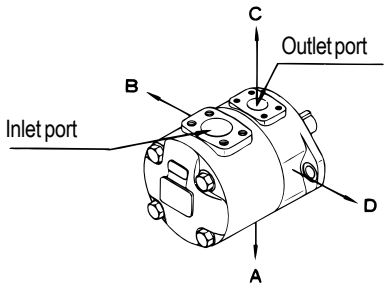
6 Mounting
Omit for flange mounting
2* : foot mounting
Outlet position relative to foot mount surface (see schematic below)

FootMountCode	Outlet Position (as Viewed from Shaft End)
2	up (12 o'clock)
23	right (3 o'clock)
26	down (6 o'clock)
29	left (9 o'clock)

7 Rotation (viewed from shaft end)
Omit for CW
LH: CCW

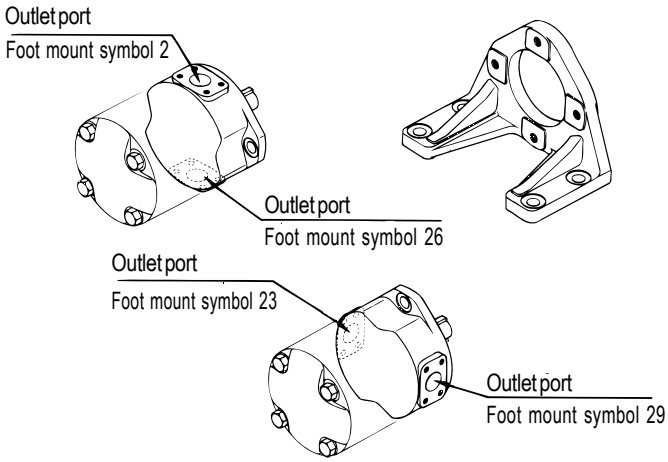
8 Design no.
Design no. is '15' for SQP(S)1 Series only.

•Outlet port position



•Note: that for SQPS1, inlet port is on shaft side and outlet port is on cover side.

• Foot mount position (unrelated to Inlet port)



Specifications

Model	Displ. Code	Del. at 1000 min^{-1} 0.7Mpa L/min	Mineral Oil SQP (S)		Phosphate Ester F11-SQP (S)		Water-Glycol F3-SQP (S)		Min. Speed min^{-1}
			Max. Pressure MPa	Max. Speed min^{-1}	Max. Pressure MPa	Max. Speed min^{-1}	Max. Pressure MPa	Max. Speed min^{-1}	
SQP (S) 1	2	7. 5	14	1800	14	1200	14	1200	600
	3	10. 2							
	4	12. 8	17. 5		17. 5				
	5	16. 7							
	6	19. 2							
	7	22. 9							
	8	26. 2							
	9	28. 3							
	11	35. 0							
	12	37. 9	16		16				
	14	44. 2	14		14				
SQP (S) 2	10	32. 5	17. 5	1800	17. 5	1200	14	1200	600
	12	38. 3							
	14	43. 3							
	15	46. 7							
	17	52. 5							
	19	59. 2							
	21	65. 0							
SQP (S) 3	17	53. 3	17. 5	1800	17. 5	1200	14	1200	600
	21	66. 7							
	25	79. 2							
	30	95. 0							
	32	100. 0							
	35	109. 0							
	38	118. 0							
SQP (S) 4	30	96. 0	17. 5	1800	17. 5	1200	14	1200	600
	35	109. 0							
	38	128. 0							
	42	134. 0							
	50	156. 0							
	60	189. 0							

Weight

Unit : kg

Model	SQP		SQPS	
	Flange Mount	Foot Mount	Flange Mount	Foot Mount
SQP (S) 1	16. 0	19. 0	18. 5	21. 5
SQP (S) 2	25. 0	34. 5	29. 5	39. 0
SQP (S) 3	35. 0	44. 5	43. 0	52. 5
SQP (S) 4	59. 5	84. 5	71. 0	96. 0

Piping Flange (Conforming to SAE J518c Standard Pressure)

- Flanges sold separately.
- Refer to table below to order flanges (with hex socket bolts, spring washers, and O-rings
- See page Q12 for dimensions, etc.

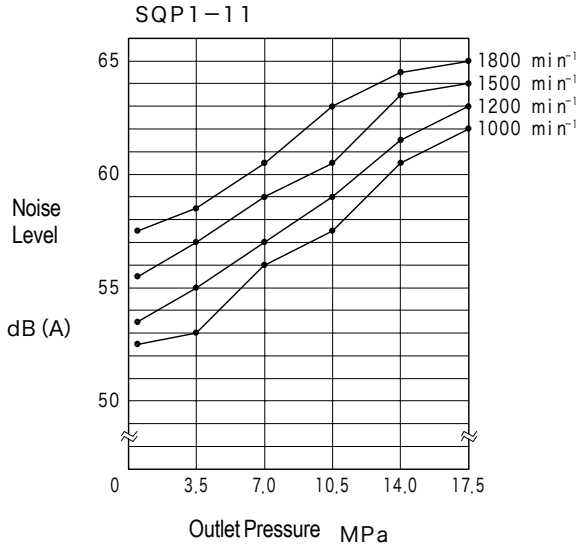
Model	Flange Type					
	Inlet Port					
	Size	Threaded	Welded	Size	Threaded	Welded
SQP 1	1-1/4	FL1-10-10P-10-JA-S4-J	FL1-10-10W-10-JA	3/4	FL1-6-06P-10-JA-S4-J	FL1-6-06W-10-JA
SQP S 1	1-1/2	FL1-12-12P-10-JA-S4-J	FL1-12-12W-10-JA	3/4	FL1-6-06P-10-JA-S4-J	FL1-6-06W-10-JA
SQP (S) 2	1-1/2	FL1-12-12P-10-JA-S4-J	FL1-12-12W-10-JA	1	FL1-8-08P-10-JA-S4-J	FL1-8-08W-10-JA
SQP (S) 3	2	FL1-16-16P-10-JA-S4-J	FL1-16-16W-10-JA	1-1/4	FL1-10-10P-10-JA-S4-J	FL1-10-10W-10-JA
SQP (S) 4	3	FL1-24-24P-10-JA-S4-J	FL1-24-24W-10-JA	1-1/2	FL1-12-12P-10-JA-S4-J	FL1-12-12W-10-JA

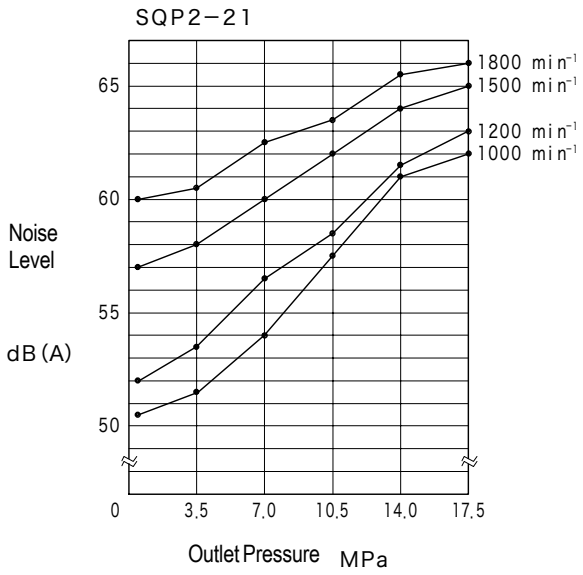
Notes on Use

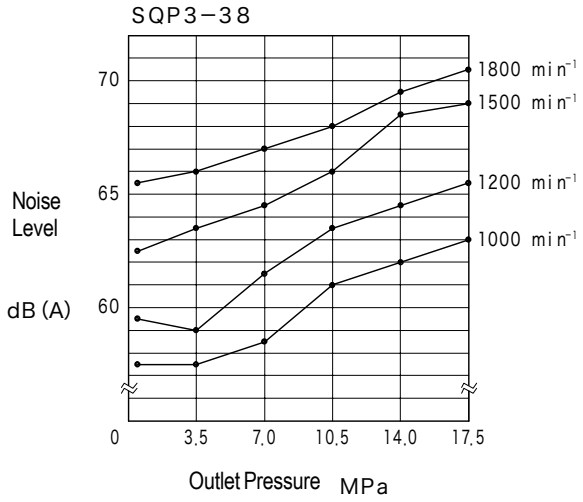
See page B5 for Notes on Using Vane Pumps

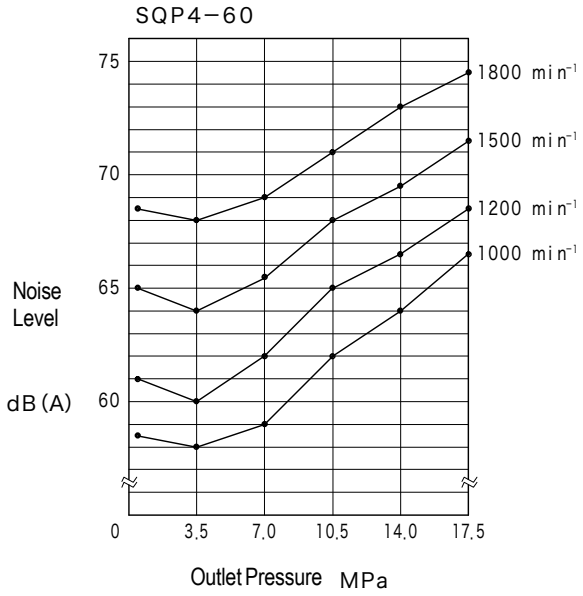
Noise Characteristics

Measurement conditions: ISO VG32 oil at 50 degrees C, inlet pressure 0 MPa, and measured 1m from rear of pump cover









Delivery, Shaft Input Power (at 20 mm²/s)

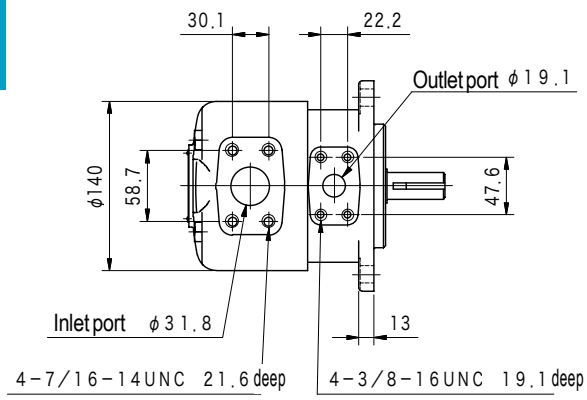
Model	Speed min⁻¹	Delivery L/min				Shaft Input kW			
		0.7 MPa	7 MPa	14 MPa	17.5 MPa	0.7 MPa	7 MPa	14 MPa	17.5 MPa
SQP (S) 1-2	1000	7.5	6.0	4.4	———	0.2	1.2	2.1	———
	1200	9.5	8.5	6.4	———	0.3	1.5	2.5	———
	1500	11.2	9.3	7.4	———	0.3	1.8	3.3	———
	1800	13.5	11.2	8.9	———	0.4	2.2	3.9	———
SQP (S) 1-3	1000	10.2	8.8	7.3	———	0.3	1.5	3.2	———
	1200	12.5	11.0	9.4	———	0.4	1.8	3.8	———
	1500	15.3	13.7	12.0	———	0.5	2.3	4.8	———
	1800	18.4	16.9	15.2	———	0.5	2.8	5.7	———
SQP (S) 1-4	1000	12.8	12.3	10.8	10.0	0.4	1.8	3.8	4.7
	1200	16.0	15.0	13.5	13.0	0.5	2.2	4.5	5.6
	1500	19.2	17.7	16.1	15.7	0.6	2.8	5.7	7.0
	1800	23.1	21.3	19.4	19.0	0.7	3.3	6.8	8.5
SQP (S) 1-5	1000	16.7	15.7	14.7	14.2	0.4	2.9	4.9	6.1
	1200	20.0	19.0	18.0	17.5	0.5	3.3	5.9	7.3
	1500	25.0	24.0	23.0	22.5	0.6	4.0	7.4	9.2
	1800	30.0	29.0	28.0	27.5	0.6	4.3	8.8	10.9
SQP (S) 1-6	1000	19.2	18.2	17.0	16.2	0.4	3.1	5.6	6.7
	1200	23.0	22.0	20.5	20.0	0.5	3.6	6.6	8.1
	1500	28.5	27.5	26.0	25.0	0.6	4.4	8.3	10.0
	1800	34.5	33.5	32.0	31.0	0.7	5.3	9.9	12.0
SQP (S) 1-7	1000	22.9	21.4	19.8	18.9	0.5	3.5	6.3	7.7
	1200	27.5	26.0	24.4	23.5	0.6	4.1	7.5	9.3
	1500	34.4	32.9	31.3	30.4	0.7	5.1	9.4	11.5
	1800	41.3	39.8	38.2	37.3	0.8	6.0	11.2	13.9
SQP (S) 1-8	1000	26.2	24.2	22.6	21.1	0.5	4.0	6.8	8.5
	1200	31.5	29.5	27.9	26.4	0.6	4.6	8.2	10.2
	1500	39.4	37.4	35.8	34.3	0.8	5.6	10.2	12.7
	1800	47.2	45.2	43.6	42.1	0.8	6.7	12.0	15.1
SQP (S) 1-9	1000	28.3	26.6	24.5	23.7	0.6	4.3	7.4	9.2
	1200	34.0	32.0	29.4	28.4	0.7	4.8	9.3	11.5
	1500	42.5	40.0	36.8	35.5	0.8	6.1	11.0	13.8
	1800	51.0	47.9	44.1	42.6	0.9	7.3	13.1	16.3
SQP (S) 1-11	1000	35.0	33.0	30.4	29.4	0.7	5.0	9.4	11.6
	1200	42.0	40.0	37.4	36.4	0.8	5.8	11.2	14.0
	1500	52.5	50.5	47.9	46.9	1.0	7.0	14.1	17.4
	1800	63.2	61.0	58.4	57.4	1.0	8.5	16.5	20.7
SQP (S) 1-12	1000	37.9	36.4	34.3	———	0.7	5.7	10.6	———
	1200	45.5	44.0	41.9	———	0.9	6.6	12.7	———
	1500	56.9	55.4	53.3	———	1.1	8.1	15.9	———
	1800	68.2	66.7	64.6	———	1.1	9.6	18.8	———
SQP (S) 1-14	1000	44.2	42.7	40.6	———	1.0	6.7	12.4	———
	1200	53.0	51.5	49.4	———	1.1	8.0	14.9	———
	1500	66.0	64.0	61.9	———	1.3	9.8	18.6	———
	1800	79.5	77.5	75.4	———	1.4	11.7	22.1	———
SQP (S) 2-10	1000	32.5	29.4	25.9	24.4	0.9	5.0	9.5	11.5
	1200	39.0	35.9	32.4	30.9	1.0	5.9	11.3	13.8
	1500	48.8	45.7	42.2	40.7	1.2	7.3	14.1	17.1
	1800	58.5	55.4	51.9	50.4	1.3	8.7	16.8	20.5
SQP (S) 2-12	1000	38.3	35.9	33.2	31.7	1.0	5.8	11.1	13.7
	1200	46.0	43.6	40.9	39.4	1.1	6.6	13.3	16.3
	1500	57.5	55.1	52.4	50.9	1.3	8.5	16.4	20.3
	1800	69.0	66.6	63.9	62.4	1.4	10.0	19.7	24.3
SQP (S) 2-14	1000	43.3	40.1	36.7	35.7	1.2	6.5	12.4	15.4
	1200	52.0	48.4	45.4	44.4	1.3	7.6	14.8	18.4
	1500	65.0	61.8	58.4	57.4	1.5	9.6	18.4	22.8
	1800	78.0	74.8	71.4	70.4	1.7	11.3	21.9	27.2
SQP (S) 2-15	1000	46.7	43.6	40.6	39.1	1.2	6.9	13.3	16.2
	1200	56.0	52.9	49.9	48.4	1.3	8.2	15.8	19.4
	1500	70.0	66.9	63.9	62.4	1.5	10.1	19.7	24.1
	1800	84.0	80.9	77.9	76.4	1.7	12.0	23.5	28.9
SQP (S) 2-17	1000	52.5	49.6	46.4	44.4	1.4	7.5	14.6	17.9
	1200	63.0	60.6	56.9	54.9	1.5	9.2	17.3	21.4
	1500	78.8	75.9	72.7	70.7	1.7	11.0	21.5	26.6
	1800	94.5	91.6	88.4	86.4	1.9	13.2	25.6	31.8

Delivery, Shaft Input Power (at 20 mm²/s)

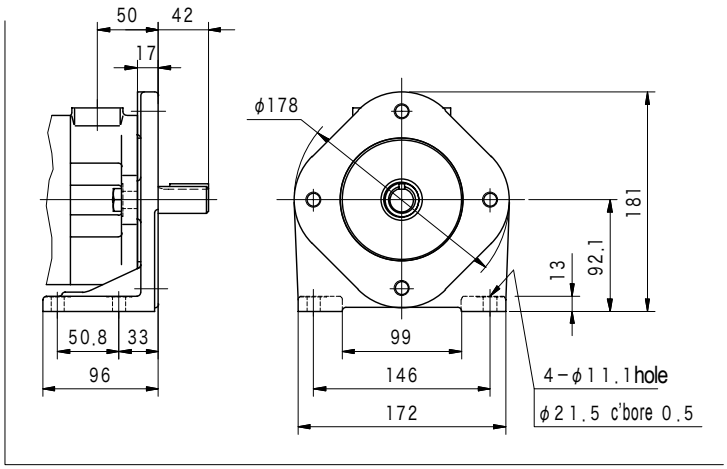
Model	Speed min⁻¹	Delivery L/min				Shaft Input kW			
		0.7 MPa	7 MPa	14 MPa	17.5 MPa	0.7 MPa	7 MPa	14 MPa	17.5 MPa
SQP (S) 2-19	1000	59.2	56.1	53.1	50.1	1.5	8.7	16.3	20.5
	1200	71.0	67.9	64.9	61.9	1.7	10.2	19.4	24.5
	1500	88.7	85.6	82.6	79.6	1.9	12.5	24.6	30.4
	1800	106.5	103.6	100.6	97.6	2.2	15.0	28.8	36.4
SQP (S) 2-21	1000	65.0	62.1	58.9	56.9	1.6	9.4	17.9	22.2
	1200	78.0	74.9	71.9	69.9	1.8	11.2	21.4	26.5
	1500	97.5	94.6	91.4	89.4	2.1	13.7	26.6	32.9
	1800	117.0	113.9	110.9	108.9	2.3	16.3	31.7	39.4
SQP (S) 3-17	1000	53.3	47.2	41.1	38.1	1.4	6.9	12.8	15.8
	1200	64.0	57.9	51.8	48.8	1.5	8.2	15.3	18.9
	1500	80.0	73.9	67.8	64.8	1.7	10.0	19.0	23.4
	1800	96.0	89.9	83.8	80.8	1.9	11.8	22.5	27.9
SQP (S) 3-21	1000	66.7	60.6	54.5	51.5	1.6	9.1	17.1	21.0
	1200	80.0	73.9	67.8	64.8	1.8	10.7	20.4	25.0
	1500	100.0	93.9	87.8	84.8	2.0	13.2	25.3	31.0
	1800	120.0	113.9	107.8	104.8	2.3	15.7	31.1	37.1
SQP (S) 3-25	1000	79.2	73.4	67.0	64.0	1.8	10.9	20.9	25.6
	1200	95.0	88.9	82.8	79.8	2.0	12.7	25.0	30.6
	1500	119.0	112.9	106.8	103.8	2.3	16.0	31.0	38.0
	1800	142.0	135.9	129.8	126.8	2.6	19.1	37.1	45.5
SQP (S) 3-30	1000	95.0	88.3	80.7	77.8	1.8	12.8	25.2	31.1
	1200	114.0	106.9	99.7	96.8	2.0	15.3	30.1	37.2
	1500	142.0	135.9	127.7	124.8	2.4	19.0	37.4	46.4
	1800	171.0	163.9	156.7	153.8	2.7	22.6	44.9	55.6
SQP (S) 3-32	1000	100.0	91.8	84.7	81.8	2.1	13.8	26.5	32.8
	1200	120.0	111.8	104.7	101.8	2.3	16.3	31.6	39.3
	1500	150.0	141.8	134.7	131.8	2.7	20.2	39.4	48.8
	1800	180.0	171.8	164.7	161.8	3.1	24.1	47.0	58.5
SQP (S) 3-35	1000	109.0	102.9	94.9	92.0	2.2	14.5	28.1	35.0
	1200	131.0	123.9	116.7	113.8	2.5	17.3	33.7	41.8
	1500	164.0	156.9	149.7	146.8	2.9	21.3	41.8	52.0
	1800	196.0	188.9	181.7	178.8	3.3	25.4	51.4	62.3
SQP (S) 3-38	1000	118.0	110.9	101.7	99.1	2.7	15.8	30.4	37.6
	1200	142.0	133.8	125.7	122.8	3.0	18.9	36.2	44.9
	1500	177.0	169.9	160.7	157.8	3.4	23.1	44.9	55.8
	1800	213.0	204.8	196.7	193.8	3.9	27.5	53.6	66.7
SQP (S) 4-30	1000	96.0	86.8	76.6	71.7	1.6	13.7	25.6	31.5
	1200	115.0	105.8	95.6	90.7	2.0	15.3	30.6	37.7
	1500	144.0	134.8	124.6	119.7	2.4	19.0	38.1	47.0
	1800	172.5	163.3	153.1	148.2	2.8	22.7	45.6	56.3
SQP (S) 4-35	1000	109.0	99.8	89.6	84.7	1.7	14.5	29.0	35.8
	1200	131.0	121.8	111.6	106.7	2.0	17.3	34.7	42.8
	1500	164.0	156.9	144.6	139.7	2.4	21.6	43.2	53.4
	1800	196.5	187.3	177.1	171.7	2.9	25.9	51.9	64.1
SQP (S) 4-38	1000	128.0	118.8	108.6	103.7	2.7	17.1	34.2	41.8
	1200	154.0	144.8	134.6	129.7	3.0	20.4	40.8	50.0
	1500	192.5	183.3	173.1	168.2	3.5	25.3	50.8	62.2
	1800	231.0	221.8	211.6	206.7	4.0	30.1	60.7	74.4
SQP (S) 4-42	1000	134.0	124.8	114.6	109.7	2.7	18.0	35.9	44.4
	1200	161.0	151.8	141.6	136.7	3.0	21.4	42.8	53.0
	1500	201.0	191.8	181.6	176.7	3.5	26.5	53.3	66.0
	1800	241.0	231.8	221.6	216.7	4.0	31.6	63.7	79.0
SQP (S) 4-50	1000	156.0	146.8	136.6	131.7	3.1	20.6	40.2	50.3
	1200	187.0	177.8	167.6	162.7	3.5	24.5	47.9	60.2
	1500	234.0	224.8	214.6	209.7	4.0	30.3	59.7	74.8
	1800	280.0	270.8	260.6	255.7	4.7	36.1	71.3	89.6
SQP (S) 4-60	1000	189.0	177.8	165.5	159.6	4.0	24.9	47.8	59.8
	1200	227.0	215.8	203.5	197.6	4.5	29.6	57.1	71.4
	1500	284.0	272.8	260.5	254.6	5.2	36.5	71.0	88.8
	1800	340.0	328.8	316.5	310.6	5.9	43.5	84.8	106.1

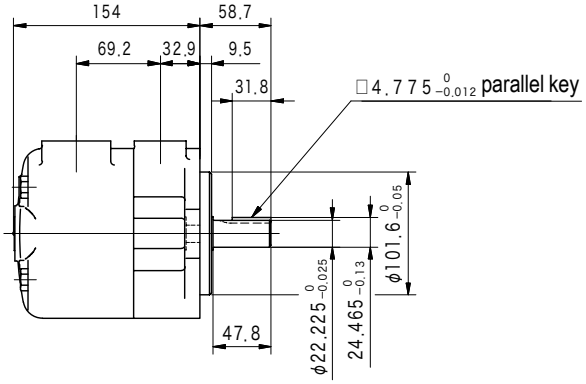
Dimensions

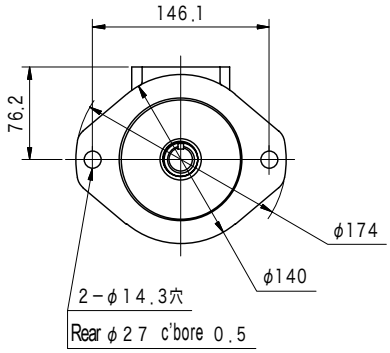
S Q P 1 (Flange Mount)



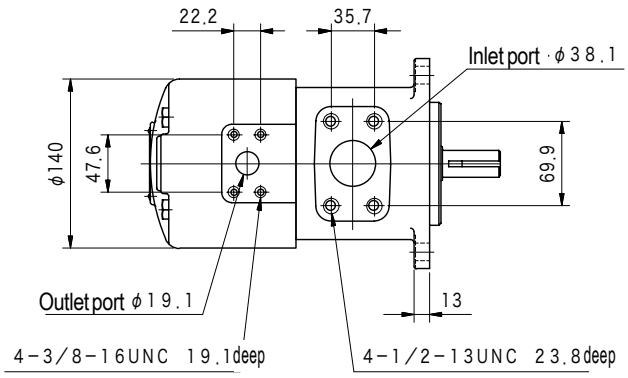
(Foot Mount)







S Q P S 1 (Flange Mount)



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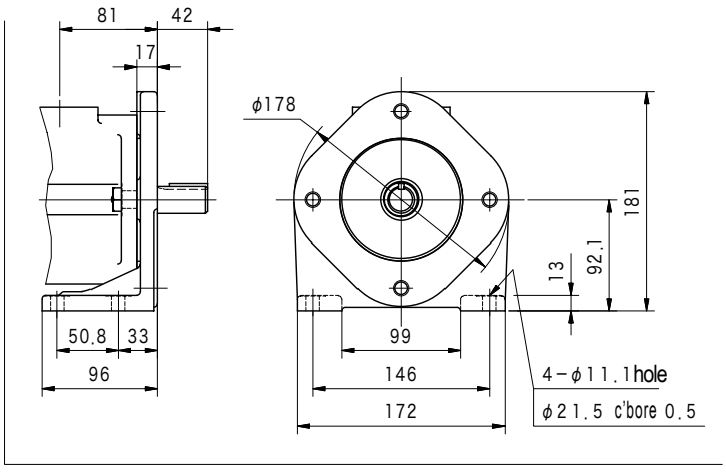
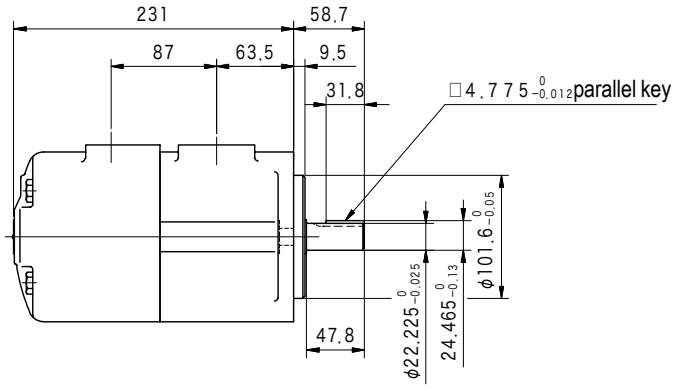
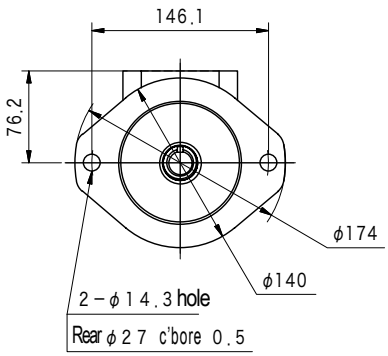
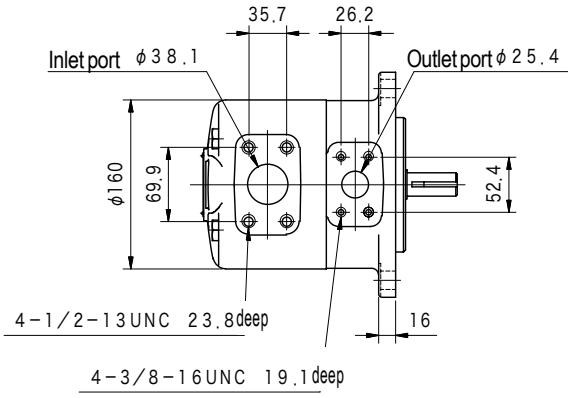






Dimensions

S Q P 2 (Flange Mount)



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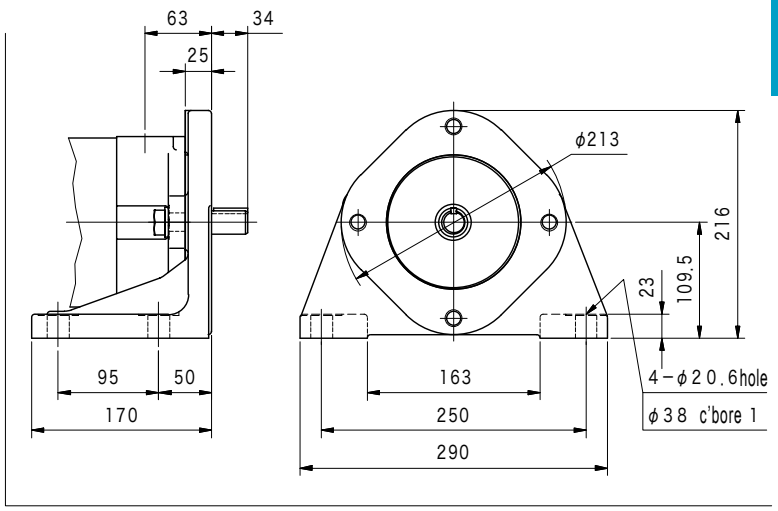
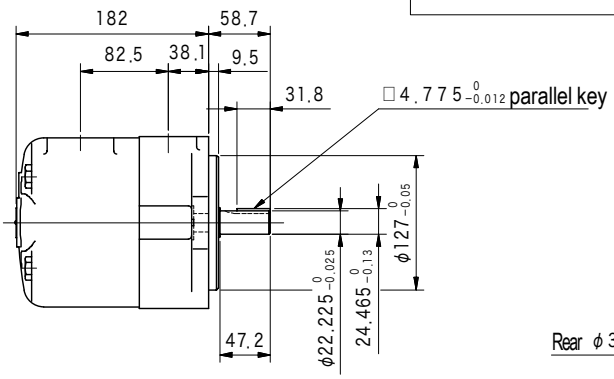
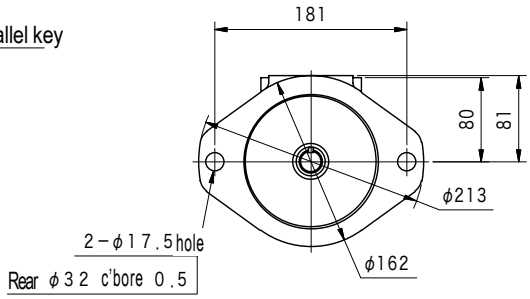
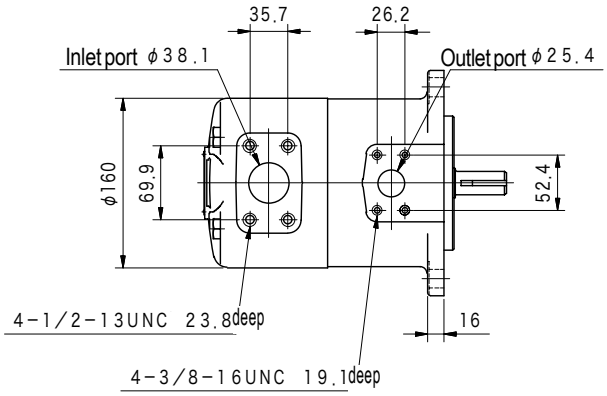


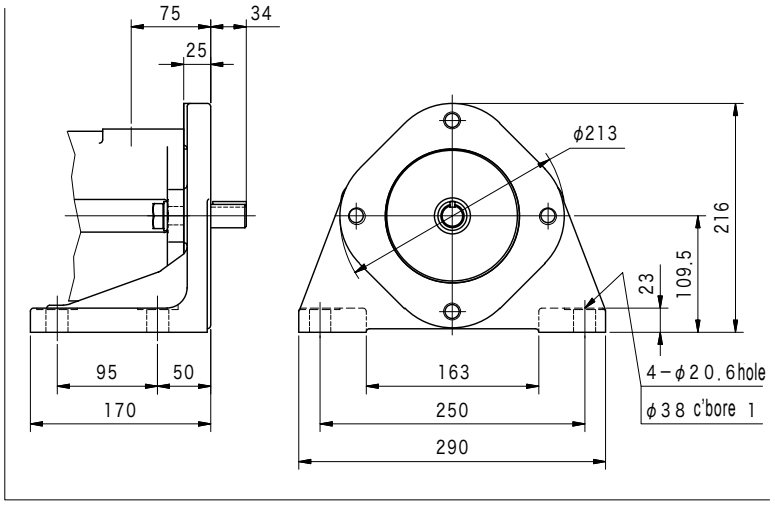


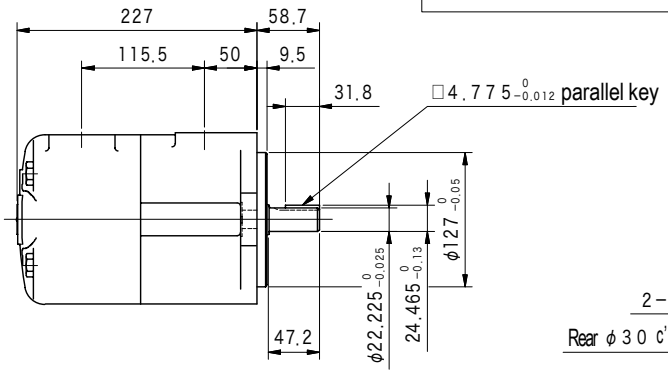


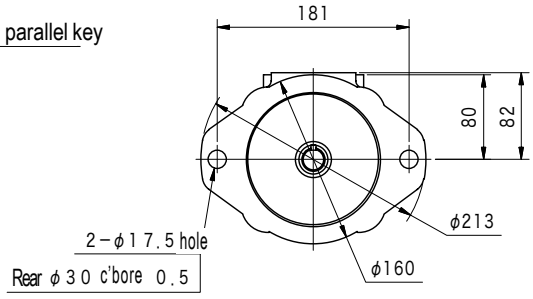
S Q P S 2 (Flange Mount)



(Foot Mount)

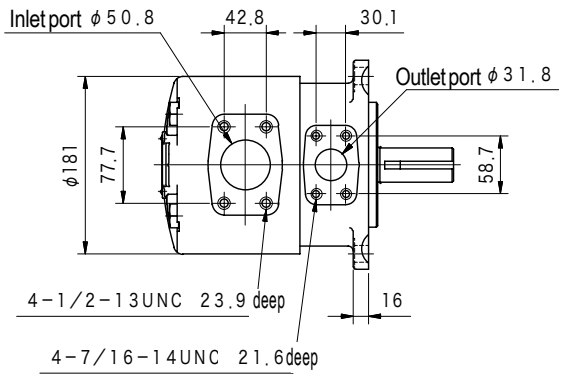




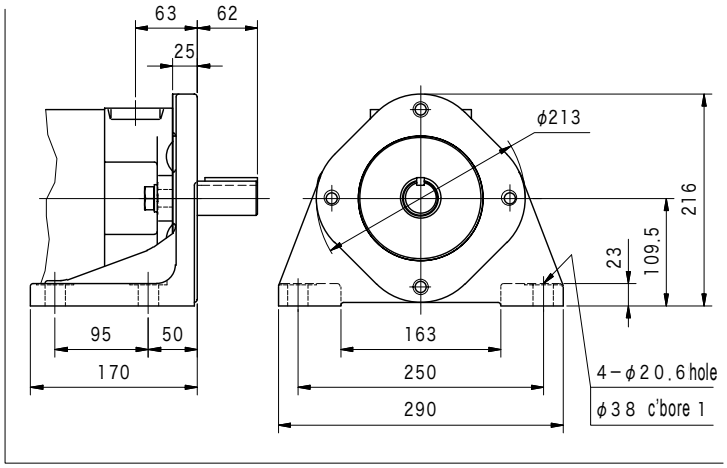


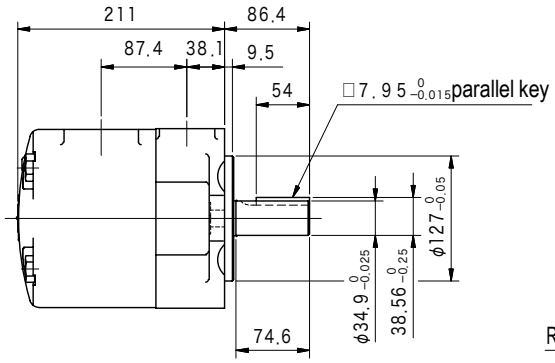
Dimensions

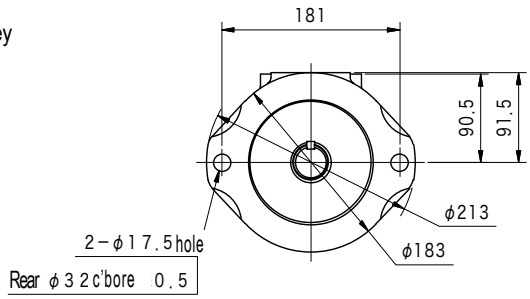
S Q P 3 (Flange Mount)



