3 Port Solenoid Valve

Series VKF300

Compact yet provides a large flow capacity
Body width 18 mm

Available in vacuum applications (−101.2 kPa)
Can be used in vacuum/release circuits

Universal porting
N.C./N.O. type can be switched by supplying air to port 1 (P) or 3 (R). 2 way valves and selector valves can also be freely used.

Various manifold piping directions
Output port: Manifold set-up allowing 360° rotation of 2 (A) entry direction (in 90° increments)

Easy manual operation
Since manual overrides are located in 2 directions, on the top and on the side of the valve, manual override operation is possible and is unaffected by mounting space and piping direction, etc.

Ozone resistant (Series 80-)
FKM (Fluororubber) is used for the fluid-contact rubber materials, allowing for use even in ozone environments.
3 Port Solenoid Valve Direct Operated Poppet Type
Series VKF300

How to Order Valves

Valve option

Valve model | Operating pressure range (MPa) | Port size | Flow characteristics | Weight (g) |
---|---|---|---|---|
VKF332 | 0 to 0.7 | M5 x 0.8 | 0.67 0.10 0.13 0.32 0.25 0.41 0.39 | 80 (1) |
VKF333 | 0 to 0.7 | M5 x 0.8 | 0.56 0.10 0.13 0.32 0.25 | 120 |
VKF334 | 0 to 0.7 | Rc 1/8 | 0.56 0.10 0.13 0.68 0.25 | 130 |

Note 1) VKF332: Add 10 g to each when equipped with bracket.

Flow Characteristics/Weight

| Valve model | Operating pressure range (MPa) | Port size | Flow characteristics | Weight (g) |
---|---|---|---|---|
Body ported | 0 to 0.7 | M5 x 0.8 | 0.67 0.10 0.13 0.32 0.25 | 80 (1) |
Base mounted (With sub-plate) | 0 to 0.7 | Rc 1/8 | 0.56 0.10 0.13 0.68 0.25 | 120 |

Electrical entry

G: Grommet
H: Grommet
D: DIN terminal
DO: DIN terminal

Thread type

Nil - RC
F - G
N - NPT
T - NPTF

CE-compliant

Nil - Q

Light/Surge voltage suppressor

S: With surge voltage suppressor
Z: With light/surge voltage suppressor

* Since the indicator light is built in the connector, thus, "DOZ" is not available.

Note 1) VKF332: Add 10 g to each when equipped with bracket.
3 Port Solenoid Valve
Direct Operated Poppet Type  Series VKF300

Standard Specifications

<table>
<thead>
<tr>
<th>Type of actuation</th>
<th>Direct operated type 2 position single solenoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>Max. 50°C</td>
</tr>
<tr>
<td>Response time (at 0.5 MPa) (^{(2)})</td>
<td>10 ms or less (Standard), 15 ms or less (Low power consumption type)</td>
</tr>
<tr>
<td>Manual override</td>
<td>Non-locking push type</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required (Use turbine oil Class 1 ISO VG32, If lubricated.)</td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
</tr>
<tr>
<td>Impact/Vibration resistance (^{(3)})</td>
<td>300/50 m/s²</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valve specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical entry</td>
</tr>
<tr>
<td>Rated voltage</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
</tr>
<tr>
<td>Apparent power (AC)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Power consumption (DC)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Indicator light</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electricity specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inrush</td>
</tr>
<tr>
<td>Holding</td>
</tr>
<tr>
<td>Surge voltage suppressor</td>
</tr>
<tr>
<td>Indicator light</td>
</tr>
</tbody>
</table>

Note 1) Based on dynamic performance test, JIS B 8374-1981. (Coil temperature: 20°C, at rated voltage, without surge voltage suppressor)
* When equipped with DC solenoid/surge voltage suppressor, a delay of about 20 to 30 msec. occurs in the OFF response time.

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Construction

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solenoid coil assembly</td>
<td>Aluminum die-casted</td>
<td>For VKF334: VKF300-5-01</td>
</tr>
<tr>
<td>2</td>
<td>Sub-plate</td>
<td>Aluminum die-casted</td>
<td>For VKF332: VKF300-13A-2</td>
</tr>
<tr>
<td>3</td>
<td>Body</td>
<td>Aluminum</td>
<td>For VKF333: VKF300-11A-2</td>
</tr>
<tr>
<td>4</td>
<td>Spool/Sleeve</td>
<td>Stainless steel</td>
<td>For VKF334: VKF300-11A-1</td>
</tr>
<tr>
<td>5</td>
<td>Manual override</td>
<td>Resin</td>
<td>For VKF331: VKF300-6A-1, 2 sets per unit required</td>
</tr>
<tr>
<td>6</td>
<td>Return spring</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Bracket assembly</td>
<td>Steel</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Gasket assembly (With mounting screw)</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Bushing assembly</td>
<td>Resin</td>
<td></td>
</tr>
</tbody>
</table>
**Series VKF300**

