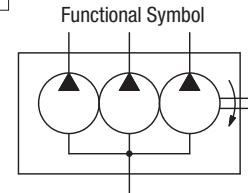
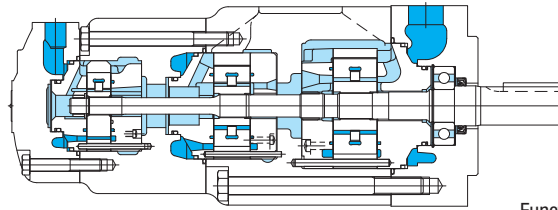
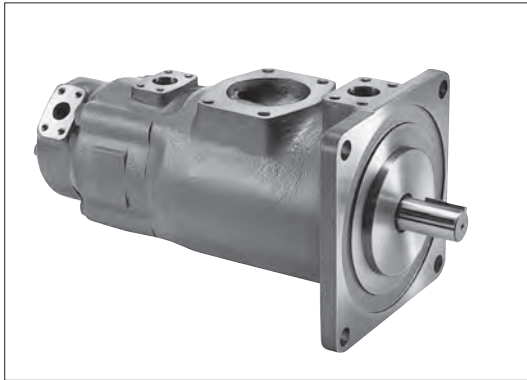


Low noise triple fixed displacement vane pumps SQP series

B
3-1

Fixed Displacement Vane Pumps



Model Code

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

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

1 Hydraulic fluid

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

2 Low noise triple fixed displacement vane pumps

SQP211 Series
SQP311, 321 Series
SQP421, 431, 432 Series

3 Shaft end pump displacement

| Series | Displacement Code |
|--------|----------------------------|
| 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 Code |
|--------|------------------------------------|
| 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 Code |
|--------|--|
| SQP**1 | 2, 3, 4, 5, 6, 7, 8, (9), (11), (12), (14) |
| SQP**2 | 10, 12, 14, 15, 17, 19, 21 |

Note: Applicable series with displacements indicated by () are limited. See page B3-2.

6 Shaft end configuration

86: parallel sq. key

7 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

8 Middle pump delivery port position (viewed from cover end)

SQP211, 311, 321, 421
A: 135° CCW from suction port
B: 45° CCW from suction port
C: 45° CW from suction port
D: 135° CW from suction port
SQP431, 432
A: opposite suction port
B: 90° CCW from suction port
C: inline with suction port
D: 90° CW from suction port

9 Cover end delivery port position (viewed from cover end)

SQP211, 311, 431, 432
A: 135° CCW from suction port
B: 45° CCW from suction port
C: 45° CW from suction port
D: 135° CW from suction port
SQP321, 421
A: opposite suction port
B: 90° CCW from suction port
C: inline with suction port
D: 90° CW from suction port

10 Pump mounting

Omit: flange mounting
2*: foot mounting
Shaft end delivery port position relative to foot mounting surface (see schematics on B2-1)

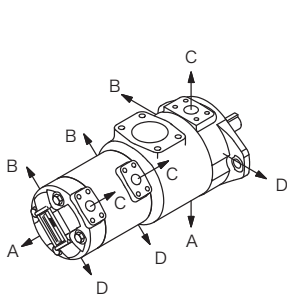
| Foot Mounting Code | Position of the Shaft End Delivery Port as Viewed from the Shaft End |
|--------------------|--|
| 2 | Up (12 o'clock) |
| 23 | Right (3 o'clock) |
| 26 | Down (6 o'clock) |
| 29 | Left (9 o'clock) |