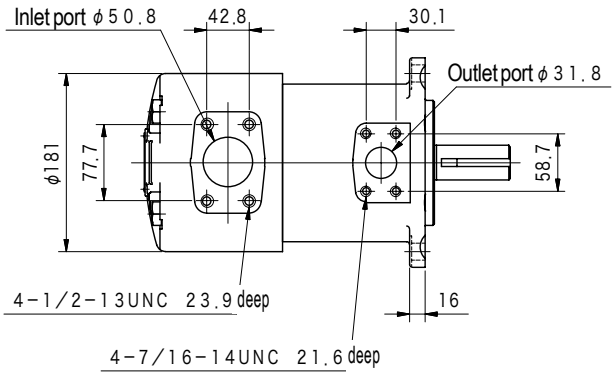
(Foot Mount)







S Q P S 3 (Flange Mount)



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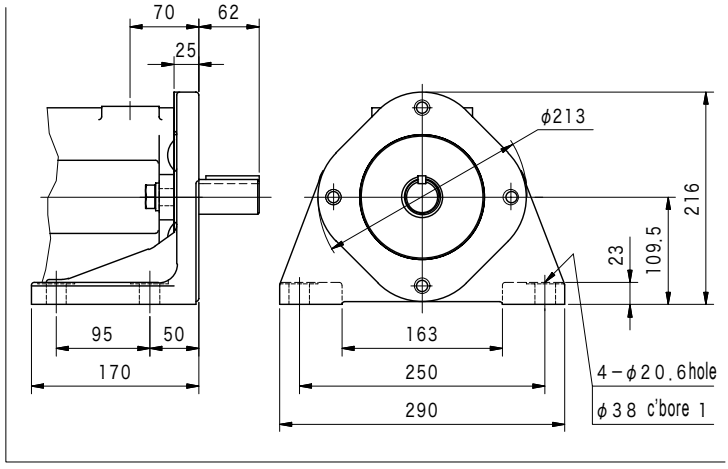
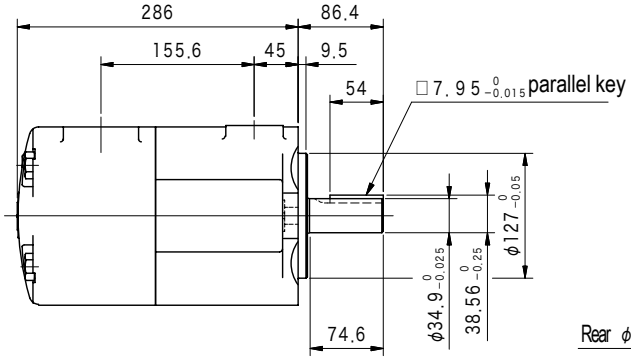
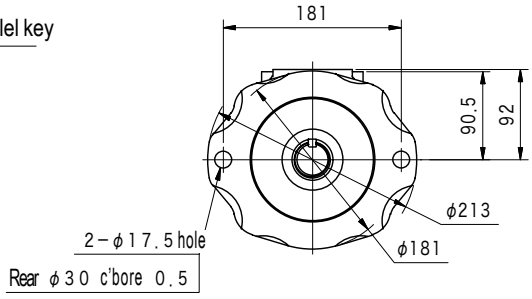
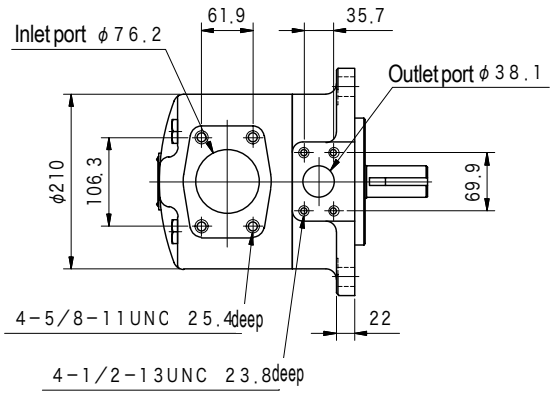






Dimensions

S Q P 4 (Flange Mount)



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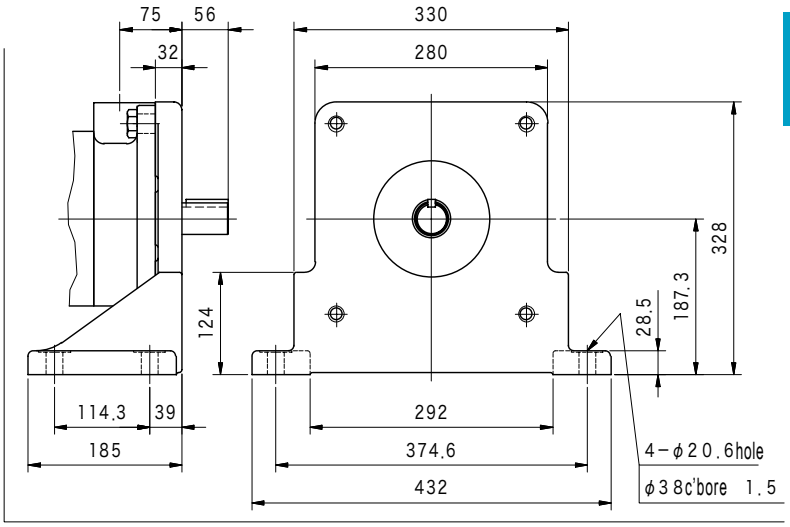

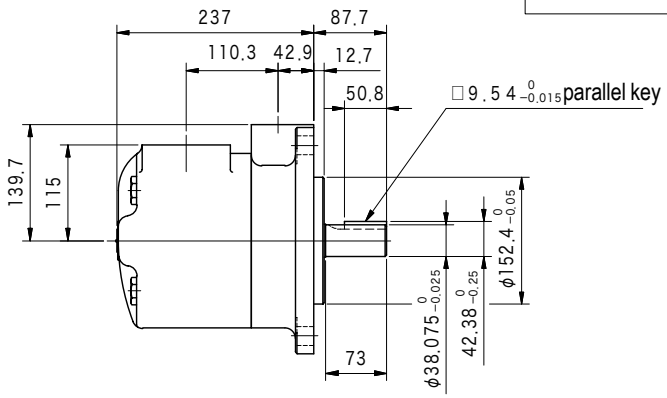

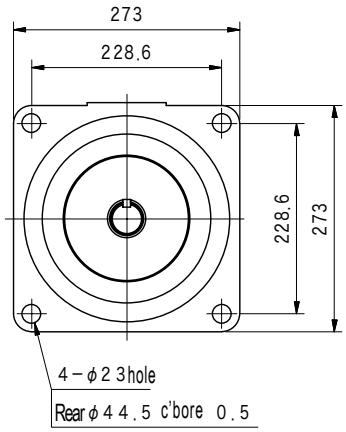

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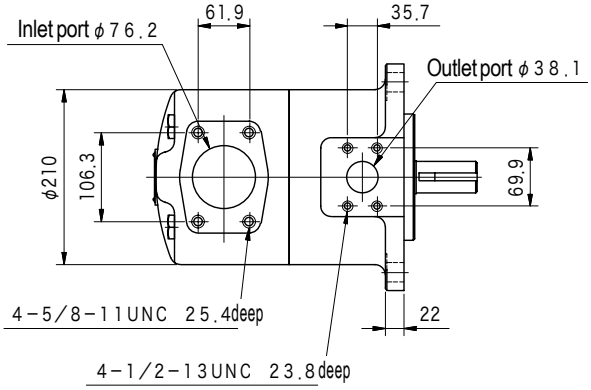

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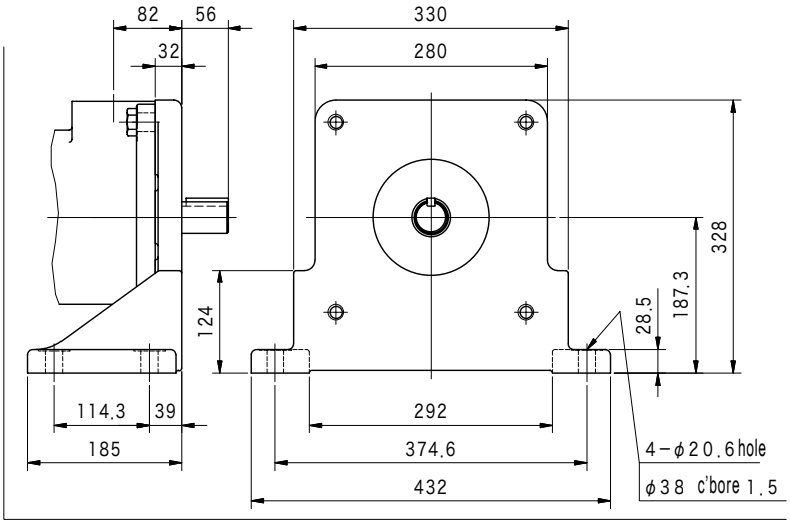
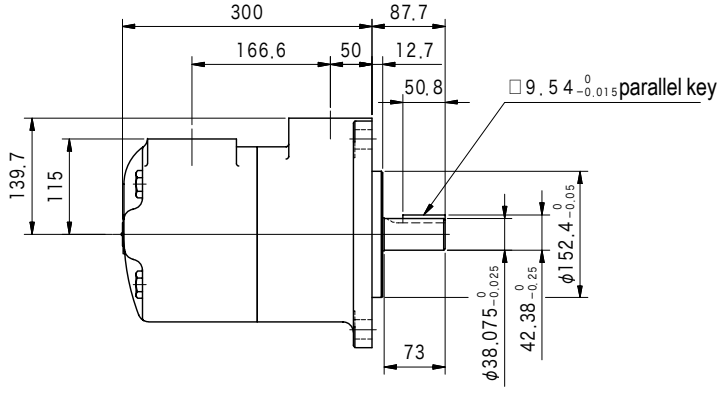
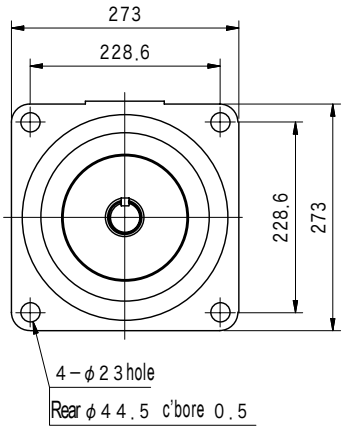
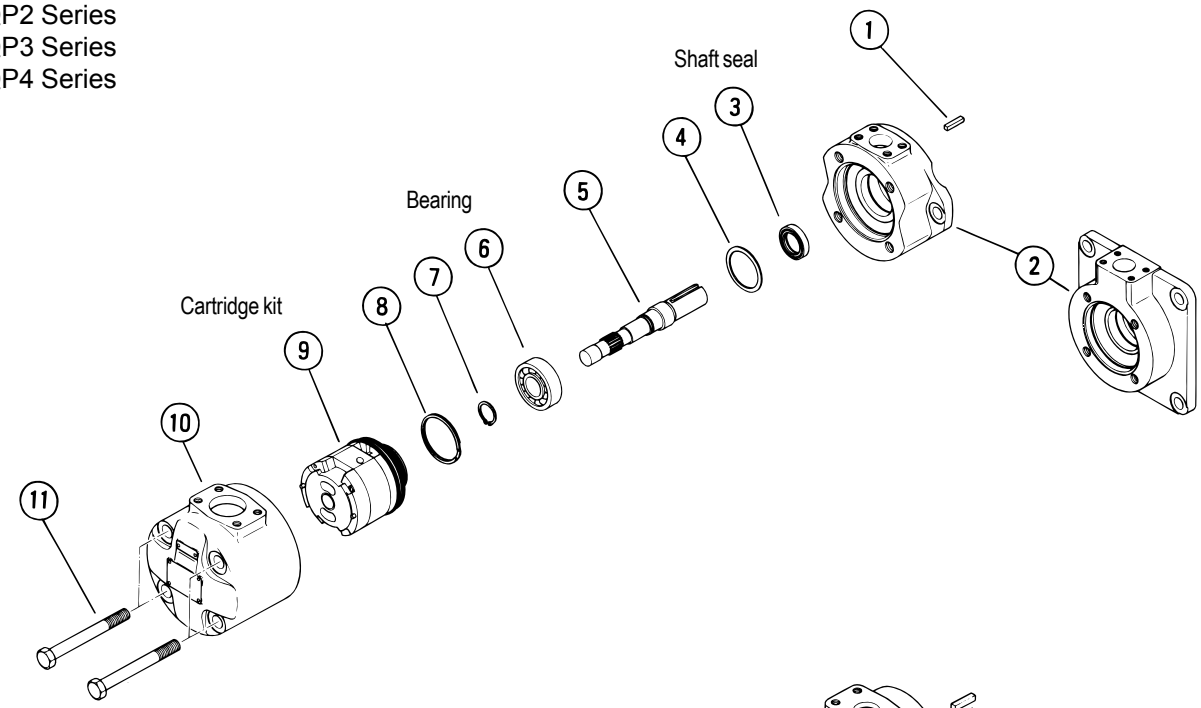




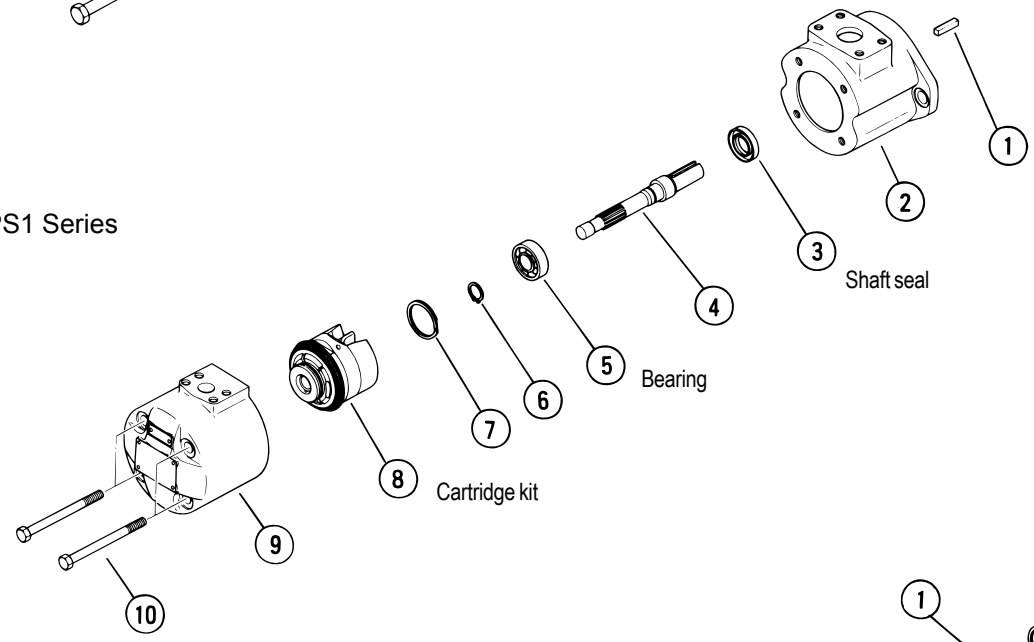


Construction

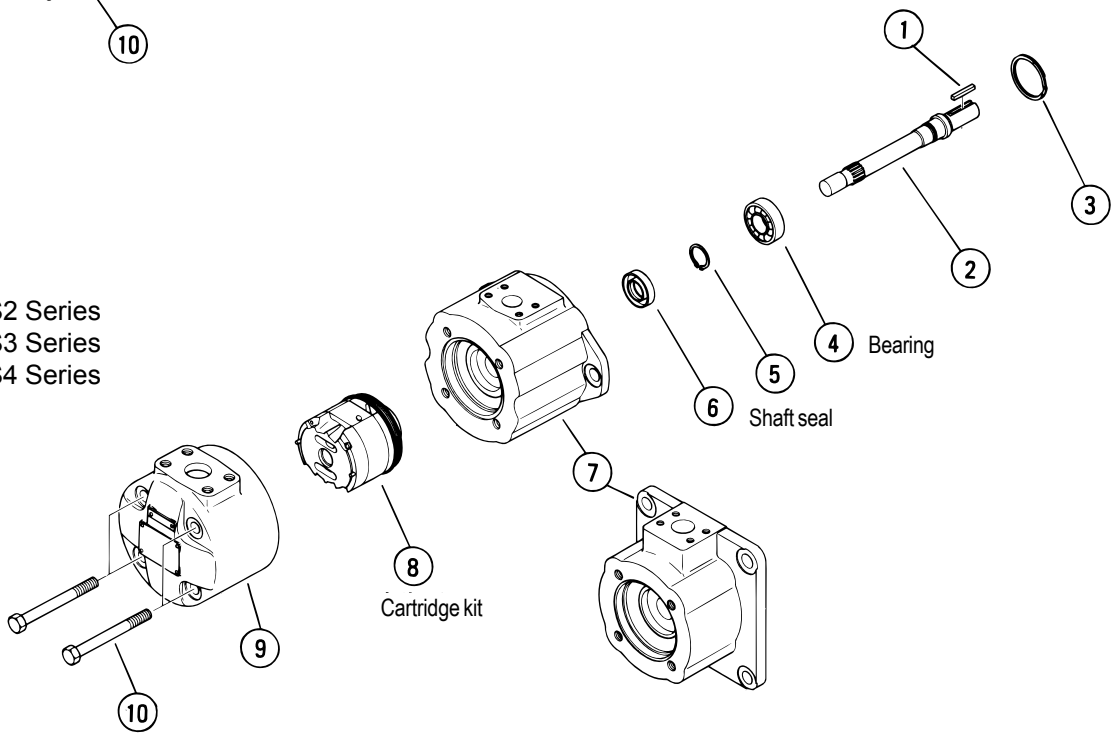
SQP1 Series
SQP2 Series
SQP3 Series
SQP4 Series



SQPS1 Series



SQPS2 Series
SQPS3 Series
SQPS4 Series



Construction

• Seal, Bearing Table

Series	Seal Kit P/N	Shaft Seal P/N	Bearing P/N
(F11) –SQP1	VA10852A (40028520)	VP191668 (40015857)	0070**6204**1
(F11) –SQP2	40038620 (40038629)	VP191668 (40015857)	0070**6205**1
(F11) –SQP3	40038621 (40038630)	VP193428 (40015856)	0070**6306**1
(F11) –SQP4	40038622 (40038631)	VP195287 (40015858)	0070**6307**1
(F11) –SQPS1	VA10852A (40028520)	VP191668 (40015857)	0070**6204**1
(F11) –SQPS2	VA9173A (40028880)	VP229236 (40016564)	0072**6205**1
(F11) –SQPS3	VA9174A (40028881)	VP191668 (40015857)	0072**6306**1
(F11) –SQPS4	VA9175A (40028882)	VP232855 (40016565)	0072**6307**1

Note: • Shaft seal included in seal kit.
• Bearing P/N - bold characters efer to JIS B 1521 nomenclature. 0070 indicates no shield, 0072 indicates both shields.
• Seal kit P/N and shaft seal P/N - ( ) refers to F11.

• Cartridge Kit Table

For Mineral Oil

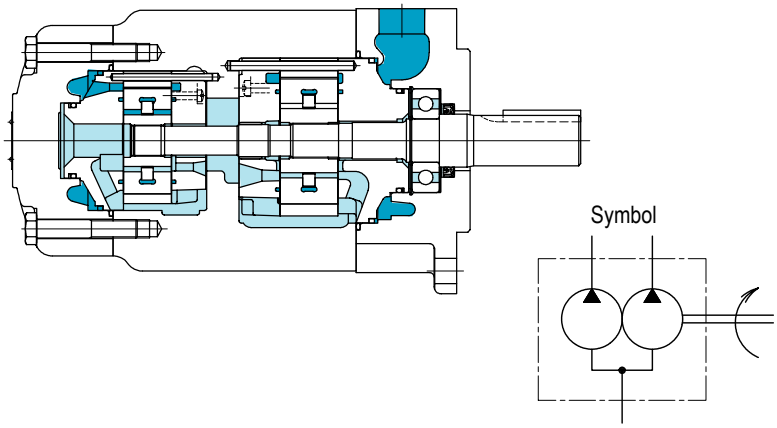
Series	Displacement	Cartridge Kit P/N
SQP1	2	VA10842A
	3	VA10843A
	4	VA10844A
	5	VA10845A
	6	VA11078A
	7	VA11104A
	8	VA10846A
	9	40018786
	11	VA10847A
	12	VA10848A
	14	VA11199A
SQPS1	2	VA11079A
	3	VA11080A
	4	VA11081A
	5	VA11082A
	6	VA11083A
	7	VA11084A
	8	VA11085A
	9	40028850
	11	VA11086A
	12	VA11087A
	14	VA11088A
SQP (S) 2	10	VA12087A
	12	VA12088A
	14	VA12089A
	15	VA12090A
	17	VA12091A
	19	VA12273A
	21	VA12092A
SQP (S) 3	17	VA12260A
	21	VA12118A
	25	VA12058A
	30	VA12059A
	32	VA12119A
	35	VA12060A
	38	VA12061A
SQP (S) 4	30	VA11211A
	35	VA12122A
	38	VA11212A
	42	VA11213A
	50	VA11214A
	60	VA11215A

For Water-Glycol

Series	Displacement	Cartridge Kit P/N
F11–SQP1	2	VA12543A
	3	VA12544A
	4	VA12545A
	5	VA12546A
	6	VA12547A
	7	VA12548A
	8	VA12549A
	9	40018790
	11	VA12550A
	12	VA12551A
	14	VA12552A
F11–SQPS1	2	VA14305A
	3	VA14306A
	4	VA14307A
	5	VA14308A
	6	VA14309A
	7	VA14310A
	8	VA14311A
	11	VA14312A
	12	VA14313A
	14	VA14314A
F11–SQP (S) 2	10	VA12553A
	12	VA12554A
	14	VA12555A
	15	VA12556A
	17	VA12557A
	19	VA12558A
	21	VA12559A
F11–SQP (S) 3	17	VA12560A
	21	VA12561A
	25	VA12562A
	30	VA12563A
	32	VA12564A
	35	VA12565A
	38	VA12566A
F11–SQP (S) 4	30	VA12567A
	35	VA12568A
	38	VA12569A
	42	VA12570A
	50	VA12571A
	60	VA12572A

Note: • "L" is added as suffix to cartridge kit P/N for left hand rotation cartridge kit.
• Cartridge kit includes seals (O-rings, backup ring, etc.) but excluding shaft seal.

Low noise double fixed displacement vane pumps SQP/SQPS series



Model Code

(F3) - SQP (S) 32 - 35 - 17 - 86 CD (2) - (LH) - 18

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10

1 Fluid
Omit for mineral oil
F3: phosphate ester
F11: water glycol

2 Low noise fixed displ. double vane pump
SQP(S)21 Series
SQP(S)31,32 Series
SQP(S)41,42,43 Series

3 Shaft end pump displacement

Series	Displacement
SQP (S) 2*	10, 12, 14, 15, 17, 19, 21
SQP (S) 3*	17, 21, 25, 30, 32, 35, 38
SQP (S) 4*	30, 35, 38, 42, 50, 60

4 Cover end pump displacement

Series	Displacement
SQP (S) *1	2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14
SQP (S) *2	10, 12, 14, 15, 17, 19, 21
SQP (S) *3	17, 21, 25, 30, 32, 35, 38

5 Shaft
86: parallel sq. key

6 Shaft end pump (viewed from cover end)
A: opposite inlet
B: 90' CCW from inlet
C: inline with inlet
D: 90' CW from inlet

7 Cover end pump (viewed from cover end)
A: 135' CCW from inlet
B: 45' CCW from inlet
C: 45' CW from inlet
D: 135' CW from inlet
Note: SQP(S) Series indicated in ( )

8 Pump mounting
Omit for flange mounting
2* : foot mounting

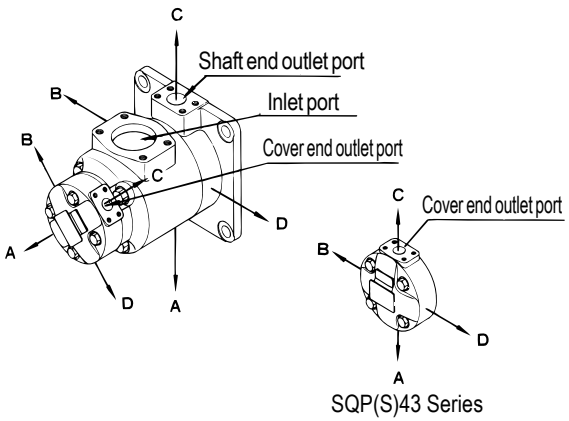
Shaft end outlet position foot mounting surface (see schematics below)

Foot Mount Code	Shaft End Outlet Position to Foot Mount Surface Viewed from Shaft End
2	up (12 o'clock)
23	right (3 o'clock)
26	down (6 o'clock)
29	left (9 o'clock)

9 Rotation (viewed from shaft end)
Omit for CW
LH: CCW

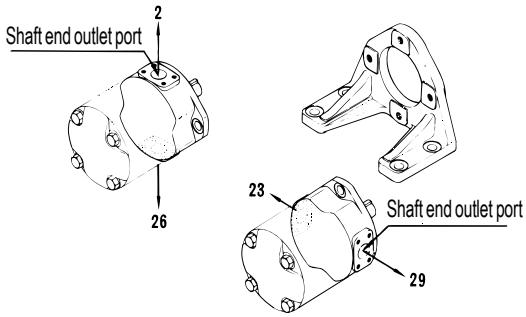
10 Design no

• Outlet port position



SQP(S)43 Series

• Foot Mounting Position



Specifications

Model	Shaft End Pump			Cover End Pump			Max. Speed min^{-1}	Minimum Speed min^{-1}
	Displacement	Delivery at 1000 min^{-1} 0.7Mpa L/min	Max. Working Press. MPa	Displacement	Delivery at 1000 min^{-1} 0.7Mpa L/min	Max. Working Press. MPa		
SQP (S) 21	10	32. 5	17. 5 ＊(14)	2	7. 5	14 ＊(14)	1800 ▲(1200) ＊(1200)	600
	12	38. 3		3	10. 2			
	14	43. 3		4	12. 8	17. 5 ＊(14)		
	15	46. 7		5	16. 7			
	17	52. 5		6	19. 2			
	19	59. 2		7	22. 9			
	21	65. 0		8	26. 2			
SQP (S) 31	17	53. 3	17. 5 ＊(14)	9	28. 3			
	21	66. 7		11	35. 0			
	25	79. 2		12	37. 9	16 ＊(14)		
	30	95. 0		14	44. 2	14 ＊(14)		
	32	100. 0						
	35	109. 0						
	38	118. 0						
SQP (S) 41	30	96. 0	17. 5 ＊(14)	10	32. 5	17. 5 ＊(14)	1800 ▲(1200) ＊(1200)	600
	35	109. 0		12	38. 3			
	38	128. 0		14	43. 3			
	42	134. 0		15	46. 7			
	50	156. 0		17	52. 5			
	60	189. 0		19	59. 2			
SQP (S) 32	17	53. 3	17. 5 ＊(14)	21	65. 0			
	21	66. 7						
	25	79. 2						
	30	95. 0						
	32	100. 0						
	35	109. 0						
	38	118. 0						
SQP (S) 42	30	96. 0	17. 5 ＊(14)					
	35	109. 0						
	38	128. 0						
	42	134. 0						
	50	156. 0						
	60	189. 0						
SQP (S) 43	30	96. 0	17. 5 ＊(14)	17	53. 3	17. 5 ＊(14)	1800 ▲(1200) ＊(1200)	600
	35	109. 0		21	66. 7			
	38	128. 0		25	79. 2			
	42	134. 0		30	95. 0			
	50	156. 0		32	100. 0			
	60	189. 0		35	109. 0			
				38	118. 0			

*F3-SQP(S)max. working pressure and sped with phosphate ester fluid
▲F11-SQP(S)max. speed with water-glycol fluid

Weight

Unit : kg

Model	SQP		SQPS	
	Flange Mount	Foot Mount	Flange Mount	Foot Mount
SQP (S) 21	31. 5	41. 0	41. 0	50. 5
SQP (S) 31	46. 0	55. 5	56. 0	65. 5
SQP (S) 32	48. 0	57. 5	62. 0	71. 5
SQP (S) 41	74. 0	99. 0	83. 0	108. 0
SQP (S) 42	80. 0	105. 0	88. 0	113. 0
SQP (S) 43	88. 5	113. 0	89. 0	123. 0

Delivery, Shaft Input Power

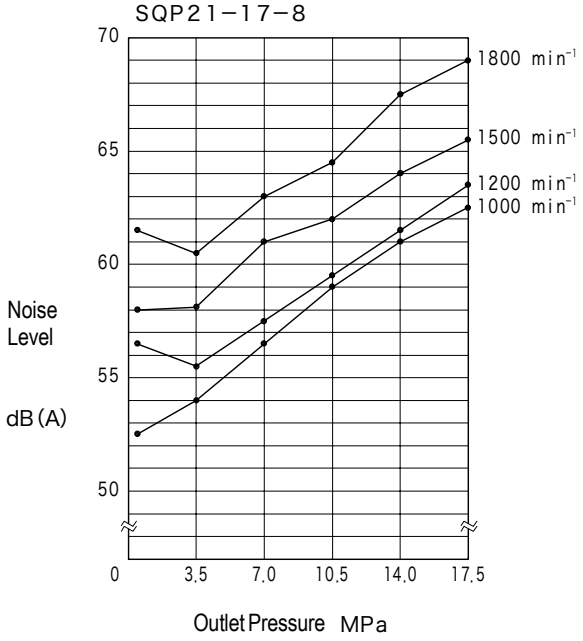
Model	Delivery, Shaft Input Power	
	Shaft End Pump	Cover End Pump
SQP (S) 21	Same as SQP (S) 2 Series	Same as SQP (S) 1 Series
SQP (S) 31	Same as SQP (S) 3 Series	
SQP (S) 41	Same as SQP (S) 4 Series	
SQP (S) 32	Same as SQP (S) 3 Series	Same as SQP (S) 2 Series
SQP (S) 42	Same as SQP (S) 4 Series	
SQP (S) 43	Same as SQP (S) 4 Series	Same as SQP (S) 3 Series

※SQP (S) 1～4 delivery, shaft input - see page B10, 11.

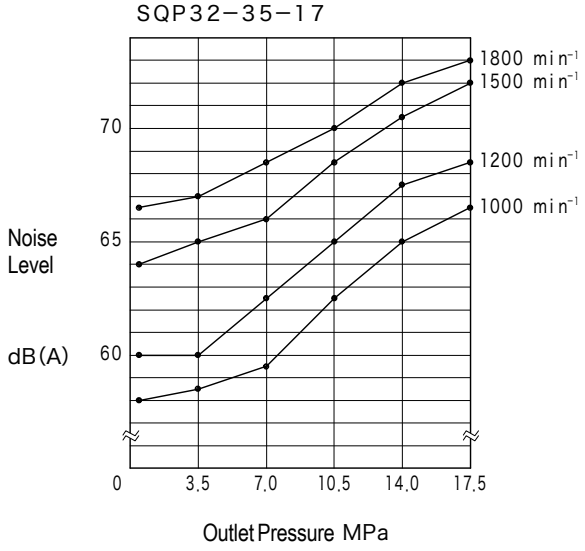
Noise Characteristics

Measurement conditions: ISO VG32 oil at 50 degrees C, inlet pressure 0 MPa, and measured 1m from rear of pump cover

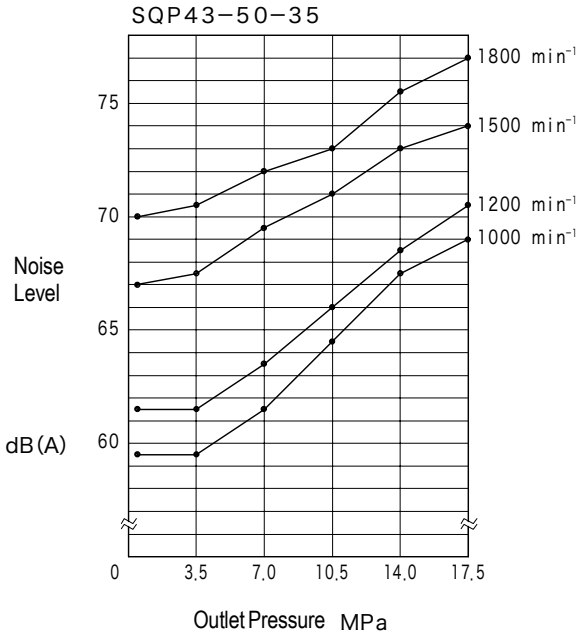
SQP21−17−8



SQP32−35−17



SQP43−50−35



Notes On Use

See Page B5 for Notes On Using Vane Pumps

Shaft Input (Shaft Torque) Limitation

Shaft torque limitations of double pumps are shown in the table. Please insure that the torque limits shown in the table are not exceeded when the total load of the two pumps are at maximum. Please calculate shaft torque from the operating speed and shaft input.

N: operating speed (min^{-1})

L: shaft input sum (kW)

Shaft torque: T = (60 X 1000/2ƒÎN) X L = (9554/N) X L (N·m)

(Example) SQP43-60-38, operating speed 1800 min^{-1}, first pump 14MPa, second pump 17.5MPa under max. load,
First pump shaft input: from table on page B11, SQP4-60 shaft input is 84.8kW
Second pump shaft input: from table on B11, SQP3-38 shaft input is 66.7kW
Shaft input sum: L=84.6 + 66.7 = 151.5 (kW)
Shaft input sum substituted for torque in the table, shaft input torque: T = 9554 X 151.5/1800 = 804.1 (N·m)
Thus, the shaft torque of the SQP43 should be below the limitation of 820 N·m.
Please confirm shaft torque using this procedure.

Model	Shaft Torque Limitation N・m
SQP (S) 21	360
SQP (S) 31	610
SQP (S) 32	610
SQP (S) 41	820
SQP (S) 42	820
SQP (S) 43	820

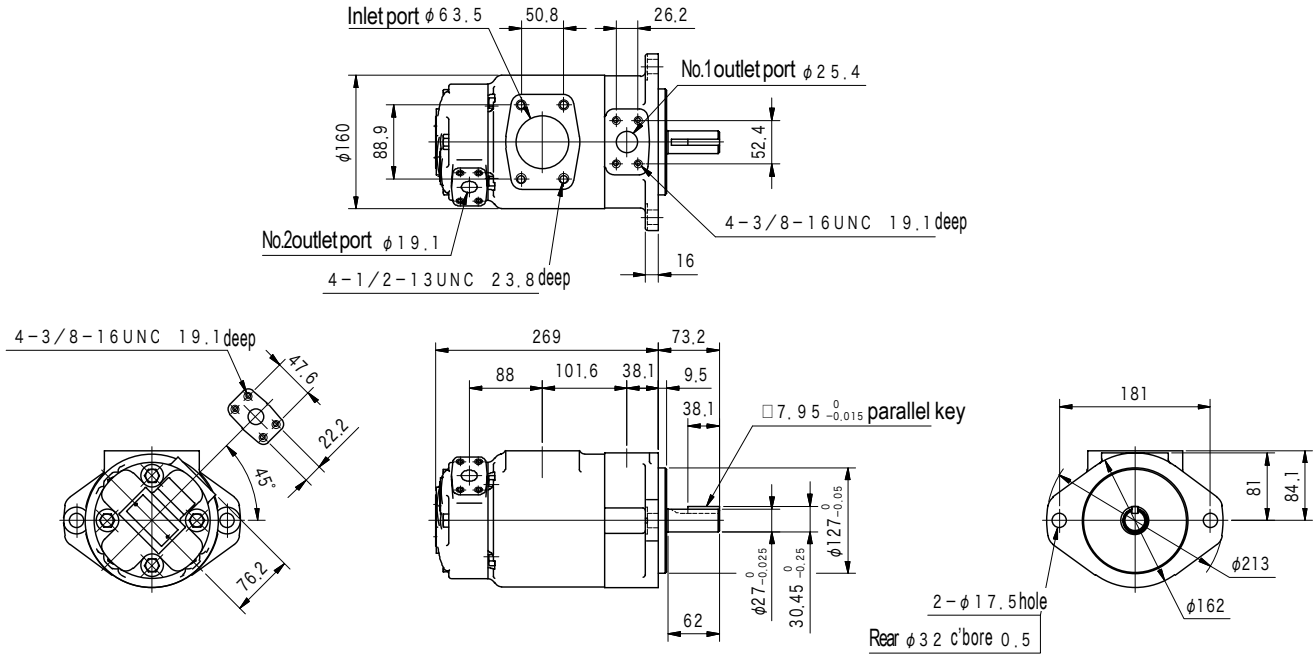
Piping Flange (Conforming to SAE J518c at Standard Pressure]

- Pump flange not included.
- Flanges (incl. hex socket bolts, spring washers, and O-rings) should be ordered separately from the table below.
- See page Q12 for details such as external dimensions, etc.

