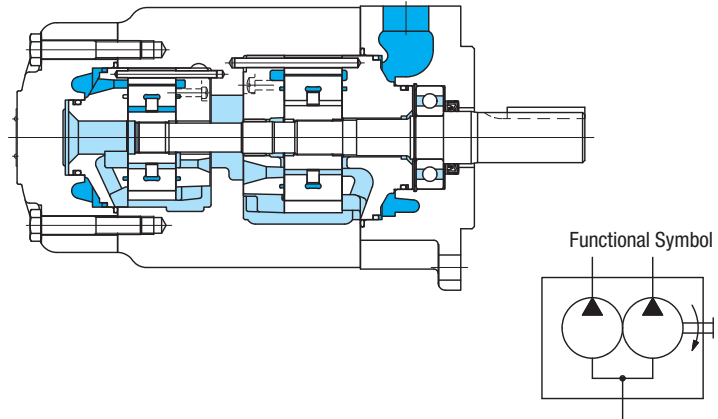


# Low noise double fixed displacement vane pumps SQP/SQPS series

B  
2-1

Fixed Displacement Vane Pumps



## Model Code

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

1 2 3 4 5 6 7 8 9 10

**1** Hydraulic fluid

Omit: mineral oil based fluid  
F3: Phosphate ester fluid  
F11: Water glycol fluid

**2** Low noise double fixed displacement vane pumps

SQP(S)21 Series  
SQP(S)31, 32 Series  
SQP(S)41, 42, 43 Series

**3** Shaft end pump displacement

Series	Displacement Code
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 Code
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 end configuration

86: parallel sq. key

**6** Shaft end delivery port position (viewed from cover end)

A: opposite suction port  
B: 90° CCW from suction port  
C: inline with suction port  
D: 90° CW from suction port

**7** Cover end delivery port position (viewed from cover end)

A: 135° CCW from suction port (opposite suction port)  
B: 45° CCW from suction port (90°)  
C: 45° CW from suction port (inline with suction port)  
D: 135° CW from suction port (90°)  
Note: SQP(S)43 Series indicated in ( )

**8** Pump mounting

Omit: flange mounting  
2\*: foot mounting

Shaft end delivery port position relative to foot mounting surface (see schematics below)

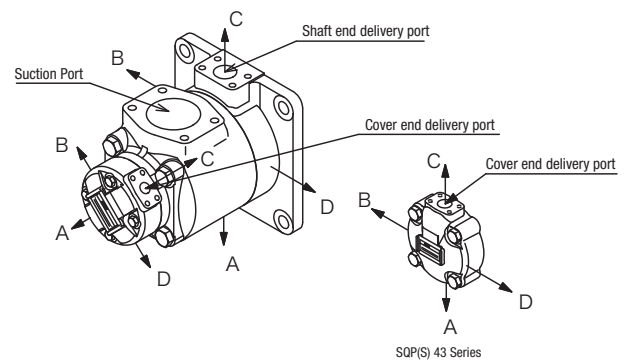
Foot Mounting Code	Position of the Shaft End Delivery Port as Viewed from the Shaft End
2	Up (12 o'clock)
23	Right (3 o'clock)
26	Down (6 o'clock)
29	Left (9 o'clock)

**9** Rotation (viewed from shaft end)

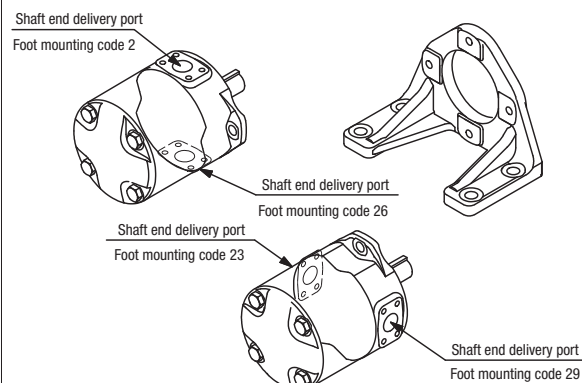
Omitted for CW  
LH: CCW

**10** Design no.

- Delivery port position



- Foot mounting position (unrelated to suction port and cover end delivery port)



# Specifications

**B**  
2-2

Fixed Displacement Vane Pumps

Model Code	Shaft End Pump			Cover End Pump			Max. Speed min <sup>-1</sup>	Min. Speed min <sup>-1</sup>		
	Displacement Code	Del. at 1000 min <sup>-1</sup> 0.7 Mpa L/min	Max. Working Pressure MPa	Displacement Code	Del. at 1000 min <sup>-1</sup> 0.7 Mpa L/min	Max. Working Pressure 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	
	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	17.5 * (14)
	21	66.7	11	35.0						
	25	79.2				12			37.9	
	30	95.0	14	44.2						
	32	100.0				16 * (14)				
	35	109.0	14 * (14)							
38	118.0	17		32.5						
SQP (S) 41	30		96.0		17.5 * (14)	12	37.9	17.5 * (14)	1800 ▲ (1200) * (1200)	600
	35	109.0	14	43.3						
	38	128.0				15	46.7			
	42	134.0	17	52.5						
	50	156.0				19	59.2			
	60	189.0	21	65.0						
SQP (S) 32	17	53.3			17.5 * (14)	17	53.3	17.5 * (14)		
	21	66.7	21	66.7						
	25	79.2				25	79.2			
	30	95.0	30	95.0						
	32	100.0				32	100.0			
	35	109.0	35	109.0						
38	118.0	38			118.0					
SQP (S) 42	30		96.0	17.5 * (14)		32	100.0	17.5 * (14)	1800 ▲ (1200) * (1200)	600
	35	109.0	35		109.0					
	38	128.0				50	156.0			
	42	134.0	60		189.0					
	50	156.0				30	96.0			
	60	189.0	35		109.0					
SQP (S) 43	30	96.0		17.5 * (14)		32	100.0	17.5 * (14)		
	35	109.0	35		109.0					
	38	128.0				50	156.0			
	42	134.0	60		189.0					
	50	156.0				17	53.3			
	60	189.0	21		66.7					
						25	79.2			

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

## Weight

Unit: kg

Model Code	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)41	74.0	99.0	83.0	108.0
SQP(S)32	48.0	57.5	62.0	71.5
SQP(S)42	80.0	105.0	88.0	113.0
SQP(S)43	88.5	113.0	89.0	123.0