11 Rotation (viewed from shaft end)

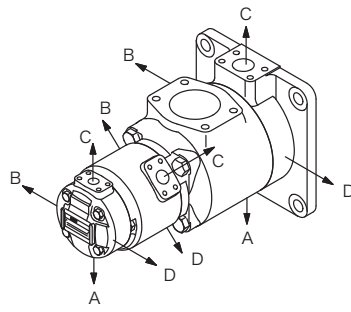
Omit: CW
LH: CCW

12 Design no.

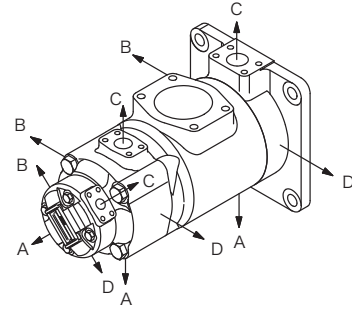
Model Code



• SQP 211 Series
• SQP 311 Series



• SQP 321 Series
• SQP 421 Series



• SQP 431 Series
• SQP 432 Series

Specifications

| Model Code | Shaft End Pump | | | Middle Pump | | | Cover End Pump | | | | | | Min. Speed min ⁻¹ | | | | | | | | | | |
|------------|-------------------|--|---------------------------|-------------------|--|---------------------------|-------------------|--|---------------------------|------------------------------|--------------------------|-----------------------|------------------------------|------|------|------|------|------|-----|----|-------|---|------|
| | Displacement Code | Del. at 1000 min ⁻¹ 0.7 Mpa | Max. Working Pressure MPa | Displacement Code | Del. at 1000 min ⁻¹ 0.7 Mpa | Max. Working Pressure MPa | Displacement Code | Del. at 1000 min ⁻¹ 0.7 Mpa | Max. Working Pressure MPa | Max. Speed min ⁻¹ | | | | | | | | | | | | | |
| | | | | | | | | | | Mineral oil based fluid | Water glycol based fluid | Phosphate ester fluid | | | | | | | | | | | |
| 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 | | 4 | 12.8 | | | | | | | | | | | | | | | |
| | 15 | 46.7 | | 5 | 16.7 | 17.5 | 5 | 16.7 | | | | | | 17.5 | 1500 | 1000 | 1000 | 600 | | | | | |
| | 17 | 52.5 | | 6 | 19.2 | | 6 | 19.2 | | | | | | | | | | | | | | | |
| | 19 | 59.2 | | 7 | 22.9 | | 7 | 22.9 | | | | | | | | | | | | | | | |
| | 21 | 65.0 | | 8 | 26.2 | | 8 | 26.2 | | | | | | | | | | | | | | | |
| SQP311 | 17 | 53.3 | 17.5 | 8 | 26.2 | 16 | 6 | 19.2 | 17.5 | 1200 | 1000 | 1000 | 600 | | | | | | | | | | |
| | 21 | 66.7 | | 9 | 28.3 | | 7 | 22.9 | | | | | | | | | | | | | | | |
| | 25 | 79.2 | | 11 | 35.0 | | 8 | 26.2 | | | | | | | | | | | | | | | |
| | 30 | 95.0 | | 12 | 37.9 | 14 | 1000 | 1000 | | 1000 | 600 | | | | | | | | | | | | |
| | 32 | 100.0 | | 14 | 44.2 | | | | | | | | | | | | | | | | | | |
| | 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 | | 12 | 38.3 | | 3 | 10.2 | | | | | | | | | | | | | | | |
| | 25 | 79.2 | | 14 | 43.3 | | 4 | 12.8 | | | | | | | | | | | | | | | |
| | 30 | 95.0 | | 15 | 46.7 | | 5 | 16.7 | | | | | | | | | | | | | | | |
| | 32 | 100.0 | | 17.5 | 17.5 | | 6 | 19.2 | | | | | | 17.5 | 1500 | 1000 | 1000 | 600 | | | | | |
| | 35 | 109.0 | | | | | 7 | 22.9 | | | | | | | | | | | | | | | |
| | 38 | 118.0 | | | | | 8 | 26.2 | | | | | | | | | | | | | | | |
| SQP421 | 30 | 96.0 | 17.5 | 17 | 52.5 | 17.5 | 9 | 28.3 | 17.5 | 1200 | 1000 | 1000 | 600 | | | | | | | | | | |
| | 35 | 109.0 | | 19 | 59.2 | | 11 | 35.0 | | | | | | | | | | | | | | | |
| | 38 | 128.0 | | 21 | 65.0 | | 11 | 35.0 | | | | | | 1000 | 1000 | 600 | | | | | | | |
| | 42 | 134.0 | | | | | | | | | | | | | | | | | | | | | |
| | 50 | 156.0 | | | | | | | | | | | | | | | | | | | | | |
| | 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 | | | | | | | | | | | | | | | |
| | 42 | 134.0 | | 30 | 95.0 | | 5 | 16.7 | | | | | | | | | | | | | | | |
| | SQP432 | 50 | | 156.0 | 17.5 | | 17.5 | 17.5 | | | | | | 17.5 | 1500 | 1200 | 1000 | 1000 | 600 | | | | |
| | | 60 | | 189.0 | | | | | | | | | | | | | | | | 32 | 100.0 | 6 | 19.2 |
| | | 30 | | 96.0 | | | | | | | | | | | | | | | | 35 | 109.0 | 7 | 22.9 |
| | | 35 | | 109.0 | | | | | | | | | | | | | | | | 38 | 118.0 | 8 | 26.2 |
| 38 | | 128.0 | 10 | 32.5 | | 9 | | | 28.3 | | | | | | | | | | | | | | |
| 42 | | 134.0 | 12 | 38.3 | | 11 | | | 35.0 | | | | | | | | | | | | | | |
| 50 | 156.0 | 14 | 43.3 | 12 | 37.9 | | | | | | | | | | | | | | | | | | |
| 60 | 189.0 | 15 | 46.7 | 14 | 44.2 | | | | | | | | | | | | | | | | | | |
| 17 | 53.3 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 1200 | 1000 | 1000 | 600 | | | | | | | | | | | | | |
| 21 | 66.7 | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 79.2 | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 95.0 | | | | | | | | | | | | | | | | | | | | | | |
| 32 | 100.0 | | | | | | | | | | | | | | | | | | | | | | |
| 35 | 109.0 | | | | | | | | | | | | | | | | | | | | | | |
| 38 | 118.0 | | | | | | | | | | | | | | | | | | | | | | |

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 Code | Delivery, shaft input | | | Weight kg | |
|------------|-----------------------|---------------------|---------------------|-----------------|---------------|
| | Shaft End Pump | Middle Pump | Cover End Pump | Flange Mounting | Foot Mounting |
| 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 | | | 104.0 | 129.0 |

*SQP1 ~ SQP4 delivery, shaft input - see page B1-4, 1-5.

Notes on Operation

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

Shaft Input (Shaft Torque) Limitation

Shaft torque limitations of triple pumps are shown in the table. Please ensure that the total of the maximum load of the three pumps do not exceed the torque limit shown in the table. Please calculate shaft torque from the operating speed and shaft input.