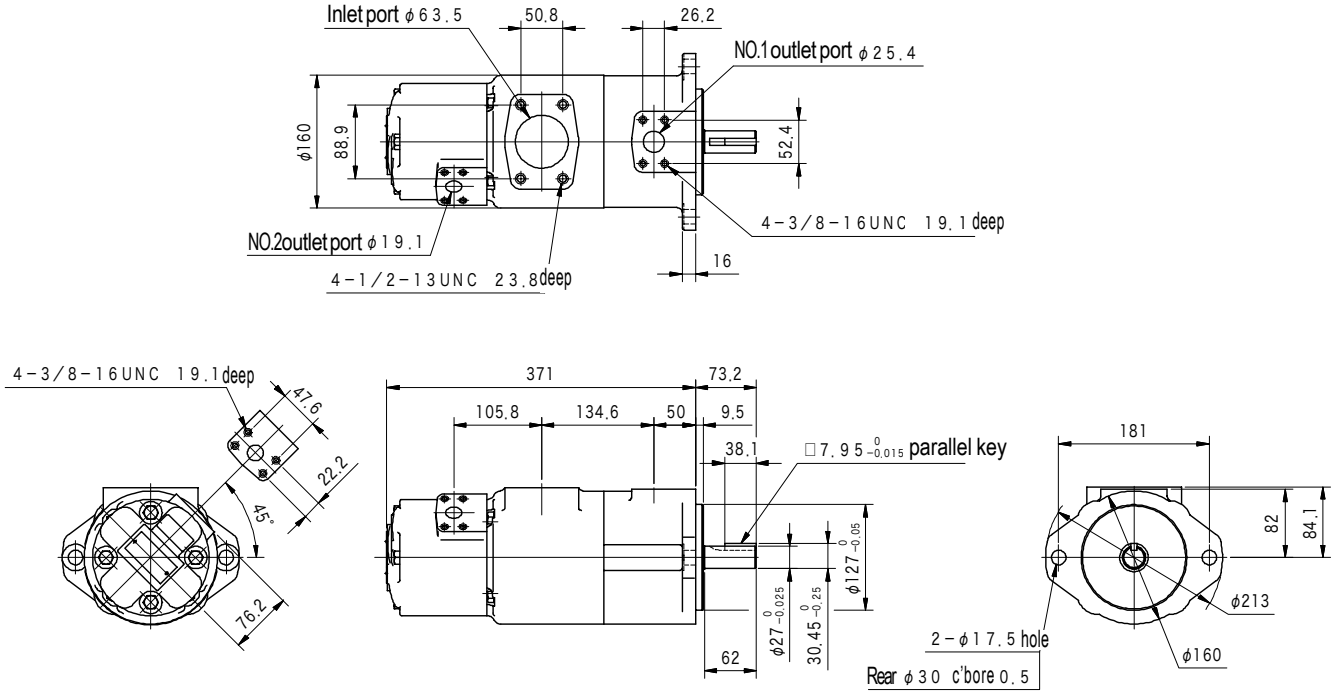
Model	Type	Flange Model					
		Inlet Port		No. 1 Outlet Port (Shaft End)		No. 2 Outlet Port (Shaft End)	
		Code		Code		Code	
SQP (S) 21	Threaded	2-1/2	FL1-20-20P-10-JA-S4-J	1	FL1-8-08P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Welded		FL1-20-20W-10-JA		FL1-8-08W-10-JA		FL1-6-06W-10-JA
SQP (S) 31	Threaded	3	FL1-24-24P-10-JA-S4-J	1-1/4	FL1-10-10P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Welded		FL1-24-24W-10-JA		FL1-10-10W-10-JA		FL1-6-06W-10-JA
SQP (S) 32	Threaded	3	FL1-24-24P-10-JA-S4-J	1-1/4	FL1-10-10P-10-JA-S4-J	1	FL1-8-08P-10-JA-S4-J
	Welded		FL1-24-24W-10-JA		FL1-10-10W-10-JA		FL1-8-08W-10-JA
SQP (S) 41	Threaded	3-1/2	———	1-1/2	FL1-12-12P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Welded		FL1-28-28W-10-JA		FL1-12-12W-10-JA		FL1-6-06W-10-JA
SQP (S) 42	Threaded	3-1/2	———	1-1/2	FL1-12-12P-10-JA-S4-J	1	FL1-8-08P-10-JA-S4-J
	Welded		FL1-28-28W-10-JA		FL1-12-12W-10-JA		FL1-8-08W-10-JA
SQP (S) 43	Threaded	4	———	1-1/2	FL1-12-12P-10-JA-S4-J	1-1/4	FL1-10-10P-10-JA-S4-J
	Welded		FL1-32-32W-10-JA		FL1-12-12W-10-JA		FL1-10-10W-10-JA

Dimensions

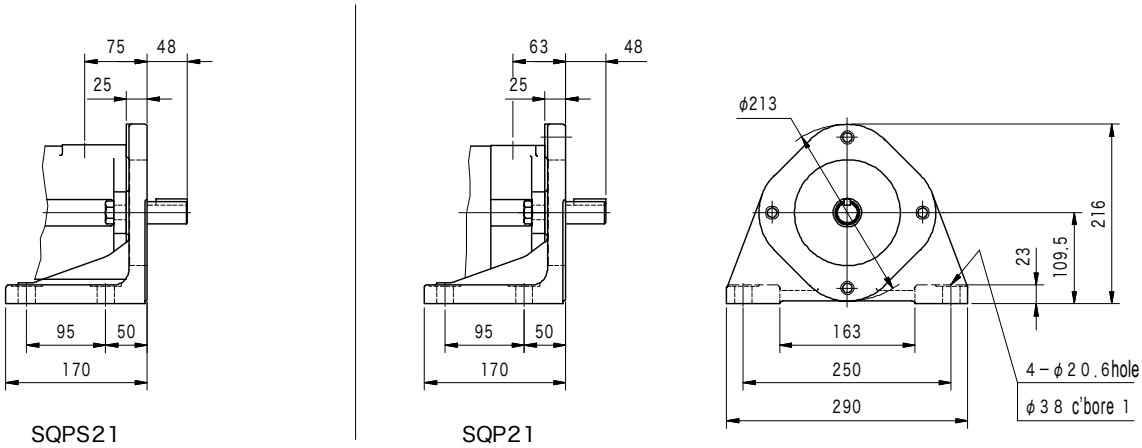
S Q P 2 1 (Flange Mount)



S Q P S 2 1 (Flange Mount)

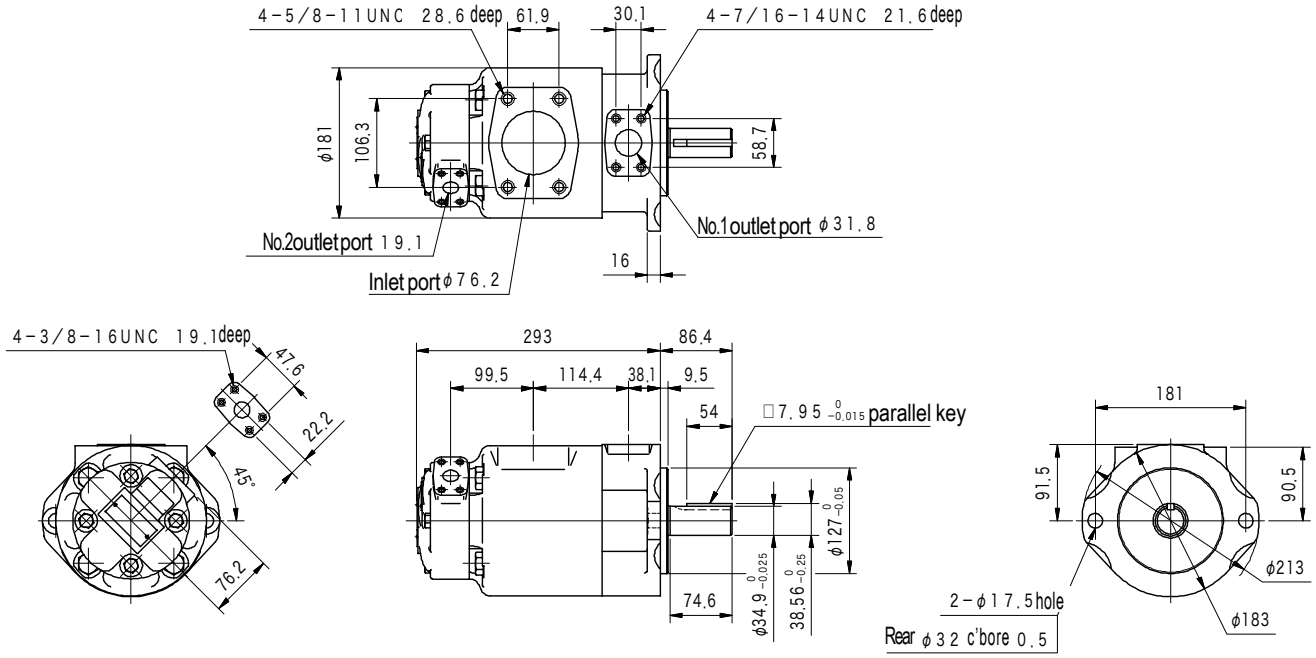


Foot Mount

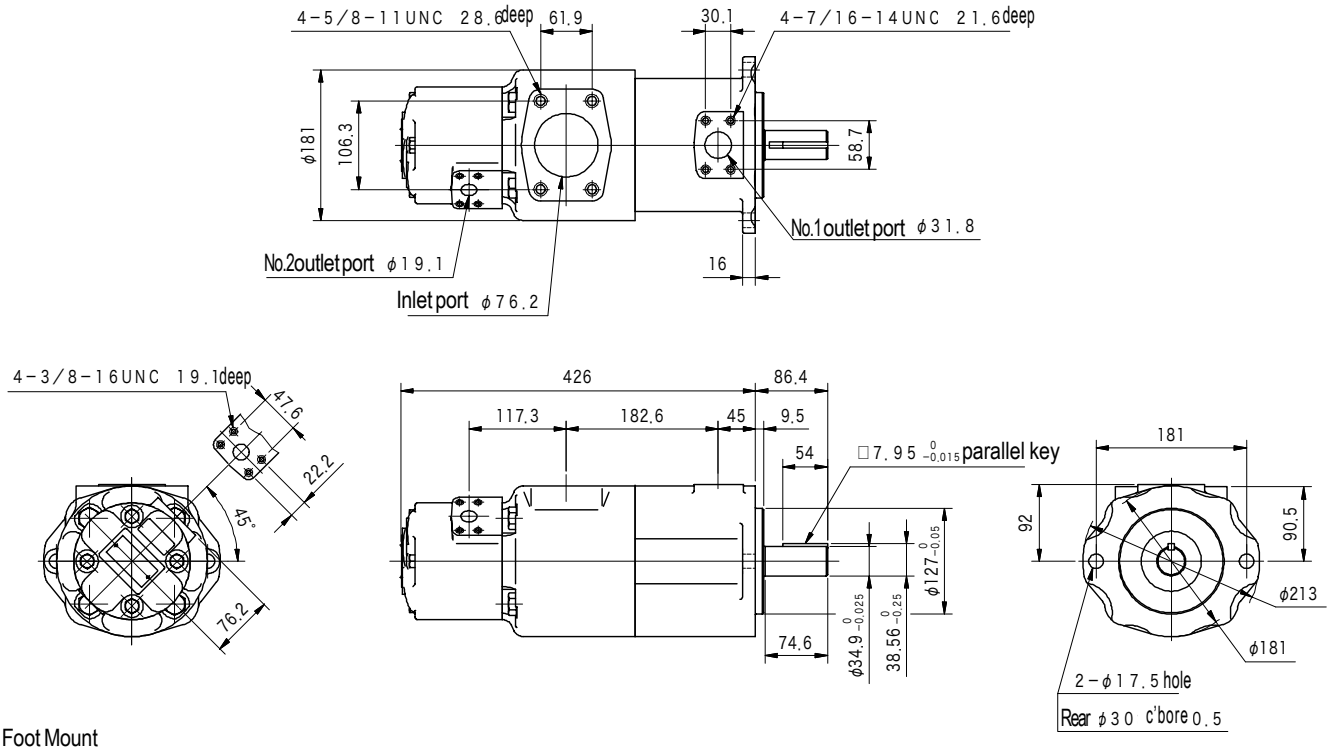


Dimensions

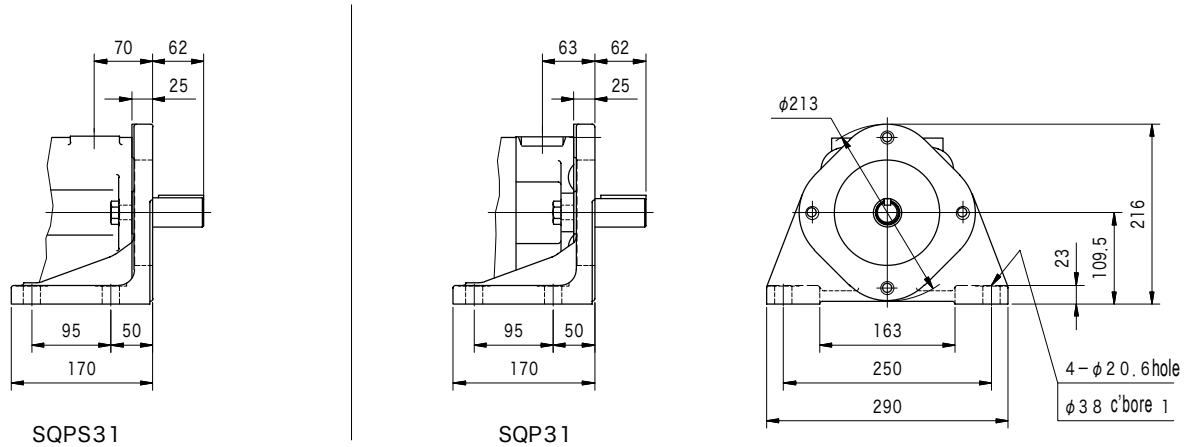
SQP31 (Flange Mount)



SQPS31 (Flange Mount)

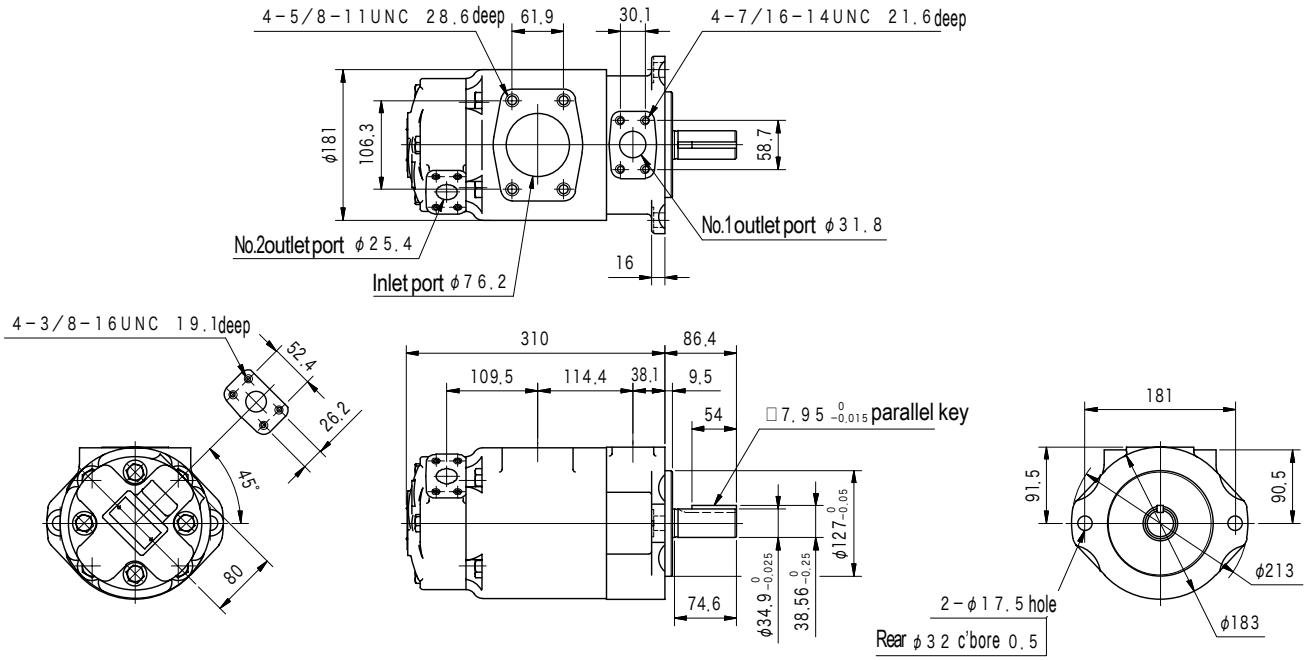


Foot Mount

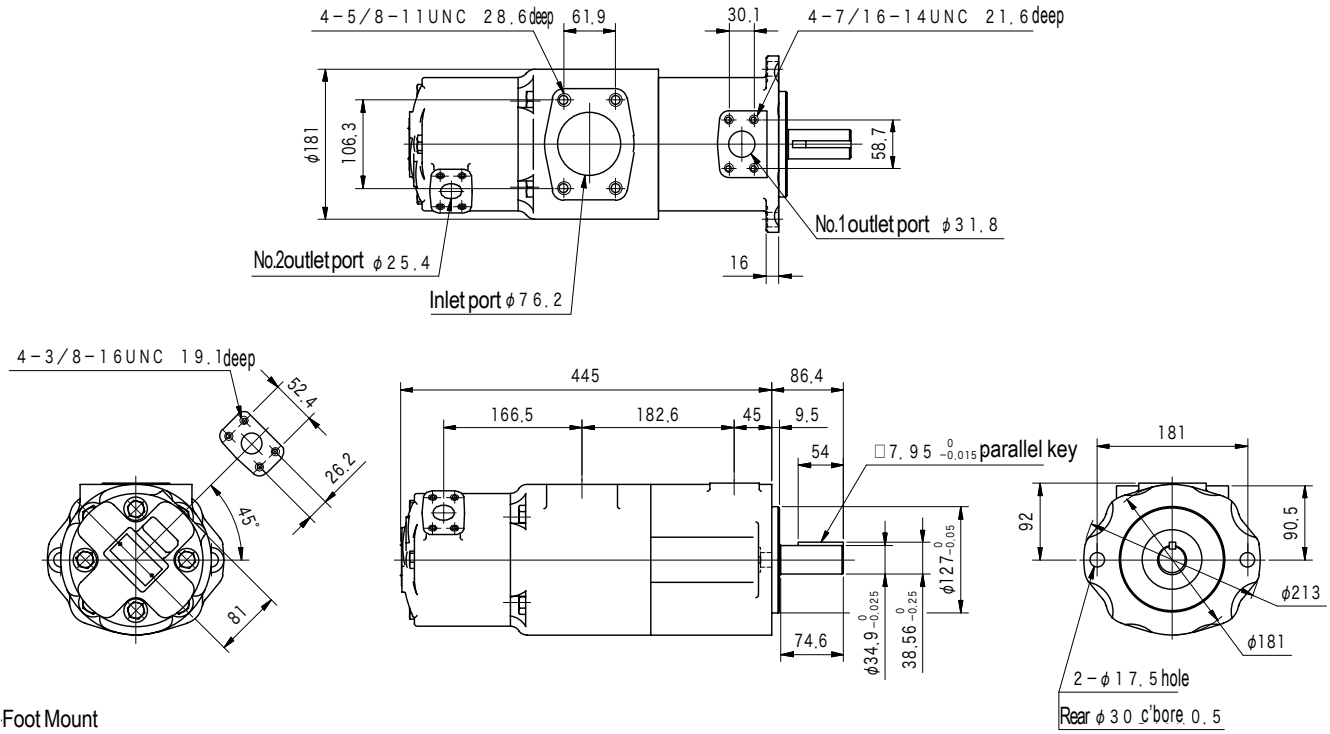


Dimensions

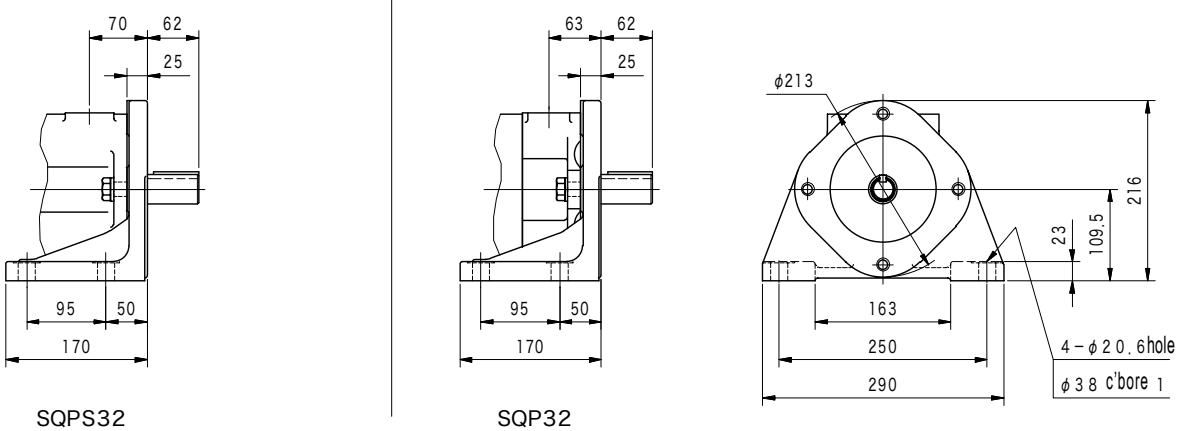
SQP32 (Flange Mount)



SQPS32 (Flange Mount)

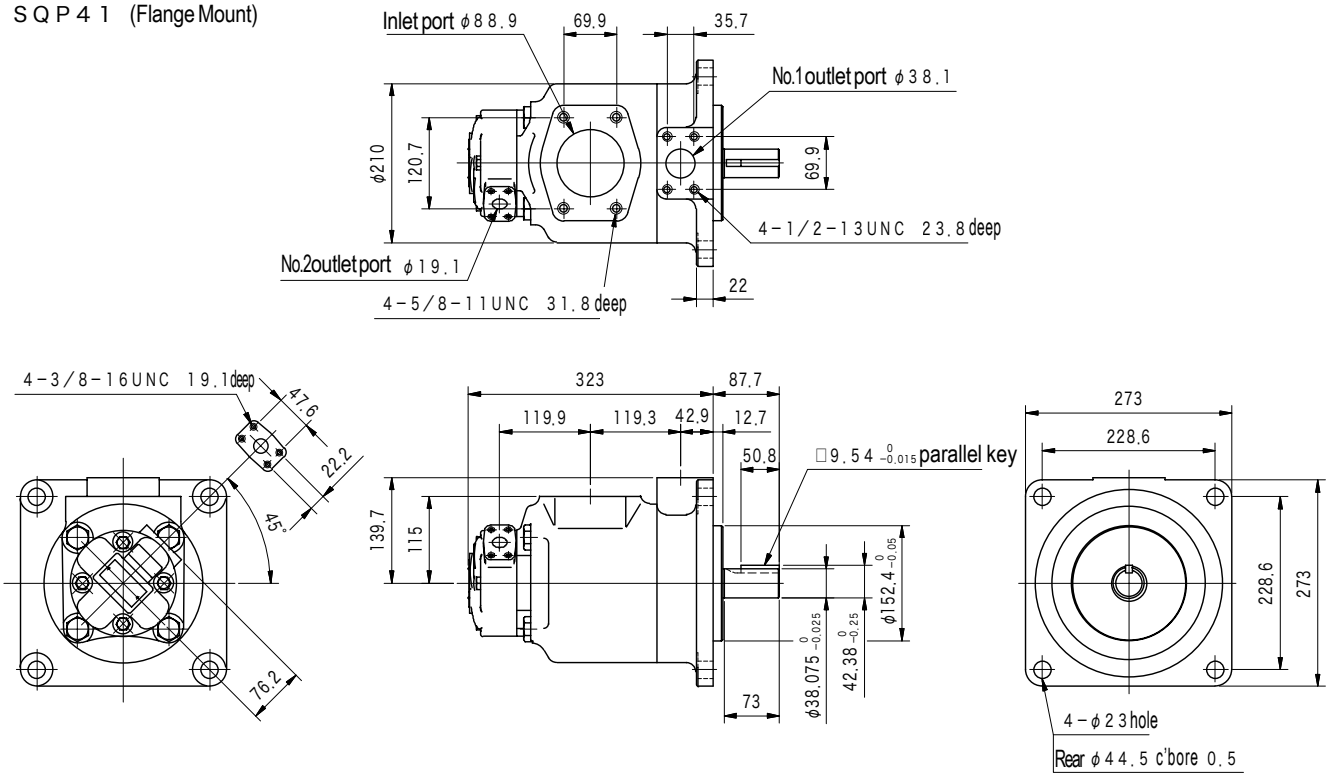


Foot Mount

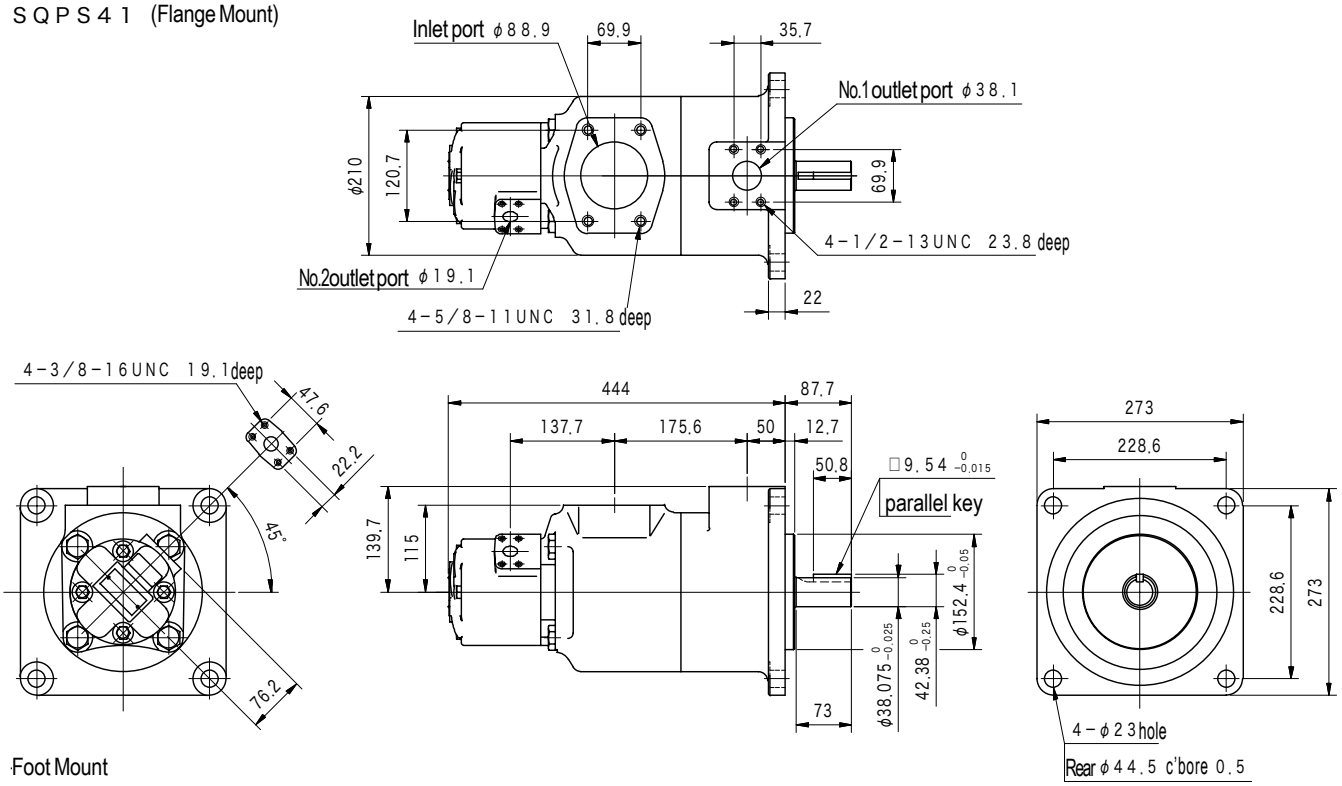


Dimensions

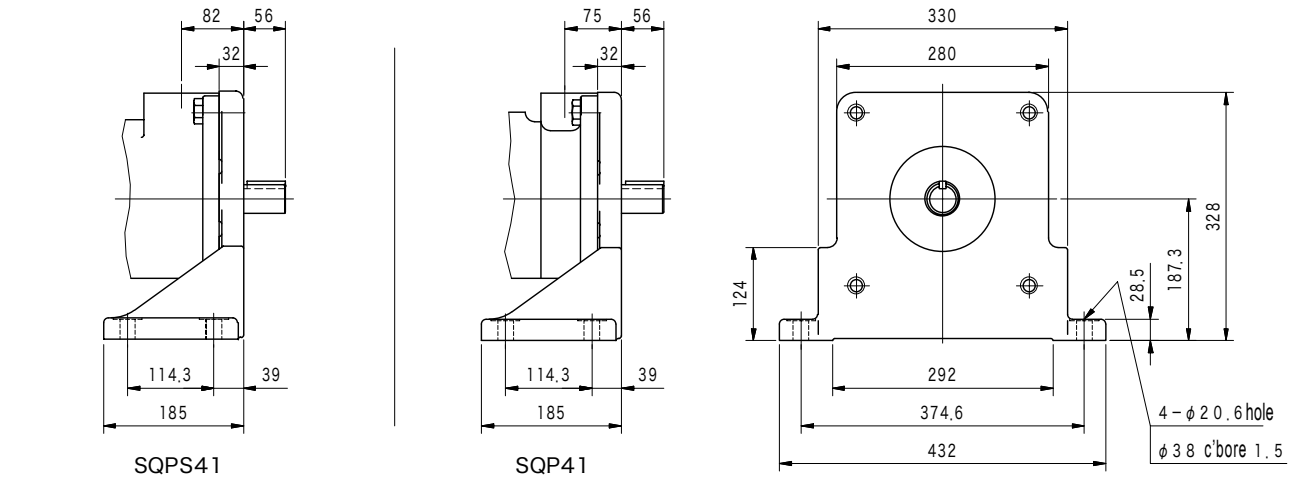
SQP41 (Flange Mount)



SQPS41 (Flange Mount)

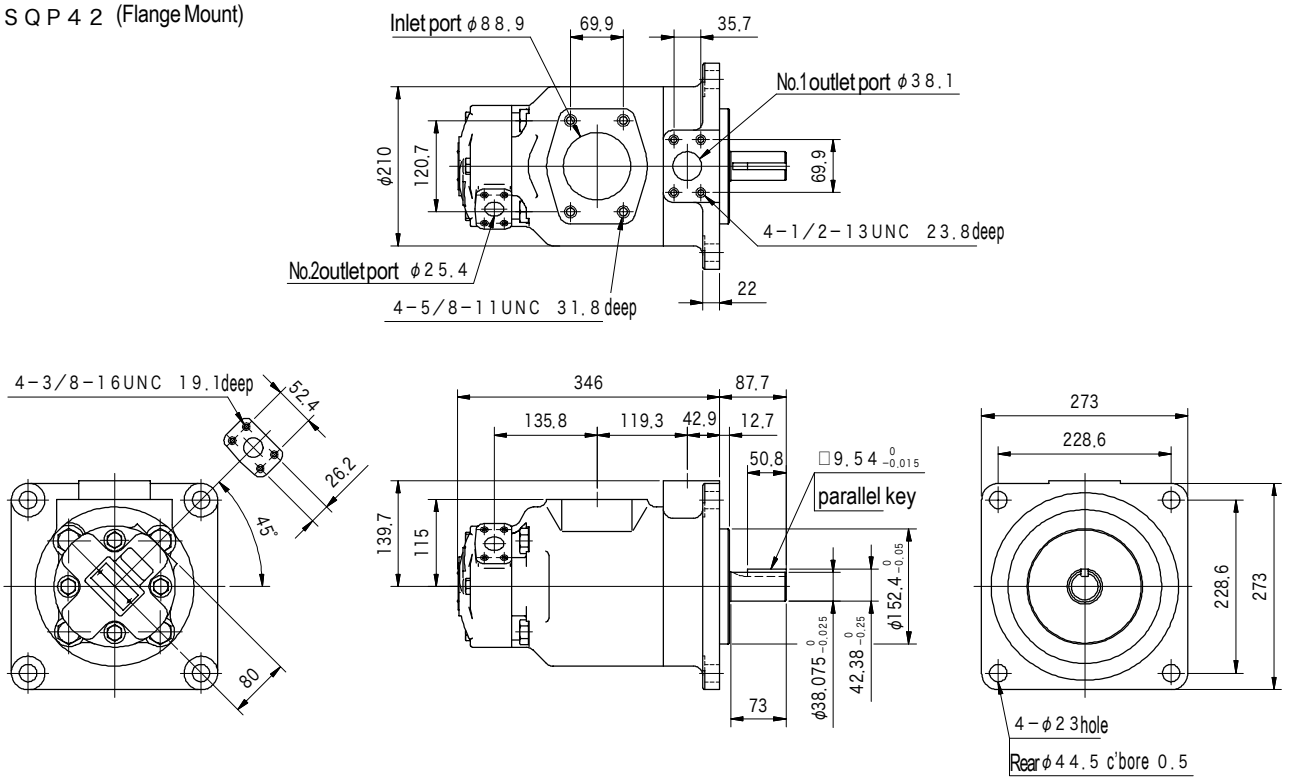


Foot Mount

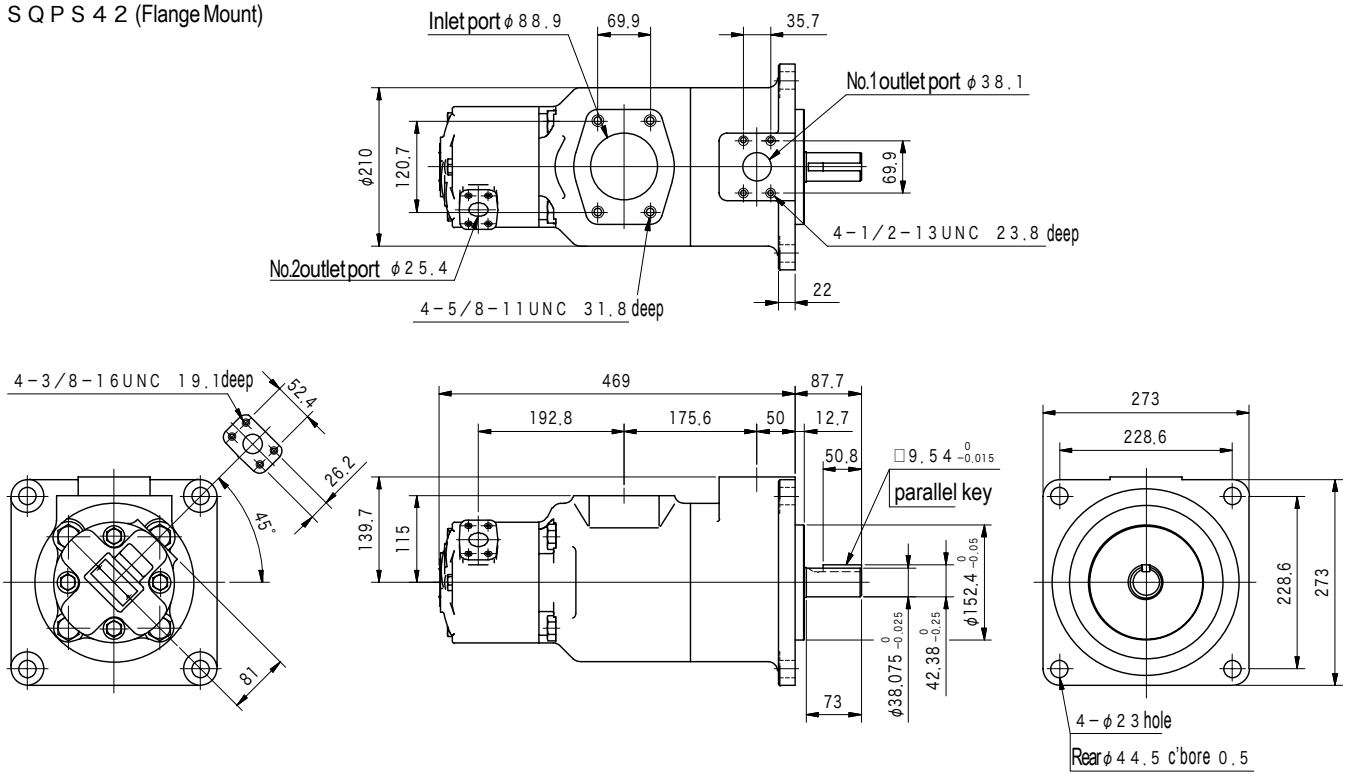


Dimensions

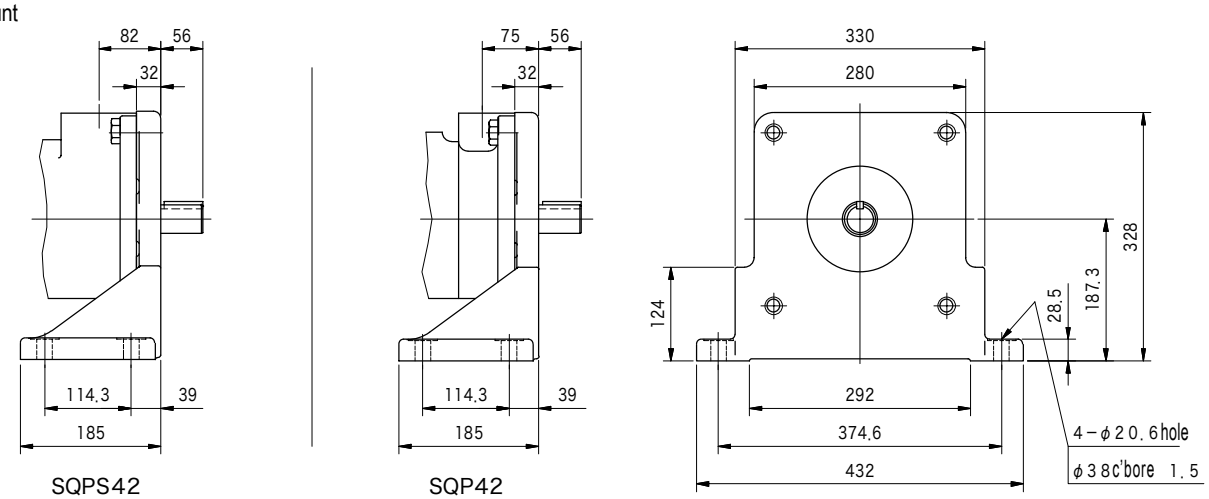
SQP42 (Flange Mount)