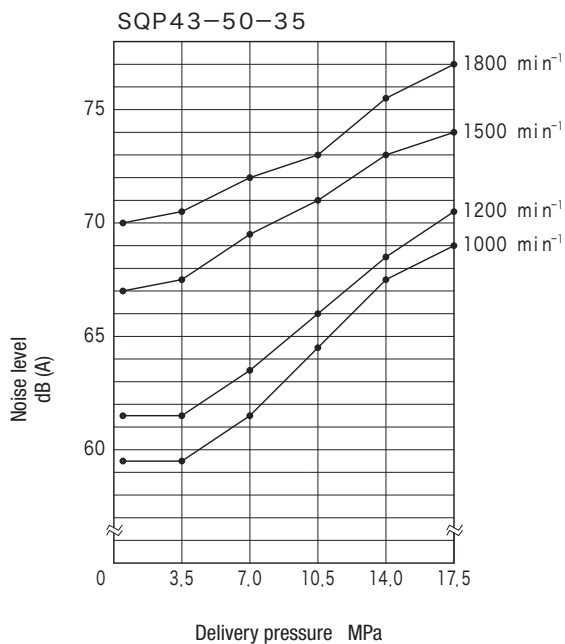
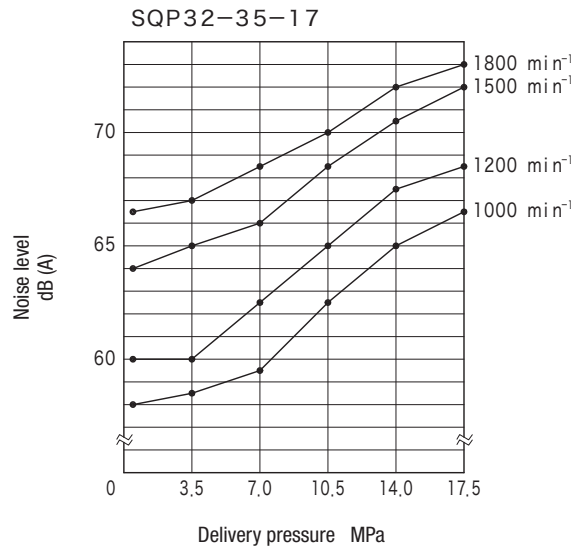
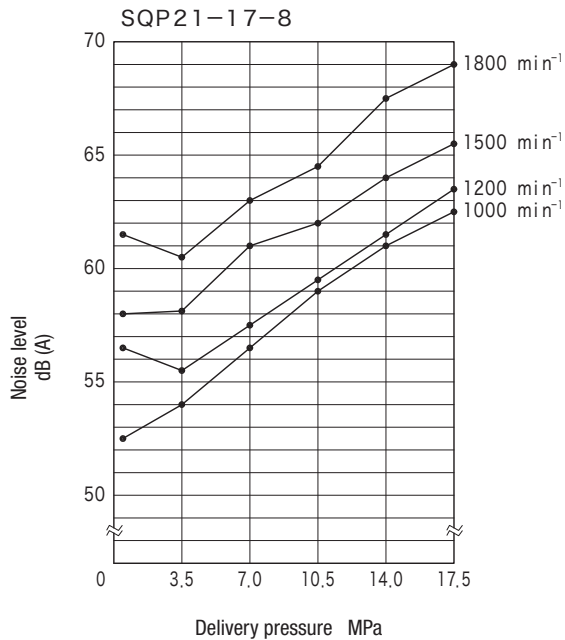
## Delivery, Shaft Input Power

Model Code	Delivery, Shaft Input	
	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	Same as SQP(S)3 Series
SQP(S)43	Same as SQP(S)4 Series	

\* SQP(S)1 ~ 4 delivery, shaft input - see page B1-4, 1-5.

## Noise Characteristics (at 20 mm<sup>2</sup>/s) (typical examples)

Measurement conditions: at suction pressure 0 MPa, and measured 1 m from rear of pump cover.



## Notes on Operation

- See page B0-4 for Notes on Using Vane Pumps.

### Shaft Input (Shaft Torque) Limitation

Shaft torque limitations of double pumps are shown in the table. Please ensure the total of the maximum load of the two pumps do not exceed the torque limits shown in the table. Please calculate shaft torque from the operating speed and shaft input.

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

$L$ : shaft input sum (kW)

Shaft torque:  $T = (60 \times 1000 / 2\pi N) \times L = (9554/N) \times L$  (N·m)

(Example) SQP43-60-38, operating speed  $1800 \text{ min}^{-1}$ , first pump 14MPa, second pump 17.5MPa under max. load,

First pump shaft input: from table on page B1-5, SQP4-60 shaft input is 84.8 kW

Second pump shaft input: from table on page B1-5, SQP3-38 shaft input is 66.7 kW

Shaft input sum:  $L = 84.8 + 66.7 = 151.5$  (kW)

Shaft input sum substituted for torque in the table,

Shaft input torque:  $T = 9554 \times 151.5 / 1800 = 804.1$  (N·m)

Thus, the shaft torque is below the limitation of 820 N·m for SQP43

Please confirm shaft torque using this procedure.