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

L : shaft input sum (kW)

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

(Example) SQP432-60-38-14, operating speed 1200 min^{-1} , first pump 14 MPa,

second pump 17.5 MPa under max. load,

First pump shaft input: from table on page B1-5, SQP4-60 shaft input is 57.1 kW

Second pump shaft input: from table on page B1-5, SQP3-38 shaft input is 36.2 kW

Third pump shaft input: from table on page B1-4, SQP2-14 shaft input is 18.4 kW

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: $T = 9554 \times 111.7 / 1200 = 889.3$ (N·m)

Thus, the shaft torque is below the limitation of 950 N·m for SQP432

Please confirm shaft torque using this procedure.

| Model Code | Shaft Torque Limitation N·m |
|------------|-----------------------------|
| SQP211 | 360 |
| SQP311 | 610 |
| SQP321 | 610 |
| SQP421 | 950 |
| SQP431 | 950 |
| SQP432 | 950 |

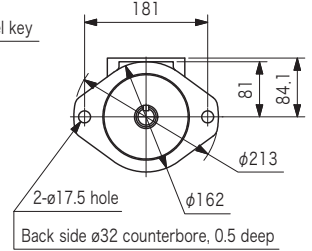
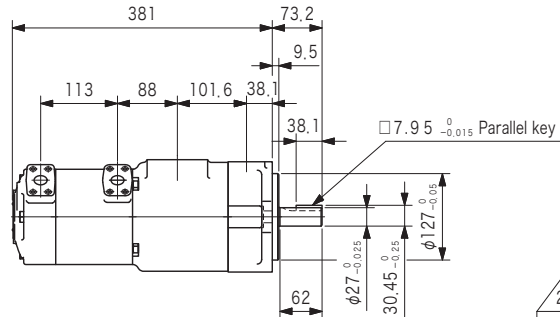
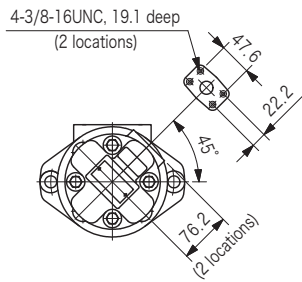
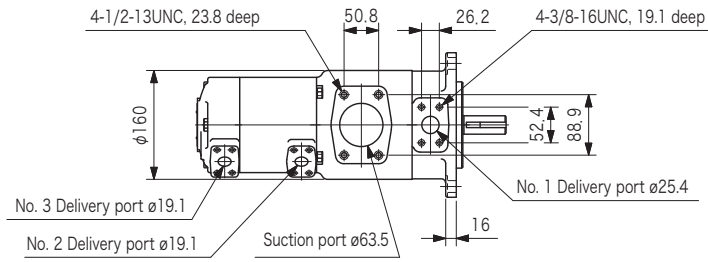
Piping Flanges (Compliant to SAE J 518c Standard Pressure)

- 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.

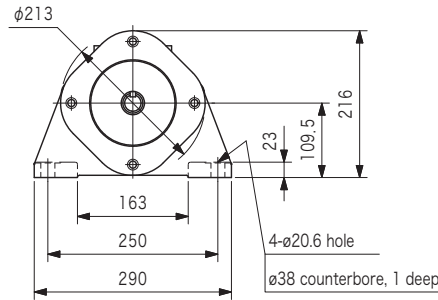
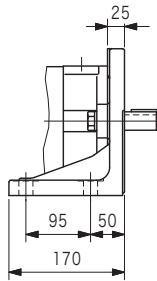
| Pump Model | Type | Flange Type | | | | | | | |
|------------|----------|--------------|-----------------------|-------|------------------------|-------|-----------------------|------|------------------------|
| | | Suction Port | | | Delivery Port | | | | |
| | | Size | | Size | No. 1 Port (Shaft End) | Size | No. 2 Port (Middle) | Size | No. 3 Port (Cover End) |
| SQP211 | 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 | 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 | | FL1-6-06W-10-JA |
| SQP311 | 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 | 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 | | FL1-6-06W-10-JA |
| SQP321 | 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 | 3/4 | FL1-6-06P-10-JA-S4-J |
| | Welded | | FL1-24-24W-10-JA | | FL1-10-10W-10-JA | | FL1-8-08W-10-JA | | FL1-6-06W-10-JA |
| SQP421 | Threaded | 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 |
| | Welded | | FL1-28-28W-10-JA | | FL1-12-12W-10-JA | | FL1-8-08W-10-JA | | FL1-6-06W-10-JA |
| SQP431 | Threaded | 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 |
| | Welded | | FL1-32-32W-10-JA | | FL1-12-12W-10-JA | | FL1-10-10W-10-JA | | FL1-6-06W-10-JA |
| SQP432 | Threaded | 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 |
| | Welded | | FL1-32-32W-10-JA | | FL1-12-12W-10-JA | | FL1-10-10W-10-JA | | FL1-8-08W-10-JA |

Dimensions

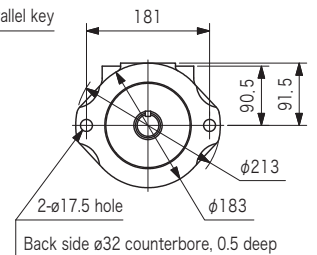
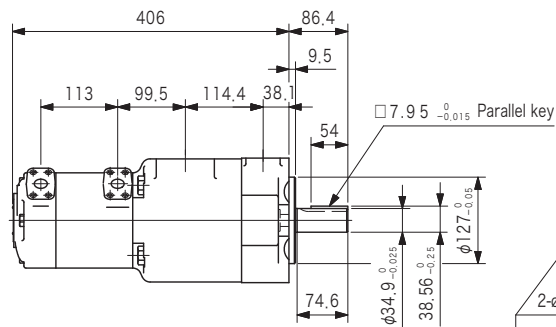
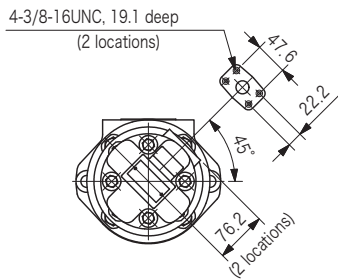
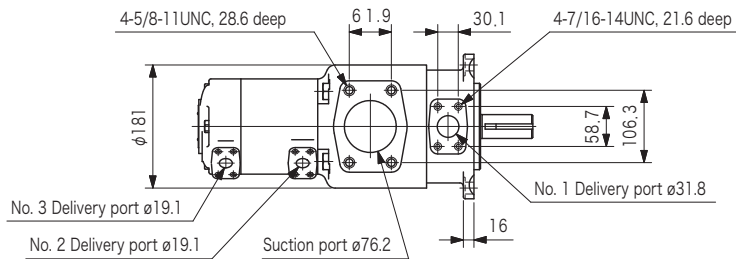
SQP211 (Flange mounting)