**Dimensions: Single Type**

**Body ported**
Grommet: VKF332□□□G-□□□M5-01

**Base mounted**
Grommet: VKF334□□□□□G-01

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### DIN terminal: VKF332□□□□□D-□□□M5-01

- **Max**: 10
- **Dimension**: 71.5 x 2.3
- **Applicable cable O.D.**: ø4 to ø6.5

Refer to grommet type for other dimensions.

### DIN terminal: VKF334□□□□□D-□□□M5-01

- **Max**: 10
- **Dimension**: 71.5 x 2.3
- **Applicable cable O.D.**: ø4 to ø6.5

Refer to grommet type for other dimensions.
How to Order Manifold

Body ported

Common SUP/Common EXH

**Type 20: Body ported**
- **How to Order**
  - VV3KF3 - 20 - 05
  - **Valve stations**
    - 01: 1 station
    - 20: 20 stations
  - **Thread type**
    - Nil
    - Rc
    - 00F
    - G
    - 00N
    - NPT
    - 00T
    - NPTF
  - **Option**
    - Nil
    - F
    - None
    - With bracket
  - **Applicable valve**
    - VKF333
    - Nil
    - M5
    - (-Q)
    - Bracket
    - VK300-43-1A
  - **Applicable blanking plate assembly**
    - VK300-42-1A

**Type 21: Body ported**
- **How to Order**
  - VV3KF3 - 21 - 05
  - **Valve stations**
    - 01: 1 station
    - 20: 20 stations
  - **Thread type**
    - Nil
    - Rc
    - 00F
    - G
    - 00N
    - NPT
    - 00T
    - NPTF
  - **CE-compliant**
    - Nil
    - Q

Base mounted

Common SUP/Common EXH

**Type 40: Base mounted**
- **How to Order**
  - VV3KF3 - 40 - 05 - 01
  - **Valve stations**
    - 01: 1 station
    - 01: Rc 1/8
  - **Port size**
    - Nil
    - F
    - G
    - None
    - With bracket
  - **Applicable valve**
    - VKF334
    - Nil
    - (-Q)
  - **Applicable blanking plate assembly**
    - VK300-42-1A

**Type 42: Base mounted**
- **How to Order**
  - VV3KF3 - 42 - 05 - 01
  - **Valve stations**
    - 01: 1 station
    - 01: Rc 1/8
  - **Solenoid direction**
    - Nil
    - S
    - Solenoid on opposite A port
    - Solenoid on same side as A port
  - **Thread type**
    - Nil
    - Rc
    - F
    - G
    - N
    - NPT
    - T
    - NPTF
  - **Option**
    - Nil
    - Q
  - **Applicable valve**
    - VKF334
    - Nil
    - (-Q)
  - **Applicable blanking plate assembly**
    - VK300-42-1A

Type S42 (Solenoid on same side as port A)
- **How to Order**
  - VV3KF3 - 42 - 05 - 01
  - **Valve stations**
    - 01: 1 station
    - 01: Rc 1/8
  - **Port size**
    - Nil
    - F
    - G
    - None
    - With bracket
  - **Applicable valve**
    - VKF334
    - Nil
    - (-Q)
  - **Applicable blanking plate assembly**
    - VK300-42-1A

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**Series VKF300**

**Direct Operated Poppet Type**

[Option]

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**Applicable solenoid valve**
- VKF333
- VKF334
- Nil
- M5
- (-Q)

**Applicable blanking plate assembly**
- VK300-42-1A
- VK300-43-1A
- CE-compliant

**Applicable solenoid valve**
- VKF300-42-1A
- VKF300-43-1A
- CE-compliant

**Applicable blanking plate assembly**
- VK300-42-1A
- VK300-43-1A
- CE-compliant
Series VKF300

Dimensions: Manifold

Body ported

**Type 20 Manifold** Common SUP, Common EXH/Top Ported

![Diagram of Type 20 Manifold]

**Type 21 Manifold** Common SUP, Individual EXH/Top Ported

![Diagram of Type 21 Manifold]