SQPS42 (Flange Mount)

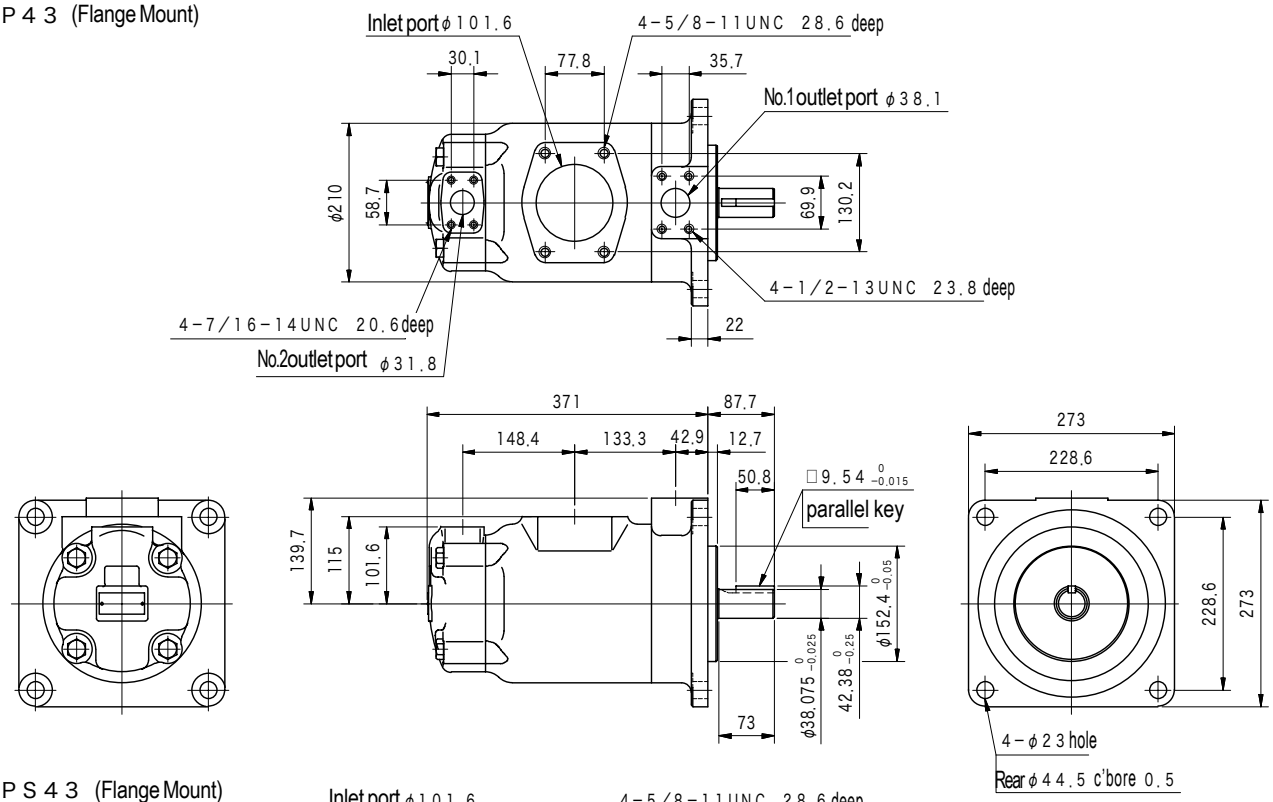


Foot Mount

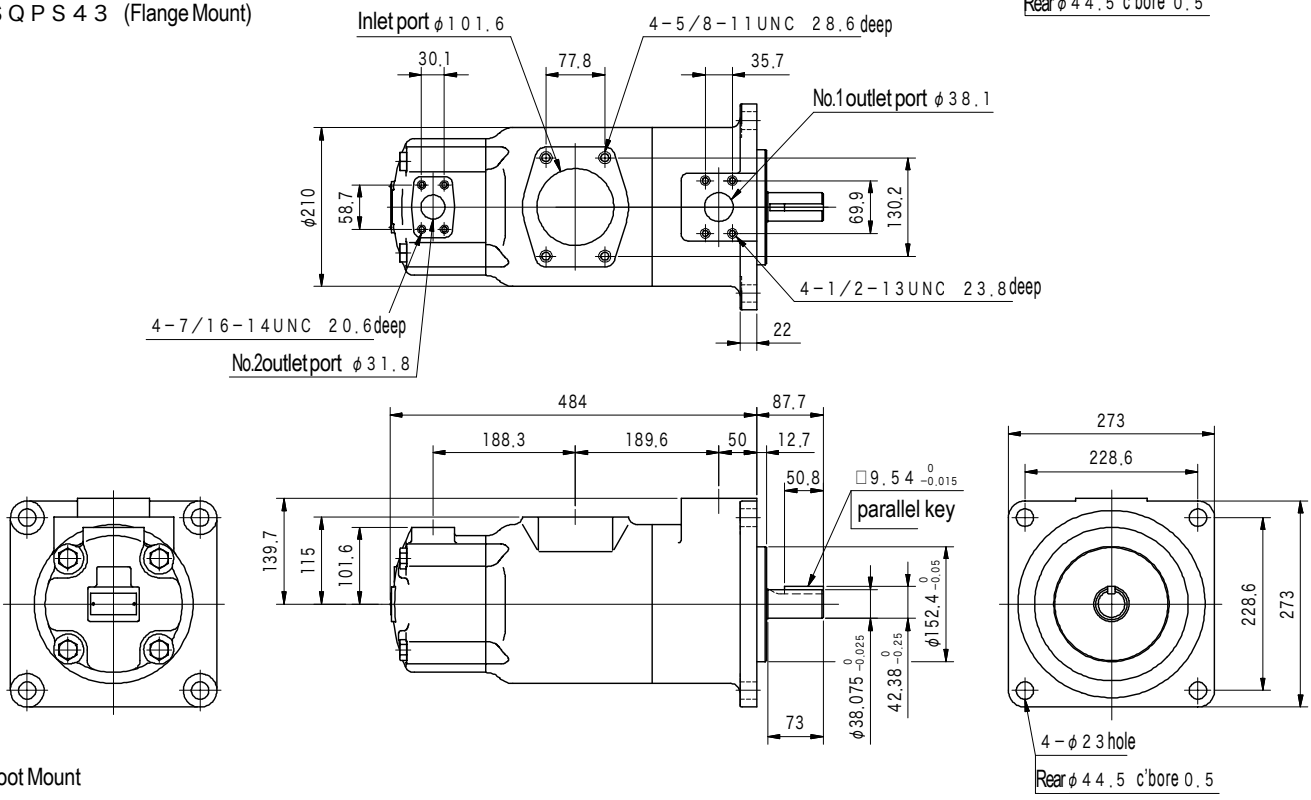


Dimensions

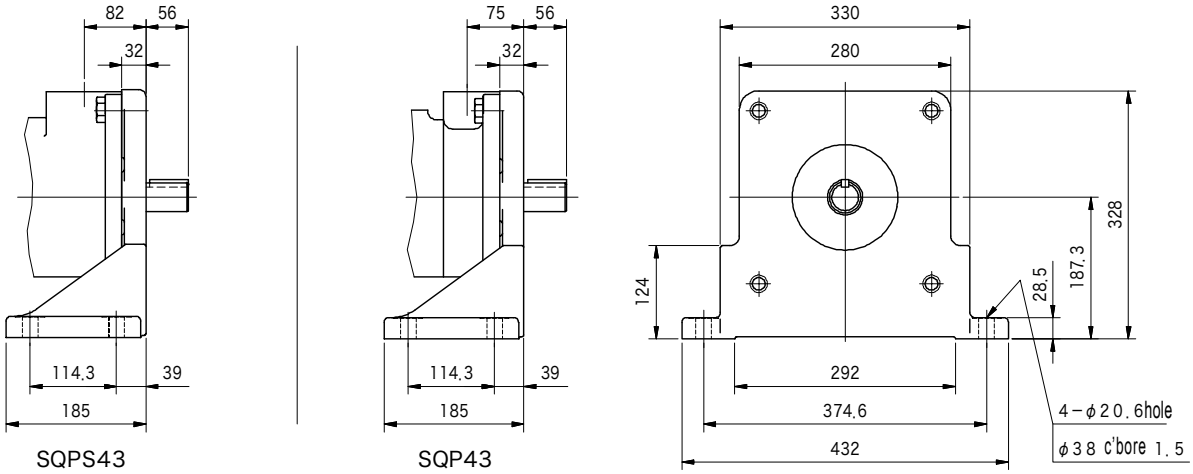
SQP43 (Flange Mount)



SQPS43 (Flange Mount)

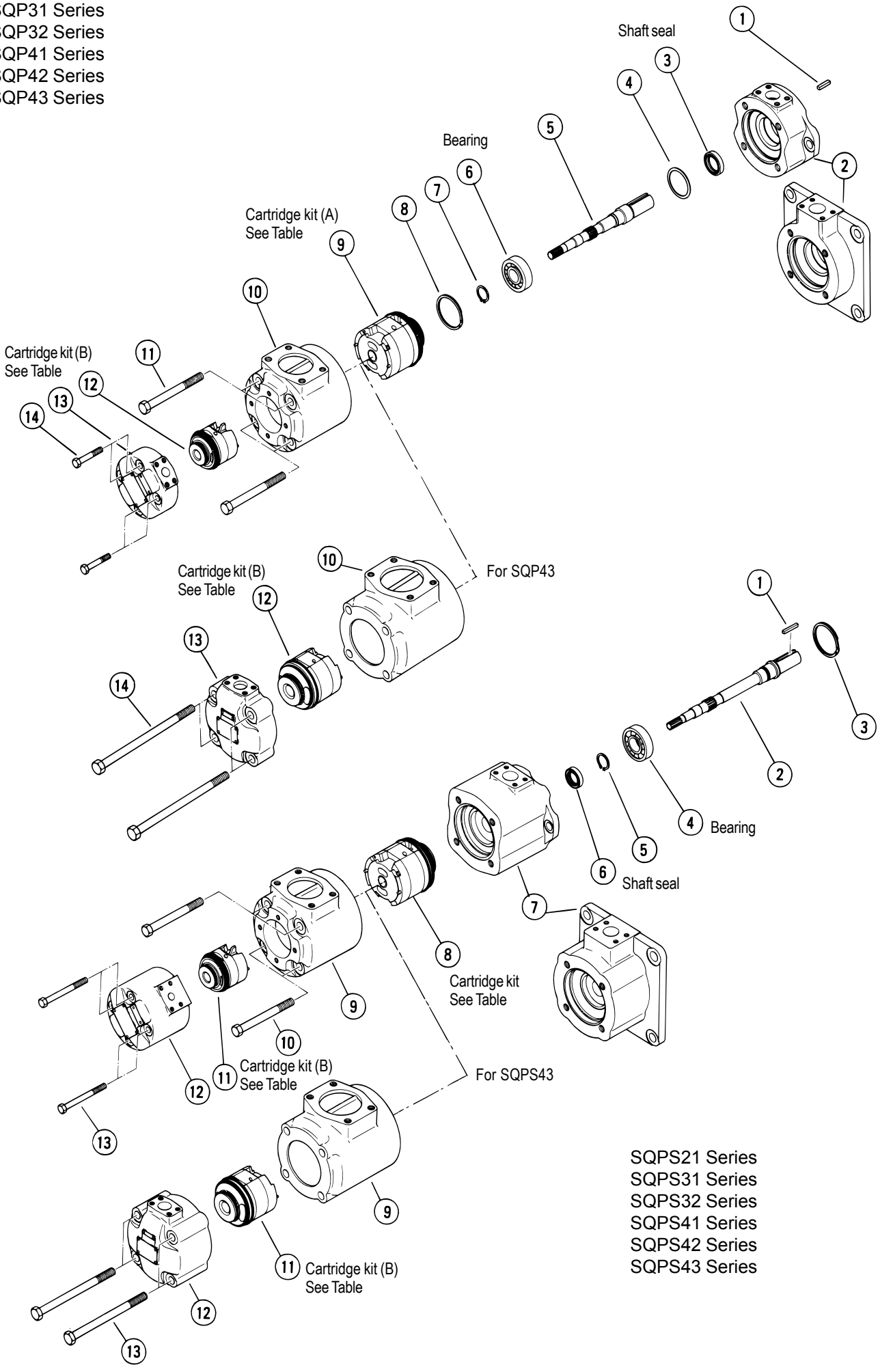


Foot Mount



Construction

SQP21 Series
SQP31 Series
SQP32 Series
SQP41 Series
SQP42 Series
SQP43 Series



SQPS21 Series
SQPS31 Series
SQPS32 Series
SQPS41 Series
SQPS42 Series
SQPS43 Series

Construction

Seals, Bearing Table

Series	Seal Kit P/N	Shaft Seal P/N	Bearing P/N
(F11) –SQP21	40038623 (40038632)	VP191668 (40015857)	0070**6205**1
(F11) –SQP31	40038624 (40038633)	VP193428 (40015856)	0070**6306**1
(F11) –SQP32	40038625 (40038634)	VP193428 (40015856)	0070**6306**1
(F11) –SQP41	40038626 (40038635)	VP195287 (40015858)	0070**6307**1
(F11) –SQP42	40038627 (40038636)	VP195287 (40015858)	0070**6307**1
(F11) –SQP43	40038628 (40038637)	VP195287 (40015858)	0070**6307**1
(F11) –SQPS21	VA9176A (40028883)	VP229236 (40016564)	0072**6205**1
(F11) –SQPS31	VA9177A (40028884)	VP191668 (40015857)	0072**6306**1
(F11) –SQPS32	VA9178A (40028885)	VP191668 (40015857)	0072**6306**1
(F11) –SQPS41	VA9179A (40028886)	VP232855 (40016565)	0072**6307**1
(F11) –SQPS42	VA9180A (40028887)	VP232855 (40016565)	0072**6307**1
(F11) –SQPS43	VA9181A (40028888)	VP232855 (40016565)	0072**6307**1

Note: • Shaft seal included in seal kit.
• Bearing P/N - bold characters refer to JIS B 1521 nomenclature. 0070 indicates no shield, 0072 indicates both shields.
• Seal kit P/N and shaft seal P/N - ( ) refers to F11.

• Cartridge Kit Table

For Mineral Oil

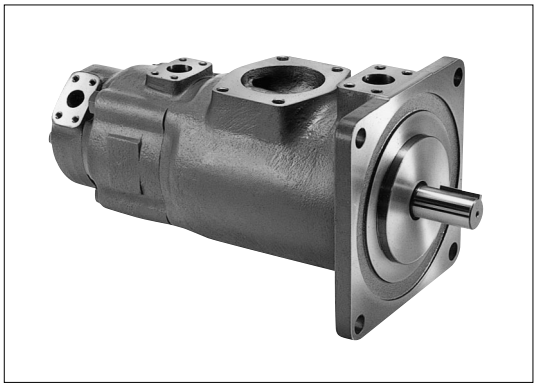
Series	Shaft End Displ.Code	Cartridge Kit A (Shaft End)	CoverEnd Displ.Code	Cartridge Kit B (Cover End)
SQP (S) 21	10	VA12087A	2	VA9267A
	12	VA12088A		
	14	VA12089A	3	VA9268A
	15	VA12090A		
	17	VA12091A	4	VA9269A
	19	VA12273A	5	VA9031A
	21	VA12092A		
SQP (S) 31	17	VA12260A	6	VA11996A
	21	VA12118A		
	25	VA12058A	7	VA11997A
	30	VA12059A		
	32	VA12119A	8	VA9032A
	35	VA12060A		
	38	VA12061A	9	40018787
SQP (S) 41	30	VA11211A	11	VA9033A
	35	VA12122A		
	38	VA11212A	12	VA9034A
	42	VA11213A		
	50	VA11214A	14	VA9932A
	60	VA11215A		
SQP (S) 32	17	VA12260A	10	VA12094A
	21	VA12118A		
	25	VA12058A	12	VA12095A
	30	VA12059A		
	32	VA12119A	14	VA12096A
	35	VA12060A		
	38	VA12061A	15	VA12097A
SQP (S) 42	30	VA11211A	17	VA12098A
	35	VA12122A		
	38	VA11212A	19	VA12274A
	42	VA11213A		
	50	VA11214A	21	VA12099A
	60	VA11215A		
SQP (S) 43	30	VA11211A	17	VA12261A
	35	VA12122A	21	VA12120A
	38	VA11212A	25	VA11208A
	42	VA11213A	30	VA11209A
	50	VA11214A	32	VA12121A
	60	VA11215A	35	VA11876A
			38	VA11210A

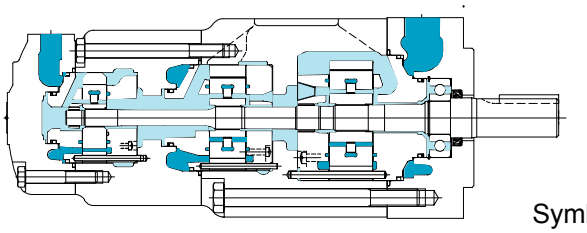
For Water-Glycol

Series	Shaft End Displ.Code	Cartridge Kit A (Shaft End)	CoverEnd Displ.Code	Cartridge Kit B (Cover End)
F11–SQP (S) 21	10	VA12553A	2	VA12573A
	12	VA12554A		
	14	VA12555A	3	VA12574A
	15	VA12556A		
	17	VA12557A	4	VA12575A
	19	VA12558A	5	VA12576A
	21	VA12559A		
F11–SQP (S) 31	17	VA12560A	6	VA12577A
	21	VA12561A		
	25	VA12562A	7	VA12578A
	30	VA12563A		
	32	VA12564A	8	VA12579A
	35	VA12565A		
	38	VA12566A	9	40018791
F11–SQP (S) 41	30	VA12567A	11	VA12580A
	35	VA12568A		
	38	VA12569A	12	VA12581A
	42	VA12570A		
	50	VA12571A	14	VA12582A
	60	VA12572A		
F11–SQP (S) 32	17	VA12560A	10	VA12583A
	21	VA12561A		
	25	VA12562A	12	VA12584A
	30	VA12563A		
	32	VA12564A	14	VA12585A
	35	VA12565A		
	38	VA12566A	15	VA12586A
F11–SQP (S) 42	30	VA12567A	17	VA12587A
	35	VA12568A		
	38	VA12569A	19	VA12588A
	42	VA12570A		
	50	VA12571A	21	VA12589A
	60	VA12572A		
F11–SQP (S) 43	30	VA12567A	17	VA12590A
	35	VA12568A	21	VA12591A
	38	VA12569A	25	VA12592A
	42	VA12570A	30	VA12593A
	50	VA12571A	32	VA12594A
	60	VA12572A	35	VA12595A
			38	VA12596A

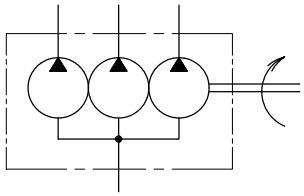
Note: • "L" is added as suffix to cartridge kit P/N for left hand rotation cartridge kit.
• Cartridge kit includes seals (O-rings, backup ring, etc.) but excluding shaft seal.

Low noise triple fixed displacement vane pumps SQP series





Symbol



Model Code

(F3) - SQP432 - 60 - 38 - 15 - 86 C C C (2)-(LH)-18

1	2	3	4	5	6	7	8	9	10	11	12

1 Fluid
Omit for mineral oil
F3: phosphate ester
F11: water glycol

2 Low noise fixed displ. triple vane pump
SQP211 Series
SQP311,321 Series
SQP421,431,432 Series

3 Shaft end pump displacement

Series	Displacement
SQP2**	10, 12, 14, 15, 17, 19, 21
SQP3**	17, 21, 25, 30, 32, 35, 38
SQP4**	30, 35, 38, 42, 50, 60

4 Middle pump displacement

Series	Displacement
SQP*1*	2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14
SQP*2*	10, 12, 14, 15, 17, 19, 21
SQP*3*	17, 21, 25, 30, 32, 35, 38

5 Cover end pump displacement

Series	Displacement
SQP**1	2, 3, 4, 5, 6, 7, 8, (9), (11), (12), (14)
SQP**2	10, 12, 14, 15, 17, 19

Note:Applicable series with displacements indicated by ( ) are limited.
See page B31.

6 Shaft
86: parallel sq. key

7 Shaft end pump outlet position(viewed from cover end)
A: opposite inlet
B: 90' CCW from inlet
C: inline with inlet
D: 90' CW from inlet

8 Middle pump outlet position(viewed from cover end)
SQP211,311,321,421
A: 135' CCW from inlet
B: 45' CCW from inlet
C: 45' CW from inlet
D: 135' CW from inlet
SQP431 ,432
A: opposite inlet
B: 90' CCW from inlet
C: inline with inlet
D: 90' CW from inlet

9 Cover end pump outlet position(viewed from cover end)
SQP211,311,431,432
A: 135' CCW from inlet
B: 45' CCW from inlet
C: 45" CW from inlet
D: 135' CW from inlet
SQP321,421
A: opposite inlet
B: 90' CCW from inlet
C: inlet with inlet
D: 90" CW from inlet

10 Pump mounting
Omit for flange mounting
2* : foot mounting

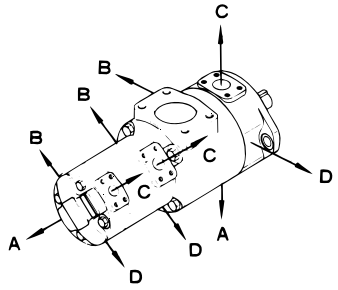
Shaft end outlet position to foot mount surface (see page B28)

Foot mount. code	Shaft end pump outlet position to foot surface (viewed from shaft end)
2	up (12 o'clock)
23	right (3 o'clock)
26	down (6 o'clock)
29	left (9 o'clock)

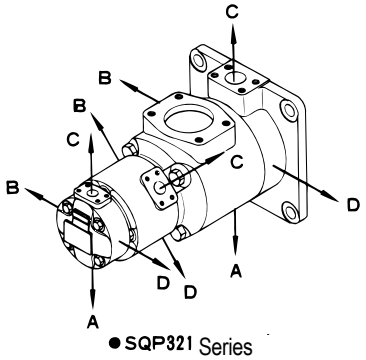
11 Rotation (viewed from shaft end)
Omit for CW
LH: CCW

12 Design no.

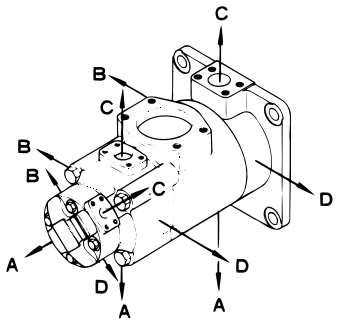
Model Code



● SQP211 Series
● SQP311 Series



● SQP321 Series
● SQP421 Series



● SQP431 Series
● SQP432 Series

Specifications

Model	Shaft End Pump			Middle Pump			Cover End Pump						Minimum Speed min^{-1}
	Displ. Code	Del. at 1000 min^{-1} 0.7Mpa L/min	Max.Wkg. Press MPa	Displ. Code	Del. at 1000 min^{-1} 0.7Mpa L/min	Max.Wkg. Press MPa	Displ. Code	Del. at 1000 min^{-1} 0.7Mpa L/min	Max.Wkg. Press MPa	Max. Speed min^{-1} Mineral Oil	Max. Speed min^{-1} Water-Glycol	Max. Speed min^{-1} Phosphate Ester	
SQP211	10	32. 5	17. 5	2	7. 5	14	2	7. 5	14	1800	1200	1200	600
	12	38. 3		3	10. 2		3	10. 2					
	14	43. 3		4	12. 8	17. 5	4	12. 8	17. 5				
	15	46. 7		5	16. 7		5	16. 7					
	17	52. 5		6	19. 2		6	19. 2		1500			
	19	59. 2		7	22. 9		7	22. 9		1200	1000	1000	
	21	65. 0		8	26. 2		8	26. 2		1000			
SQP311	17	53. 3	17. 5	9	28. 3								600
	21	66. 7		11	35. 0								
	25	79. 2		12	37. 9	16							
	30	95. 0		14	44. 2	14							
	32	100. 0											
	35	109. 0											
	38	118. 0											
SQP321	17	53. 3	17. 5	10	32. 5	17. 5	2	7. 5	14	1800	1200	1200	600
	21	66. 7					3	10. 2					
	25	79. 2		12	38. 3		4	12. 8	17. 5				
	30	95. 0					5	16. 7					
	32	100. 0		14	43. 3		6	19. 2					
	35	109. 0					7	22. 9		1500			
	38	118. 0		15	46. 7		8	26. 2		1200	1000	1000	
SQP421	30	96. 0	17. 5	17	52. 5		9	28. 3					600
	35	109. 0					11	35. 0		1000			
	38	128. 0		19	59. 2								
	42	134. 0											
	50	156. 0		21	65. 0								
	60	189. 0											
SQP431	30	96. 0	17. 5	17	53. 3	17. 5	2	7. 5	14	1800	1200	1200	600
	35	109. 0		21	66. 7		3	10. 2					
	38	128. 0		25	79. 2		4	12. 8	17. 5				
	42	134. 0		30	95. 0		5	16. 7					
	50	156. 0		32	100. 0		6	19. 2					
	60	189. 0		35	109. 0		7	22. 9					
				38	118. 0		8	26. 2					
							9	28. 3					
							11	35. 0					
							12	37. 9	16	1500			
							14	44. 2	14				
SQP432	30	96. 0	17. 5	17	53. 3	17. 5	10	32. 5	17. 5	1800	1200	1200	600
	35	109. 0		21	66. 7		12	38. 3		1500			
	38	128. 0		25	79. 2		14	43. 3					
	42	134. 0		30	95. 0		15	46. 7					
	50	156. 0		32	100. 0		17	52. 5		1200	1000	1000	
	60	189. 0		35	109. 0		19	59. 2					
				38	118. 0		21	65. 0					

Note: • Max. working pressure is 14 MPa for phosphate-ester fluid.
• Max. speed may vary depending on displacement of cover side pump.

Weight, Delivery, Shaft Input Power

Model	Delivery, Shaft Input Power			Weight kg	
	Shaft End Pump	Middle Pump	Cover End Pump	Flange Mount	Foot Mount
SQP211	same as SQP2 Series	same as SQP1 Series	same as SQP1 Series	40. 0	49. 5
SQP311	same as SQP3 Series			60. 0	69. 5
SQP321	same as SQP3 Series	same as SQP2 Series	same as SQP1 Series	62. 0	71. 5
SQP421	same as SQP4 Series			88. 0	113. 0
SQP431	same as SQP4 Series	same as SQP3 Series	same as SQP1 Series	97. 0	122. 0
SQP432	same as SQP4 Series		same as SQP2 Series	104. 0	129. 0

See pages B10, 11 for delivery, shaft input power for SQP1 - SQP4 Series

Notes on Use

See page B5 for Notes On Using Vane Pumps

Shaft Input Torque Limitation

Shaft torque limitations of triple pumps are shown in the table. Please insure that the torque limits shown in the table are not exceeded when the total load of the three pumps are at maximum. Please calculate shaft torque from the operating speed and shaft input.

N: operating speed (min^{-1})

L: shaft input sum (kW)

Shaft torque: T = (60 X 1000/2ƒÎN) X L = (9554/N) X L (N•Em)

Model	Shaft Torque Limitation N・m
SQP211	360
SQP311	610
SQP321	610
SQP421	950
SQP431	950
SQP432	950

(Example) SQP432-60-38-14, operating speed 1200 min^{-1}, first pump 14MPa, second pump 14MPa, third pump 17.5MPa under max. load,
First pump shaft input: from table on page B11, SQP4-60 shaft input is 57.1kW
Second pump shaft input: from table on B11, SQP3-38 shaft input is 36.2kW
Third pump shaft input: from table on B10, SQP2-14 shaft input is 18.4kW
Shaft input sum: L=57.1 + 36.2 + 18.4 = 111.7 (kW)
Shaft input sum substituted for torque in the table, shaft input torque: T = 9554 X 111.7/1200 = 889.3 (N·Em)
Thus, the shaft torque of the SQP432 should be below the limitation of 820 N·Em.
Please confirm shaft torque using this procedure.

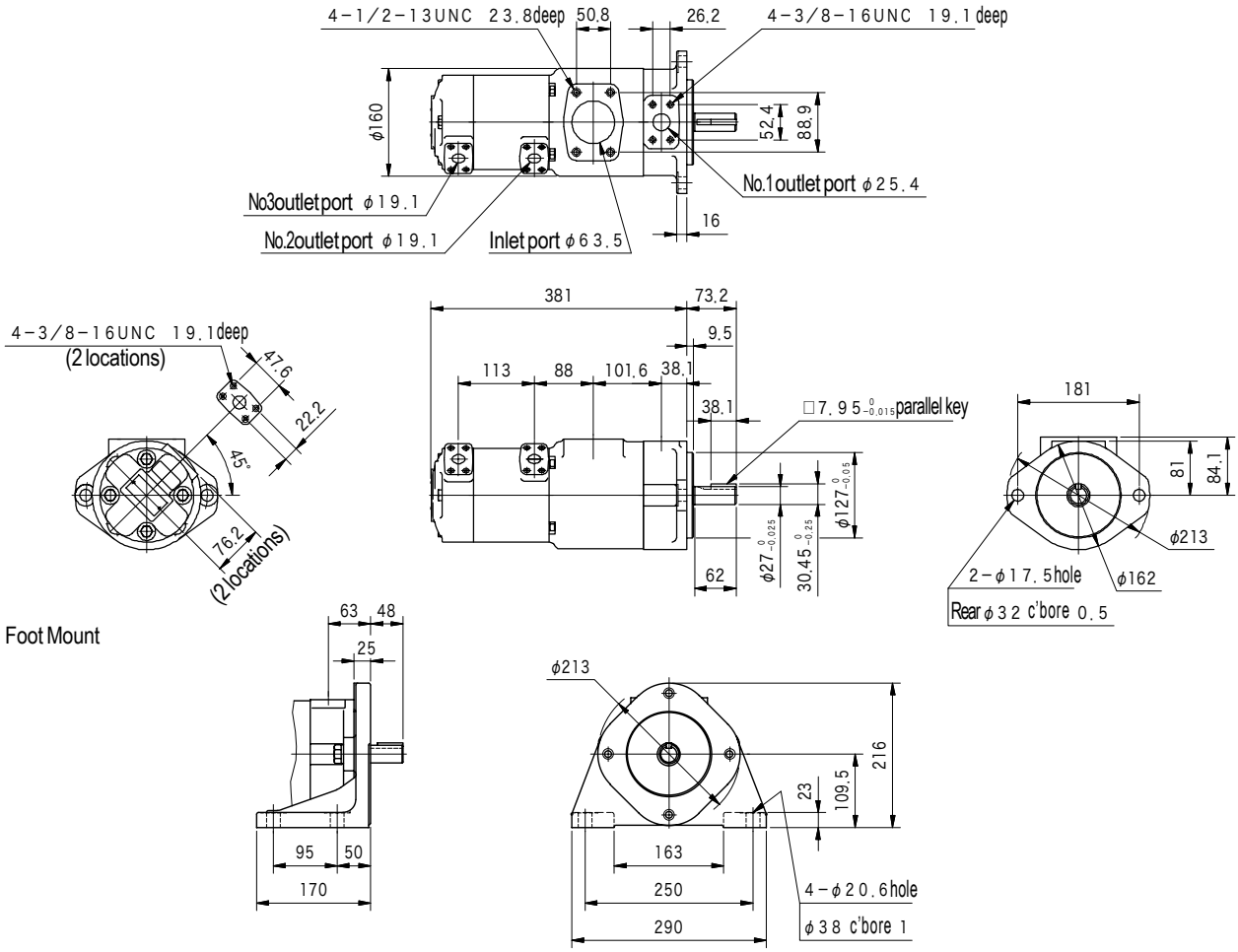
Piping Flange (Conforming to SAE J518c at Standard Pressure]

- Pump flange not included.
- Flanges (incl. hex socket bolts, spring washers, and O-rings) should be ordered separately from the table below.
- See page Q12 for details such as dimensions, etc.