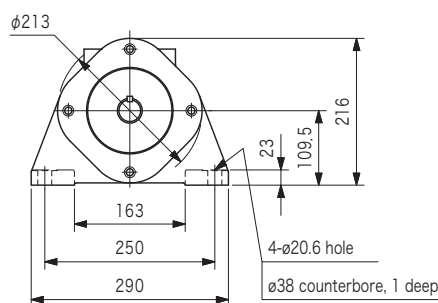
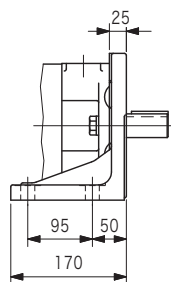
(Foot mounting)



SQP311 (Flange mounting)

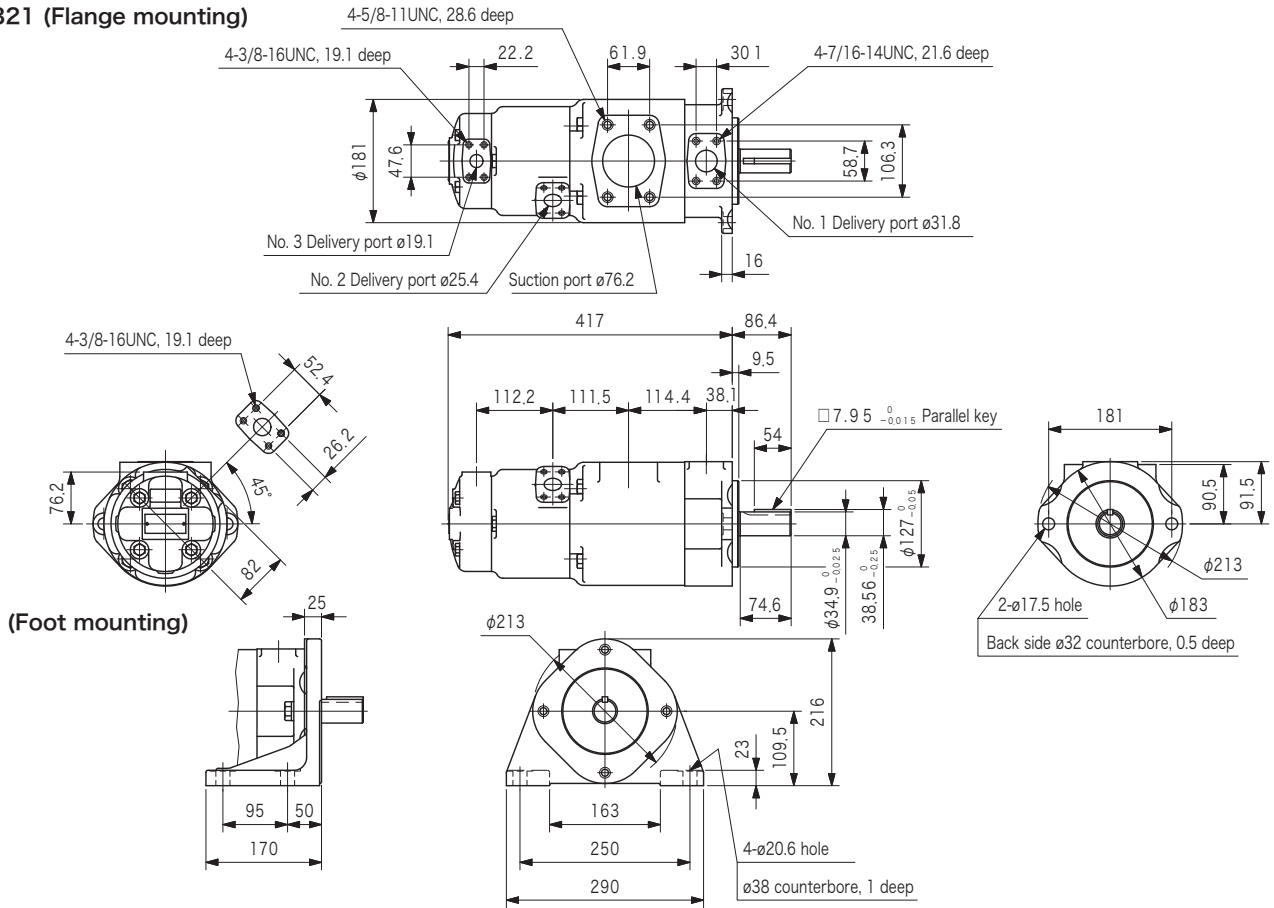


(Foot mounting)

