### Features

1. The function of two valves in one
   - A two-speed controller provides smooth speed adjustment from low speed to high, and from high-speed to low.
2. Quiet starts and stops
   - A low-speed startup and stop feature makes startups and stops smooth and soft.
3. Separate control of forward and back cylinder movement
   - There are five volume settings for highspeed flow rate and acceleration/deceleration times that can be independently adjusted SOL.a and SOL.b (ON side, OFF side).

### Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>SF-G01-C*10-D2-10</th>
<th>SF-G01-C*20-D2-10</th>
<th>SF-G01-C*40-D2-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve Maximum Operating Pressure (MPa)</td>
<td>21</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>High-speed Flow Rate (l/min)</td>
<td>10</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Low-speed Flow Rate (l/min)</td>
<td>0.5 to 4</td>
<td>2 to 8</td>
<td>4 to 16</td>
</tr>
<tr>
<td>Maximum Allowable Pressure (MPa)</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Acceleration/Deceleration Time Adjustment</td>
<td>0.1 to 2</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>Power Supply Voltage (V)</td>
<td>D2: 24V DC regulated DC power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Power Consumption (W)</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>5 to 50°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature Range</td>
<td>5 to 60°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kinematic Viscosity Range (mm²/s)</td>
<td>15 to 300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filtration</td>
<td>25 μm or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size x Length</td>
<td>5x5x45 (four)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tightening Torque</td>
<td>5 to 7N·m (51 to 71kgf·cm)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
1. The above high-speed and low-speed flow rates are obtained with a differential pressure (PA, PB) of 1.0MPa (10.2kgf/cm²). The flow rates depend on differential pressure.
2. Hysteresis and repeatability values are those at maximum flow rate.
3. For mounting bolts, use bolts of 12.9 strength classification or equivalent.
4. Mounting bolts are not included.

### Explanation of model No.

**SF - G01 - C * * * - R - D2 - 10**

- **Design number**
  - Power supply: D2: 24VDC
  - Auxiliary symbol: None: Sink, A: Source
  - Maximum flow rate: 10, 20, 40l/min
  - Center position: 5, 6S
  - Operation Method: C (Spring center)
  - Mounting method: G: Gasket type, Nominal diameter: 01 (01 size)
- **Fine solenoid valve**

### Handling

1. **Valve differential pressure**
   - Volume adjustment becomes sensitive when P→A (B) and B(A)→T differential pressure is large. Maintain the pressure differential so it is no greater than 3.5MPa (35.7kgf/cm²).
2. **Low-speed flow rate**
   - The spool may not move if the low-speed flow rate is below the minimum. Use this valve only within the allowable minimum low-speed flow rate range.
3. **Deceleration circuit**
   - Use a C5** spool for the deceleration circuit. Deceleration is difficult with the C6S** spool.
   - When large deceleration is required or for a system that uses a vertical cylinder, equip an external drain type counter balance valve. See the illustration below.
4. **Pilot check circuit**
   - For a circuit with a pilot check valve, knocking may occur in the pilot check valve due to large load inertia and circuit pressure loss. In cases like this, use an external drain type pilot check valve. See the illustration below.
5. **Environmental conditions**
   - The IC circuit board is located inside the central control box, so care must be exercised concerning water-resistance and ambient temperature.
   - Water: Cover the box so there is no direct splashing with water.
   - Ambient Temperature: Use in an area where the temperature is 5°C to 50°C.
6. **Operating Fluid**
   - Always keep the operating fluid clean. Allowable contamination is class NAS11 or less.
   - Use oil-based hydraulic operating fluid.
   - Contact your agent when you want to use fire-resistant hydraulic fluid.
Note the following points to optimize operation.
(1) Control oil temperature when using this valve. Since the valve performs restrictor valve control on all processes, temperature differential changes flow volume and acceleration/deceleration time. The recommended temperature range is 30°C to 60°C.
(2) During the positioning operation following deceleration, make sure that sufficient low-speed running is provided following deceleration before stopping operation. If low-speed operation time is too short can cause stopping during deceleration and shock problems due to fluctuation in load, etc.

### Electrical Wiring
- **Sink Type (Auxiliary Symbol: None)**
  - Switches on load and power supply minus side
- **Source Type (Auxiliary Symbol: A)**
  - Switches on load and power supply plus side

### Adjustment Elements
**Control Pattern**

<table>
<thead>
<tr>
<th>Flow rate</th>
<th>High-speed signal</th>
<th>Low-speed signal</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON side</td>
<td>Low-speed flow rate adjustment VR1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF side</td>
<td>Low-speed flow rate adjustment VR5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Acceleration time adjustment VR2 | High-speed flow rate adjustment VR3 | Deceleration time adjustment VR4 |

**Electrical Control Precautions**
- Do not introduce a high-speed signal prior to a low-speed signal. Make sure the two signals are introduced simultaneously or that the low-speed signal is introduced first.
- Repeatedly introducing the high-speed signal first in a source type configuration can damage the IC board.
- The valve will not operate on the high-speed signal only.
- The following adjustments in the range of VR1 through VR5 can be made independently for SOL.a and SOL.b. You can make adjustments for the best conditions for forward and back operations when considering the cylinder operations.
- Adjustment volume is arranged in from VR1 through VR5 in clockwise (rightward) rotation sequence when viewed from the coil side.
- The following are the factory default volume settings.
  - VR12-4-5
  - Minimum setting
  - VR3—Maximum setting

**All Adjustment VRs**
- Maximum is clockwise (rightward) rotation.
- The volume rotation angle is 270°. Contact your agent about a three-rotation type adjustor for fine adjustment.
**Installation Dimension Drawings**

SF-G01-C***-(A)R-D2-10

**Performance Curves**

- **Hydraulic Operating Fluid Kinematic Viscosity 32mm²/s**
  - Use the valve within the allowable flow rate range shown by the graph to the Left.
  - There are no operational problems within the allowable flow rate range, even when one-pass is used.

- **Pressure – Flow Rate Characteristics**

- **Control Waveform Example**
  - Valve: SF-G01-C510-R-D2-10
  - Supply Pressure: 21MPa (214kgf/cm²)
  - Hydraulic Circuit

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40.5 30.2 21.5 12.7

25.5

32.5 31 0.75 25.9 15.5 5.1

46 25.5 48 92.5 112.5

37.5 216

0 10 20 10(102) 20(204)

Flow rate l/min

Pressure MPa (kgf/cm²)
Seal Part List (Kit Model Number EFS)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Part Name</th>
<th>Type/Part Number</th>
<th>Q'ty</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>O-ring</td>
<td>AS568-012(NBR-90)</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>O-ring</td>
<td>AS568-019(NBR-70-1)</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>O-ring</td>
<td>AS568-019(NBR-90)</td>
<td>2</td>
</tr>
<tr>
<td>19</td>
<td>O-ring</td>
<td>AS568-017(NBR-90)</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>O-ring</td>
<td>P3 Note2</td>
<td>2</td>
</tr>
</tbody>
</table>

Note: 1. The materials and hardness of the O-ring conforms with JIS B2401.
2. Special fluororubber is used (Part Number: RO-P3-VS).