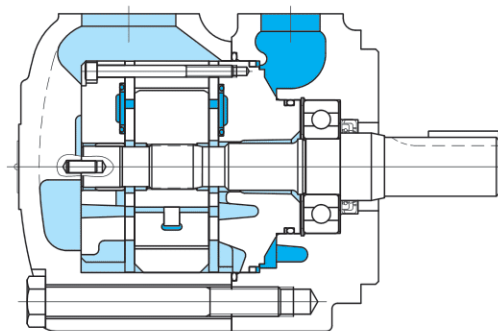
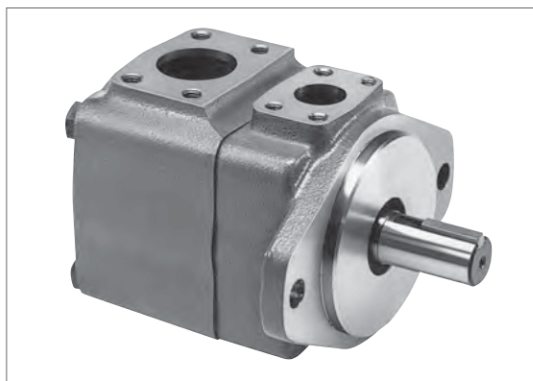


# High performance single fixed displacement vane pumps for mobile applications

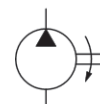
## VQ series

B  
5-1

Fixed Displacement Vane Pumps



Functional Symbol



### Model Code

(F3-)35VQ25A(F)-86C20(L)-JA

1 2 3 4 5 6 7 8 9

**1** Hydraulic fluid

Omit: mineral oil based fluid  
F3: Phosphate ester fluid

**2** High performance single fixed displacement vane pump for mobile applications

25VQ Series  
35VQ Series  
45VQ Series

**3** Pump displacement code

| Series | Displacement Code |
|--------|-------------------|
| 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: flange mounting  
F: foot mounting

**6** Shaft end configuration

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

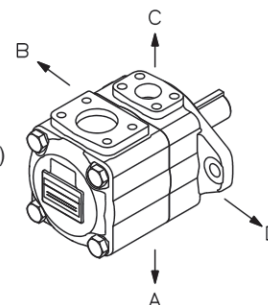
**7** Delivery port position (viewed from cover end)

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

**8** Design no.

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

Omit: CW  
L: left rotation (counter-clockwise)



### Specifications

| Model Code | Displacement Code | Del. at 1000 min <sup>-1</sup> 0.7 Mpa<br>L/min | Anti-Wear Mineral Oil     |                              | Phosphate Ester Fluid     |                              | Min. Speed min <sup>-1</sup> | Weight kg |
|------------|-------------------|---|---------------------------|------------------------------|---------------------------|------------------------------|------------------------------|-----------|
|            |                   |   | Max. Working Pressure MPa | Max. Speed min <sup>-1</sup> | Max. Working Pressure MPa | Max. Speed min <sup>-1</sup> |                              |           |
| 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 Tokyo Keiki.  
• Max. speed is based on 0 MPa (gauge pressure) suction pressure.  
Max. speed will be limited by negative suction pressure. Consult Tokyo Keiki in this case.

TOKYO KEIKI INC.

## Delivery, Shaft Input Power (at 20 mm<sup>2</sup>/s) (typical examples)

| Model Code | Speed<br>min <sup>-1</sup> | Delivery L/min |       |        |          |        | Shaft Input 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   | 44.4     | 42.7   | 1.4            | 7.5   | 14.6   | 17.9     | 21.3   |
|            | 1200                       | 63.0           | 60.6  | 56.9   | 54.9     | 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 20 mm<sup>2</sup>/s) (typical examples)

| Model Code | Speed<br>min <sup>-1</sup> | Delivery L/min |       |        |          |        | Shaft Input 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 20 mm<sup>2</sup>/s) (typical examples)

| Model Code | Speed<br>min <sup>-1</sup> | 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 |
| 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 Operation

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

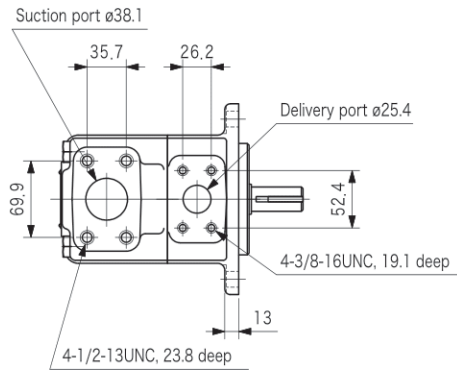
### Piping Flanges (Compliant to SAE J 518c Standard Pressure)

- 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.