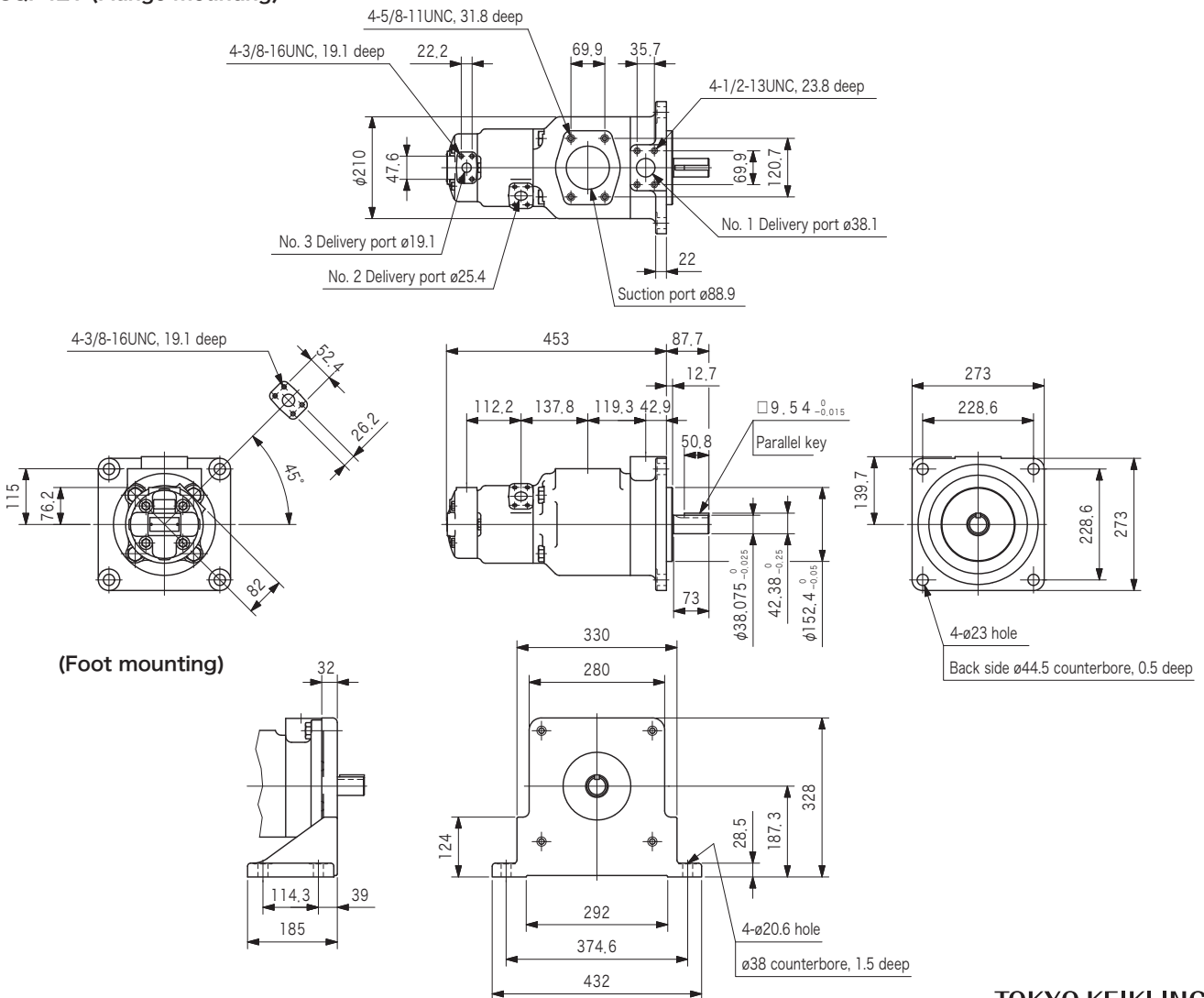


Dimensions

SQP321 (Flange mounting)

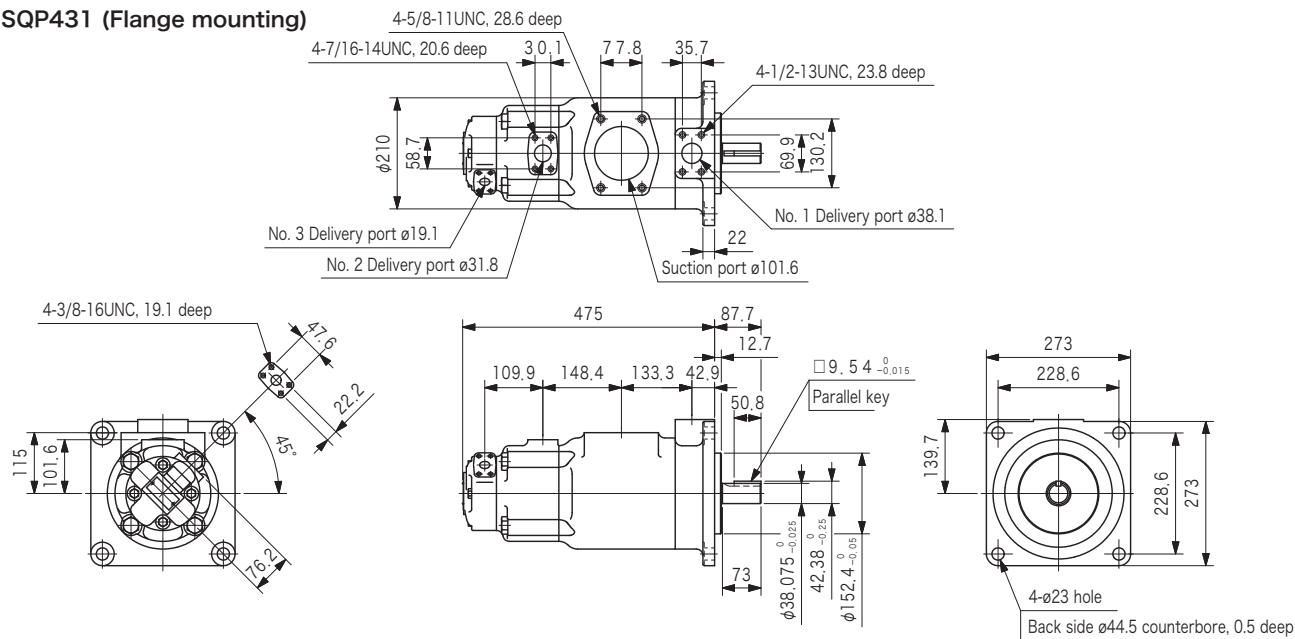


SQP421 (Flange mounting)