Model Code	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

**B**  
2-4

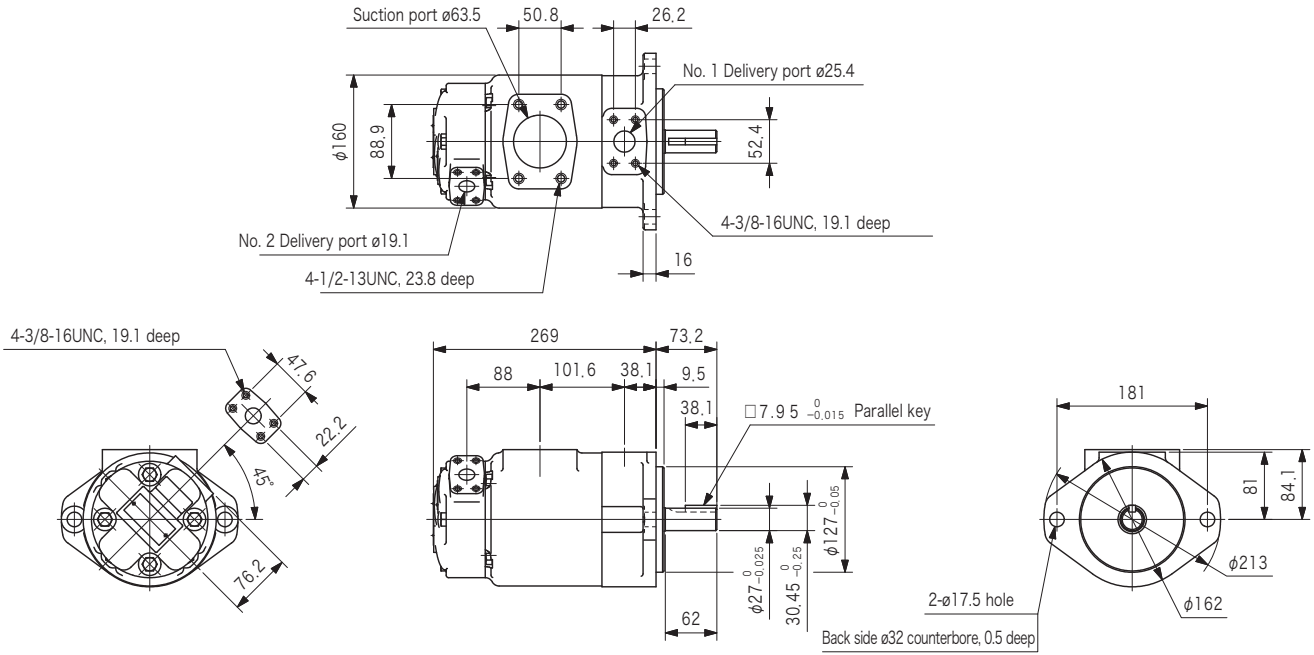
Fixed Displacement Vane Pumps

### Piping Flanges (Compliant to SAE J 518c Standard Pressure)

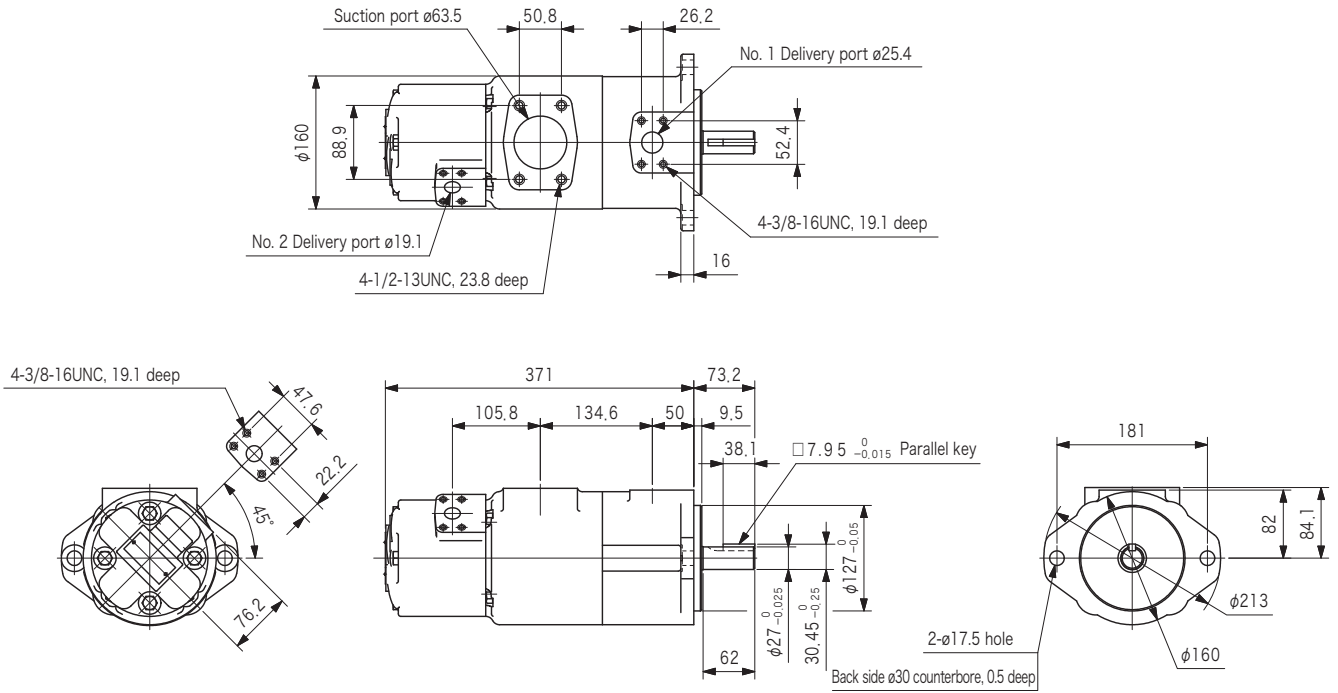
- Flanges sold separately.
- Refer to table below to order flanges (with hex socket bolts, spring washers, and O-rings).
- See page R7-1 for dimensions, etc.

Pump Model	Type	Flange Type					
		Suction Port		No.1 Delivery Port (Shaft End)		No.2 Delivery Port (Cover End)	
		Size		Size		Size	
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

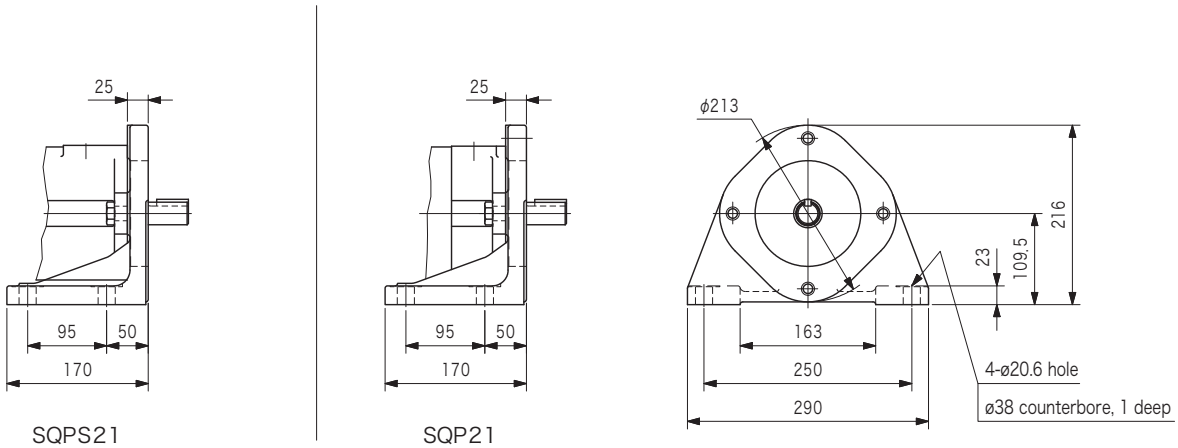
SQP21 (Flange mounting)



SQPS21 (Flange mounting)