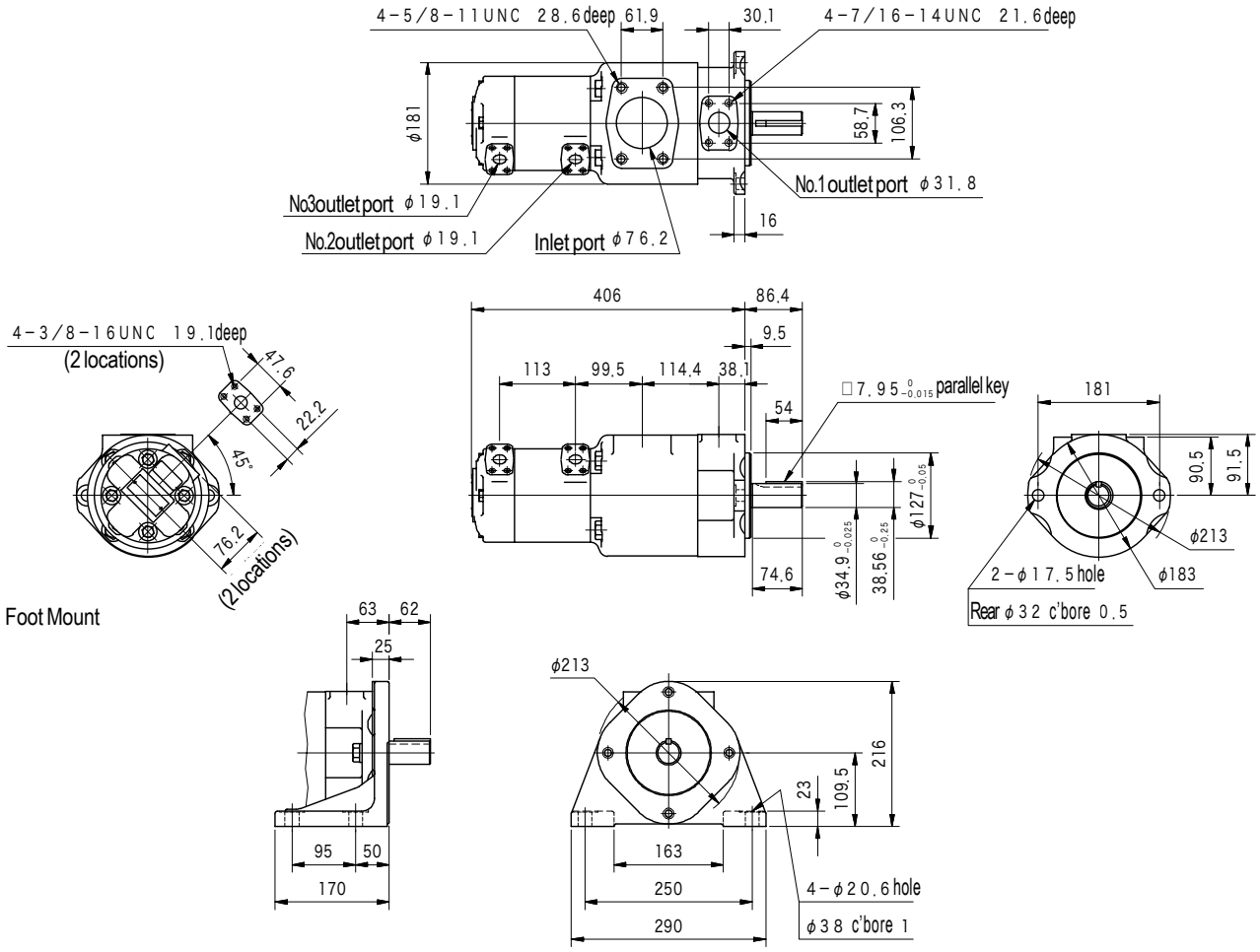
Pump Model	Type	Flange Model							
		Inlet Port		Outlet Port					
		Code		Code	No. 1 Port (Shaft End)	Code	No. 2 Port (Middle)	Code	No.3 Port (Cover End)
SQP211	Thread	2-1/2	FL1-20-20P-10-JA-S4-J	1	FL1-8-08P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Weld		FL1-20-20W-10-JA		FL1-8-08W-10-JA		FL1-6-06W-10-JA		FL1-6-06W-10-JA
SQP311	Thread	3	FL1-24-24P-10-JA-S4-J	1-1/4	FL1-10-10P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Weld		FL1-24-24W-10-JA		FL1-10-10W-10-JA		FL1-6-06W-10-JA		FL1-6-06W-10-JA
SQP321	Thread	3	FL1-24-24P-10-JA-S4-J	1-1/4	FL1-10-10P-10-JA-S4-J	1	FL1-8-08P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Weld		FL1-24-24W-10-JA		FL1-10-10W-10-JA		FL1-8-08W-10-JA		FL1-6-06W-10-JA
SQP421	Thread	3-1/2	——	1-1/2	FL1-12-12P-10-JA-S4-J	1	FL1-8-08P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Weld		FL1-28-28W-10-JA		FL1-12-12W-10-JA		FL1-8-08W-10-JA		FL1-6-06W-10-JA
SQP431	Thread	4	——	1-1/2	FL1-12-12P-10-JA-S4-J	1-1/4	FL1-10-10P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Weld		FL1-32-32W-10-JA		FL1-12-12W-10-JA		FL1-10-10W-10-JA		FL1-6-06W-10-JA
SQP432	Thread	4	——	1-1/2	FL1-12-12P-10-JA-S4-J	1-1/4	FL1-10-10P-10-JA-S4-J	1	FL1-8-08P-10-JA-S4-J
	Weld		FL1-32-32W-10-JA		FL1-12-12W-10-JA		FL1-10-10W-10-JA		FL1-8-08W-10-JA

Dimensions

SQP211 (Flange Mount)

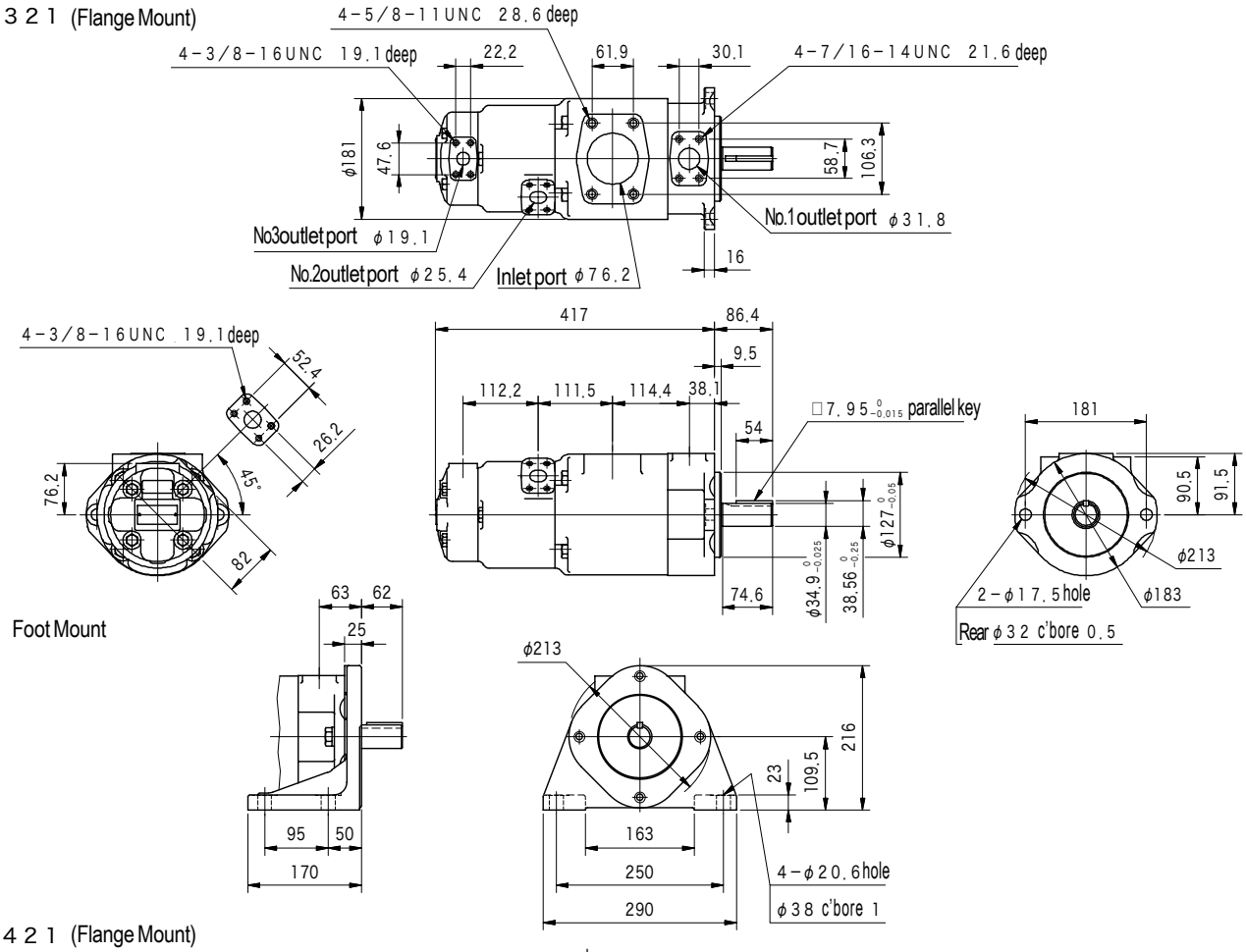


SQP311 (Flange Mount)

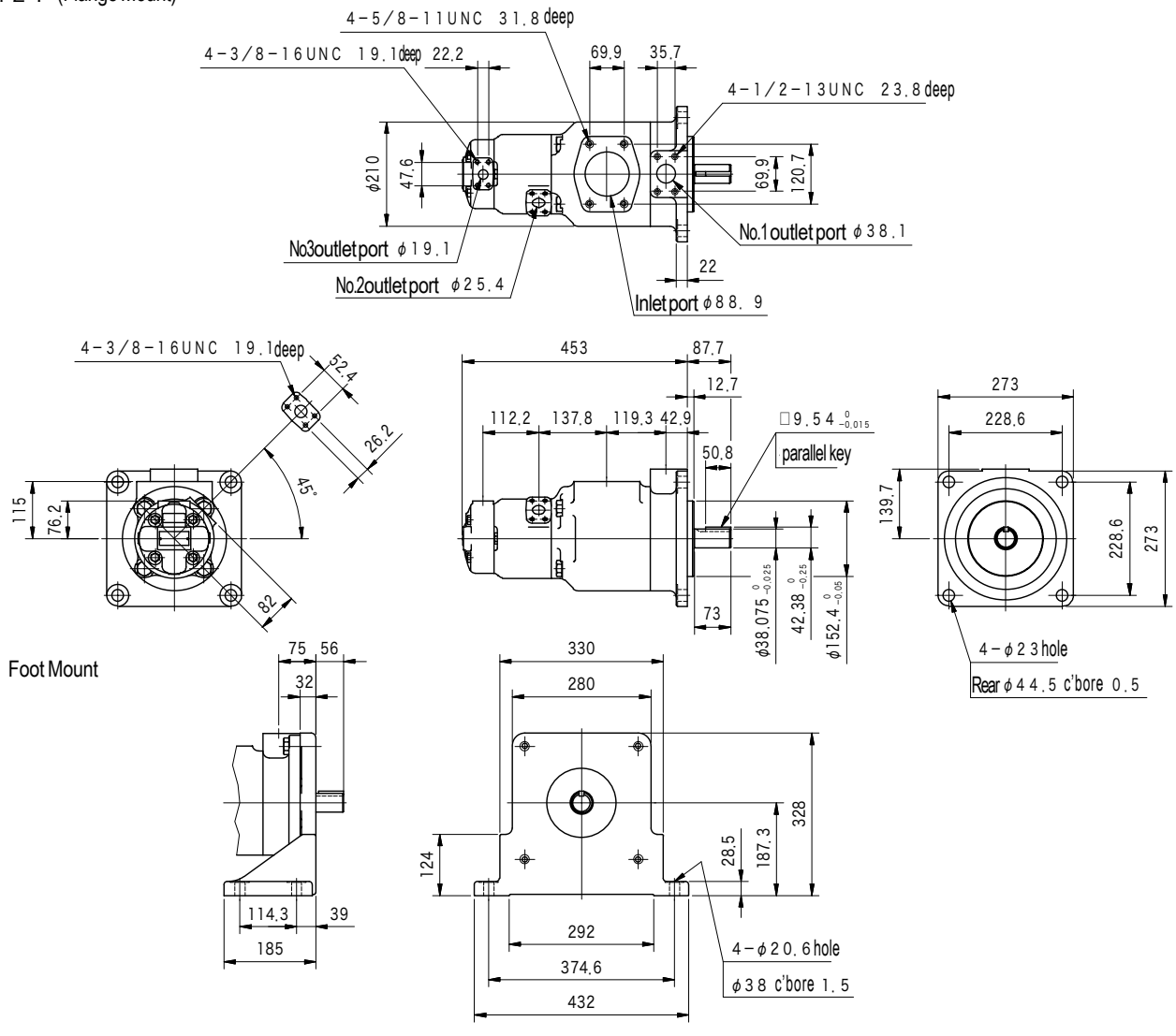


Dimensions

SQP321 (Flange Mount)

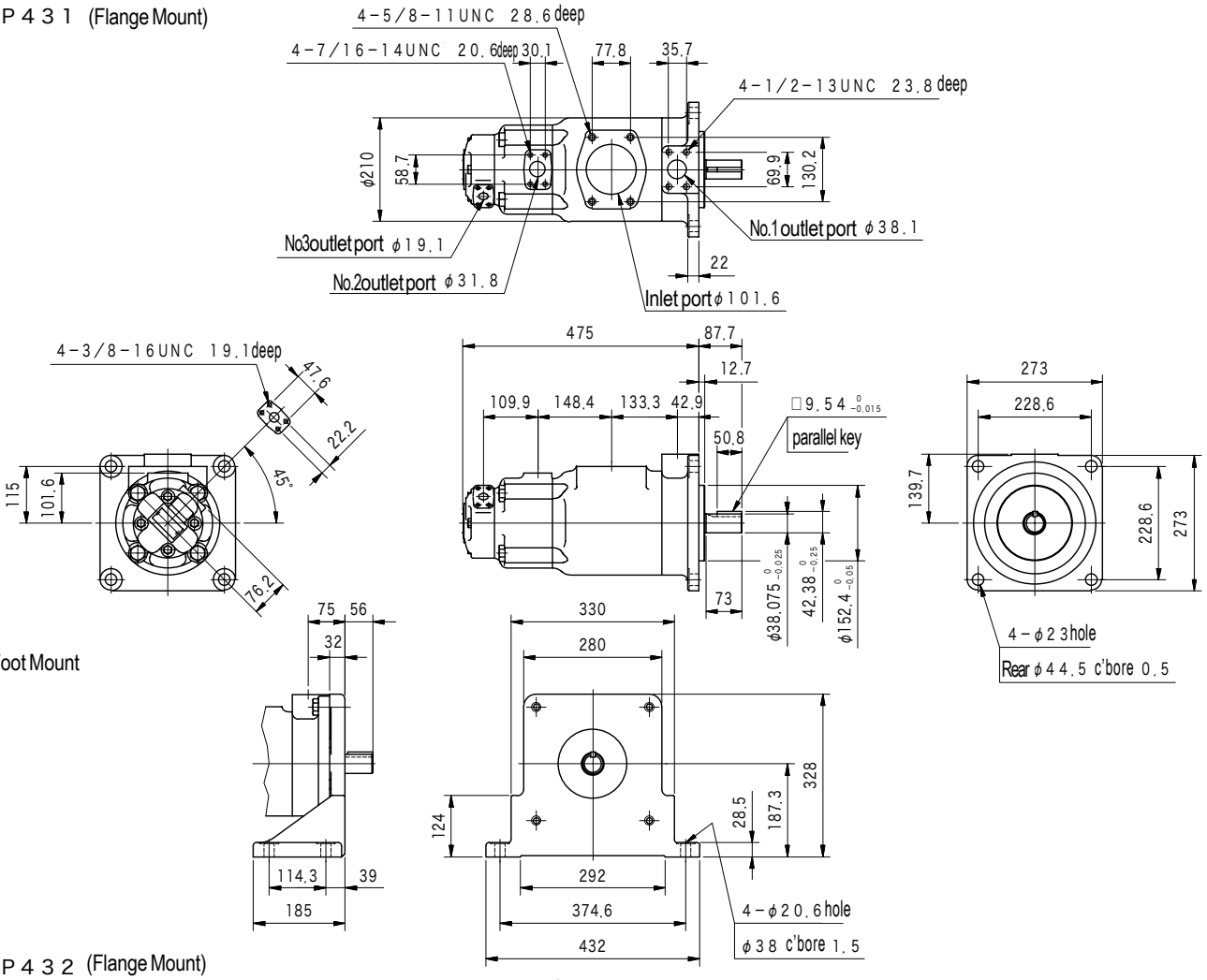


SQP421 (Flange Mount)



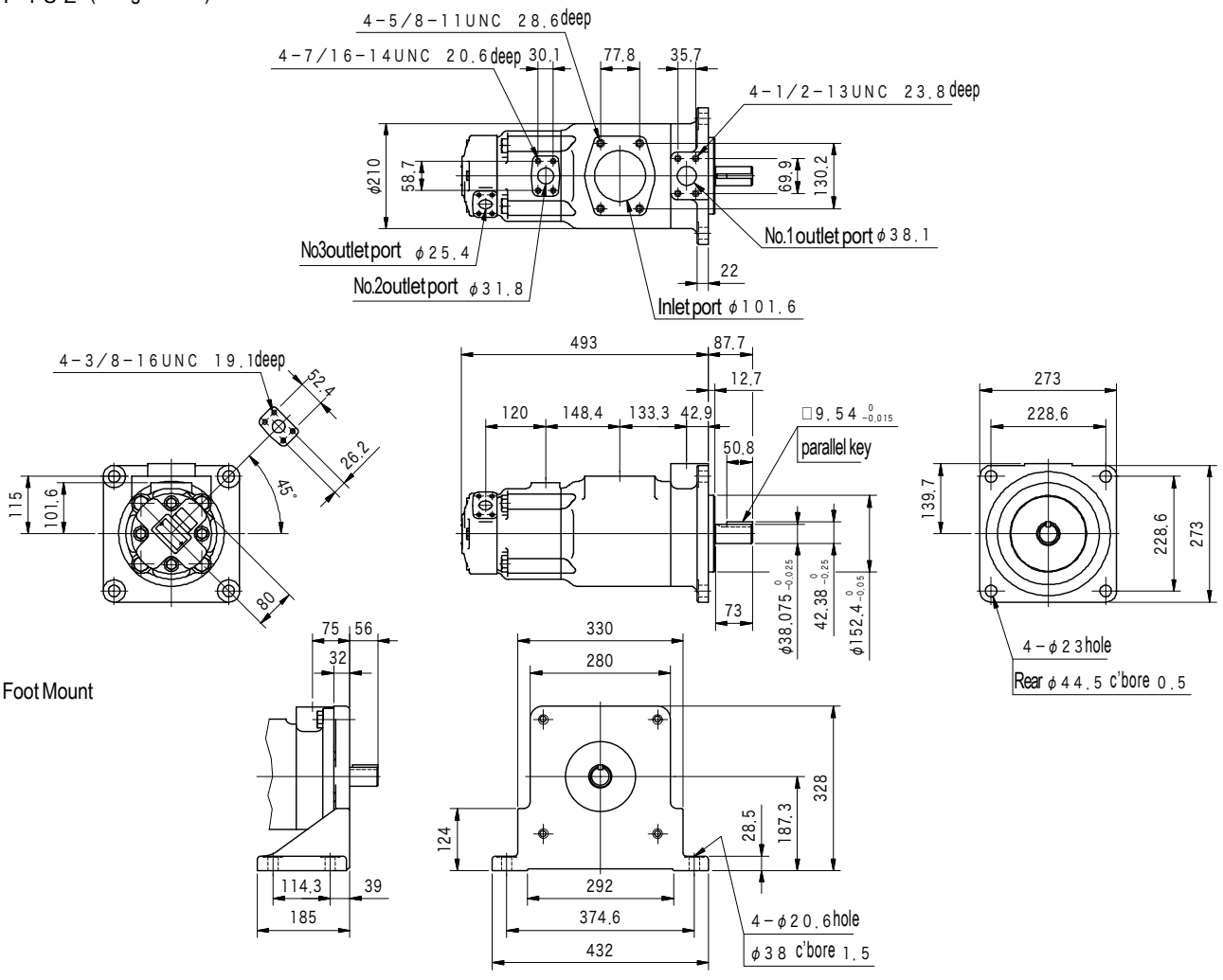
Dimensions

SQP431 (Flange Mount)

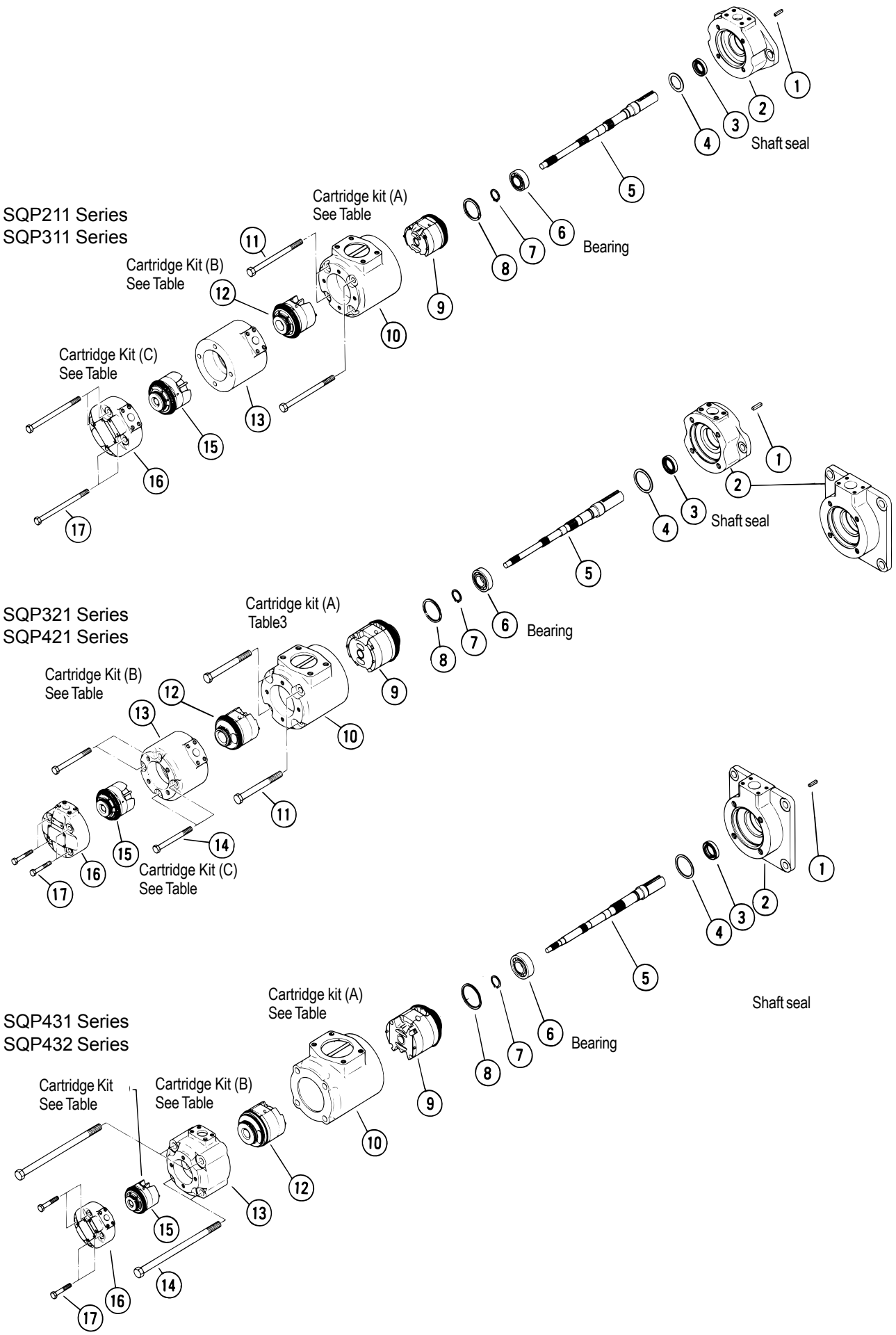


Foot Mount

SQP432 (Flange Mount)



Foot Mount


SQP211 Series
SQP311 Series
Cartridge kit (A)
See Table
Cartridge Kit (B)
See Table
Cartridge Kit (C)
See Table
Bearing
Shaft seal
SQP321 Series
SQP421 Series
Cartridge kit (A)
Table3
Cartridge Kit (B)
See Table
Cartridge Kit (C)
See Table
Bearing
Shaft seal
SQP431 Series
SQP432 Series
Cartridge kit (A)
See Table
Cartridge Kit
See Table
Cartridge Kit (B)
See Table
Bearing
Shaft seal

Construction

• Seal, Bearing Table

Series	Seal Kit P/N	Shaft Seal P/N	Bearing P/N
(F11) –SQP211	VA10885A (40028865)	VP191668 (40015857)	0070**6205**1
(F11) –SQP311	VA10757A (40028502)	VP193428 (40015856)	0070**6306**1
(F11) –SQP321	VA10756A (40028503)	VP193428 (40015856)	0070**6306**1
(F11) –SQP421	VA11703A (40028869)	VP195287 (40015858)	0070**6307**1
(F11) –SQP431	VA11133A (40028870)	VP195287 (40015858)	0070**6307**1
(F11) –SQP432	VA11450A (40028871)	VP195287 (40015858)	0070**6307**1

Note: • Shaft seal included in seal kit.
• Bearing P/N - bold characters efer to JIS B 1521 nomenclature. 0070 indicates no shield.
• Seal kit P/N and shaft seal P/N - ( ) refers to F11.

• Cartridge Kit Table

Model / Displ. Code	Mineral Oil			Water-Glycol		
		Cartridge Kit B (Middle Pump)	Cartridge Kit C (Cover End Pump)		Cartridge Kit B (Middle Pump)	Cartridge Kit C (Cover End Pump)
		SQP211 SQP311	SQP211 SQP311 SQP321 SQP421 SQP431		F11–SQP211 F11–SQP311	F11–SQP211 F11–SQP311 F11–SQP321 F11–SQP421 F11–SQP431
2		VA10889A	VA10243A		VA12597A	VA12621A
3		VA10890A	VA10244A		VA12598A	VA12622A
4		VA10891A	VA10245A		VA12599A	VA12623A
5		VA10892A	VA10246A		VA12600A	VA12624A
6		VA11074A	VA11072A		VA12601A	VA12625A
7		VA11075A	VA11073A		VA12602A	VA12626A
8		VA10893A	VA10247A		VA12603A	VA12627A
9		40018788	(40018789)		40018792	(40018793)
11		VA10894A	(VA10248A)		VA12604A	(VA12628A)
12		VA10895A	(VA10249A)		VA12605A	(VA12629A)
14		VA11455A	(VA11411A)		VA12606A	(VA12630A)
	Cartridge Kit A (Shaft End Pump)	Cartridge Kit B (Middle Pump)	Cartridge Kit C (Cover End Pump)	Cartridge Kit A (Shaft End Pump)	Cartridge Kit B (Middle Pump)	Cartridge Kit C (Cover End Pump)
	SQP211	SQP321 SQP421	SQP432	F11–SQP211	F11–SQP321 F11–SQP421	F11–SQP432
10	VA12087A	VA12100A	VA12106A	VA12553A	VA12607A	VA12631A
12	VA12088A	VA12101A	VA12107A	VA12554A	VA12608A	VA12632A
14	VA12089A	VA12102A	VA12108A	VA12555A	VA12609A	VA12633A
15	VA12090A	VA12103A	VA12109A	VA12556A	VA12610A	VA12634A
17	VA12091A	VA12104A	VA12110A	VA12557A	VA12611A	VA12635A
19	VA12273A	VA12314A	VA12315A	VA12558A	VA12612A	VA12636A
21	VA12092A	VA12105A	40078070	VA12559A	VA12613A	VA12637A
	Cartridge Kit A (Shaft End Pump)	Cartridge Kit B (Middle Pump)		Cartridge Kit A (Shaft End Pump)	Cartridge Kit B (Middle Pump)	
	SQP311 SQP321	SQP431 SQP432		F11–SQP311 F11–SQP321	F11–SQP431 F11–SQP432	
17	VA12260A	VA12316A		VA12560A	VA12614A	
21	VA12118A	VA12317A		VA12561A	VA12615A	
25	VA12058A	VA12318A		VA12562A	VA12616A	
30	VA12059A	VA12319A		VA12563A	VA12617A	
32	VA12119A	VA12320A		VA12564A	VA12618A	
35	VA12060A	VA12321A		VA12565A	VA12619A	
38	VA12061A	VA12322A		VA12566A	VA12620A	
	Cartridge Kit A (Shaft End Pump)			Cartridge Kit A (Shaft End Pump)		
	SQP421 SQP431 SQP432			F11–SQP421 F11–SQP431 F11–SQP432		
30	VA11211A			VA12567A		
35	VA12122A			VA12568A		
38	VA11212A			VA12569A		
42	VA11213A			VA12570A		
50	VA11214A			VA12571A		
60	VA11215A			VA12572A		

Note: • Care should be taken as construction of shaft end, middle, and cover end pump differ.
• Cartridge kit includes seals excluding shaft seal.
• Suffix "L" added to end of cartridge kit P/N indicates left hand rotation model.
• Some series of cartridge kit P/N's indicated by ( ) may not be applicable.
Confirm displacement codes on page B31.

High Performance Pump for Mobile Applications - VQ Series

The VQ Series intravane pump is designed for high performance mobile applications. The pump's flexible side plate mechanism provides higher volumetric efficiency compared to conventional vane pumps and provides high resistance to seizure during hot and cold startups.

1. Stable operation at high pressures of 21MPa and high speeds of 2700 min^{-1}.

2. Employs pressure balanced flexible side plates. Automatically maintains clearance between rotor and side plates providing high (83•`85%) volumetric efficiency at 82°C.
   Side plates act to offset overload spike at startup and swelling caused by heat and improves on seizure characteristics during low temperature starts.

3. Cartridge kit configuration of main rotating elements for ease in maintenance.

4. Single pump, 3 series, 11 types and double pump, 6 series, 99 types configurations allow selection of optimum model to meet the application.

Intravane Mechanism

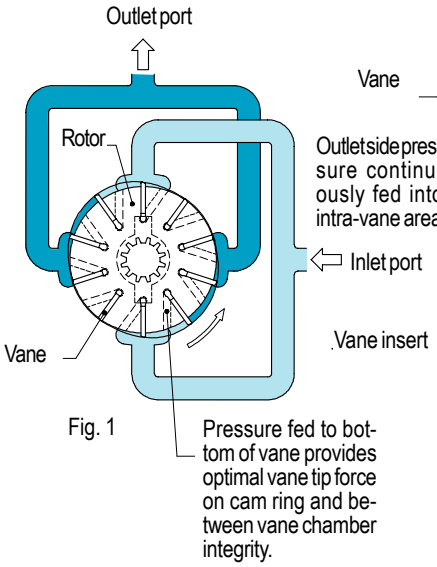


Fig. 1

Pressure fed to bottom of vane provides optimal vane tip force on cam ring and between vane chamber integrity.

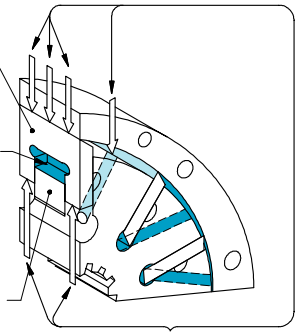
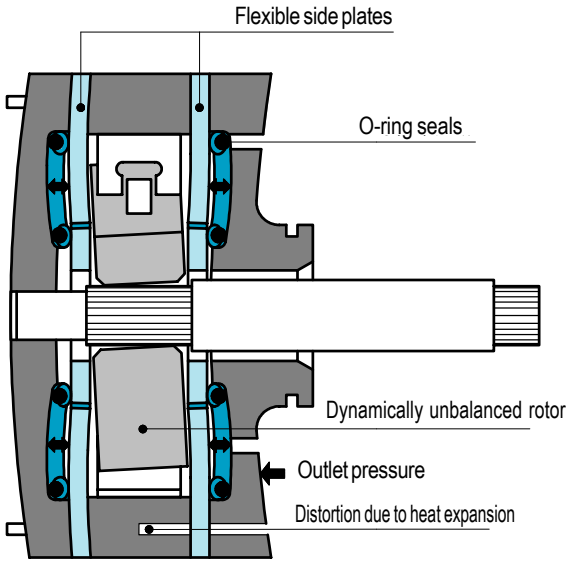


Fig. 2

Shaft rotation causes outlet side or inlet side pressure to alternately act on bottom of vane.

Flexible Side Plate Mechanism

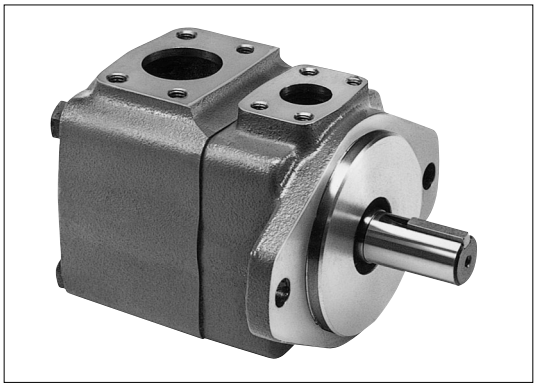
The flexible sides plates consist of thin bronze and steel plates. Seals located between both support plates and flexible side plates create pressure chambers. Pump delivery pressure fills these chambers and act to provide uniform force on the flexible sides plates toward the rotor. Rotation causes generation of countering flow pressure between the rotor and flexible sides plates pushing the flexible sides plates outward. These two forces are automatically balanced to maintain optimal clearance.

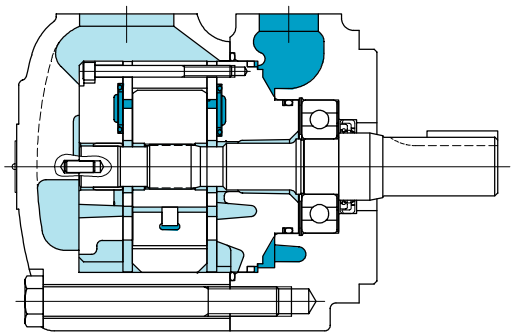


Adjusts for unequal balance between flexible side plates and rotor and heat-caused swelling.

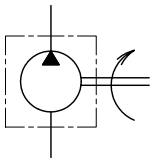
Chambers pressurized by pump delivery to balance rotor and plates for optimal clearance.

High performance single fixed displacement vane pumps for mobile applications VQ series





Symbol



Model Code

(F3-) 35VQ 25 A (F) - 86 C 20 (L)-JA

1 2 3 4 5 6 7 8 9

1 Fluid
Omit for mineral oil
F3: phosphate ester

2 High performance vane pump for mobile applications
25VQ Series
35VQ Series
45VQ Series

3 Pump displacement

Series	Displacement
25VQ	12, 14, 17, 21
35VQ	25, 30, 35, 38
45VQ	42, 50, 60

4 Port piping connection
A: SAE 4 bolt flange connection

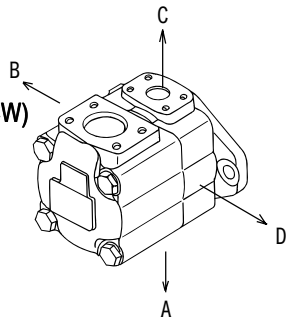
5 Pump mounting
Omit for flange mounting
F: foot mounting

6 Shaft
1: sq. key parallel shaft (25VQ)
86: sq. key parallel shaft (35VQ, 45VQ)
11: spline shaft

7 Outlet position (viewed from cover end)
A: opposite of inlet
B: 90° CCW from inlet
C: aligned with inlet
D: 90° CW from inlet

8 Design no.

9 Rotation (viewed from shaft end)
Omit for right hand rotation (CW)
L: left hand rotation (CCW)



Specifications

Model	Displ. Code	Del. at 1000 min^{-1} 0.7Mpa L/min	Anti-Wear Mineral Oil		Phosphate Ester Fluid		Minimum Speed min^{-1}	kg
			Max. Working Press. MPa	Max. Speed min^{-1}	Max. Working Press. MPa	Max. Speed min^{-1}		
25VQ	12	38. 3	21	2700	14	1800	600	14. 5
	14	43. 3						
	17	52. 5		2500		1600		
	21	65. 0						
35VQ	25	79. 2	21	2500	14	1600	600	22. 7
	30	95. 0						
	35	109. 0		2400				
	38	118. 0						
45VQ	42	134. 0	17. 5	2200	14	1500	600	34. 0
	50	156. 0						
	60	189. 0						

Note: • As max. working pressure may be limited for general industrial machinery applications, consult Tokimec.
• Max. speed is based on 0 MPa (gauge pressure) inlet pressure.
Max. speed will be limited by negative inlet pressure. Consult Tokimec in this case.