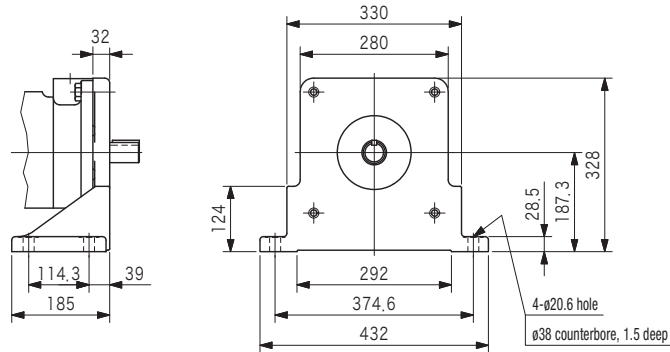


Dimensions

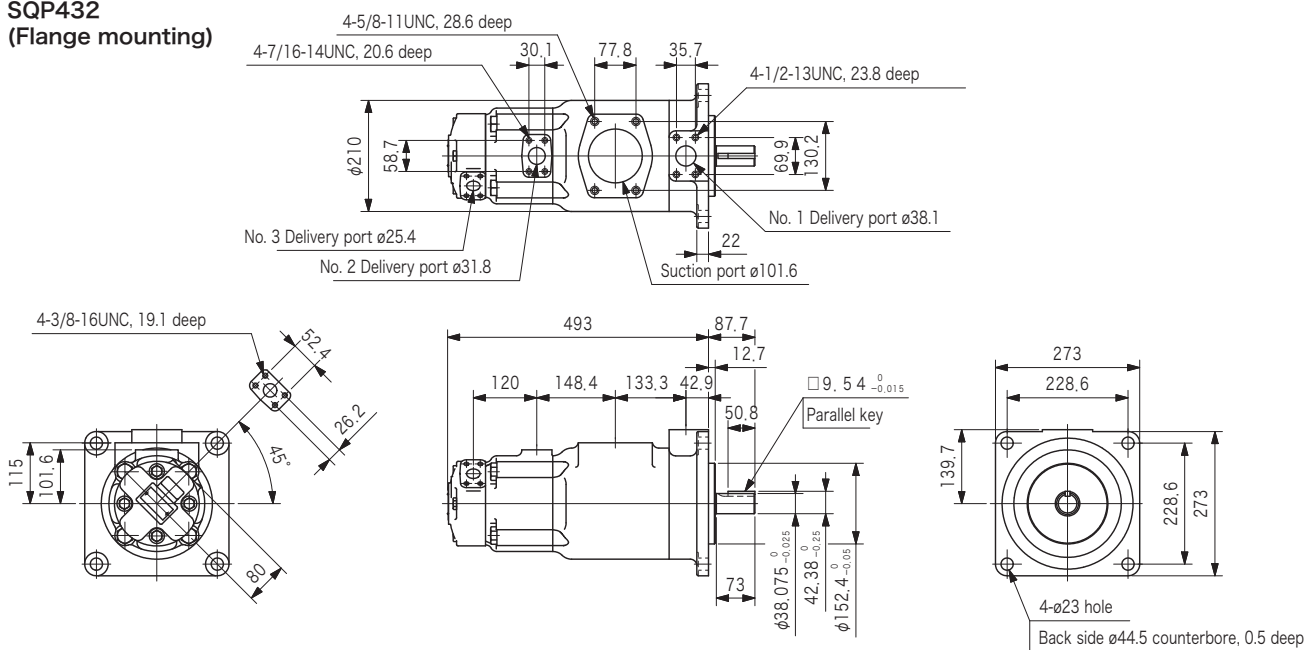
SQP431 (Flange mounting)



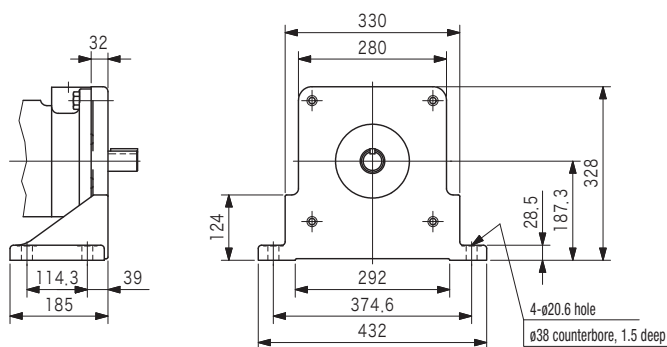
(Foot mounting)