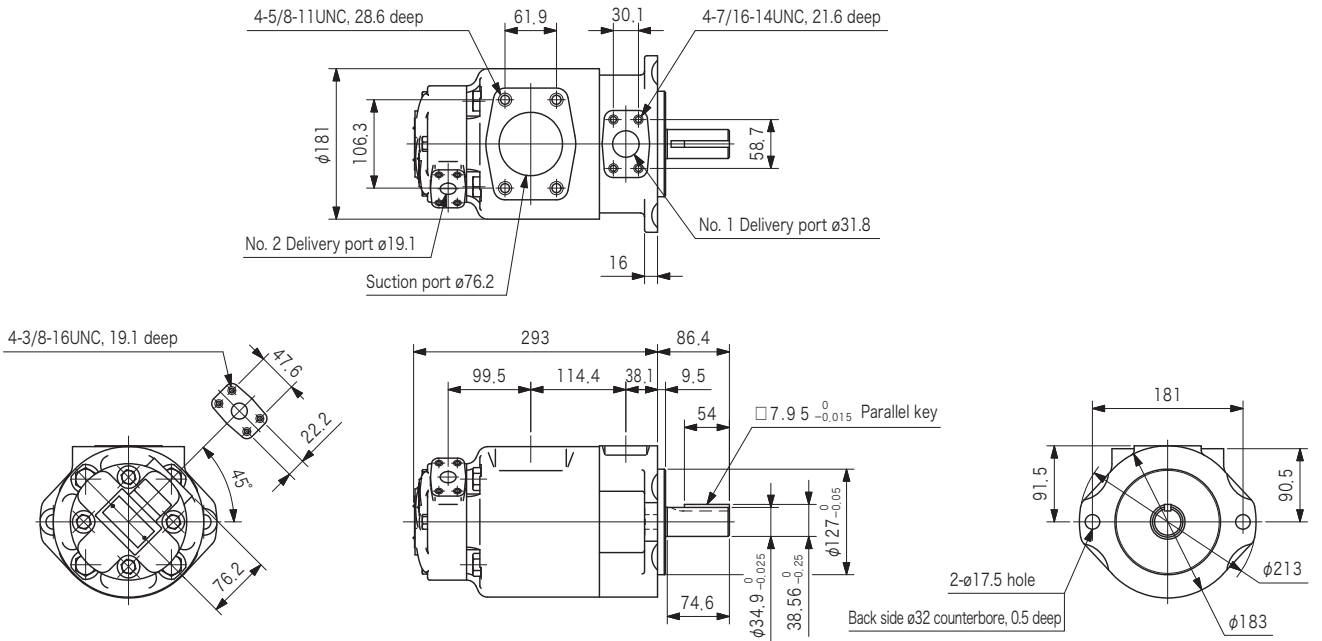


Foot mounting

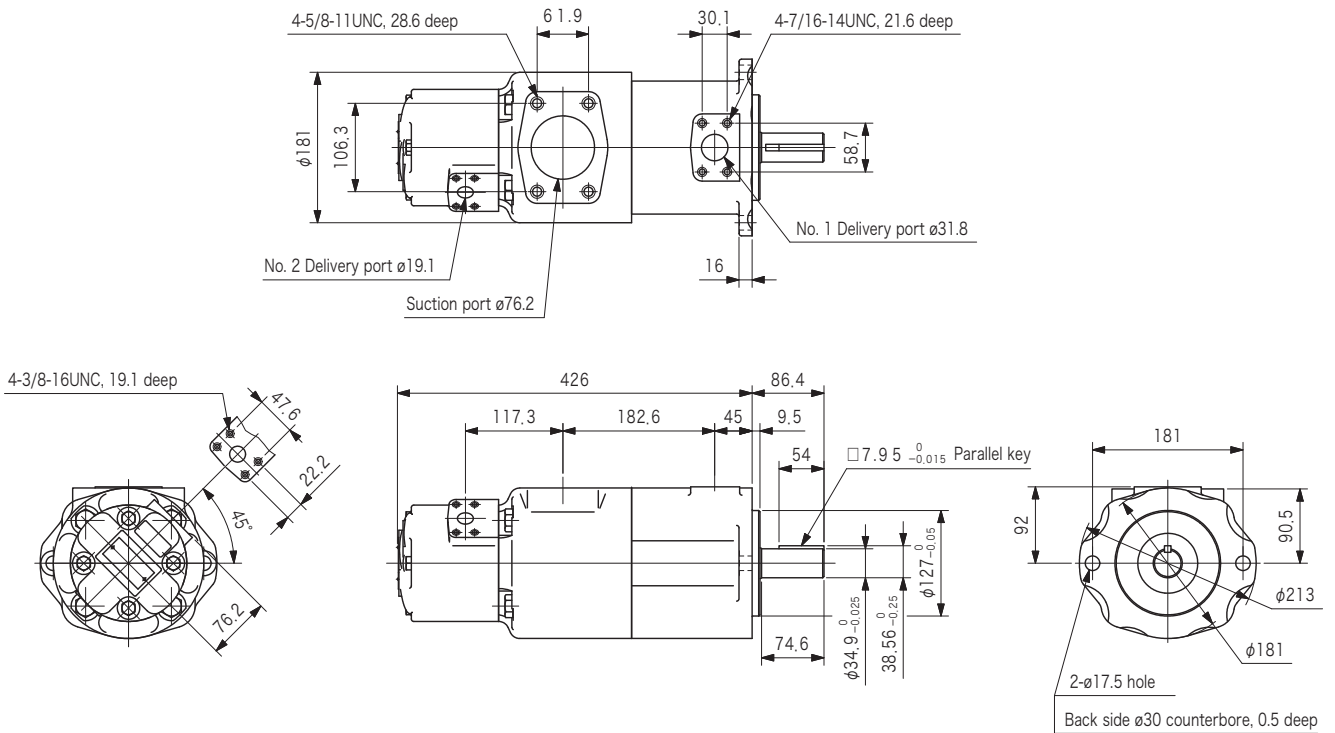


# Dimensions

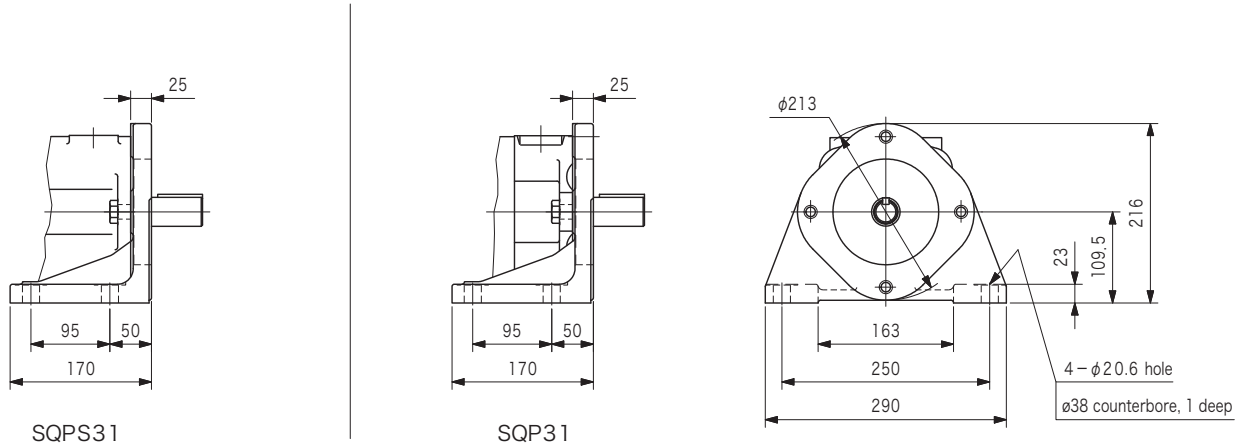
## SQP31 (Flange mounting)