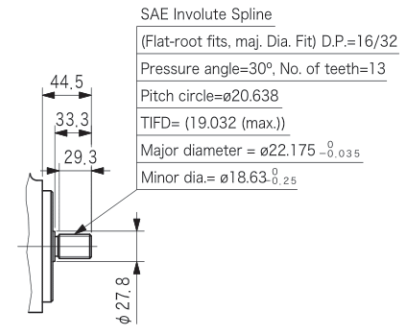
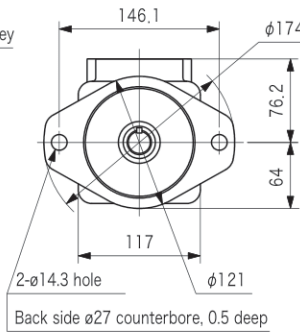
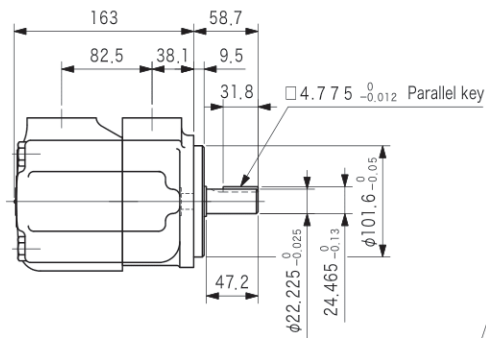
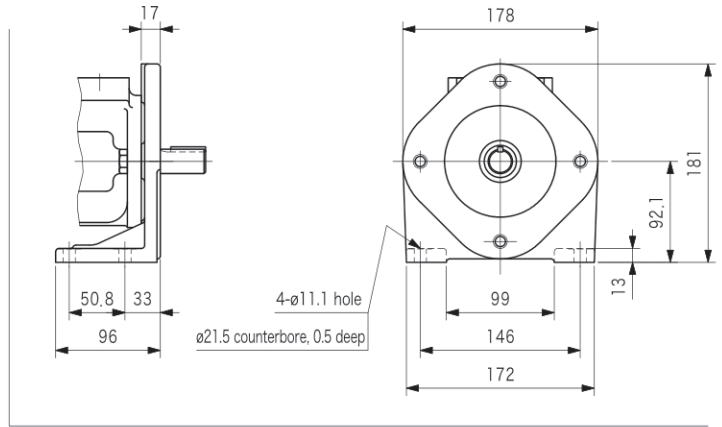
| Pump Model | Flange Type  |                       |                  |               |                       |                  |
|------------|--------------|-----------------------|------------------|---------------|-----------------------|------------------|
|            | Suction Port |                       |                  | Delivery Port |                       |                  |
|            | Size         | Threaded              | Welded           | Size          | Threaded              | Welded           |
| 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