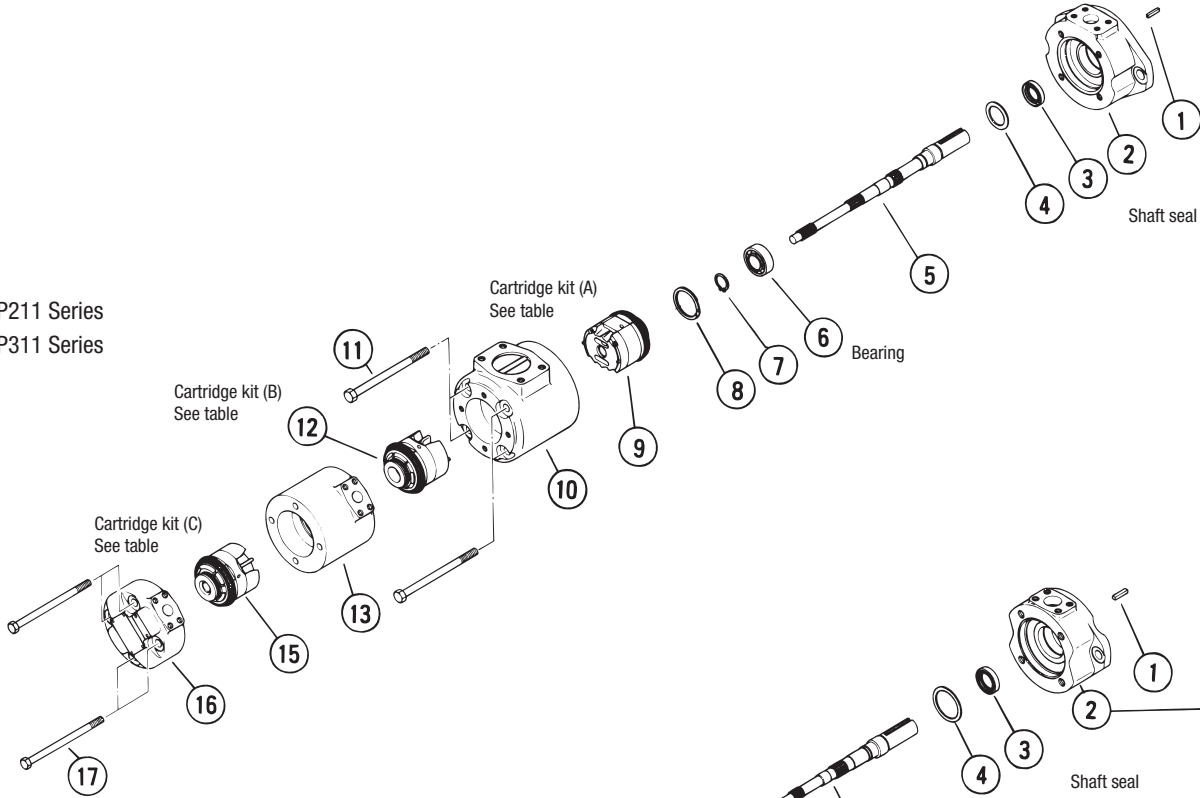
SQP432 (Flange mounting)



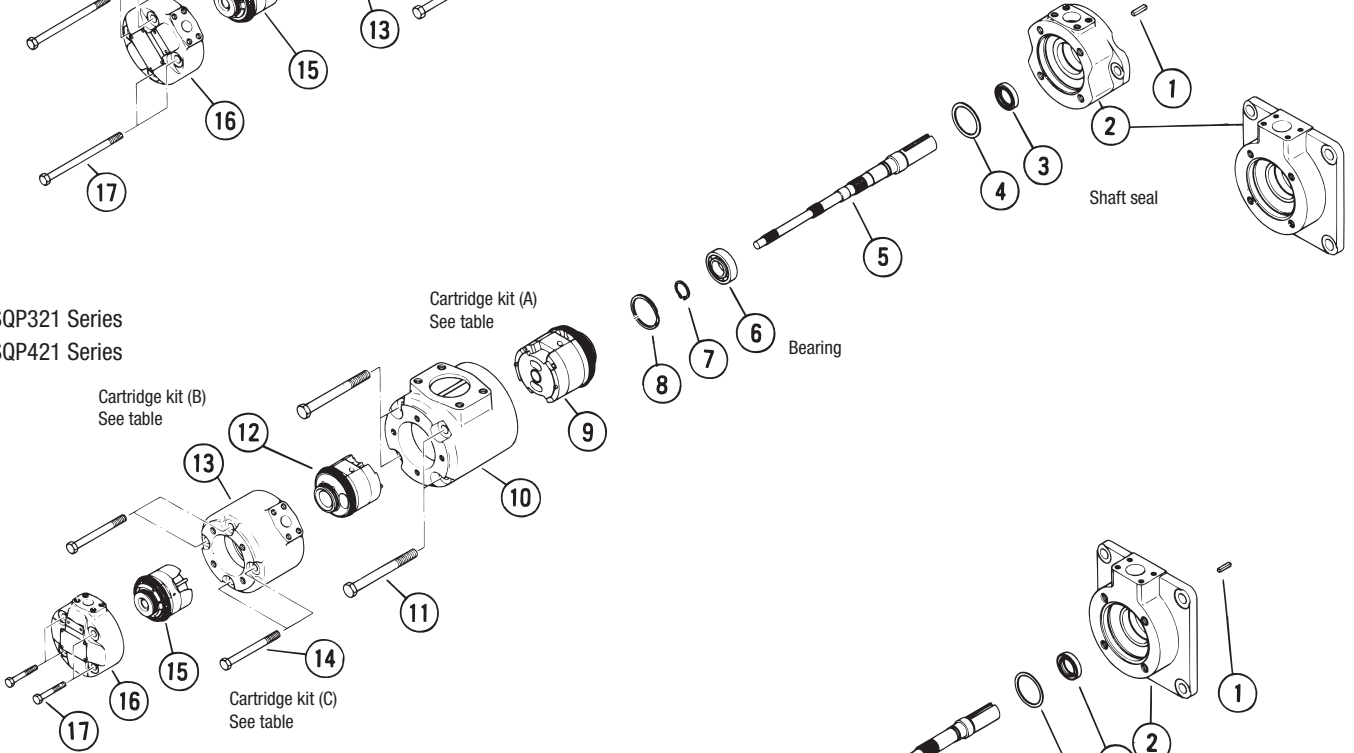
(Foot mounting)