## SQPS31 (Flange mounting)

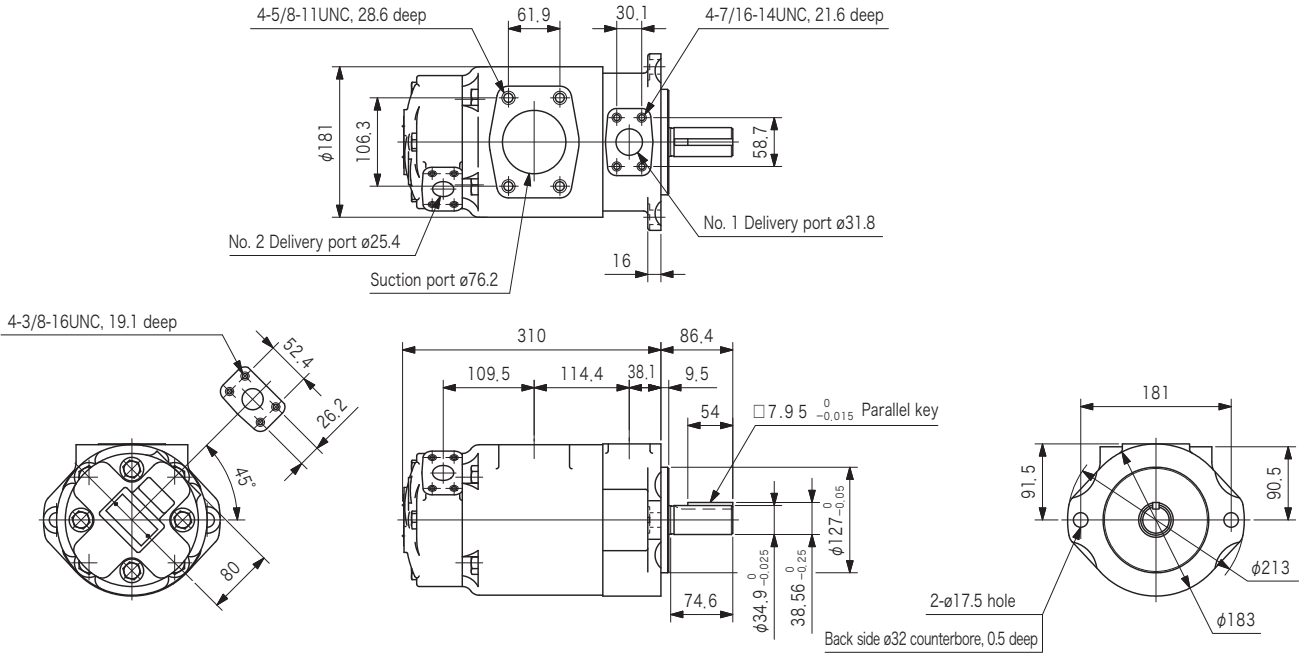


## Foot mounting

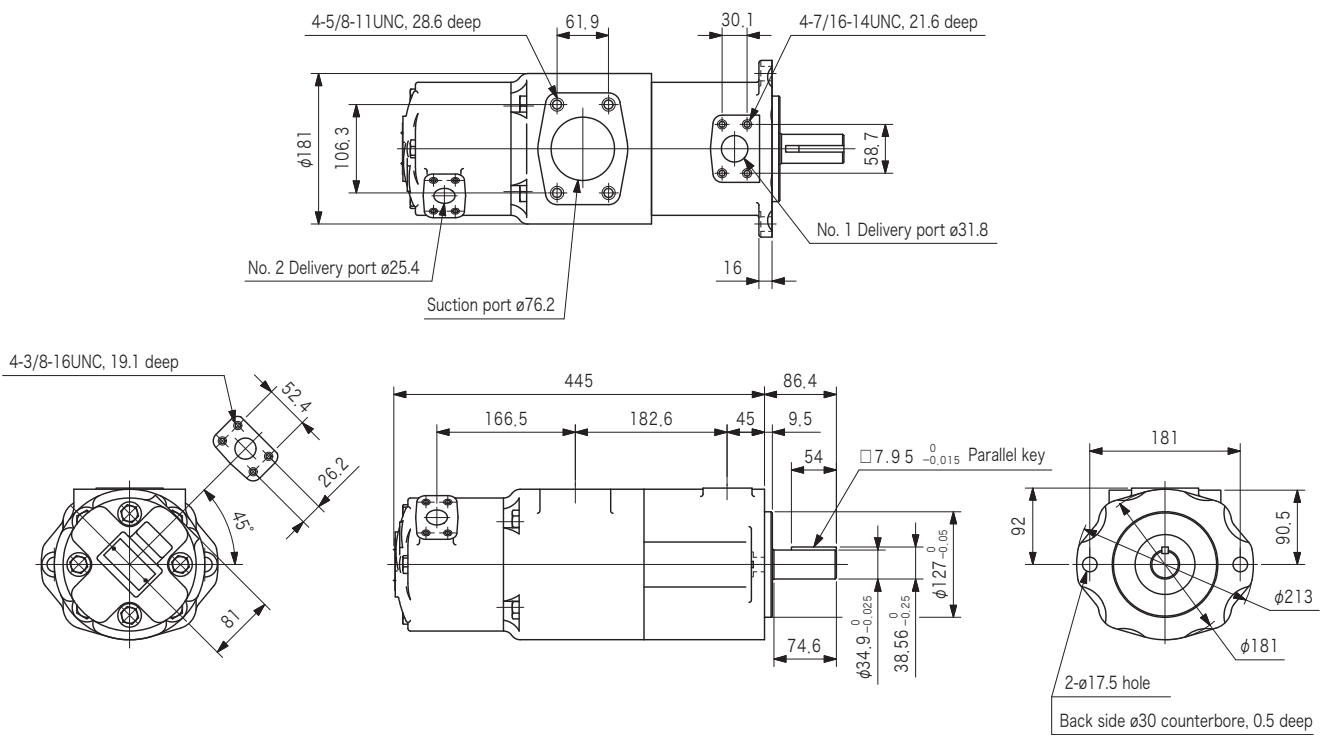


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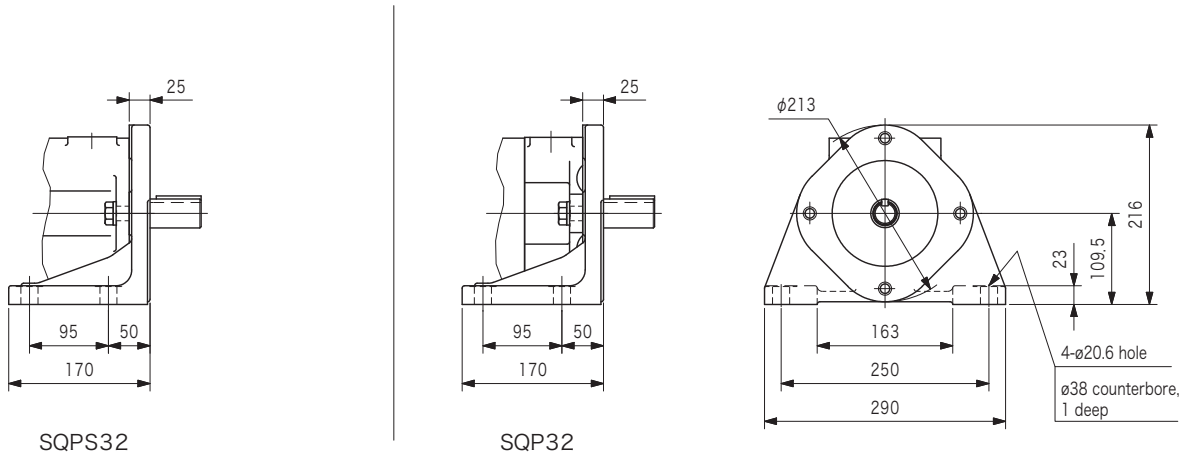
## SQP32 (Flange mounting)



## SQPS32 (Flange mounting)



## Foot mounting

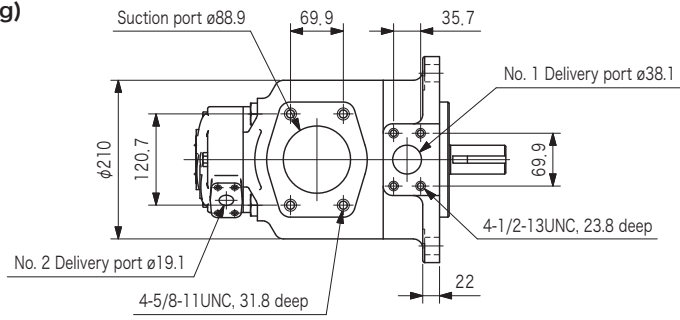


SQPS32

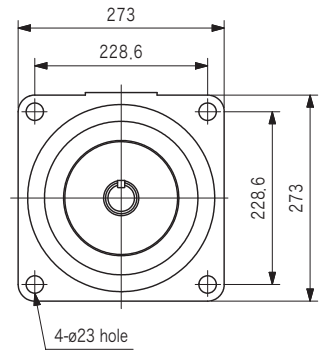
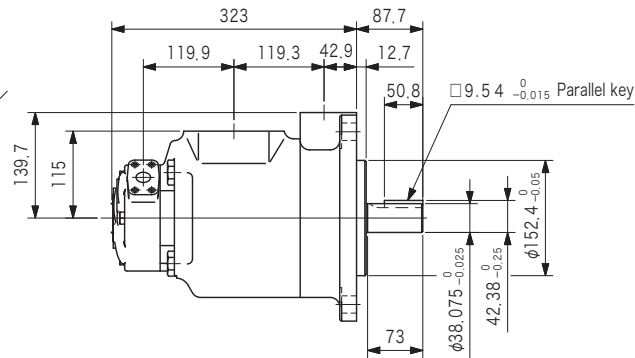
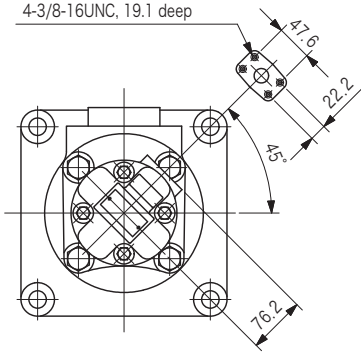
SQP32

# Dimensions

## SQP41 (Flange mounting)

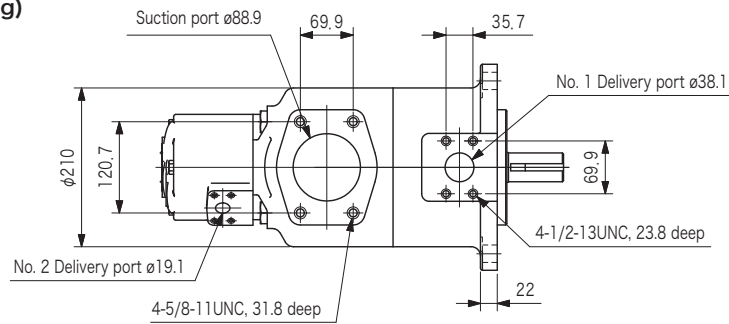


4-3/8-16UNC, 19.1 deep

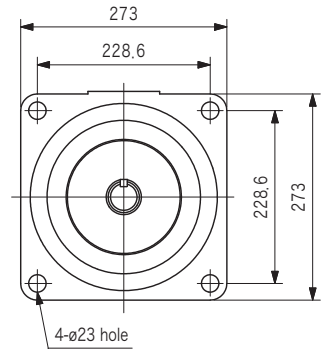
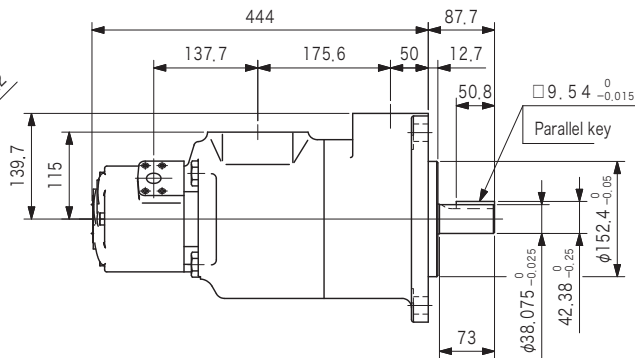
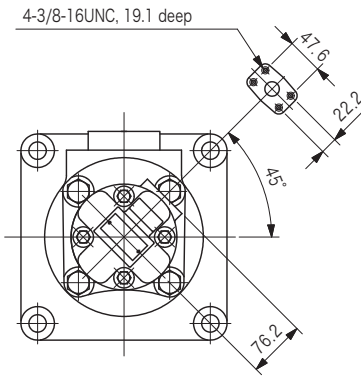