## 25VQ (Flange mounting)

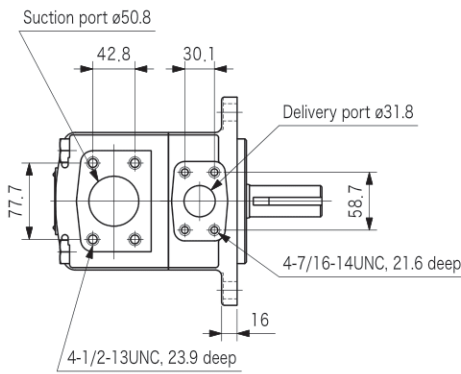


## (Foot mounting)

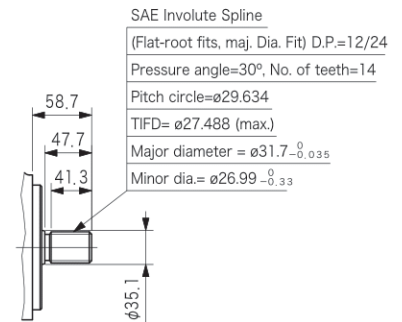
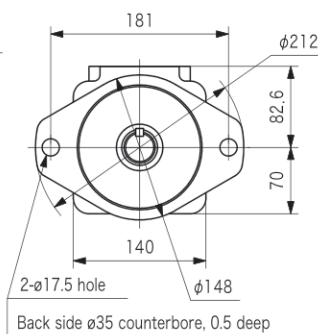
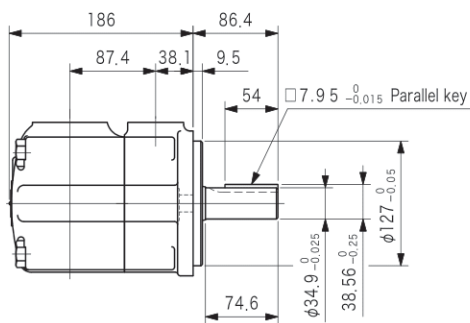
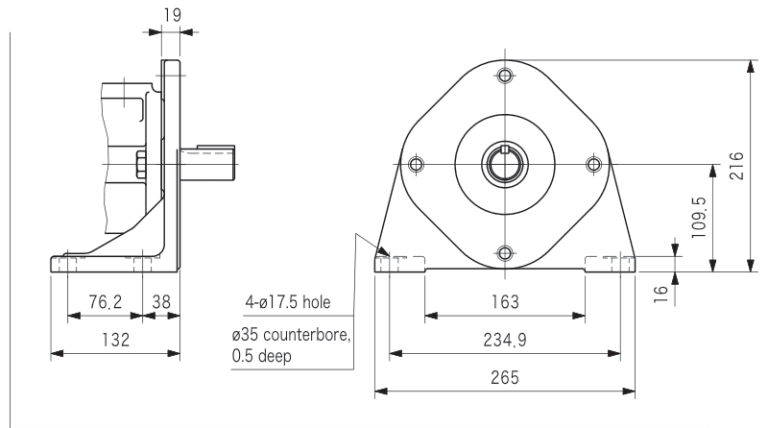


No. 11 Spline Shaft End Shape

## 35VQ (Flange mounting)



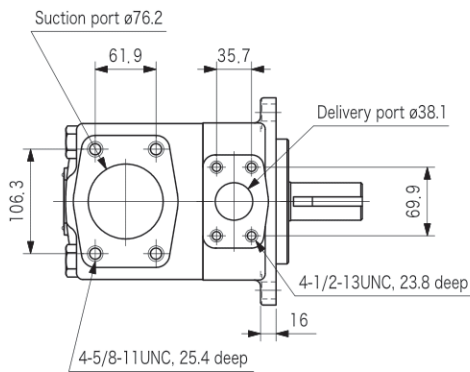
## (Foot mounting)



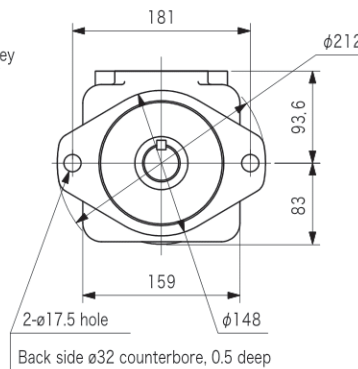
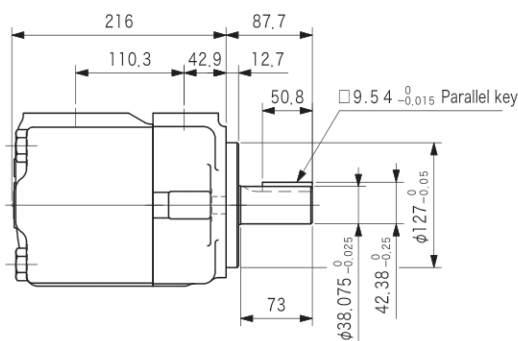
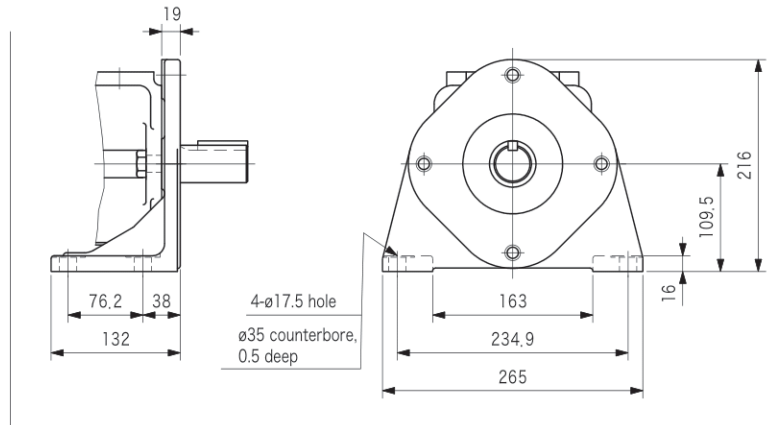
No. 11 Spline Shaft End Shape