**L Dimension**

<table>
<thead>
<tr>
<th>n</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>35</td>
<td>54</td>
<td>73</td>
<td>92</td>
<td>111</td>
<td>130</td>
<td>149</td>
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<td>320</td>
<td>339</td>
<td>358</td>
<td>377</td>
<td>396</td>
</tr>
<tr>
<td>L2</td>
<td>27</td>
<td>46</td>
<td>66</td>
<td>84</td>
<td>103</td>
<td>122</td>
<td>141</td>
<td>160</td>
<td>179</td>
<td>198</td>
<td>217</td>
<td>236</td>
<td>255</td>
<td>274</td>
<td>293</td>
<td>312</td>
<td>331</td>
<td>350</td>
<td>369</td>
<td>388</td>
</tr>
<tr>
<td>L3</td>
<td>13</td>
<td>32</td>
<td>51</td>
<td>70</td>
<td>89</td>
<td>108</td>
<td>127</td>
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<td>165</td>
<td>184</td>
<td>203</td>
<td>222</td>
<td>241</td>
<td>260</td>
<td>279</td>
<td>298</td>
<td>317</td>
<td>336</td>
<td>355</td>
<td>374</td>
</tr>
</tbody>
</table>

**Grommet: G**

2 x ø4.5 (Mounting hole)

4 x M3 x 0.5 depth 6 (Bracket mounting screw)

**DIN terminal: D**

Applicable cable O.D. ø4 to ø6.5

Indicator light (Type DZ only)

**Manifold**

- Common SUP
- Individual EXH/Top Ported

**Bracket mounting screw**

- ø4.5
- ø4 to ø6.5

**Series VKF300**

1974

**SMC**

Dimensions: Manifold

Body ported

**Type 20 Manifold** Common SUP, Common EXH/Top Ported

![Diagram of Type 20 Manifold]

**Type 21 Manifold** Common SUP, Individual EXH/Top Ported

![Diagram of Type 21 Manifold]

**L Dimension**

<table>
<thead>
<tr>
<th>n</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>38</td>
<td>57</td>
<td>76</td>
<td>95</td>
<td>114</td>
<td>133</td>
<td>152</td>
<td>171</td>
<td>190</td>
<td>209</td>
<td>228</td>
<td>247</td>
<td>266</td>
<td>285</td>
<td>304</td>
<td>323</td>
<td>342</td>
<td>361</td>
<td>380</td>
<td>399</td>
</tr>
<tr>
<td>L2</td>
<td>27</td>
<td>46</td>
<td>65</td>
<td>84</td>
<td>103</td>
<td>122</td>
<td>141</td>
<td>160</td>
<td>179</td>
<td>198</td>
<td>217</td>
<td>236</td>
<td>255</td>
<td>274</td>
<td>293</td>
<td>312</td>
<td>331</td>
<td>350</td>
<td>369</td>
<td>388</td>
</tr>
</tbody>
</table>

**Grommet: G**

2 x ø4.5 (Mounting hole)

**DIN terminal: D**

Applicable cable O.D. ø4 to ø6.5

Indicator light (Type DZ only)

**Manifold**

- Common SUP
- Individual EXH/Top Ported

**Bracket mounting screw**

- ø4.5
- ø4 to ø6.5

**Series VKF300**

1974

**SMC**
Base mounted

**Type 40 Manifold** Common SUP, Common EXH/BOTTOM PORTED

**Grommet: G**
- Manual override (Non-locking)
- 2 x ø4.5 (Mounting hole)
- 4 x M3 x 0.5, depth 6 (Bracket mounting screw)
- 4 x ø4.5 (Bracket mounting hole)

**DIN terminal: D**
- Applicable cable O.D. ø4 to ø6.5
- Indicator light (Type DZ only)
- 4 x Rc 1/8 (P), 3(R) port

**L Dimension**

|   | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| L1| 37 | 56 | 75 | 94 | 113| 132| 151| 170| 189| 208| 227| 246| 265| 284| 303| 322| 341| 360| 379| 398|
| L2| 27 | 46 | 65 | 84 | 103| 122| 141| 160| 179| 198| 217| 236| 255| 274| 293| 312| 331| 350| 369| 388|
| L3| 13 | 32 | 51 | 70 | 89 | 108| 127| 146| 165| 184| 203| 222| 241| 260| 279| 298| 317| 336| 355| 374|

n: Stations

**Series VKF300**

- VV061
- VV100
- V100
- S070
- VQD
- VQD-V
- VKF
- VK
- VT
- VS4
- VS3
**Series VKF300**

**Dimensions: Manifold**

**Base mounted**

<table>
<thead>
<tr>
<th>Type 42 Manifold</th>
<th>Common SUP, Common EXH/Side Ported</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**Type S42 Manifold**

<table>
<thead>
<tr>
<th>Common SUP, Common EXH/Side Ported: Same direction as solenoid</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="Diagram" /></td>
</tr>
</tbody>
</table>

| **L Dimension** | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| L1              | 38 | 57 | 76 | 95 |114 |133 |152 |171 |190 |209 |228 |247 |266 |285 |304 |323 |342 |361 |380 |399 |
| L2              | 28 | 47 | 66 | 85 |104 |123 |142 |161 |180 |199 |218 |237 |256 |275 |294 |313 |332 |351 |370 |389 |
Series VKF300
Specific Product Precautions 1

Be sure to read before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valve Precautions.