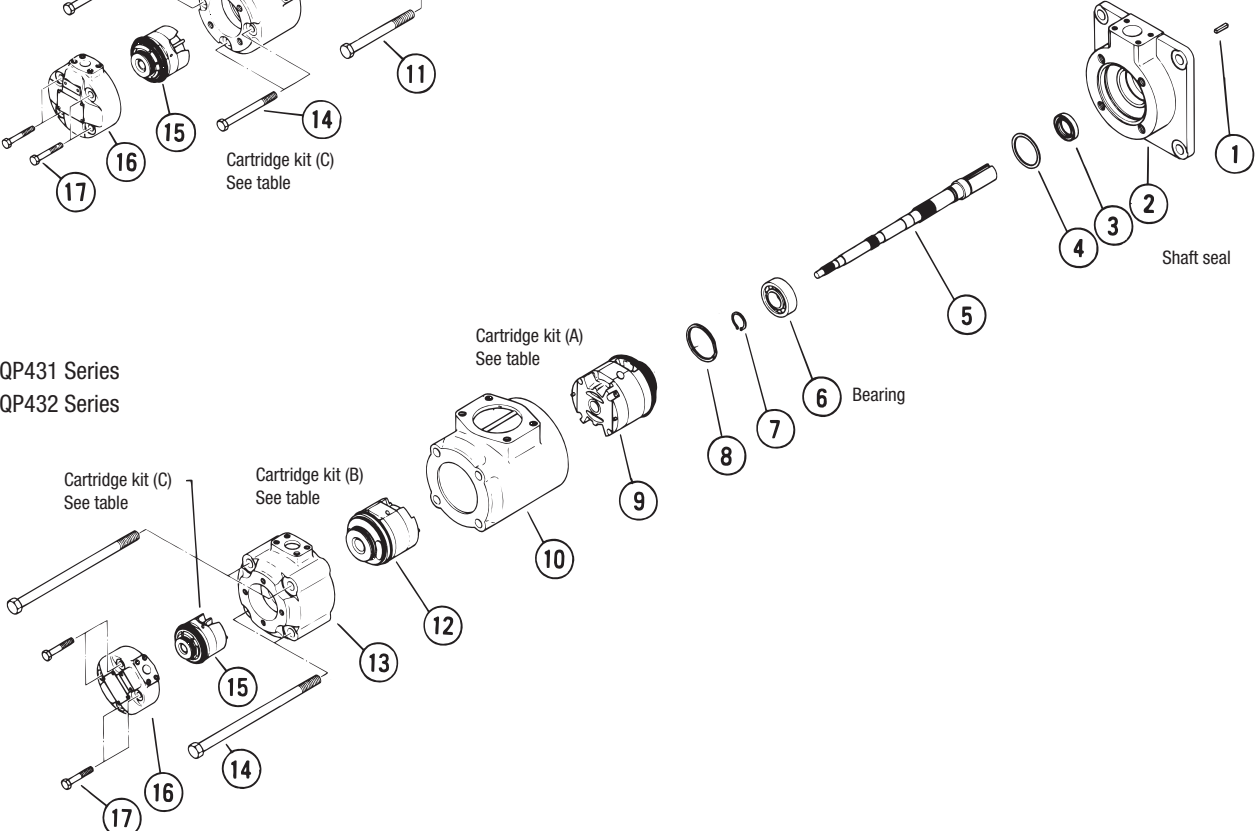
SQP211 Series
SQP311 Series



SQP321 Series
SQP421 Series



SQP431 Series
SQP432 Series



Construction

● Seals, Bearing Table

| Series | Seal Kit P/N | Shaft Seal P/N | Bearing P/N |
|--------------|--------------------|--------------------|-------------------|
| (F11)-SQP211 | VA10885A(40028865) | VP191668(40015857) | 0070 62051 |
| (F11)-SQP311 | VA10757A(40028502) | VP193428(40015856) | 0070 63061 |
| (F11)-SQP321 | VA10756A(40028503) | VP193428(40015856) | 0070 63061 |
| (F11)-SQP421 | VA11703A(40028869) | VP195287(40015858) | 0070 63071 |
| (F11)-SQP431 | VA11133A(40028870) | VP195287(40015858) | 0070 63071 |
| (F11)-SQP432 | VA11450A(40028871) | VP195287(40015858) | 0070 63071 |

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 without shield.

● Cartridge Kit Table

| Model Code | For Mineral Oil Based Fluid | | | For Water Glycol Fluid | | |
|-------------------|-----------------------------|--------------------------|--|--|--------------------------|--|
| | — | Cartridge Kit B (Middle) | Cartridge Kit C (Cover End) | — | Cartridge Kit B (Middle) | Cartridge Kit C (Cover End) |
| Displacement Code | — | 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) |
| Model Code | Cartridge Kit A (Shaft End) | Cartridge Kit B (Middle) | Cartridge Kit C (Cover End) | Cartridge Kit A (Shaft End) | Cartridge Kit B (Middle) | Cartridge Kit C (Cover End) |
| Displacement Code | 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 |
| Model Code | Cartridge Kit A (Shaft End) | Cartridge Kit B (Middle) | — | Cartridge Kit A (Shaft End) | Cartridge Kit B (Middle) | — |
| Displacement Code | 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 | — |
| Model Code | Cartridge Kit A (Shaft End) | — | — | Cartridge Kit A (Shaft End) | — | — |
| Displacement Code | 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.
● "L" is added as suffix to cartridge kit P/N for left hand rotation cartridge kit.

● Some series of cartridge kit P/N's indicated by () may not be applicable.
Confirm displacement codes on page B3-2.