Delivery, Shaft Input Power (at 20mm /s)

Model	Speed min^{-1}	Delivery L/min					Shaft Input Power kW				
		0.7 MPa	7 MPa	14 MPa	17.5 MPa	21 MPa	0.7 MPa	7 MPa	14 MPa	17.5 MPa	21 MPa
25VQ-12	1000	38.3	35.9	33.2	31.7	30.3	1.0	5.8	11.1	13.7	16.2
	1200	46.0	43.6	40.9	39.4	38.0	1.1	6.6	13.3	16.3	19.4
	1500	57.5	55.1	52.4	50.9	49.5	1.3	8.5	16.4	20.3	24.1
	1800	69.0	66.6	63.9	62.4	61.0	1.4	10.0	19.7	24.3	28.8
	2000	76.6	73.9	71.3	70.0	68.6	1.6	11.1	21.7	26.7	31.7
	2200	84.3	81.6	79.0	77.6	76.3	1.7	12.1	23.7	29.1	34.5
	2400	91.9	89.3	86.6	85.3	84.0	1.9	13.2	25.6	31.5	37.3
	2500	95.8	93.1	90.4	89.1	87.8	2.0	13.7	26.6	32.7	38.6
	2700	103.4	100.8	98.1	96.8	95.5	2.1	14.8	28.5	35.0	41.3
25VQ-14	1000	43.3	40.1	36.7	35.7	34.1	1.2	6.5	12.4	15.4	18.2
	1200	52.0	48.4	45.4	44.4	42.8	1.3	7.6	14.8	18.4	21.8
	1500	65.0	61.8	58.4	57.4	55.8	1.5	9.6	18.4	22.8	27.1
	1800	78.0	74.8	71.4	70.4	68.8	1.7	11.3	21.9	27.2	32.3
	2000	86.6	83.5	80.5	79.0	77.4	1.9	12.5	24.1	30.0	35.5
	2200	95.3	92.2	89.1	87.6	86.1	2.1	13.7	26.3	32.6	38.7
	2400	103.9	100.9	97.8	96.3	94.7	2.2	14.9	28.5	35.2	41.7
	2500	108.3	105.2	102.1	100.6	99.1	2.3	15.5	29.5	36.5	43.2
	2700	116.9	113.9	110.8	109.3	107.7	2.5	16.7	31.6	39.0	46.1
25VQ-17	1000	52.5	49.6	46.4	44.3	42.7	1.4	7.5	14.6	17.9	21.3
	1200	63.0	60.6	56.9	54.8	53.2	1.5	9.2	17.3	21.4	25.4
	1500	78.8	75.9	72.7	70.7	69.0	1.7	11.0	21.5	26.6	31.6
	1800	94.5	91.6	88.4	86.4	84.7	1.9	13.2	25.6	31.8	37.8
	2000	105.0	101.7	98.5	96.8	95.2	2.2	14.5	28.3	35.2	41.9
	2200	115.5	112.2	109.0	107.3	105.7	2.4	16.0	30.9	38.5	45.8
	2400	126.0	122.7	119.5	117.8	116.2	2.6	17.4	33.6	41.7	49.7
	2500	131.3	128.0	124.7	123.1	121.5	2.7	18.1	34.9	43.4	51.7
	2700	———	———	———	———	———	———	———	———	———	———
25VQ-21	1000	65.0	62.1	58.9	56.9	55.2	1.6	9.4	17.9	22.2	26.3
	1200	78.0	74.9	71.9	69.9	68.2	1.8	11.2	21.4	26.5	31.4
	1500	97.5	94.6	91.4	89.4	87.7	2.1	13.7	26.6	32.9	39.1
	1800	117.0	113.9	110.9	108.9	107.2	2.3	16.3	31.7	39.4	46.8
	2000	130.0	126.7	123.5	121.8	120.2	2.5	18.0	34.9	43.4	51.6
	2200	143.0	139.7	136.5	134.8	133.2	2.8	19.6	38.1	47.3	56.2
	2400	156.0	152.7	149.5	147.8	146.2	3.0	21.3	41.1	51.1	60.8
	2500	162.5	159.2	156.0	154.3	152.7	3.1	22.1	42.6	52.9	63.1
	2700	———	———	———	———	———	———	———	———	———	———

Delivery, Shaft Input Power (at 20mm /s)

Model	Speed min^{-1}	Delivery L/min					Shaft Input Power kW				
		0.7 MPa	7 MPa	14 MPa	17.5 MPa	21 MPa	0.7 MPa	7 MPa	14 MPa	17.5 MPa	21 MPa
35VQ-25	1000	79.2	73.4	67.0	64.0	60.8	1.8	10.9	20.9	25.6	30.3
	1200	95.0	88.9	82.8	79.8	76.6	2.0	12.7	25.0	30.6	36.3
	1500	119.0	112.9	106.8	103.8	100.6	2.3	16.0	31.0	38.0	45.2
	1800	142.0	135.9	129.8	126.8	123.6	2.6	19.1	37.1	45.5	54.0
	2000	158.4	152.3	146.2	143.1	140.0	2.9	21.0	41.0	50.5	60.1
	2200	174.2	168.1	162.0	158.9	155.9	3.1	23.0	45.0	55.5	66.0
	2400	190.1	184.0	177.8	174.8	171.7	3.4	24.9	48.9	60.5	72.0
	2500	198.0	191.9	185.8	182.7	179.6	3.5	25.9	50.8	62.9	75.0
35VQ-30	1000	95.0	88.3	80.7	77.8	74.2	1.8	12.8	25.2	31.1	37.0
	1200	114.0	106.9	99.7	96.8	93.2	2.0	15.3	30.1	37.2	44.3
	1500	142.0	135.9	127.7	124.8	121.2	2.4	19.0	37.4	46.4	55.2
	1800	171.0	163.9	156.7	153.8	150.2	2.7	22.6	44.9	55.6	66.1
	2000	190.0	183.1	176.1	172.7	169.2	3.0	25.1	49.8	61.7	73.5
	2200	209.0	202.1	195.1	191.7	188.2	3.3	27.6	54.7	67.9	80.9
	2400	228.0	221.1	214.1	210.7	207.2	3.6	30.1	59.6	74.0	88.2
	2500	237.5	230.6	223.6	220.2	216.7	3.7	31.4	62.1	77.1	91.9
35VQ-35	1000	109.0	102.9	94.9	92.0	88.4	2.2	14.5	28.1	35.0	41.5
	1200	131.0	123.9	116.7	113.8	110.2	2.5	17.3	33.7	41.8	49.7
	1500	164.0	156.9	149.7	146.8	143.2	2.9	21.3	41.8	52.0	61.8
	1800	196.0	188.9	181.7	178.8	175.2	3.3	25.4	51.4	62.3	74.1
	2000	218.0	211.1	204.1	200.7	197.2	3.6	28.1	56.6	69.0	82.3
	2200	239.8	232.9	225.9	222.5	219.0	3.9	30.8	61.7	75.8	90.4
	2400	261.6	254.7	247.7	244.3	240.8	4.3	33.5	66.7	82.4	98.5
	2500	———	———	———	———	———	———	———	———	———	———
35VQ-38	1000	118.0	110.9	101.7	99.1	95.1	2.7	15.8	30.4	37.6	44.6
	1200	142.0	133.8	125.7	122.8	118.8	3.0	18.9	36.2	44.9	53.2
	1500	177.0	169.9	160.7	157.8	153.8	3.4	23.1	44.9	55.8	66.2
	1800	213.0	204.8	196.7	193.8	189.8	3.9	27.5	53.6	66.7	79.2
	2000	236.0	228.3	220.5	216.6	212.8	4.3	30.4	59.5	74.0	88.1
	2200	259.6	251.9	244.1	240.2	236.4	4.6	33.4	65.4	81.4	97.1
	2400	283.2	275.5	267.7	263.8	260.0	5.0	36.3	71.2	88.7	106.0
	2500	———	———	———	———	———	———	———	———	———	———

Delivery, Shaft Input Power (at 20mm /s)

Model	Speed min^{-1}	Delivery L/min				Shaft Input Power			
		0.7 MPa	7 MPa	14 MPa	17.5 MPa	0.7 MPa	7 MPa	14 MPa	17.5 MPa
45VQ-42	1000	134.0	124.8	114.6	109.7	2.7	18.0	35.9	44.4
	1200	161.0	151.8	141.6	136.7	3.0	21.4	42.8	53.0
	1500	201.0	191.8	181.6	176.7	3.5	26.5	53.3	66.0
	1800	241.0	231.8	221.6	216.7	4.0	31.6	63.7	79.0
	2000	268.0	258.2	248.4	243.5	4.4	35.3	70.1	87.5
	2200	294.8	285.0	275.2	270.3	4.9	38.9	76.9	95.8
45VQ-50	1000	156.0	146.8	136.6	131.7	3.1	20.6	40.2	50.3
	1200	187.0	177.8	167.6	162.7	3.5	24.5	47.9	60.2
	1500	234.0	224.8	214.6	209.7	4.0	30.3	59.7	74.8
	1800	280.0	270.8	260.6	255.7	4.7	36.1	71.3	89.6
	2000	312.0	302.2	292.4	287.5	5.1	40.2	79.2	99.4
	2200	343.2	333.4	323.6	318.7	5.6	44.4	87.1	109.0
45VQ-60	1000	189.0	177.8	165.5	159.6	4.0	24.9	47.8	59.8
	1200	227.0	215.8	203.5	197.6	4.5	29.6	57.1	71.4
	1500	284.0	272.8	260.5	254.6	5.2	36.5	71.0	88.8
	1800	340.0	328.8	316.5	310.6	5.9	43.5	84.8	106.1
	2000	378.0	366.2	354.3	348.4	6.4	48.4	94.2	117.7
	2200	415.8	404.0	392.1	386.2	6.9	53.1	103.5	129.2

Notes on Use

See page B5, Notes on Using Vane Pumps

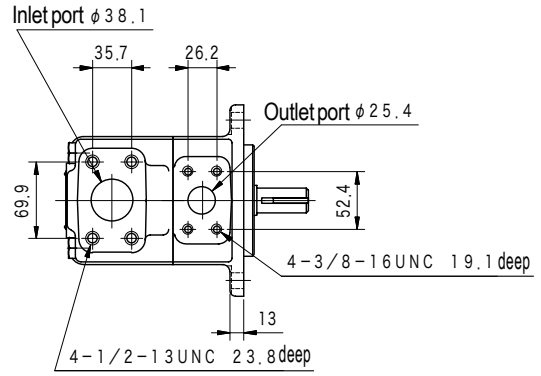
Piping Flange (Conforming to SAE J518c at Standard Pressure]

- Pump flange not included.
- Flanges (incl. hex socket bolts, spring washers, and O-rings) should be ordered separately from the table below.
- See page Q12 for details such as external dimensions, etc.

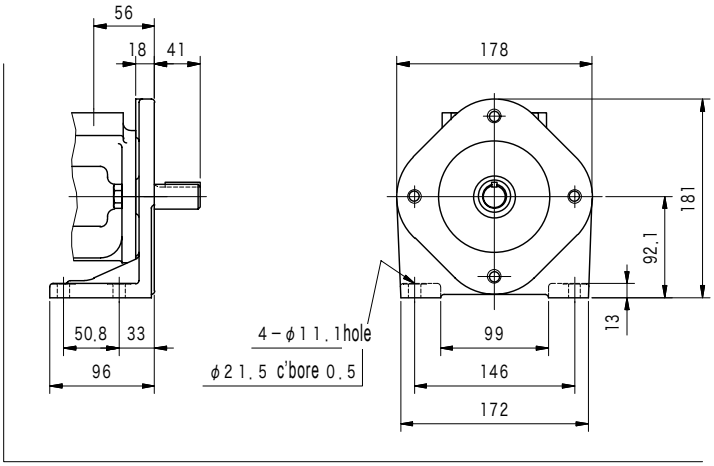
Pump Model	Flange Model					
	Inlet Port			Outlet Port		
	Code	Threaded	Flanged	Code	Threaded	Flanged
25VQ	1-1/2	FL1-12-12P-10-JA-S4-J	FL1-12-12W-10-JA	1	FL1-8-08P-10-JA-S4-J	FL1-8-08W-10-JA
35VQ	2	FL1-16-16P-10-JA-S4-J	FL1-16-16W-10-JA	1-1/4	FL1-10-10P-10-JA-S4-J	FL1-10-10W-10-JA
45VQ	3	FL1-24-24P-10-JA-S4-J	FL1-24-24W-10-JA	1-1/2	FL1-12-12P-10-JA-S4-J	FL1-12-12W-10-JA

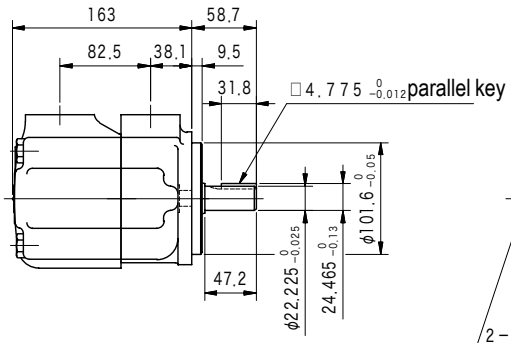
Dimensions

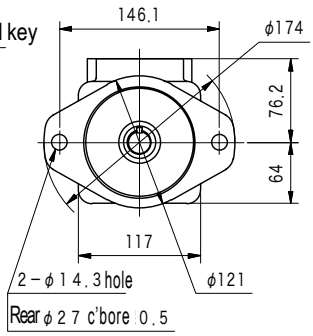
2 5 V Q (Flange Mount)

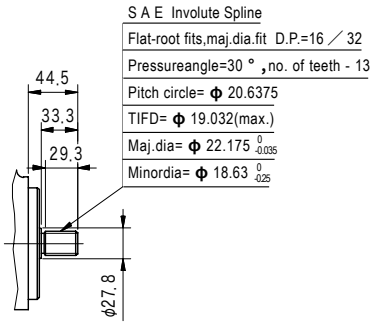


(Foot Mount)



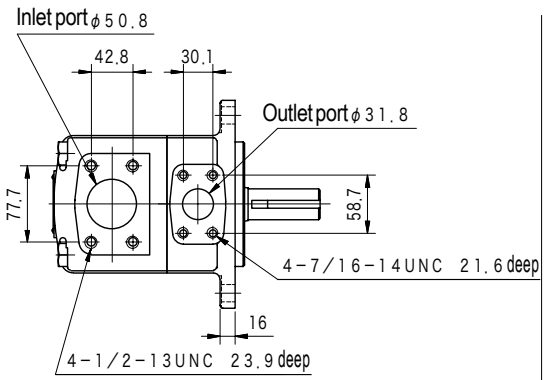




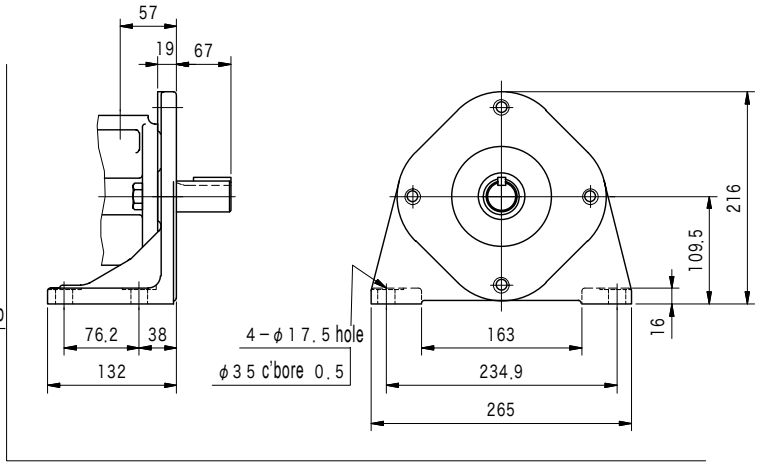


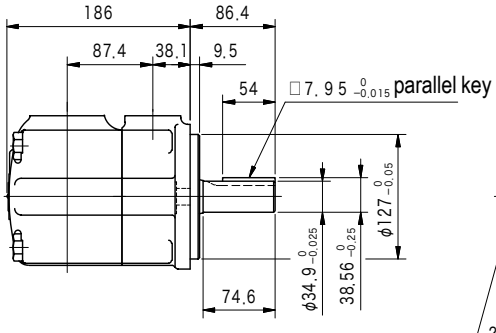
No.11 Spline Shaft End

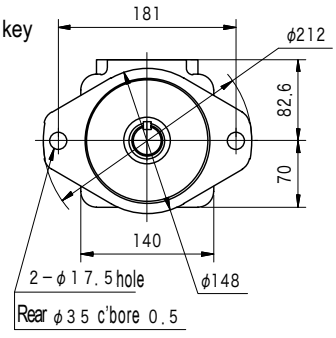
3 5 V Q (Flange Mount)

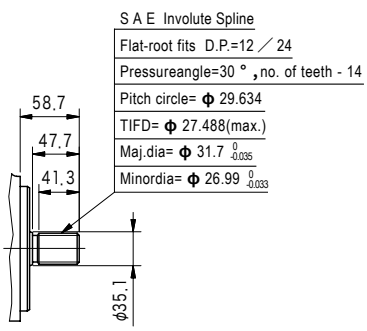


(Foot Mount)





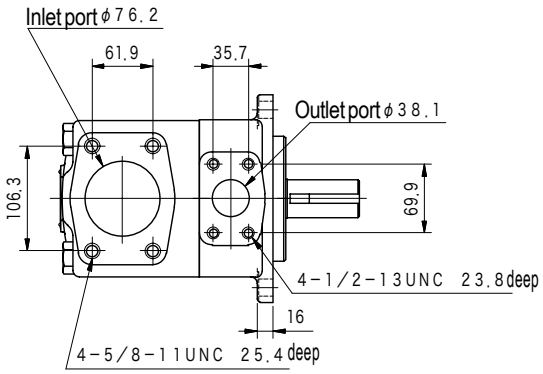




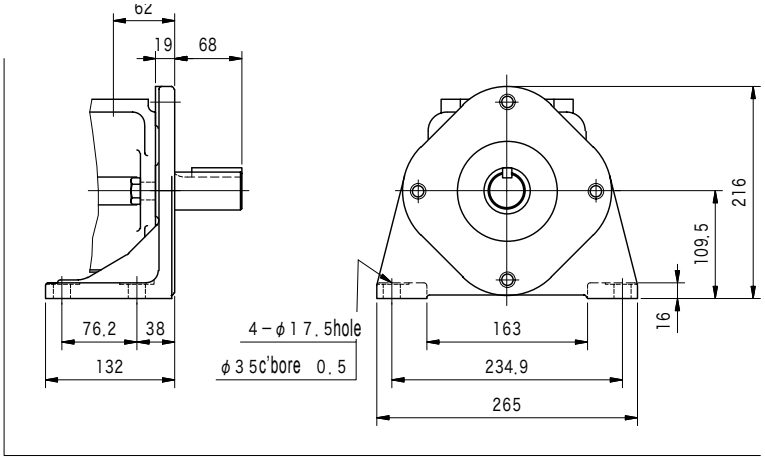
No.11 Spline Shaft End

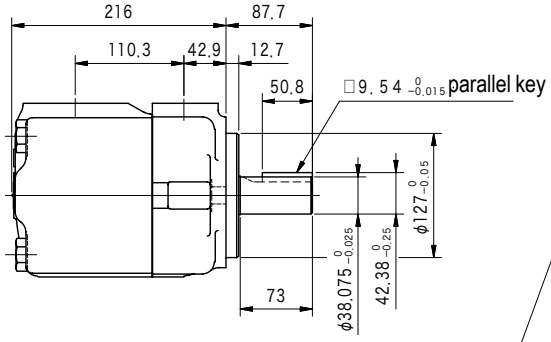
Dimensions

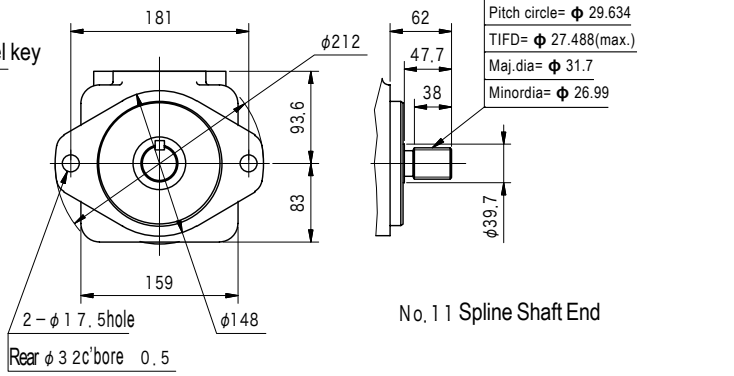
4 5 V Q (Flange Mount)



(Foot Mount)





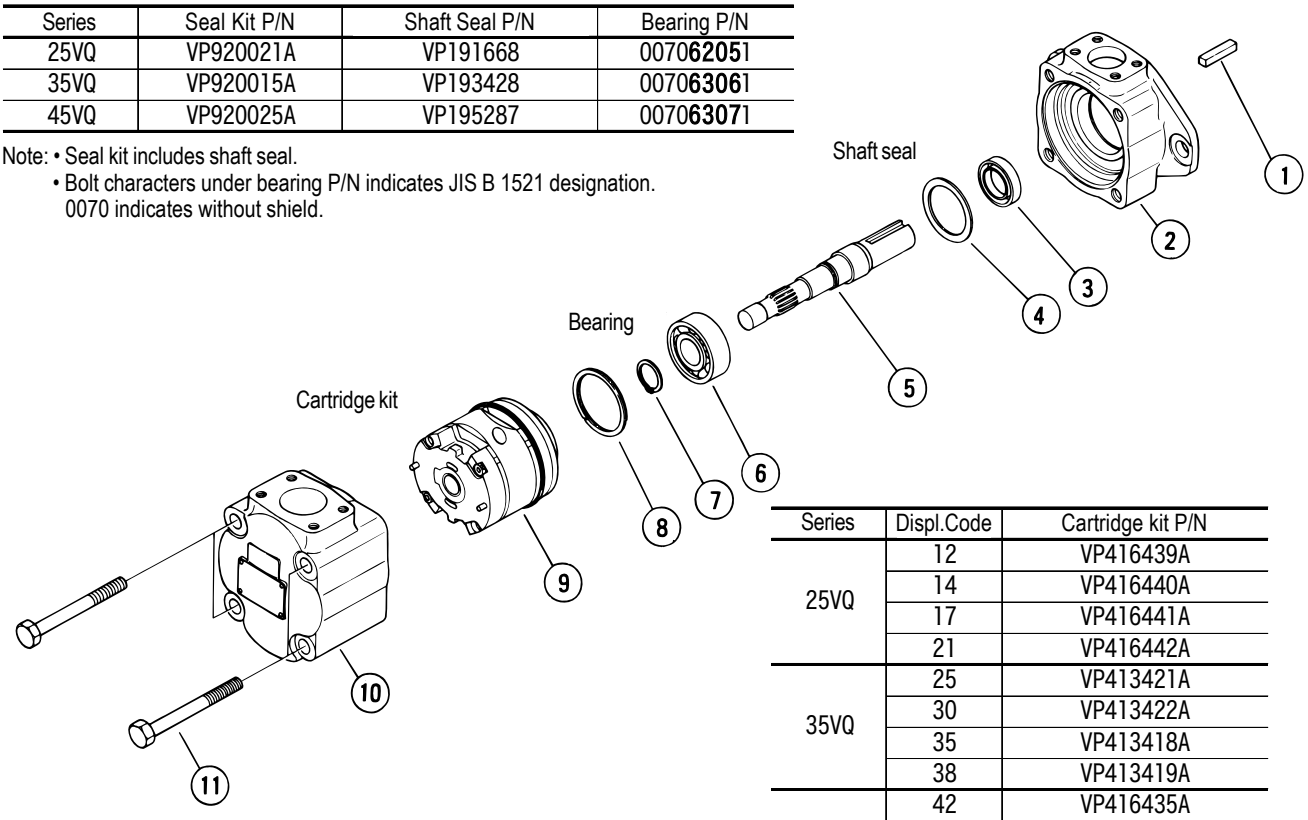


No. 1 1 Spline Shaft End

Construction

Series	Seal Kit P/N	Shaft Seal P/N	Bearing P/N
25VQ	VP920021A	VP191668	007062051
35VQ	VP920015A	VP193428	007063061
45VQ	VP920025A	VP195287	007063071

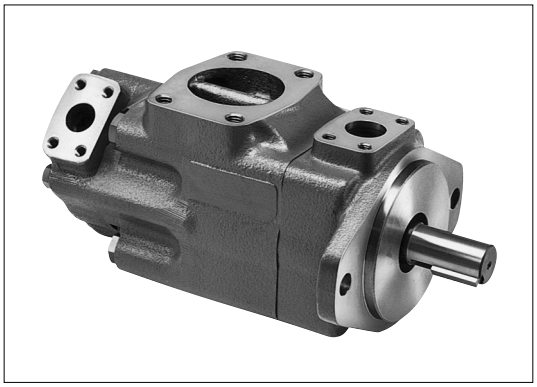
Note: • Seal kit includes shaft seal.
• Bolt characters under bearing P/N indicates JIS B 1521 designation.
0070 indicates without shield.

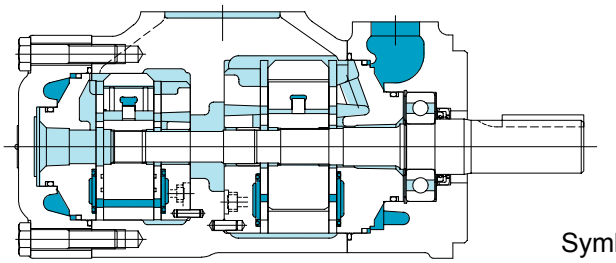


Series	Displ.Code	Cartridge kit P/N
25VQ	12	VP416439A
	14	VP416440A
	17	VP416441A
	21	VP416442A
35VQ	25	VP413421A
	30	VP413422A
	35	VP413418A
	38	VP413419A
45VQ	42	VP416435A
	50	VP416436A
	60	VP416437A

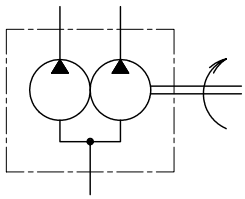
Note: • Cartridge kit includes seals except shaft seal.
• "L" suffix at end of cartridge kit P/N denotes left hand rotation.

High performance double fixed displacement vane pumps for mobile applications VQ series





Symbol



Model Code

(F3-) 3 5 2 5 V Q 38 A 17 (F) - 86 C C 20 (L) -JA

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11

1 Fluid
Omit for mineral oil
F3: phosphate ester

2 High performance vane pump for mobile applications
2520VQ Series
3520, 3525VQ Series
4520, 4525, 4535VQ Series

3 Shaft end pump displacement

Series	Displacement
25**VQ	12, 14, 17, 21
35**VQ	25, 30, 35, 38
45**VQ	42, 50, 60

4 Port piping connection
A: SAE 4 bolt flange connection

5 Cover end pump displacement

Series	Displacement
**20VQ	5, 8, 11, 12, 14
**25VQ	12, 14, 17, 21
**35VQ	25, 30, 35, 38

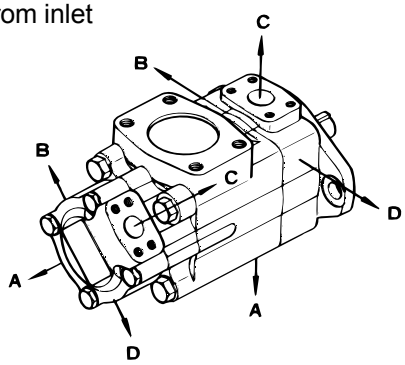
6 Pump mounting
Omit for flange mounting
F: foot mounting

7 Shaft
1: sq. key parallel shaft (25VQ)
86: sq. key parallel shaft (35VQ, 45VQ)
11: spline shaft

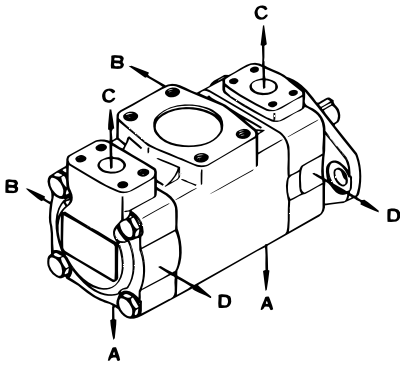
8 Shaft end pump outlet position (viewed from cover end)
A: opposite of inlet
B: 90° CCW from inlet
C: aligned with inlet
D: 90° CW from inlet

9 Cover end pump outlet position (viewed from cover end)
2520, 3520, 3525, 4520, 4525VQ
A: 135° CCW from inlet
B: 45° CCW from inlet
C: 45° CW from inlet
D: 135° CW from inlet
4535VQ
A: opposite of inlet
B: 90° CCW from inlet
C: aligned with inlet
D: 90° CW from inlet

●2520VQ
●3520VQ
●3525VQ
●4520VQ
●4525VQ



●4535VQ



10 Design no.

11 Rotation (viewed from shaft end)
Omit for right hand rotation (CW)
L: left hand rotation (CCW)

Specifications

Model	Shaft End Pump						Cover End Pump				Min. Speed min^{-1}	Weight kg
	Displ. Code	Del. at 1000 min^{-1} 0.7Mpa L/min	Anti-Wear Mineral Oil		Phosphate Ester		Displ. Code	Del. at 1000 min^{-1} 0.7Mpa L/min	Max. Working Pressure MPa			
			Max. Wkg. Pressure MPa	Max. Speec min^{-1}	Max. Wkg. Pressure MPa	Max. Speec min^{-1}			Anti-Wear Mineral Oil	Phosphate Ester		
2520VQ	12	38. 3	21	2700	14	1800	5	16. 7	21	14	600	20. 4
	14	43. 3										
	17	52. 5		2500		1600	8	26. 2				
	21	65. 0										
3520VQ	25	79. 2	21	2500	14	1600	11	35. 0			600	34. 0
	30	95. 0										
	35	109. 0		2400								
	38	118. 0					12	37. 9	16			
4520VQ	42	134. 0	17. 5	2200	14	1500					600	42. 6
	50	156. 0					14	44. 2	14			
	60	189. 0										
3525VQ	25	79. 2	21	2500	14	1600	12	38. 3	21	14	600	34. 5
	30	95. 0										
	35	109. 0		2400			14	43. 3				
	38	118. 0										
4525VQ	42	134. 0	17. 5	2200	14	1500	17	52. 5			600	45. 8
	50	156. 0										
	60	189. 0					21	65. 0				
4535VQ	42	134. 0	17. 5	2200	14	1500	25	79. 0	21	14	600	53. 5
	50	156. 0					30	95. 0				
	60	189. 0					35	109. 0				
							38	118. 0				

Note: • As max. working pressure may be limited for general industrial machinery applications, consult Tokimec.
• Max. speed is based on 0 MPa (gauge pressure) inlet pressure.
• Max. speed will be limited by negative inlet pressure. Consult Tokimec in this case.

Delivery, Shaft Input Power

Model	Delivery, Shaft Input Power	
	Shaft Side Pump	Cover Side Pump
2520VQ	same as 25VQ Series (page B40)	See Table on next page.
3520VQ	same as 35VQ Series (page B41)	
4520VQ	same as 45VQ Series (page B42)	
3525VQ	same as 35VQ Series (page B41)	same as 25VQ Series (page B40)
4525VQ	same as 45VQ Series (page B42)	
4535VQ	same as 45VQ Series (page B42)	same as 35VQ Series (page B41)

Delivery, Shaft Input Power (at 20 mm²/s)

Model	Speed min⁻¹	Delivery L/min					Shaft Input Power kW				
		0.7 MPa	7 MPa	14 MPa	17.5 MPa	21 MPa	0.7 MPa	7 MPa	14 MPa	17.5 MPa	21 MPa
20VQ-5	1000	16.7	15.7	14.7	14.2	13.6	0.4	2.9	4.9	6.1	7.3
	1200	20.0	19.0	18.0	17.5	16.9	0.5	3.3	5.9	7.3	8.7
	1500	25.0	24.0	23.0	22.5	21.9	0.6	4.0	7.4	9.2	10.9
	1800	30.0	29.0	28.0	27.5	26.9	0.6	4.3	8.8	10.9	13.0
	2000	33.4	32.4	31.4	30.9	30.3	0.7	4.8	9.6	11.9	14.2
	2200	36.7	35.7	34.7	34.2	33.7	0.7	5.3	10.5	13.0	15.4
	2400	40.1	39.1	38.0	37.5	37.0	0.8	5.7	11.3	14.0	16.6
	2500	41.8	40.7	39.7	39.2	38.7	0.8	6.0	11.7	14.5	17.2
	2700	45.1	44.1	43.1	42.5	42.0	0.9	6.4	12.5	15.5	18.4
20VQ-8	1000	26.2	24.2	22.6	21.1	20.1	0.5	4.0	6.8	8.5	10.1
	1200	31.5	29.5	27.9	26.4	25.4	0.6	4.6	8.2	10.2	12.1
	1500	39.4	37.4	35.8	34.3	33.3	0.8	5.6	10.2	12.7	15.1
	1800	47.2	45.2	43.6	42.1	41.1	0.8	6.7	12.0	15.1	17.9
	2000	52.4	50.4	48.3	47.3	46.3	0.9	7.4	13.3	16.7	19.9
	2200	57.6	55.6	53.6	52.5	51.5	1.0	8.0	14.6	18.3	21.9
	2400	62.9	60.8	58.8	57.8	56.8	1.0	8.6	15.9	19.9	23.8
	2500	65.5	63.5	61.4	60.4	59.4	1.1	8.8	16.6	20.7	24.8
	2700	70.7	68.7	66.7	65.6	64.6	1.2	9.4	17.8	22.3	26.7
20VQ-11	1000	35.0	33.0	30.4	29.4	28.3	0.7	5.0	9.4	11.6	13.8
	1200	42.0	40.0	37.4	36.4	35.3	0.8	5.8	11.2	14.0	16.6
	1500	52.5	50.5	47.9	46.9	45.8	1.0	7.0	14.1	17.4	20.7
	1800	63.2	61.0	58.4	57.4	56.2	1.0	8.5	16.5	20.7	24.6
	2000	70.0	67.7	65.4	64.2	63.0	1.1	9.3	18.2	22.8	27.2
	2200	77.0	74.7	72.4	71.2	70.0	1.2	10.2	19.9	24.8	29.7
	2400	84.0	81.8	79.5	78.4	77.3	1.3	11.0	21.5	26.8	32.1
	2500	87.5	85.2	82.9	81.7	80.5	1.4	11.4	22.3	27.8	33.3
	2700	94.5	92.2	89.9	88.7	87.5	1.5	12.2	23.9	29.8	35.7
20VQ-12	1000	37.9	36.4	34.3	———	———	0.7	5.7	10.6	———	———
	1200	45.5	44.0	41.9	———	———	0.9	6.6	12.7	———	———
	1500	56.9	55.4	53.3	———	———	1.1	8.1	15.9	———	———
	1800	68.2	66.7	64.6	———	———	1.1	9.6	18.8	———	———
	2000	75.8	74.0	72.2	———	———	1.2	10.6	20.7	———	———
	2200	83.4	81.6	79.8	———	———	1.3	11.6	22.6	———	———
	2400	91.0	89.2	87.4	———	———	1.4	12.7	24.5	———	———
	2500	94.8	93.0	91.2	———	———	1.5	13.2	25.4	———	———
	2700	102.3	100.5	98.8	———	———	1.6	14.3	27.2	———	———
20VQ-14	1000	44.2	42.7	40.6	———	———	1.0	6.7	12.4	———	———
	1200	53.0	51.5	49.4	———	———	1.1	8.0	14.9	———	———
	1500	66.0	64.0	61.9	———	———	1.3	9.8	18.6	———	———
	1800	79.5	77.5	75.4	———	———	1.4	11.7	22.1	———	———
	2000	88.4	86.4	84.3	———	———	1.5	12.9	24.3	———	———
	2200	97.2	95.2	93.2	———	———	1.7	14.1	26.5	———	———
	2400	106.1	104.0	102.0	———	———	1.8	15.3	28.7	———	———
	2500	110.5	108.5	106.4	———	———	1.9	15.9	29.8	———	———
	2700	119.3	117.3	115.3	———	———	2.0	17.1	31.9	———	———

Notes on Use

See pag B5 on Notes on Using Vane Pumps

Shaft Input (Shaft Torque) Limitation

VQ double pumps have max. shaft torque limitations. Please insure that the torque limits shown in the table are not exceeded when the total load of the two pumps are at maximum. Please refer to limitations of SQP double pumps shaft input (shaft torque) on page B21.

Series	Shaft Torque Limit. N・m	Series	Shaft Torque Limit. N・m
2520VQ	320	4520VQ	820
3520VQ	610	4525VQ	820
3525VQ	610	4535VQ	820

Piping Flange (Conforming to SAE J518c at Standard Pressure]

- Pump flange not included.
- Flanges (incl. hex socket bolts, spring washers, and O-rings) should be ordered separately from the table below.
- See page Q12 for details such as dimensions, etc.