Back side  $\phi 44.5$  counterbore, 0.5 deep

## SQPS41 (Flange mounting)

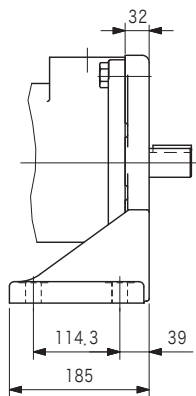


4-3/8-16UNC, 19.1 deep

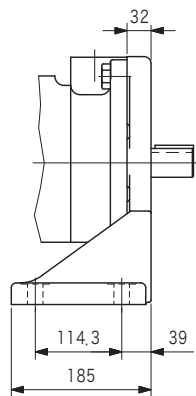


Back side  $\phi 44.5$  counterbore, 0.5 deep

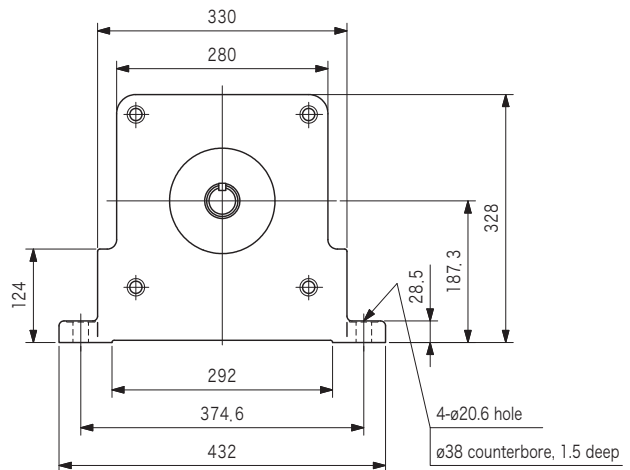
## Foot mounting



SQPS41



SQP41



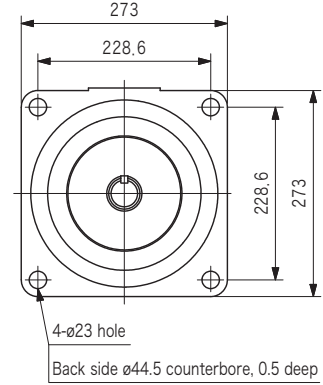
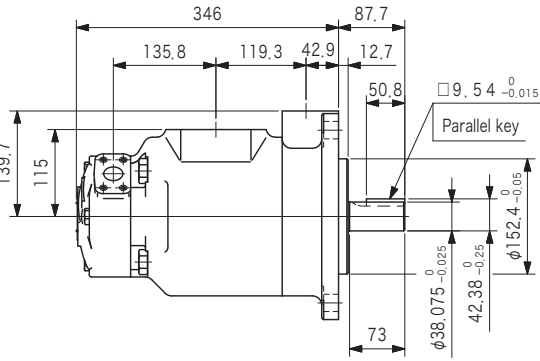
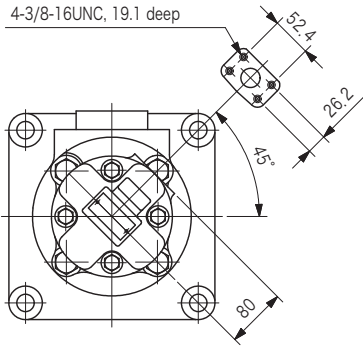
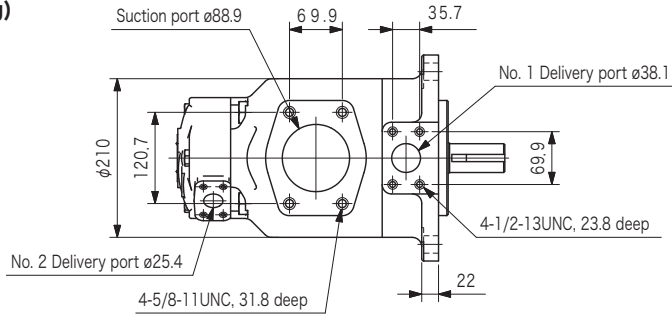


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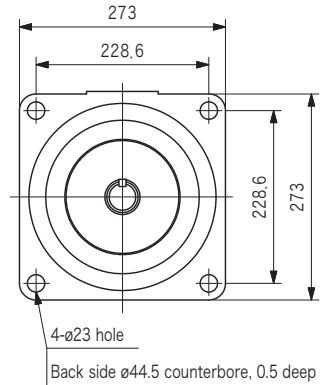
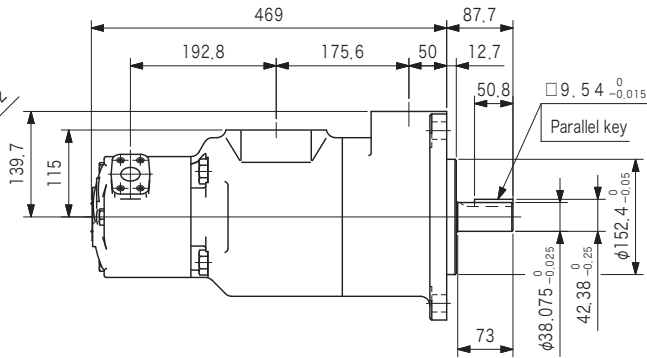
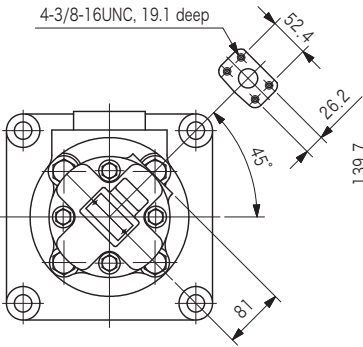
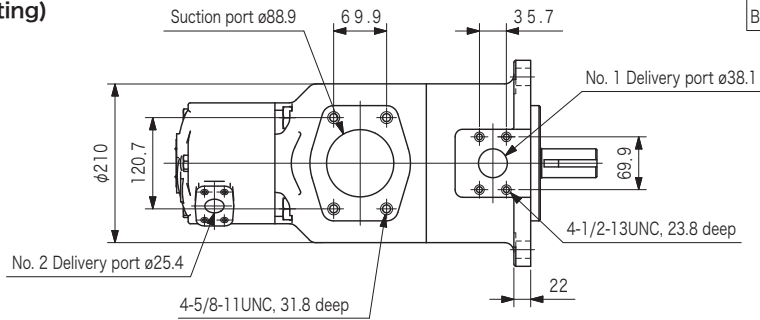
**B**  
2-9

Fixed Displacement Vane Pumps

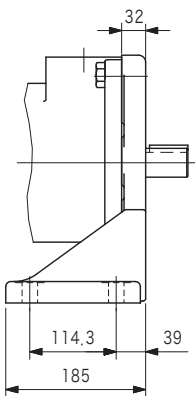
## SQP42 (Flange mounting)