# Dimensions

## 45VQ (Flange mounting)



## (Foot mounting)



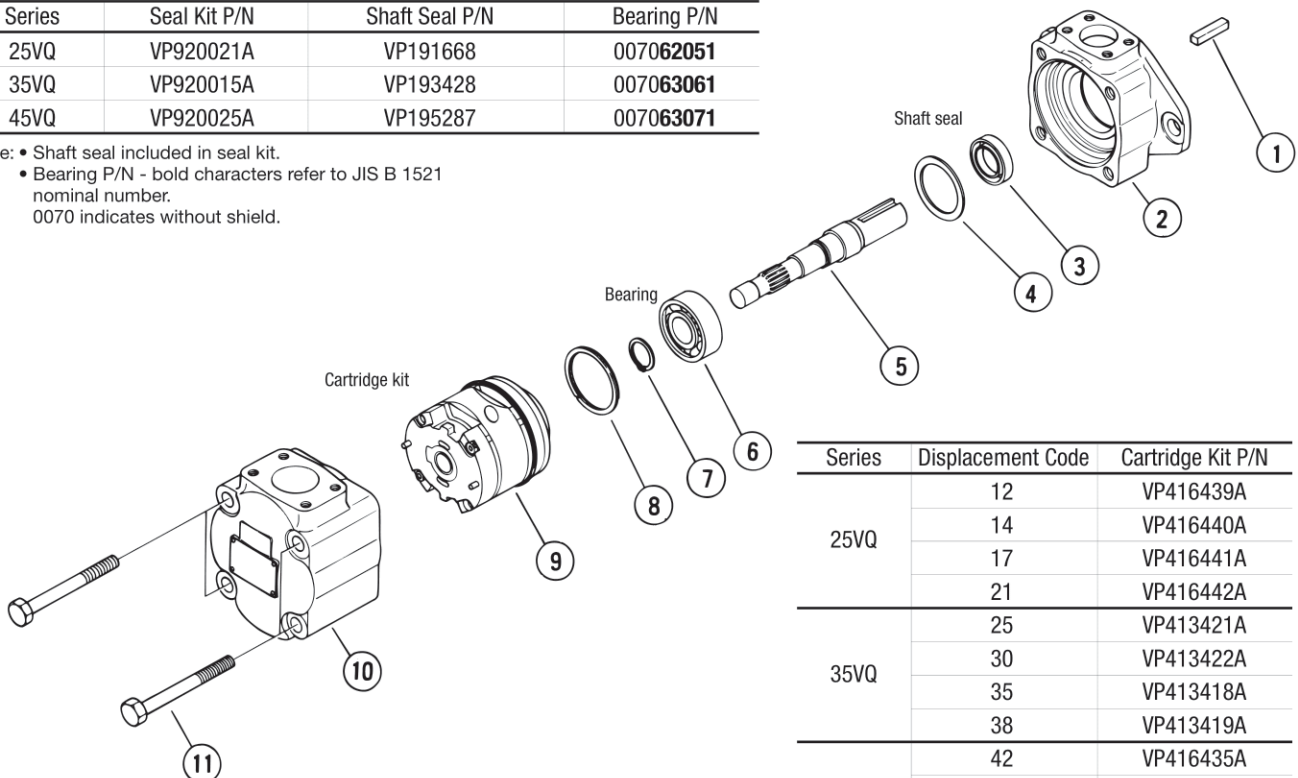
SAE Involute Spline  
 (Flat-root fits, maj. Dia. Fit) D.P.=12/24  
 Pressure angle=30°, No. of teeth=14  
 Pitch circle=φ29.634  
 TIFD=φ27.488 (max.)  
 Major diameter = φ31.7<sup>-0.035</sup>  
 Minor dia.= φ26.99<sup>-0.33</sup>

No. 11 Spline Shaft End Shape

# Construction

| Series | Seal Kit P/N | Shaft Seal P/N | Bearing P/N       |
|--------|--------------|----------------|-------------------|
| 25VQ   | VP920021A    | VP191668       | 0070 <b>62051</b> |
| 35VQ   | VP920015A    | VP193428       | 0070 <b>63061</b> |
| 45VQ   | VP920025A    | VP195287       | 0070 <b>63071</b> |

Note: • Shaft seal included in seal kit.  
 • Bearing P/N - bold characters refer to JIS B 1521 nominal number.  
 0070 indicates without shield.



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

Note: • Cartridge kit includes seals excluding shaft seal.  
 • "L" is added as suffix to cartridge kit P/N for left hand rotation cartridge kit.