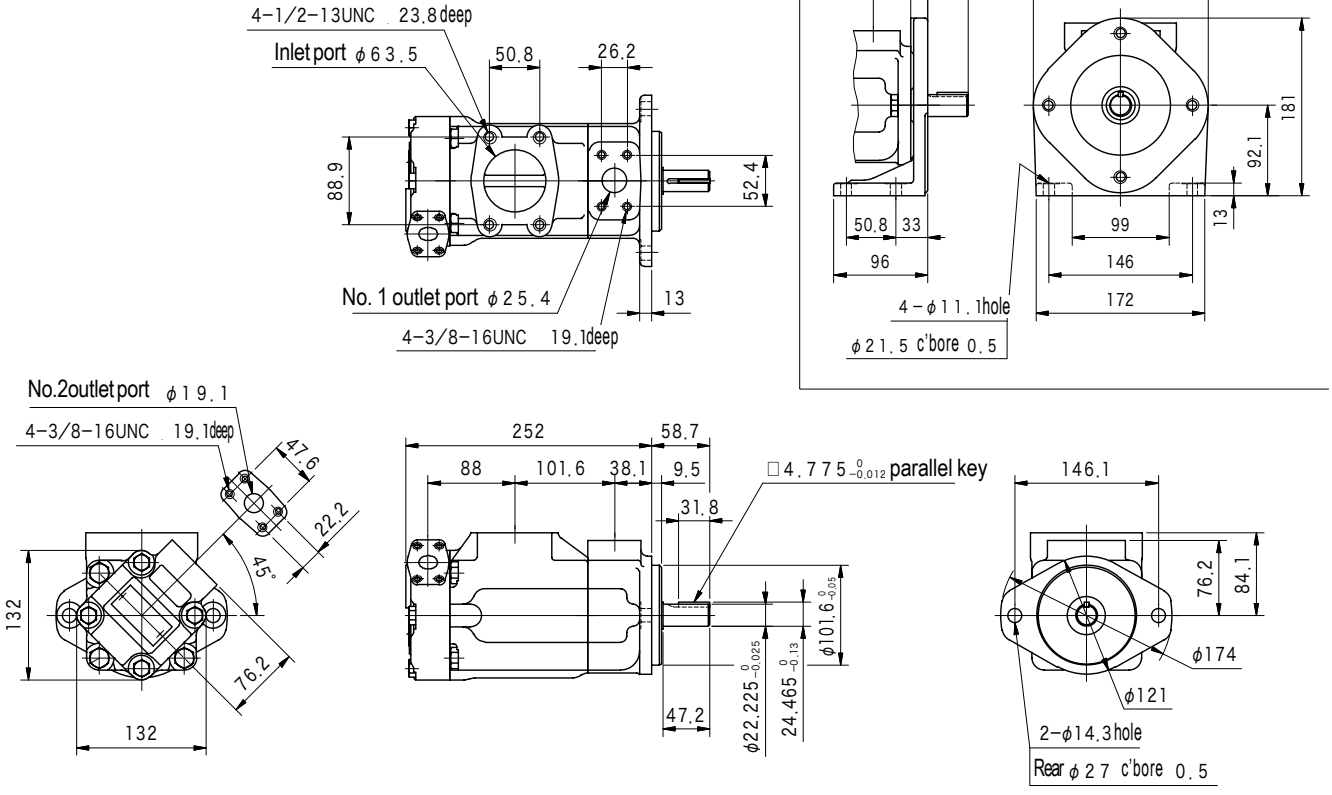
Pump Model	Type	Flange Mount					
		Inlet Port		No. 1Outlet Port (Shaft End)		No. 2 Outlet Port (Cover End)	
		Code		Code		Code	
2520VQ	Thread	2-1/2	FL1-20-20P-10-JA-S4-J	1	FL1-8-08P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Weld		FL1-20-20W-10-JA		FL1-8-08W-10-JA		FL1-6-06W-10-JA
3520VQ	Thread	3	FL1-24-24P-10-JA-S4-J	1-1/4	FL1-10-10P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Weld		FL1-24-24W-10-JA		FL1-10-10W-10-JA		FL1-6-06W-10-JA
3525VQ	Thread	3	FL1-24-24P-10-JA-S4-J	1-1/4	FL1-10-10P-10-JA-S4-J	1	FL1-8-08P-10-JA-S4-J
	Weld		FL1-24-24W-10-JA		FL1-10-10W-10-JA		FL1-8-08W-10-JA
4520VQ	Thread	3-1/2	———	1-1/2	FL1-12-12P-10-JA-S4-J	3/4	FL1-6-06P-10-JA-S4-J
	Weld		FL1-28-28W-10-JA		FL1-12-12W-10-JA		FL1-6-06W-10-JA
4525VQ	Thread	3-1/2	———	1-1/2	FL1-12-12P-10-JA-S4-J	1	FL1-8-08P-10-JA-S4-J
	Weld		FL1-28-28W-10-JA		FL1-12-12W-10-JA		FL1-8-08W-10-JA
4535VQ	Thread	4	———	1-1/2	FL1-12-12P-10-JA-S4-J	1-1/4	FL1-10-10P-10-JA-S4-J
	Weld		FL1-32-32W-10-JA		FL1-12-12W-10-JA		FL1-10-10W-10-JA

Dimensions

- Refer to the below table for the No. 11 spline shaft end configuration.

Model	Shaft End Configuration
2520VQ	same as 25VQ (page B43)
3520VQ	same as 35VQ (page B43)
3525VQ	
4520VQ	same as 45VQ (page B44)
4525VQ	
4535VQ	

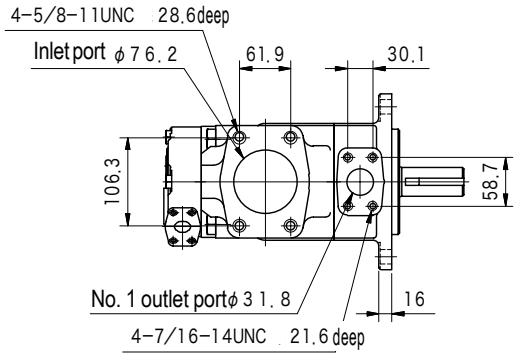
2520VQ (Flange Mount)



(Foot Mount)

Dimensions

3520VQ (Flange Mount)



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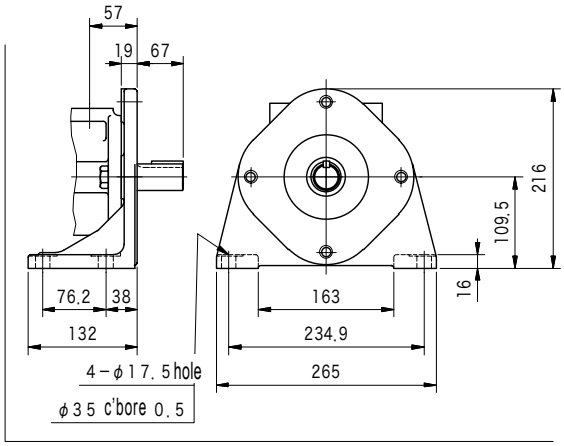
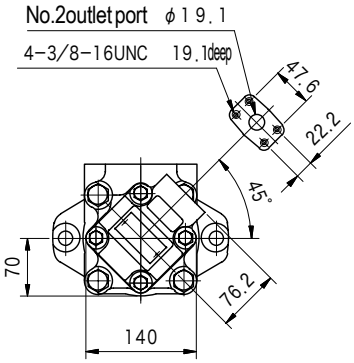
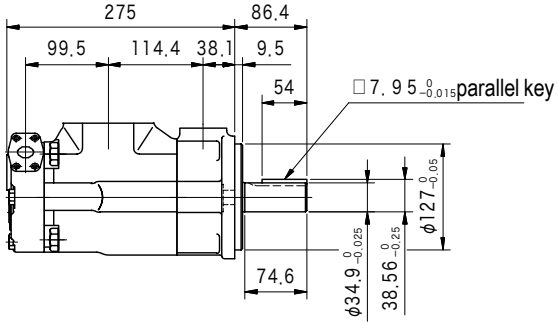
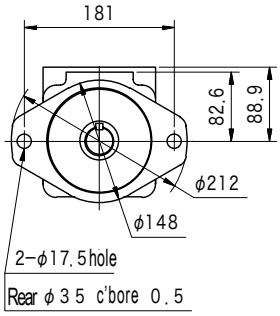
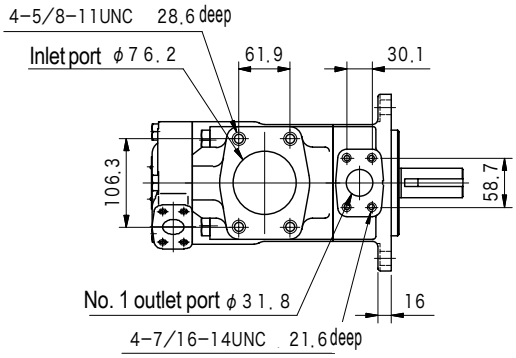




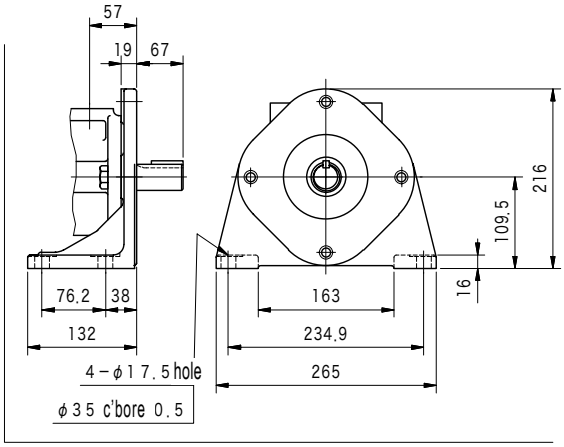


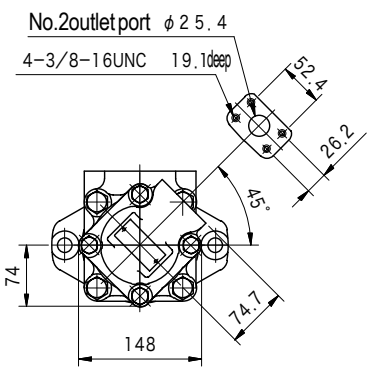


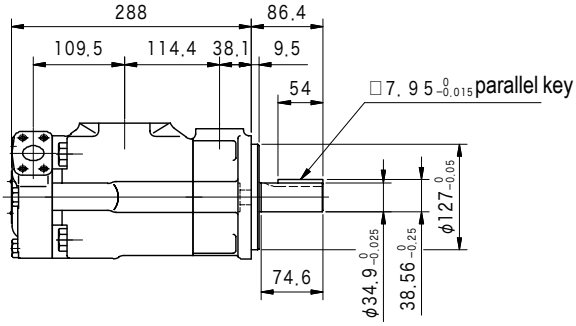
3525VQ (Flange Mount)

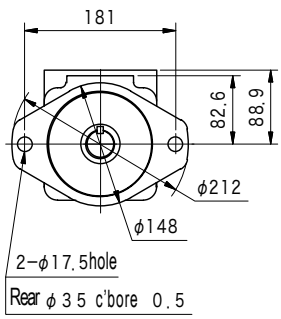


(Foot Mount)



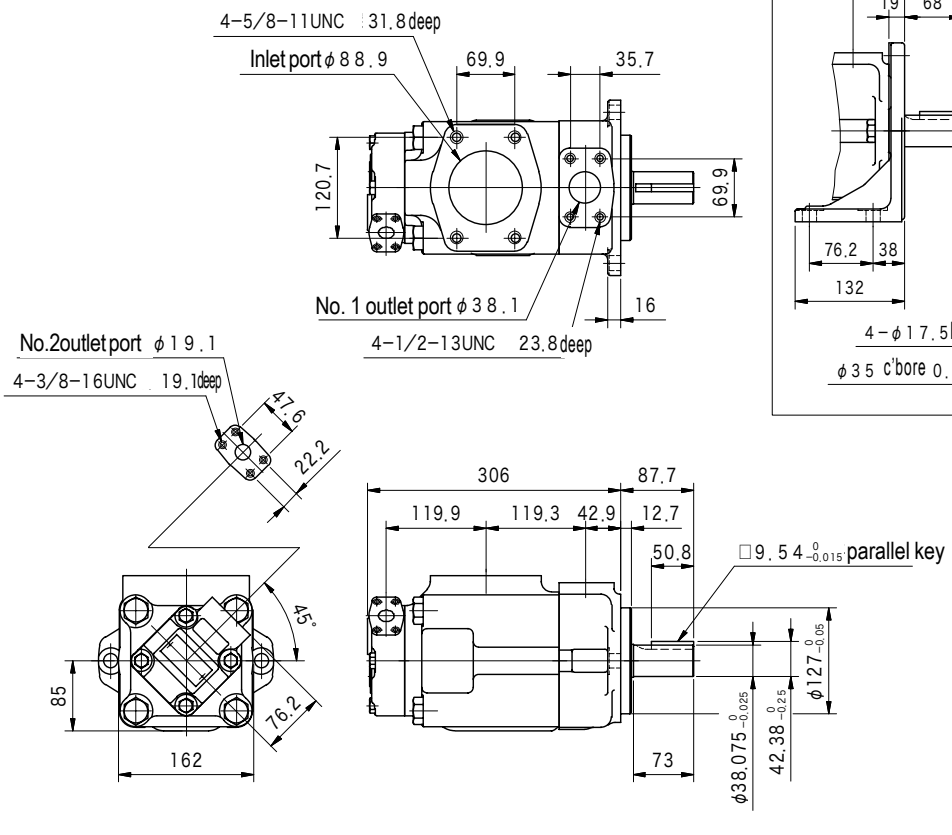




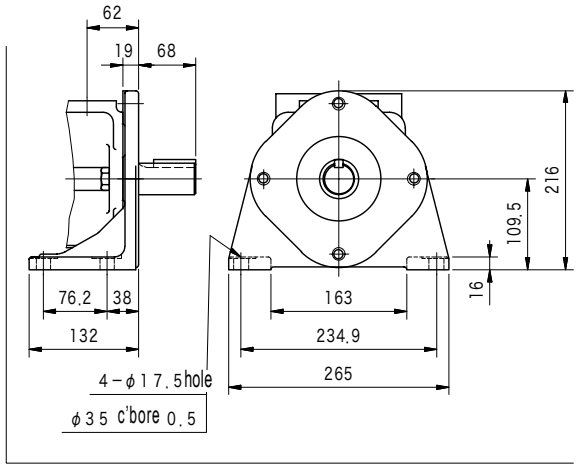


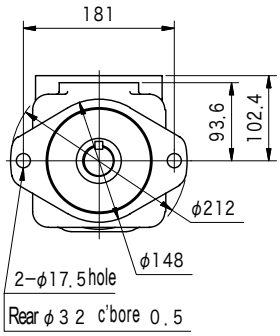
Dimensions

4520VQ (Flange Mount)

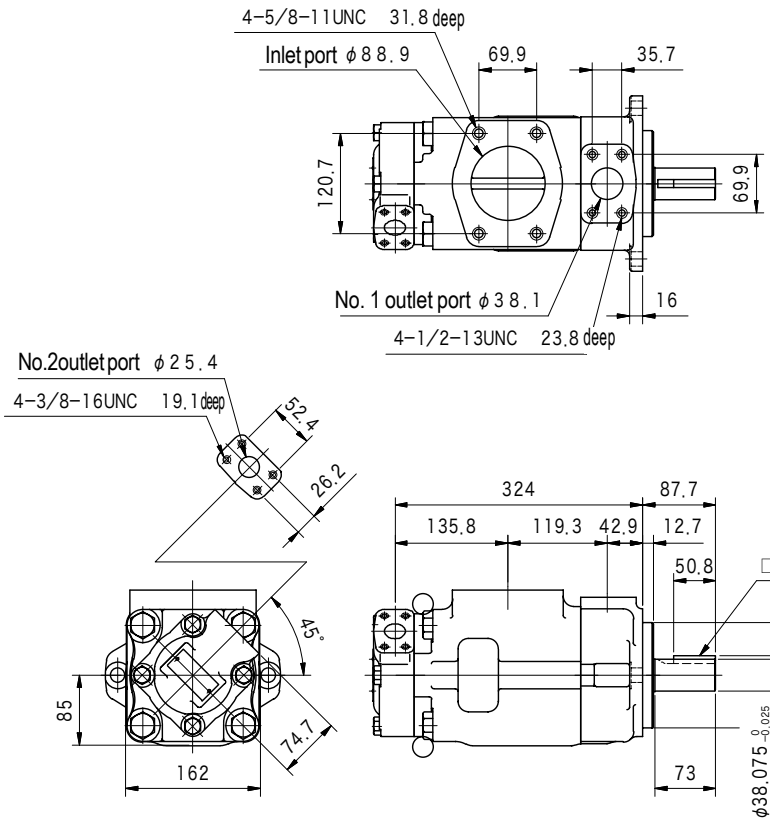


(Foot Mount)

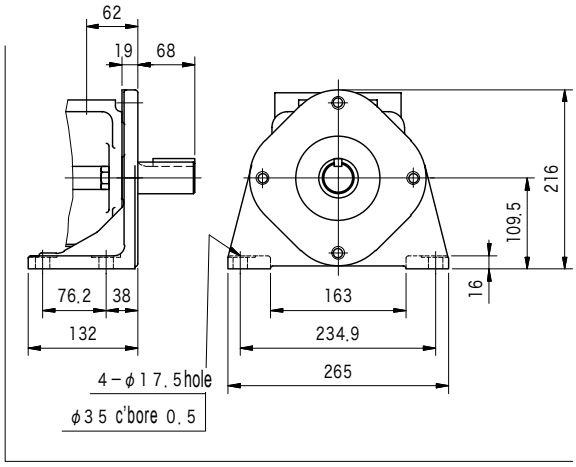


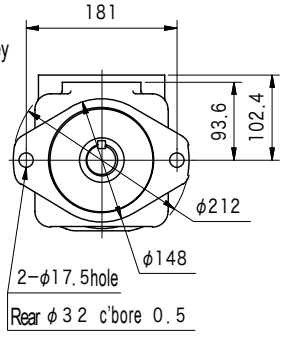


4525VQ (Flange Mount)



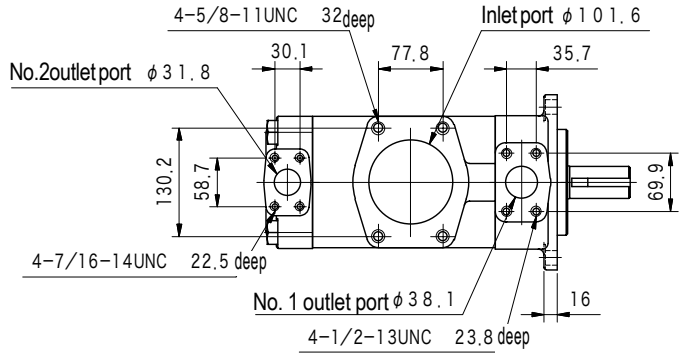
(Foot Mount)



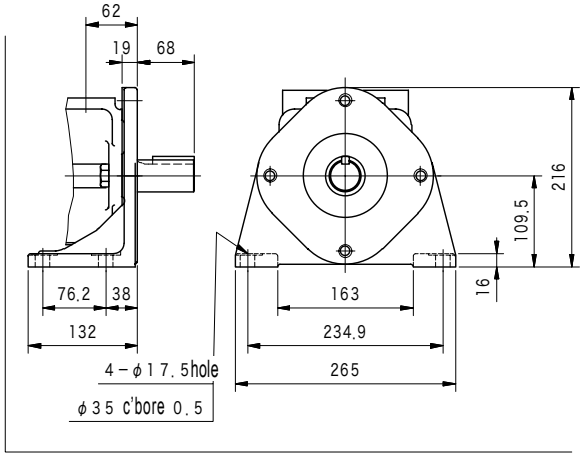


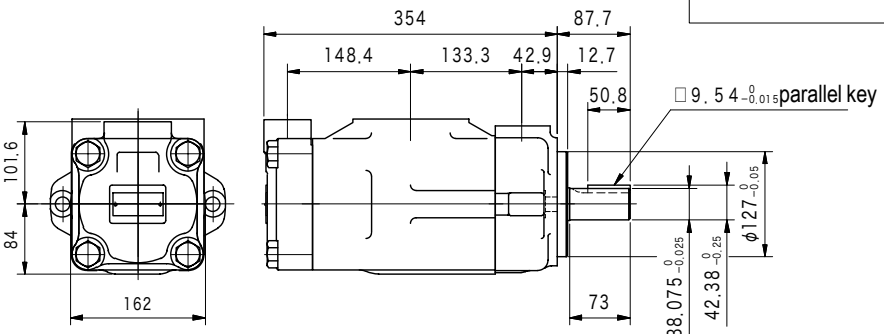
Dimensions

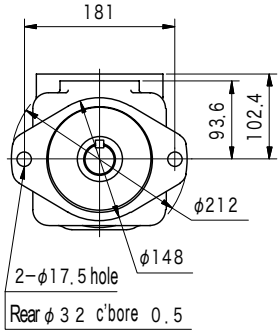
4535VQ (Flange Mount)



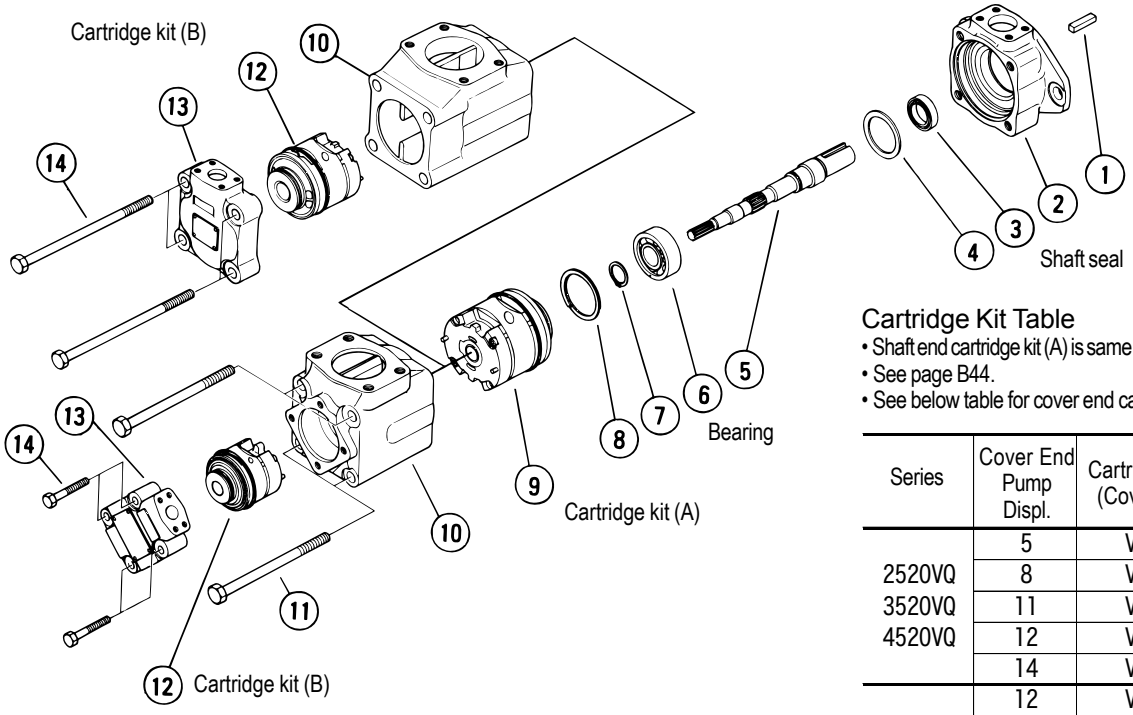
(Foot Mount)







Construction



Seal, Bearing Table

Series	Seal Kit P/N	Shaft Seal P/N	Bearing P/N
2520VQ	VP920040A	VP191668	0070**6205**1
3520VQ	VP920048A	VP193428	0070**6306**1
3525VQ	VP920056A	VP193428	0070**6306**1
4520VQ	VP920060A	VP195287	0070**6307**1
4525VQ	VP920068A	VP195287	0070**6307**1
4535VQ	VP920072A	VP195287	0070**6307**1

Note:• Seal kit includes shaft seal.
• Bearing P/N in bold characters designate JIS B 1521 P/N.
• 0070 indicates no shield.

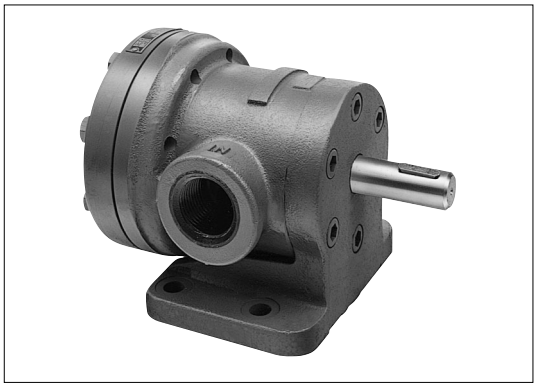
Cartridge Kit Table

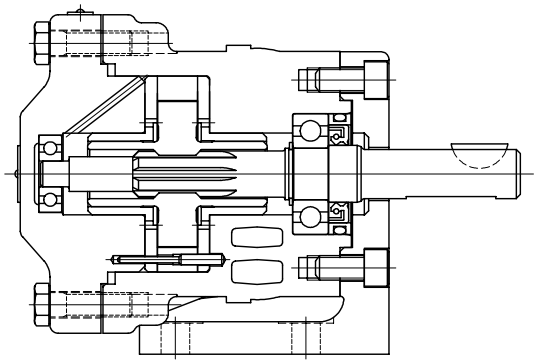
- Shaft end cartridge kit (A) is same as for single pump.
- See page B44.
- See below table for cover end cartridge kit (B) P/N.

Series	Cover End Pump Displ.	Cartridge Kit (B) P/N (Cover End Pump)
2520VQ 3520VQ 4520VQ	5	VP417053A
	8	VP417054A
	11	VP416427A
	12	VP416428A
	14	VP416429A
3525VQ 4525VQ	12	VP421244A
	14	VP421235A
	17	VP421236A
	21	VP421238A
4535VQ	25	VP421240A
	30	VP421241A
	35	VP421242A
	38	VP421243A

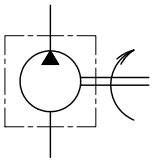
Note:• Cartridge kit includes seals except for shaft seal.
• "L" suffix at end of P/N denotes left hand rotation.

Fixed displacement vane pumps V-104,124,134,144 series





Symbol



Model Code

(F3) - V - 104 - Y - 10 - (LH) - (S) - JA - (S36) -J

1 | 2 | 3 | 4 | 5 | 6 | 7

(F3) - V - 134 U - 20 - (LH) - (S) - JA - (S36) -J

1 | 2 | 3 | 4 | 5 | 6 | 7

1 Fluid
Omit for mineral oil, water glycol (S36)
F3: phosphate ester

2 Fixed displacement vane pump
V-104 Series, V-124 Series
V-134 Series, V-144 Series

Series	Pump Mounting
	Foot Mounting
V–104	V–104
V–124	V–124
V–134	V–134
V–144	V–144

3 Pump displacement

Series	Displacement
V–104	Y, E, G, A, C, D
V–124	omitted
V–134	omitted, U, X
V–144	omitted

4 Design no.
10: V-104 Series
20: V-124, 134, 144 Series

5 Rotation (viewed from shaft end)
Omitted: right hand rotation (CW)
LH: left hand rotation (CCW)

6 Port connection position (for foot mounting)
Omitted:viewed from shaft end - inlet port on left side, outlet port on right side (standard)
S:viewed from shaft end - inlet port on right side, outlet port on left side

7 Special feature
S36: for water-glycol

Specifications

Model	Displ. Code	Del. at 1000 min^{-1} 0.7Mpa L/min	Anti-Wear Mineral Oil		Phosphate Ester		Water-Glycol		Minimum Speed min^{-1}	Weight Foot Mount Pump kg
			Max. Speed min^{-1}	Max. Wkg. Pressure MPa	Max. Speed min^{-1}	Max. Wkg. Pressure MPa	Max. Speed min^{-1}	Max. Wkg. Pressure MPa		
V–104	Y	5. 7	1800	7	1200	7	1200	7	600	9. 5
	E	8. 5								
	G	11. 7								
	A	16. 8								
	C	25. 8	1500		1200*			5. 5		
	D	36. 3	1200		—	—	—	—		
V–124	—	48. 6	1500	7	1200	7	1200	5. 5	600	23. 6
V–134	—	61. 5								
	U	72. 6								
	X	94. 2	1200		—	—				
V–144	—	119					—	—		

Note: may differ depending on specific gravity of fluid. Use those below 1.2 specific gravity.

Delivery, Shaft Input Power (at 20 mm²/s)

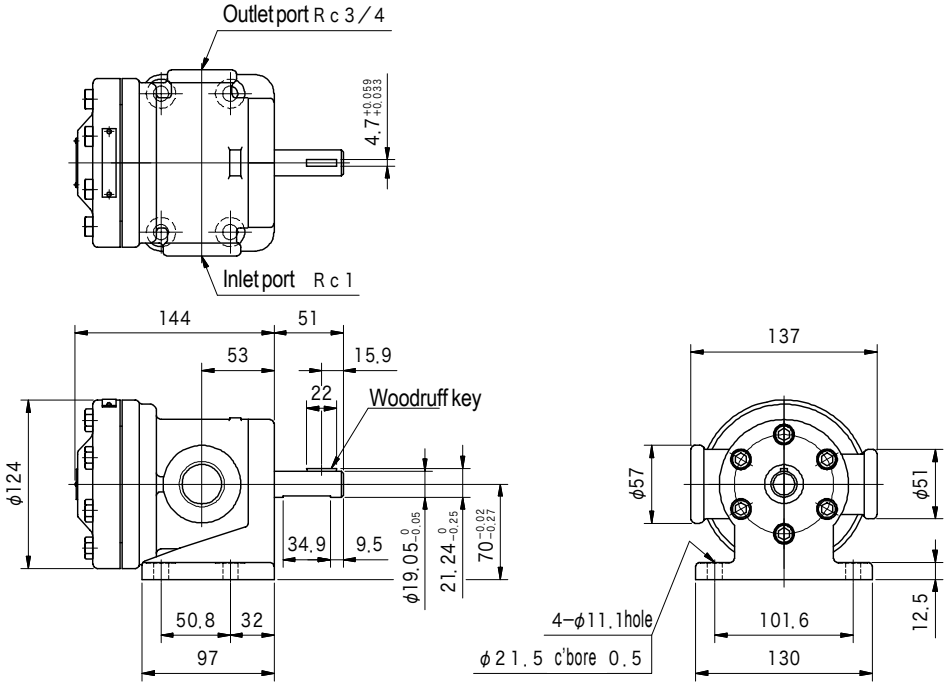
Model	Speed min⁻¹	Delivery L/min			Shaft Input Power kW		
		0 MPa	3.5 MPa	7 MPa	0 MPa	3.5 MPa	7 MPa
V-104-Y-10	1000	5.7	4.6	3.1	0.2	0.6	1.0
	1200	6.8	5.7	4.2	0.2	0.7	1.2
V-104-E-10	1000	8.5	7.4	5.9	0.2	0.7	1.4
	1200	10.2	9.1	7.6	0.2	0.9	1.7
V-104-G-10	1000	11.7	10.6	9.1	0.2	0.9	1.7
	1200	14.0	12.9	11.4	0.2	1.1	2.0
V-104-A-10	1000	16.8	15.7	14.2	0.3	1.2	2.2
	1200	20.1	19.0	17.5	0.3	1.5	2.7
V-104-C-10	1000	25.8	24.7	23.2	0.3	1.7	3.2
	1200	31.0	29.9	28.4	0.3	2.1	3.9
V-104-D-10	1000	36.3	34.4	32.9	0.3	2.3	4.4
	1200	43.5	41.6	40.1	0.3	2.8	5.3
V-124-20	1000	48.6	45.2	41.8	0.5	3.7	6.8
	1200	58.3	54.9	51.5	0.6	4.4	8.2
V-134-20	1000	61.5	58.9	55.8	0.5	4.2	7.7
	1200	73.8	71.2	68.1	0.6	5.0	9.3
V-134U-20	1000	72.6	69.5	66.1	0.5	5.1	9.3
	1200	87.1	84.0	80.6	0.6	6.1	11.2
V-134X-20	1000	94.2	90.2	86.2	0.7	6.1	11.7
	1200	113	109	105	0.8	7.3	14.1
V-144-20	1000	119	114	108	0.7	8.4	15.0
	1200	143	138	132	0.9	10.1	18.0

Notes on Use

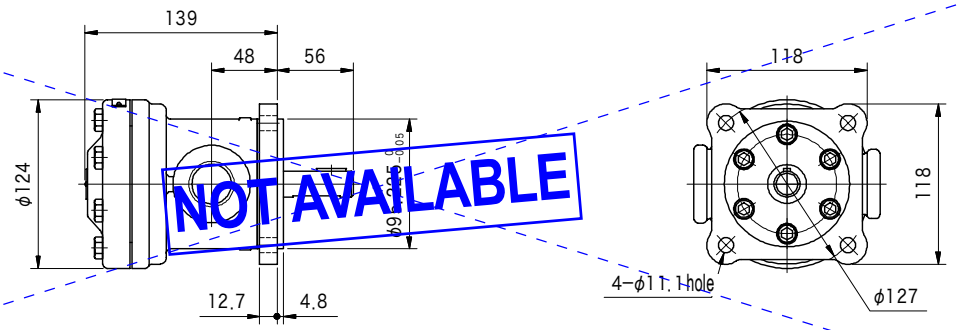
See page B5, Notes on Using Vane Pumps

Dimensions

V−104 (Foot Mount)



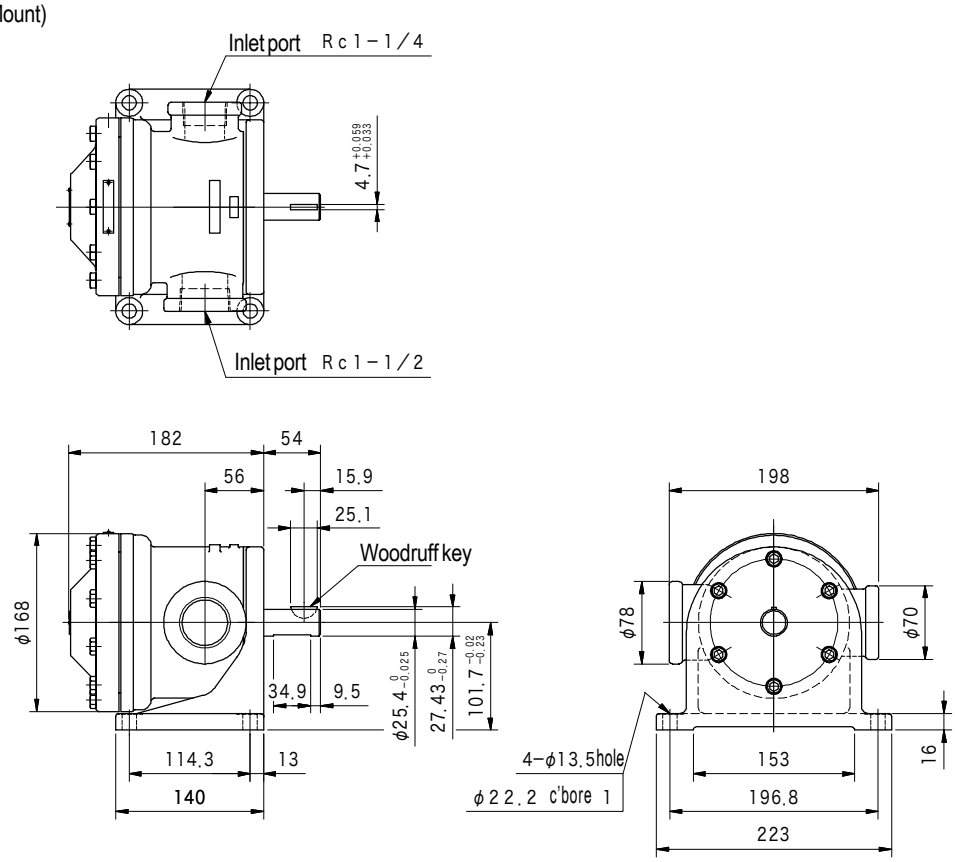
V−105 (Flange Mount)