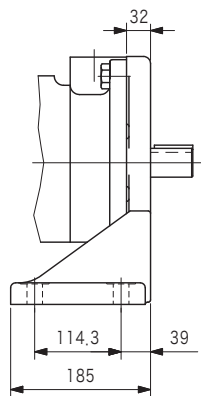
## SQPS42 (Flange mounting)



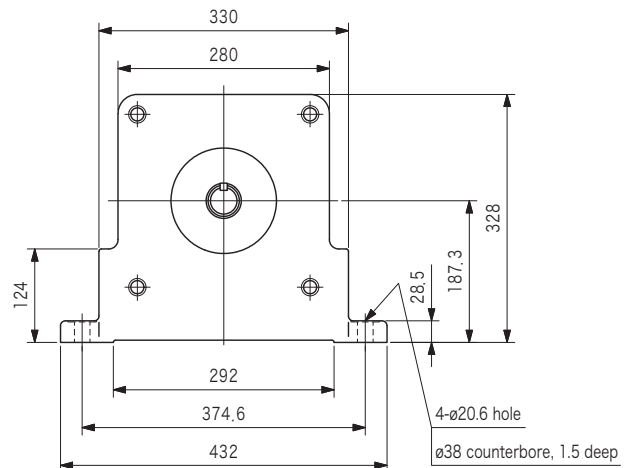
## Foot mounting



SQPS42

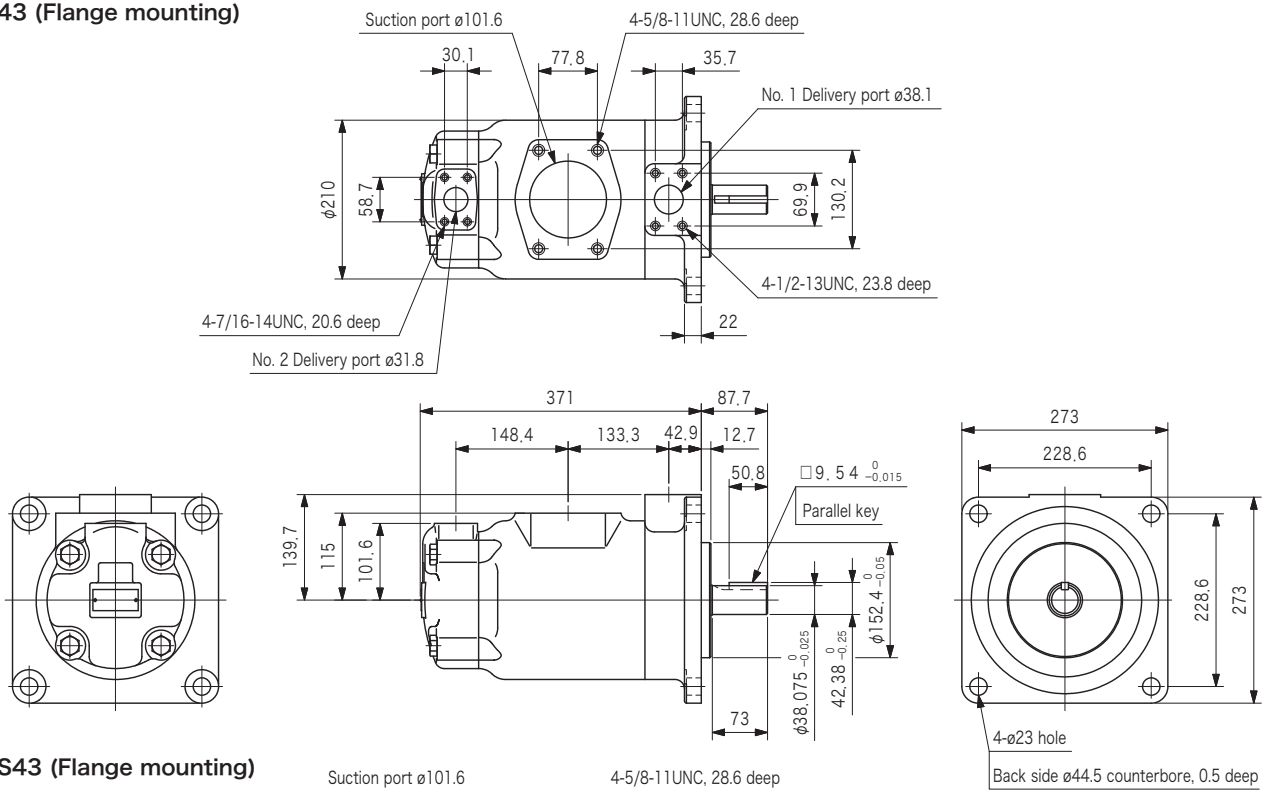


SQP42

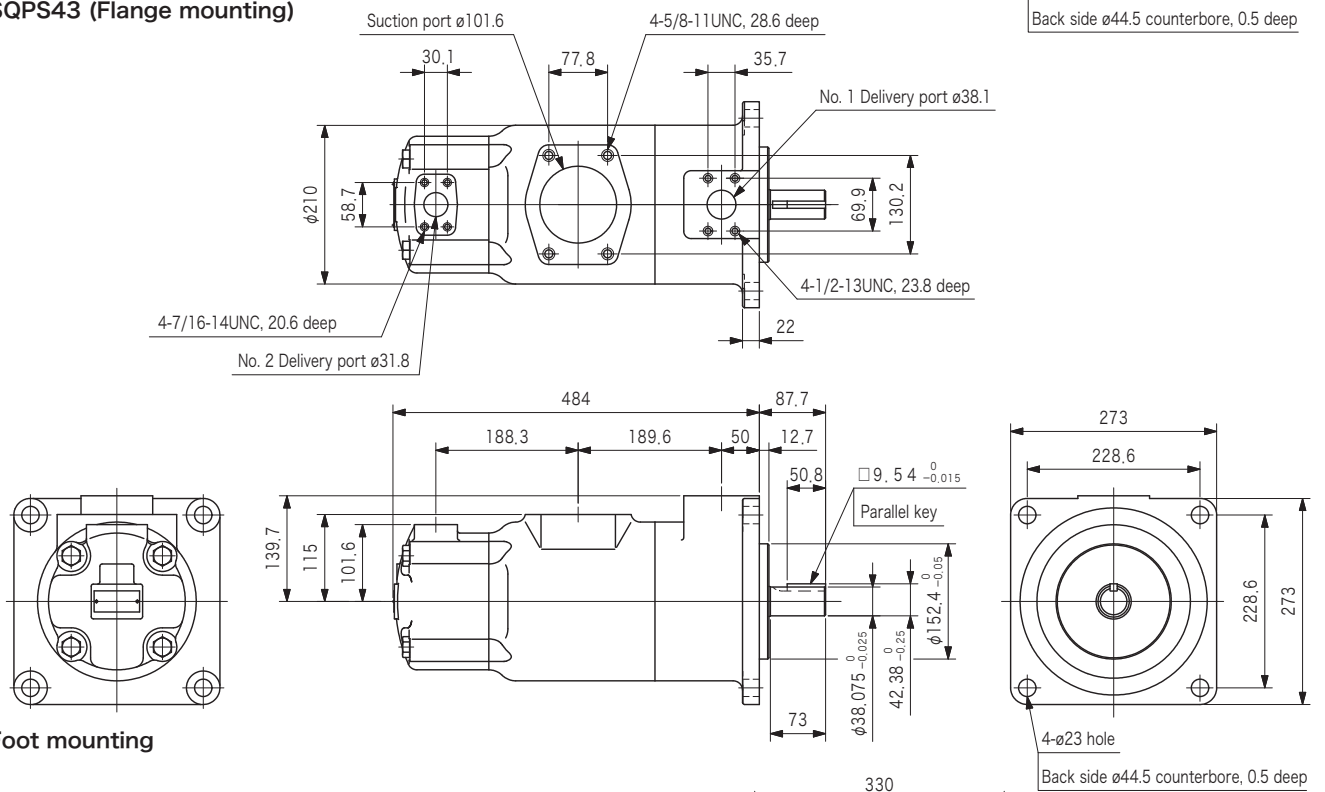


# Dimensions

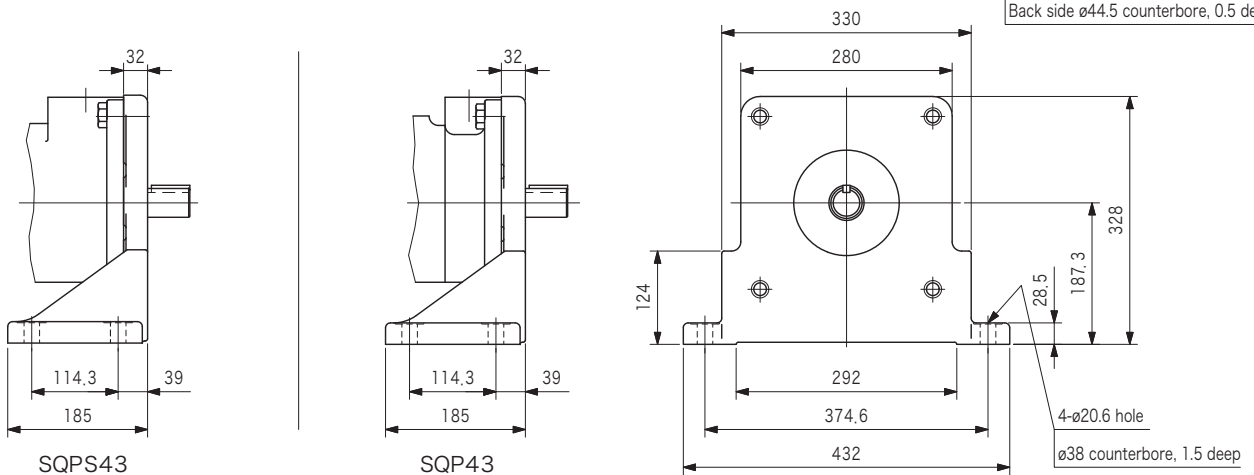
## SQP43 (Flange mounting)



## SQPS43 (Flange mounting)



## Foot mounting

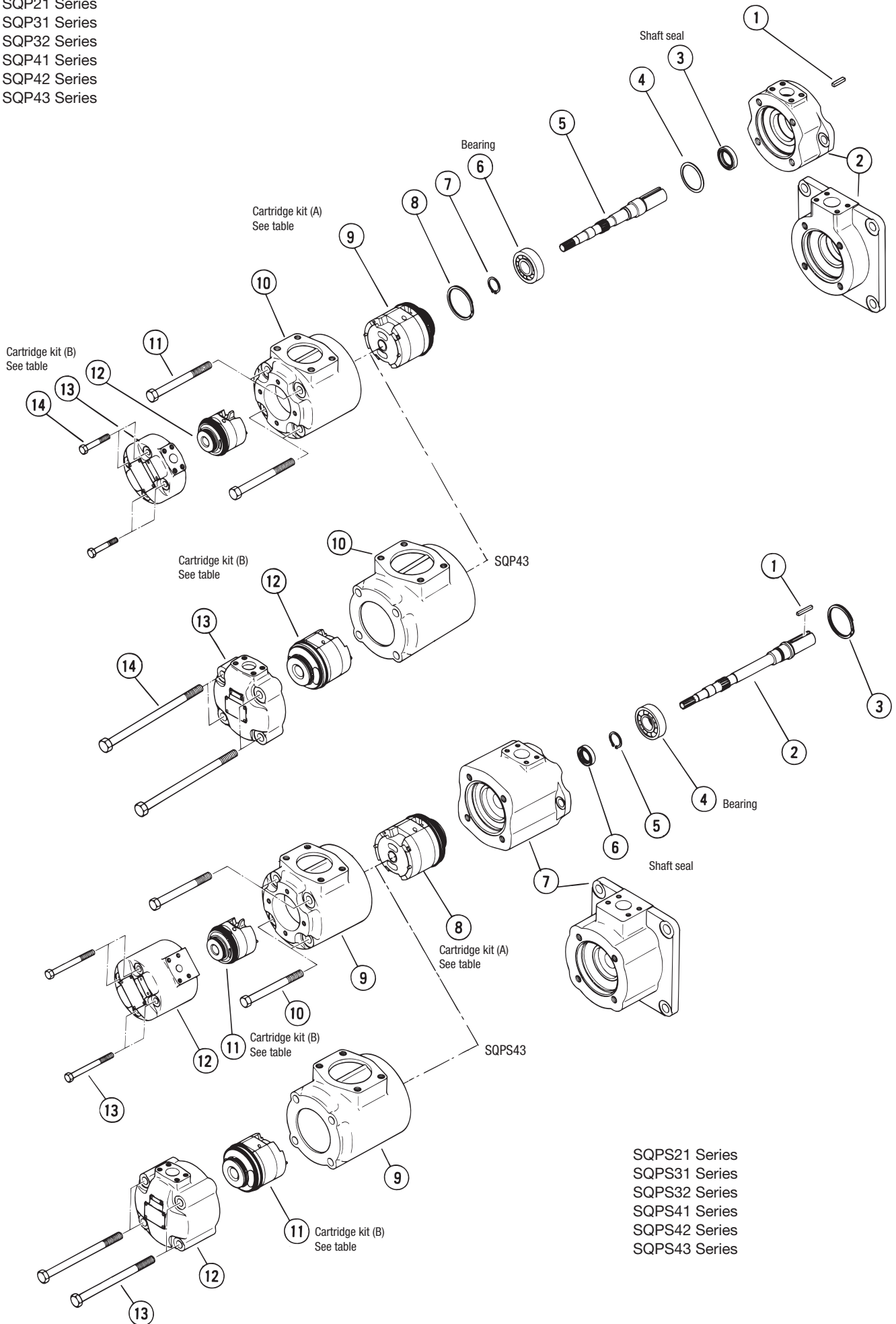


# Construction

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

**B**  
2-11

Fixed Displacement Vane Pumps



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 <b>62051</b>
(F11)-SQP31	40038624(40038633)	VP193428(40015856)	0070 <b>63061</b>
(F11)-SQP32	40038625(40038634)	VP193428(40015856)	0070 <b>63061</b>
(F11)-SQP41	40038626(40038635)	VP195287(40015858)	0070 <b>63071</b>
(F11)-SQP42	40038627(40038636)	VP195287(40015858)	0070 <b>63071</b>
(F11)-SQP43	40038628(40038637)	VP195287(40015858)	0070 <b>63071</b>
(F11)-SQPS21	VA9176A(40028883)	VP229236(40016564)	0072 <b>62051</b>
(F11)-SQPS31	VA9177A(40028884)	VP191668(40015857)	0072 <b>63061</b>
(F11)-SQPS32	VA9178A(40028885)	VP191668(40015857)	0072 <b>63061</b>
(F11)-SQPS41	VA9179A(40028886)	VP232855(40016565)	0072 <b>63071</b>
(F11)-SQPS42	VA9180A(40028887)	VP232855(40016565)	0072 <b>63071</b>
(F11)-SQPS43	VA9181A(40028888)	VP232855(40016565)	0072 <b>63071</b>

Note: ● Shaft seal included in seal kit.  
● Seal kit P/N and shaft seal P/N ( - ) refers to F11.

● Bearing P/N - bold characters refer to JIS B 1521 nominal number.  
0070 indicates no shield, 0072 indicates both shields.

## ● Cartridge Kit Table

For Mineral oil based fluid

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

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