Manual Override Operation

⚠️ Warning

Connected actuator is started by manual operation. Use the manual override after confirming that there is no danger.

- Non-locking push type (Tool required)

There are manual overrides in 2 directions, on the top and on the side (solenoid side). By pressing either of the manual overrides in the direction of the arrow (R) until it stops (approx. 1 mm), it will turn ON, and it turns OFF when released.

Mounting of Valves

⚠️ Caution

After confirming the gasket is correctly placed under the valve, securely tighten the bolts with the proper torque shown in the table below.

| Proper tightening torque (N-m) | 0.6 to 0.8 |

The bushing may be damaged if the tightening torque of 0.8 N-m is exceeded. In the event that damage does occur, be sure to replace the bushing.

SUP Block bushing assembly no. VKF300-6A-1
- 2 sets per unit are required.

Light/ Surge Voltage Suppressor

⚠️ Caution

Precautions on connection of 24 V or more DC

For the grommet type, connect the positive (+) side to the red lead wire and connect the negative (−) side to the black lead wire. For the DIN terminal, connect the positive (+) side to the connector’s no.1 terminal and connect the negative (−) side to the no.2 terminal. (See the markings on the terminal block.)

- For 12 V or less DC, positive (+) and negative (−) can be connected in either direction.

● Grommet type

● DIN terminal type

Symbol

- Marking

For AC and 12 VDC or less

For 24 VDC or more

Symbol

(Varistor) (Diode)
How to Wire DIN Terminal

⚠️ Warning

- **Connection**
  1. Loosen the set screw and pull out the connector from the terminal block of the solenoid.
  2. After removing the holding screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it up, separating the terminal block and the housing.
  3. Loosen the terminal screws (slotted screws) on the terminal block, insert the core of the lead wire into the terminal in accordance with the prescribed connection method, and attach securely with the terminal screws.
  4. Tighten the ground nut to secure the wire.

- **Change of electrical entry (Orientation)**
  After separating terminal block and housing, the cord entry direction can be changed by attaching the housing in the desired direction (4 directions in 90 increments).

- **Precautions**
  The connector should be inserted and pulled out in a straight line without tilting diagonally.

- **Applicable cable**
  O.D.: ø4 to ø6.5
  (Reference)
  0.5 mm²: 2 core and 3 core wires equivalent to JIS C 3306

### How to Calculate the Flow Rate

For obtaining the flow rate, refer to front matters 42 to 45.

#### How to Wire DIN Terminal

**Connector part no. VK300-82-1**

**Part no. for connector with indicator light**

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Voltage symbol</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 VAC</td>
<td>A1</td>
<td>VK300-82-2-01</td>
</tr>
<tr>
<td>200 VAC</td>
<td>A2</td>
<td>VK300-82-2-02</td>
</tr>
<tr>
<td>24 VAC</td>
<td>A3</td>
<td>VK300-82-2-07</td>
</tr>
<tr>
<td>6 VDC</td>
<td>LW06</td>
<td>VK300-82-4-51</td>
</tr>
<tr>
<td>12 VDC</td>
<td>LW2</td>
<td>VK300-82-4-06</td>
</tr>
<tr>
<td>24 VDC</td>
<td>LD4</td>
<td>VK300-82-3-05</td>
</tr>
<tr>
<td>48 VDC</td>
<td>LD8</td>
<td>VK300-82-3-53</td>
</tr>
</tbody>
</table>

#### Circuit with indicator light

- **AC Circuit diagram**
  - R: Resistor
  - NL: Neon bulb

- **12 VDC or less Circuit diagram**
  - LED: Light emitting diode
  - R: Resistor

- **24 VDC or more Circuit diagram**
  - D: Protective diode
  - LED: Light emitting diode
  - R: Resistor

---

Series VKF300
Specific Product Precautions 2

Be sure to read before handling. Refer to front matter 53 for Safety Instructions and pages 3 to 8 for 3/4/5 Port Solenoid Valve Precautions.