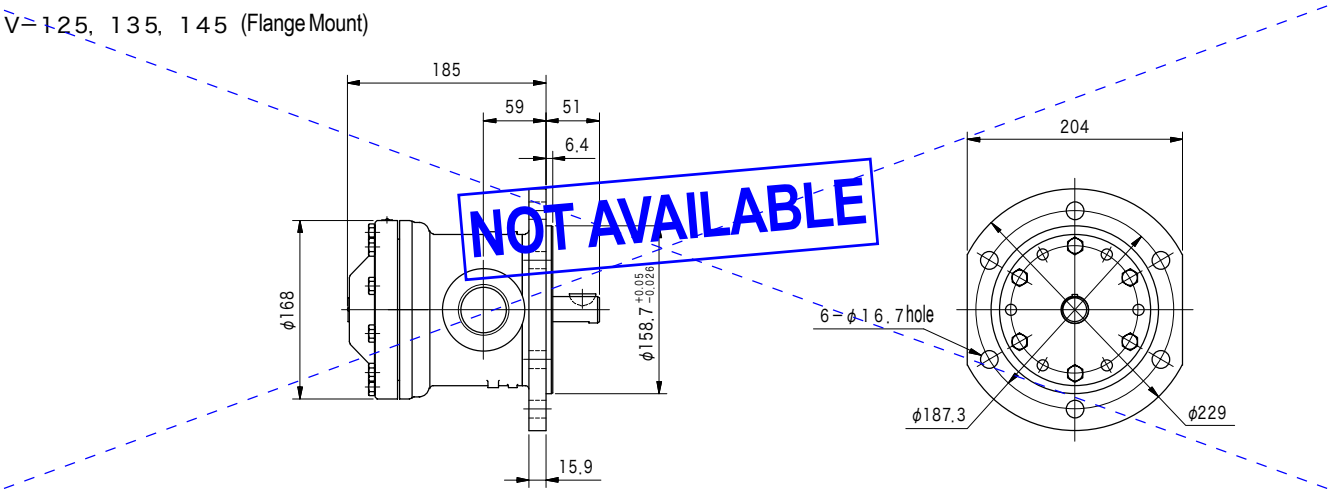
NOT AVAILABLE

Dimensions

V−124, 134, 144 (Foot Mount)

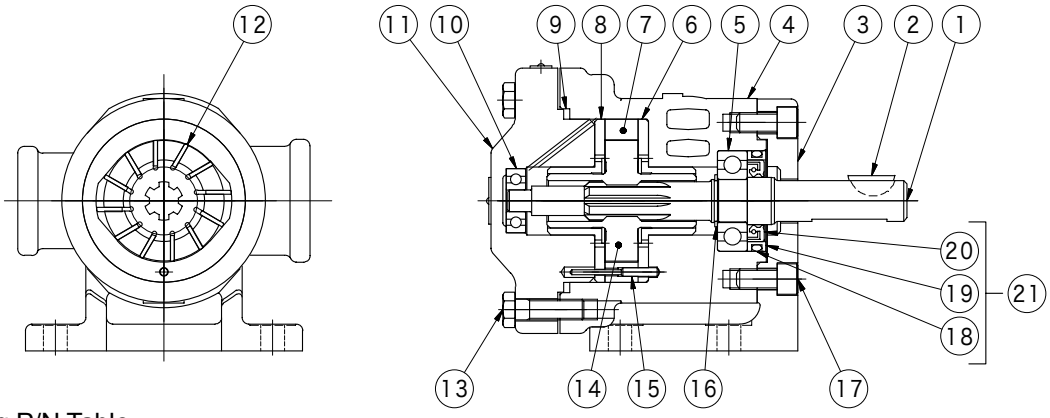


V−125, 135, 145 (Flange Mount)



NOT AVAILABLE

Construction

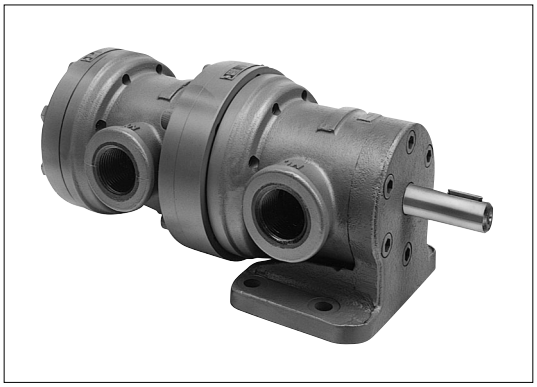


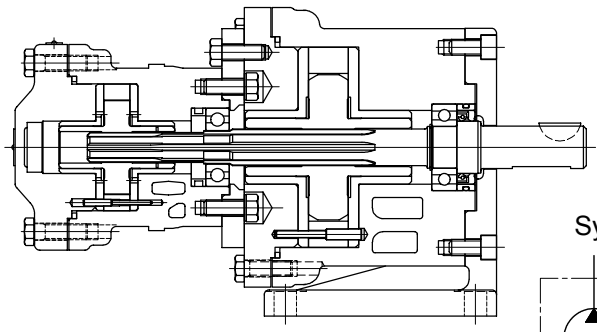
Seal, Bearing P/N Table

Series	㉑ Oil Seal Subassembly	⑳ Shaft Seal	⑱ O-Ring	⑨ Seal Ring	⑤ Bearing (I)	⑩ Bearing (II)
V−104	VA0759A	VP188323	007922317	VP2021	007062041	007062001
V−124, 134, 144	VA8109A	VP190142	007913417	VP2052	007062051	007062031

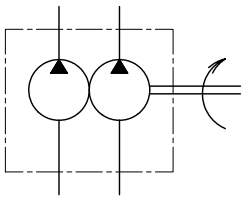
Note: ⑱ O-ring, ⑳ shaft seal included in ㉑ oil seal subassembly

Double fixed displacement vane pumps V-108,128,138,148 series





Symbol



Model Code

(F3) - V - 108 - Y E - 10 - (LH) - JA - (S36) -J

1 2 4 3 5 6 7

(F3) - V - 138 U - E - 20 - (LH) - JA - (S36) -J

1 2 3 4 5 6 7

1 Fluid
Omit for mineral oil, water glycol (S36)
F3: phosphate ester

2 Fixed displacement double vane pump
V-108 Series, V-128 Series
V-138 Series, V-148 Series

Series	Pump Mounting
	Foot Mounting
V–108	V–108
V–128	V–128
V–138	V–138
V–148	V–148

3 Shaft end pump displacement

Series	Displacement
V–108	Y, E, G, A, C, D
V–128	omitted
V–138	omitted, U, X
V–148	omitted

4 Cover end pump displacement

Series	Displacement
V–108	Y, E, G, A, C, D
V–128	
V–138	
V–148	

5 Design no.
10: V-108 Series
20: V-128, 138, 148 Series

6 Rotation (viewed from shaft end)
Omitted: right hand rotation (CW)
LH: left hand rotation (CCW)

7 Special feature
S36: for water-glycol

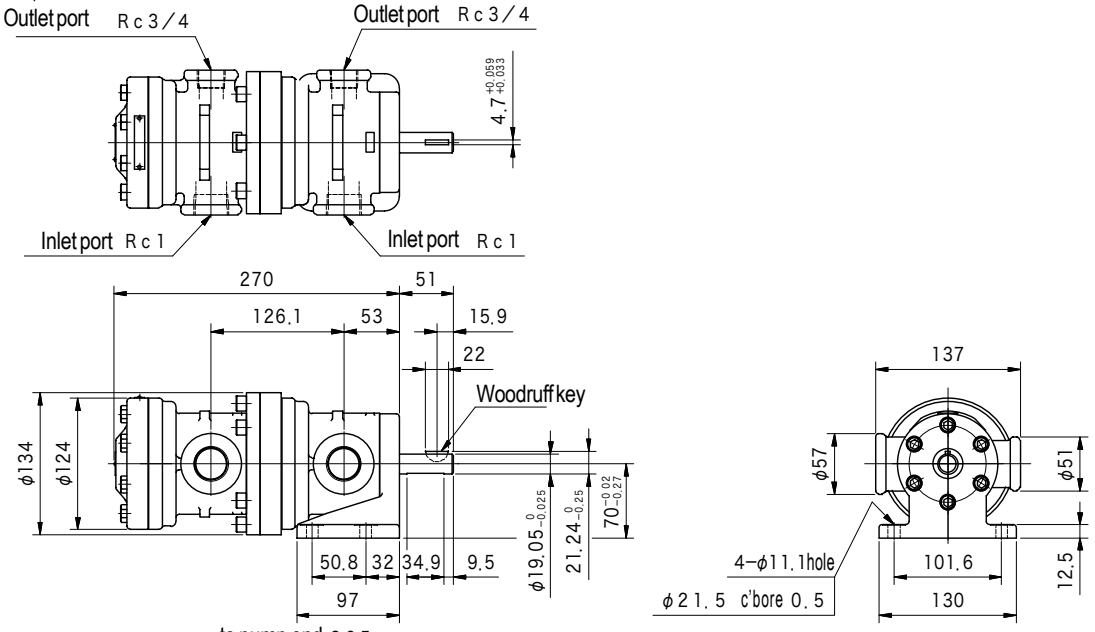
Specifications

Model	Shaft End Pump	Cover End Pump	Foot Mount Pump Weight kg
V–108–*Y	V–104–Y (same as pump)	V–104–Y (same as pump)	17. 3
V–108–*E	V–104–E	V–104–E	
V–108–*G	V–104–G	V–104–G	
V–108–*A	V–104–A	V–104–A	
V–108–*C	V–104–C	V–104–C	
V–108–*D	V–104–D	V–104–D	
V–128–*	V–124		31. 7
V–138–*	V–134		
V–138U–*	V–134U		
V–138X–*	V–134X		
V–148–*	V–144		

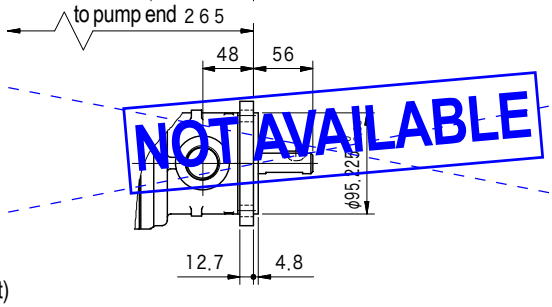
Note: • Max. speed is speed of shaft end pump.
• For V-108 Series, shaft end pump is the larger delivery pump.

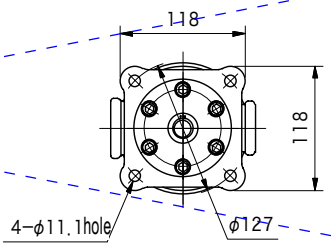
Dimensions

V－１０８ (Foot Mount)

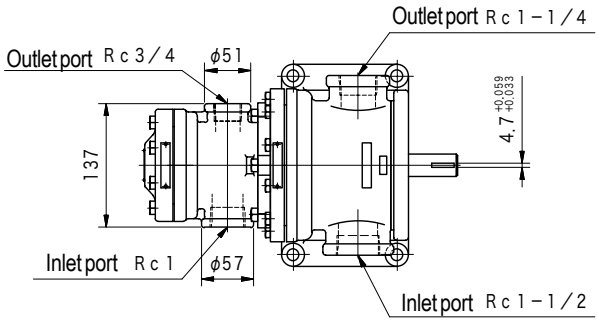


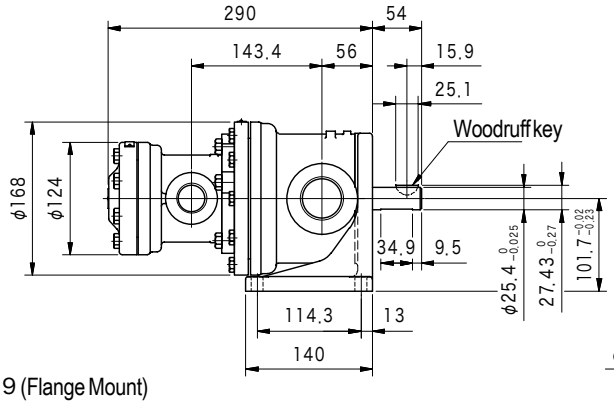
V－１０９ (Flange Mount)

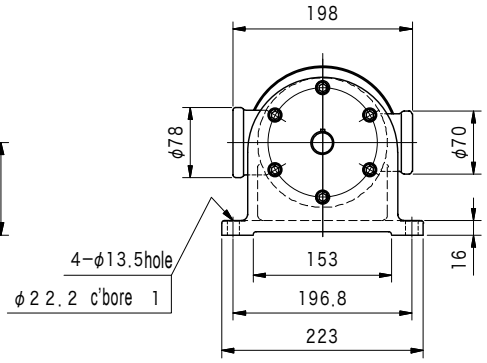




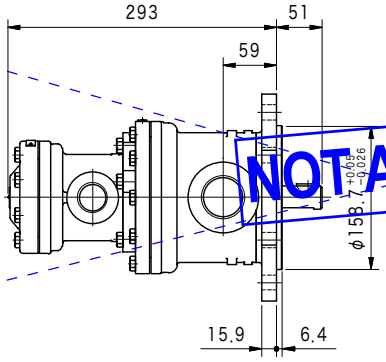
V－128, 138, 148 (Foot Mount)

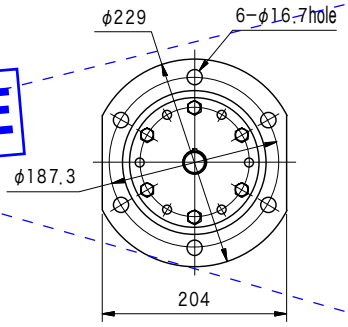




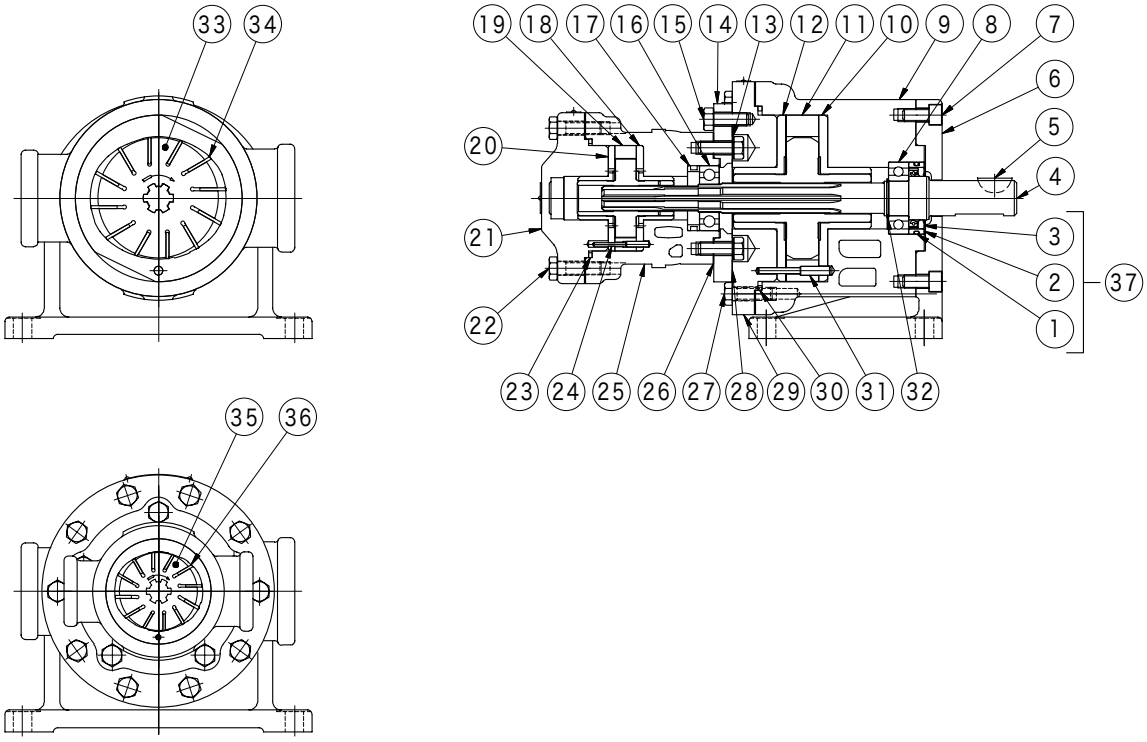


V－129, 139, 149 (Flange Mount)





Construction



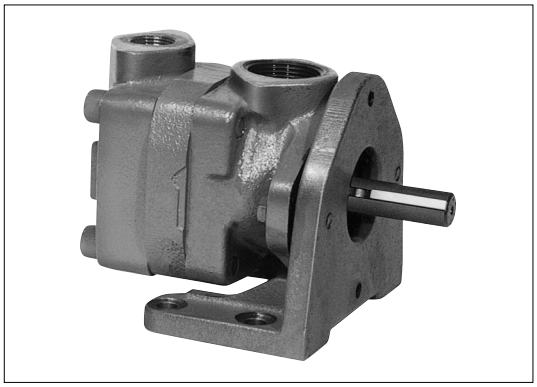
Seal, Bearing P/N Table

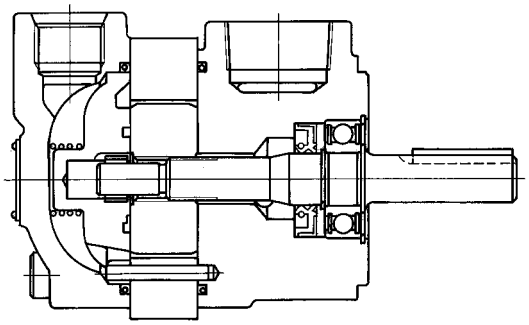
Series	㊲ Oil Seal Subassembly	③ Shaft Seal	① O-Ring	㉚ Seal Ring	㉘ Packing	㉓ Seal Ring
V-108	VA0759A	VP188323	007922317	VP2021	VP2240	VP2021
V-128, 138, 148	VA8109A	VP190142	007913417	VP2052	VP2547	VP2021

Series	㉖ Packing	⑧ Bearing	⑯ Bearing
V-108	VP2546	007062041	007062001
V-128, 138, 148	VP2546	007062051	007062041

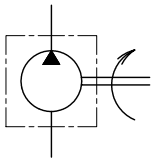
Note:①O-ring, ③shaft seal included in ㊲oil seal subassy

Fixed displacement vane pumps V20/30 series





Symbol



Model Code

(F3) - V20 - 1 P 6 S -1 C 11 (L) - JA - (J)

1 2 3 4 5 6 7 8 9 10 11

1 Fluid
Omit for mineral oil, water glycol
F3: phosphate ester

2 Fixed displacement vane pump
V20
V30

3 Pump mounting
1: flange mounting
2*: foot mounting

Inlet position to foot surface

Foot Mounting Code	Inlet Port Position To Foot Surface (Viewed from Shaft End)
2	up (12 o'clock)
23	right (3 o'clock)
26	down (6 o'clock)
29	left(9 o'clock)

4 Inlet port connection
F: flange connection
P: taper pipe thread
S: SAE straight thread (O-ring seal)

5 Pump displacement

Series	Displacement
V20	6, 7, 8, 9, 11, 12, 13
V30	15, 17, 21, 24, 28

6 Outlet port connection
F: flange connection
P: taper pipe thread
S: SAE straight thread (O-ring seal)

7 Shaft
1: parallel sq. key
3: woodruff key
11: involute spline

8 Outlet position(viewed from cover end)
A: opposite inlet
B: 90' CCW from inlet
C: inline with inlet
D: 90' CW from inlet

9 Design no. V20: 11 V30: 10

10 Rotation (viewed from shaft end)
Omit for right hand rotation (CW)
L: left hand rotation (CCW)

11 J: JIS taper thread for P type port connection

Specifications

Model	Displ. Code	Del. at 1000 min^{-1} 0.7Mpa L/min	Anti-Wear Mineral Oil		Phosphate Ester		Water-Glycol		Minimum Speed min^{-1}	Weight kg	
			Max. Speed min^{-1}	Max. Wkg. Pressure MPa	Max. Speed min^{-1}	Max. Wkg. Pressure MPa	Max. Speed min^{-1}	Max. Wkg. Pressure MPa		Flange Mount	Foot Mount
V20	6	18. 9	3400	17. 5	1800	14	1800	12. 5	600	7. 3	9. 6
	7	22. 1	3000								
	8	25. 8	2800								
	9	29. 0			1500			11			
	11	36. 3	2500								
	12	37. 8	2400	15. 4		12. 5					
	13	42. 6									

Specifications

Model	Displ. Code	Del. at 1000 min^{-1} 0.7Mpa L/min	Anti-Wear Mineral Oil		Phosphate Ester		Water-Glycol		Minimum Speed min^{-1}	Weight kg	
			Max. Speed min^{-1}	Max. Wkg. Pressure MPa	Max. Speed min^{-1}	Max. Wkg. Pressure MPa	Max. Speed min^{-1}	Max. Wkg. Pressure MPa		Flange Mount	Foot Mount
V30	15	47.0	2700	17.5	1200	12.5	1200	11	600	13.6	16.3
	17	53.9	2600	15.4		11.5		10			
	21	65.9	2500								
	24	77.2	2400								
	28	90.0	2200								

Delivery, Shaft Input Power (at 20 mm²/s)

Model	Speed min^{-1}	Delivery L/min				Shaft Input Power kW			
		0.7 MPa	7 MPa	14 MPa	17.5 MPa	0.7 MPa	7 MPa	14 MPa	17.5 MPa
V20-＊＊6	1000	18.9	17.4	15.9	15.0	0.7	2.6	5.2	6.3
	1200	22.7	21.2	19.7	18.8	0.9	3.1	6.2	7.8
	1500	28.4	26.9	25.3	24.5	0.9	3.7	7.6	9.6
	1800	34.1	32.6	31.0	30.2	1.0	4.3	9.0	11.4
V20-＊＊7	1000	22.1	20.2	19.1	18.1	0.7	3.1	5.7	7.0
	1200	26.5	24.6	23.5	22.5	0.9	3.7	6.9	8.4
	1500	33.1	31.2	30.1	29.1	0.9	4.3	8.4	10.3
	1800	39.7	37.8	36.7	35.7	1.0	5.1	10.0	12.3
V20-＊＊8	1000	25.8	23.5	22.1	21.3	0.7	3.4	6.7	8.2
	1200	31.0	28.7	27.3	26.5	0.9	4.1	8.0	10.0
	1500	38.8	36.5	35.0	34.3	0.9	4.9	9.8	12.3
	1800	46.5	44.2	42.7	42.0	1.0	5.8	11.6	14.6
V20-＊＊9	1000	29.0	26.7	25.2	24.5	0.8	3.8	7.4	9.2
	1200	34.8	32.5	31.0	30.3	1.0	4.6	8.9	11.1
	1500	43.5	41.2	39.7	39.0	1.0	5.5	10.9	13.7
	1800	52.2	49.9	48.4	47.7	1.1	6.5	12.9	16.2
V20-＊＊11	1000	36.3	34.4	32.5	31.6	0.8	4.7	9.0	11.2
	1200	43.5	41.6	39.7	38.8	1.0	5.6	10.8	13.4
	1500	54.4	52.5	50.6	49.7	1.1	6.9	13.4	16.6
	1800	65.3	63.4	61.5	60.6	1.3	8.2	16.0	19.9
V20-＊＊12	1000	37.8	35.5	33.3	32.1	0.8	5.1	9.7	12.0
	1200	45.4	43.1	40.9	39.7	1.0	6.1	11.6	14.4
	1500	56.7	54.4	52.2	51.0	1.2	7.6	14.4	17.7
	1800	68.1	65.8	63.6	62.4	1.3	9.0	17.2	21.1
V20-＊＊13	1000	42.6	40.7	38.8	—	0.8	5.4	10.5	—
	1200	51.1	49.2	47.3	—	1.0	6.5	12.3	—
	1500	63.9	62.0	60.1	—	1.2	8.0	15.3	—
	1800	76.7	74.8	72.9	—	1.3	9.6	18.3	—
V30-＊＊15	1000	47.0	44.3	41.3	39.8	1.0	6.2	12.4	15.5
	1200	56.4	53.7	50.7	49.2	1.2	7.4	14.8	18.5
	1500	70.5	67.8	64.8	63.3	1.4	9.1	18.4	23.0
	1800	84.6	81.9	78.9	77.4	1.6	10.9	22.0	27.5
V30-＊＊17	1000	53.9	51.6	50.1	—	1.2	6.8	13.1	—
	1200	64.7	62.4	60.9	—	1.3	8.1	15.6	—
	1500	80.9	78.6	77.1	—	1.5	10.9	19.4	—
	1800	97.1	94.8	93.3	—	1.7	11.9	23.2	—
V30-＊＊21	1000	65.9	63.6	61.7	—	1.1	8.4	16.7	—
	1200	79.1	76.8	74.9	—	1.3	9.9	20.0	—
	1500	98.9	96.6	94.7	—	1.6	12.3	24.9	—
	1800	118	116	114	—	1.8	14.7	29.9	—
V30-＊＊24	1000	77.2	71.5	66.6	—	1.5	10.1	19.8	—
	1200	92.7	87.0	82.1	—	1.7	12.0	23.6	—
	1500	115	110	105	—	2.0	14.9	29.4	—
	1800	139	133	128	—	2.3	17.7	35.1	—
V30-＊＊28	1000	90.0	84.0	79.2	—	1.7	11.8	22.6	—
	1200	108	102	97.2	—	1.9	14.0	27.0	—
	1500	135	129	124	—	2.2	17.4	33.6	—
	1800	162	156	151	—	2.6	20.7	40.2	—

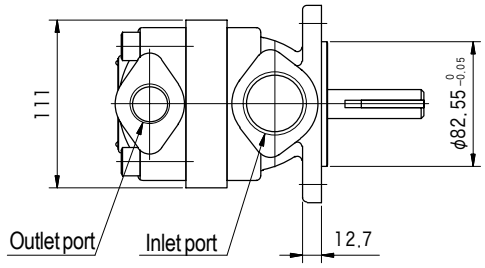
Piping Flange (Conforming to SAE J518c at Standard Pressure]

- Pump flange not included.
- Flanges (incl. hex socket bolts, spring washers, and O-rings) should be ordered separately from the table below.
- See page Q12, 13 for details such as dimensions, etc.

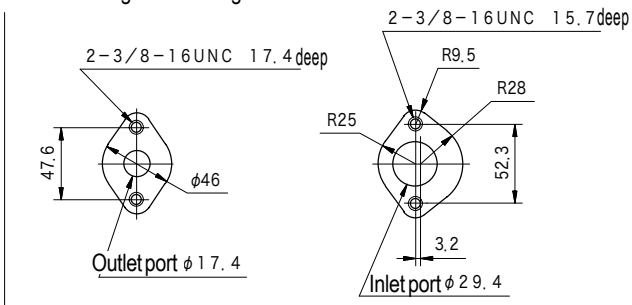
Pump Model	Size code	Flange Model			
		Inter Port		Outlet Port	
		Threaded	Welded	Threaded	Welded
V20	1/2	———	———	FL3-6-04P-JA-10-J	FL3-6-04W-JA-10
	3/4	———	———	FL3-6-06P-JA-10-J	FL3-6-06W-JA-10-S7
	1	FL3-8-08LP-JA-10-J	FL3-8-08LW-JA-10-S7	———	———
V30	1	———	———	FL1-8-08P-10-JA-S4-J	FL1-8-08W-10-JA
	1-1/4	FL3-12-10P-JA-10-J	FL3-12-10W-JA-10-S7	———	———
	1-1/2	FL3-12-12P-JA-10-J	FL3-12-12W-JA-10-S7	———	———

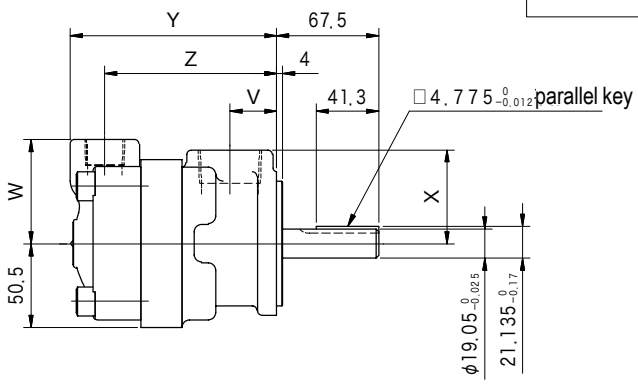
Dimensions

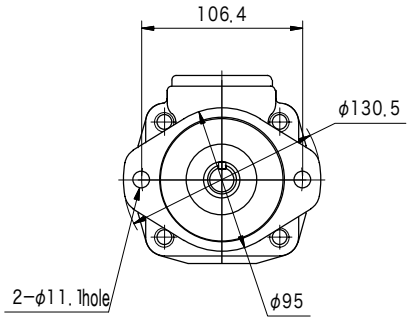
V20 (Flange Mount)



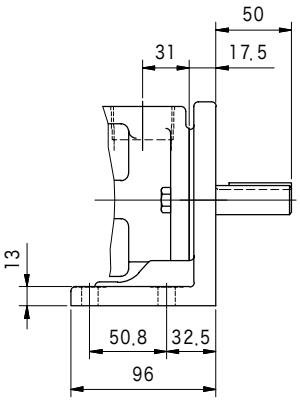
Port Configuration Flange Connection

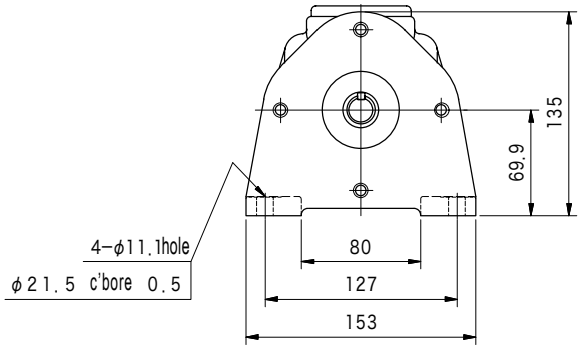






V20 (Foot Mount)





V20 Demension Table

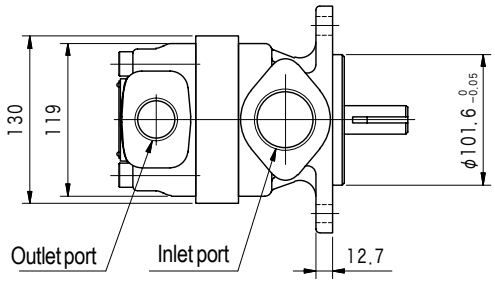
Model	Y	Z
V20-** 6*-**11 (L) -JA- (J)	126	102.3
V20-** 7*-**11 (L) -JA- (J)	132	108.7
V20-** 8*-**11 (L) -JA- (J)	132	108.7
V20-** 9*-**11 (L) -JA- (J)	132	108.7
V20-**11*-**11 (L) -JA- (J)	137	113.7
V20-**12*-**11 (L) -JA- (J)	141	117.2
V20-**13*-**11 (L) -JA- (J)	141	117.2

Model	X	V	Inlet port
V20-*P**-**11 (L) -JA-J	62	31	Rc1-1/4
V20-*S**-**11 (L) -JA	59	31	1-5/8-12UN
V20-*F**-**11 (L) -JA	57.2	34.2	2 bolt flange

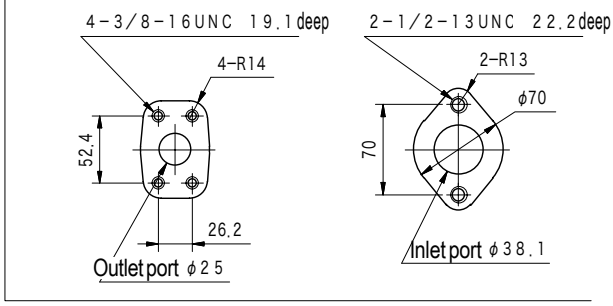
Model	W	Outlet port
V20-***P-**11 (L) -JA-J	69	Rc3/4
V20-***S-**11 (L) -JA	65	1-1/16-12UN
V20-***F-**11 (L) -JA	57.2	2 bolt flange

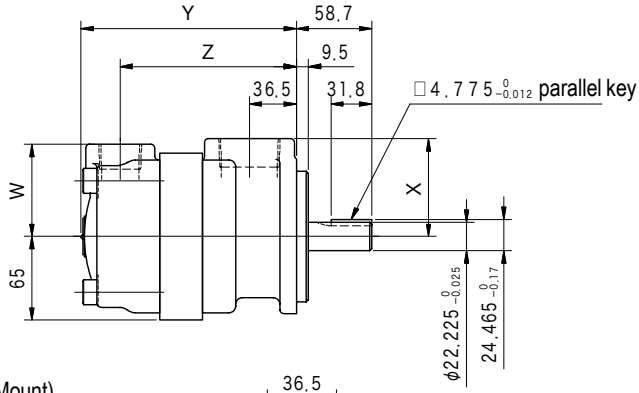
Dimensions

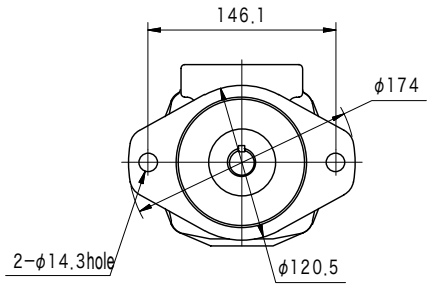
V30 (Flange Mount)



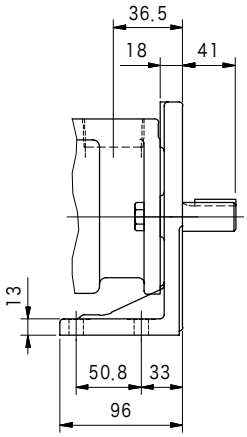
Port Configuration Flange Connection

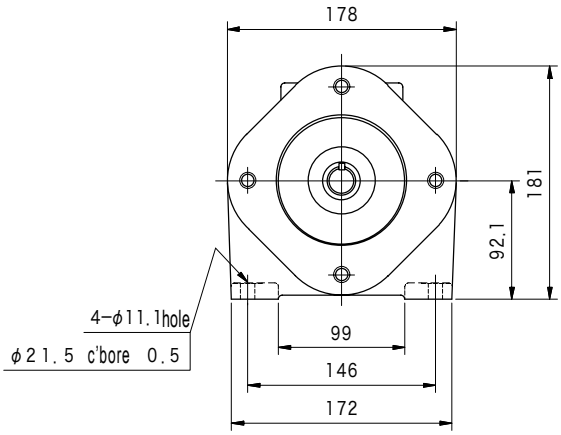






V30 (Foot Mount)





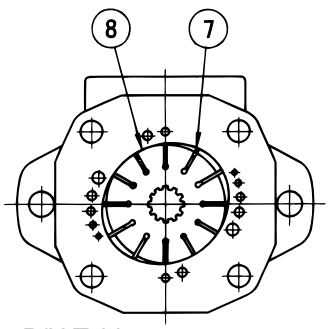
V30 Demension Table

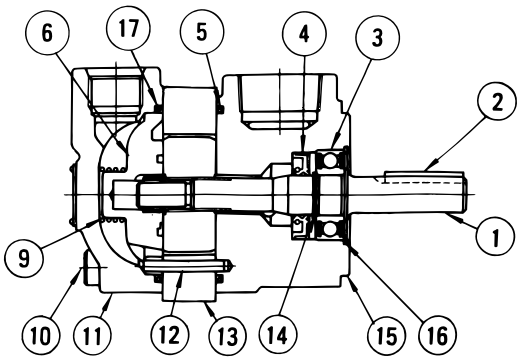
Model	Y	Z
V30-**15*-**10 (L) -JA- (J)	166	137. 1
V30-**17*-**10 (L) -JA- (J)	166	137. 1
V30-**21*-**10 (L) -JA- (J)	166	137. 1
V30-**24*-**10 (L) -JA- (J)	177	148. 3
V30-**28*-**10 (L) -JA- (J)	177	148. 3

Model	X	Inlet port
V30-*F**-**10 (L) -JA	73	2 bolt flange
V30-*P**-**10 (L) -JA-J	76	Rc1-1/2
V30-*S**-**10 (L) -JA	76	1-7/8-12UN

Model	W	Outlet port
V30-***F-**10 (L) -JA	73. 2	4 bolt flange
V30-***S-**10 (L) -JA	77. 5	1-5/16-12UN
V30-***P-**10 (L) -JA-J	77. 5	Rc1

Construction





Seal,Bearing P/N Table

Series	④ Shaft Seal	⑤ O-Ring		⑰ O-Ring		③ Bearing
V20	VP229235	007923619	AS568-236 (NBR, Hs90)	007923619	AS568-236 (NBR, Hs90)	007262041
V30	VP229236	007924119	AS568-241 (NBR, Hs90)	007924019	AS568-240 (NBR, Hs90)	007262051