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Bellows Sealed Globe Valve

BSV-2EN

■ Features

1. Non-rising handwheel: Free from foreign substance trouble because most threaded surface is covered.
2. No leakage by two-stage sealing of double bellows and gland packing.
3. Gland packing does not need retightening nor applying pressure on spindle, thus handwheel can be turned with small torque without interference from the spindle.
4. Maintenance-free: No need to replace or retighten gland packing.

■ Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>BSV-2EN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Steam, Air, Cold and hot water, Oil, Other non-dangerous fluids</td>
</tr>
<tr>
<td>Nominal size</td>
<td>15A-200A *1</td>
</tr>
<tr>
<td>Max. pressure</td>
<td>1.6 MPa *2 2.5 MPa *2</td>
</tr>
<tr>
<td>Max. temperature</td>
<td>300°C *2 350°C *2</td>
</tr>
<tr>
<td>Material</td>
<td>Body Cast Iron Ductile Cast Iron</td>
</tr>
<tr>
<td></td>
<td>Bonnet Ductile Cast Iron</td>
</tr>
<tr>
<td></td>
<td>Valve Stainless steel</td>
</tr>
<tr>
<td></td>
<td>Valve seat Stainless steel</td>
</tr>
<tr>
<td></td>
<td>Bellows Stainless steel (SUS316Ti)</td>
</tr>
<tr>
<td>Connection</td>
<td>EN 1092-2 PN16 EN 1092-2 PN25</td>
</tr>
</tbody>
</table>

*1 If 250A is needed, please contact us (for cast iron body only).
*2 According to PT rating.

■ Dimensions (mm) and Weights (kg)

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>L</th>
<th>H</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15A</td>
<td>130</td>
<td>178</td>
<td>3.2</td>
</tr>
<tr>
<td>20A</td>
<td>150</td>
<td>178</td>
<td>3.9</td>
</tr>
<tr>
<td>25A</td>
<td>160</td>
<td>193</td>
<td>4.6</td>
</tr>
<tr>
<td>32A</td>
<td>180</td>
<td>201</td>
<td>6.5</td>
</tr>
<tr>
<td>40A</td>
<td>200</td>
<td>224</td>
<td>9.0</td>
</tr>
<tr>
<td>50A</td>
<td>230</td>
<td>228</td>
<td>11.0</td>
</tr>
<tr>
<td>65A</td>
<td>290</td>
<td>270</td>
<td>15.8</td>
</tr>
<tr>
<td>80A</td>
<td>310</td>
<td>295</td>
<td>20.5</td>
</tr>
<tr>
<td>100A</td>
<td>350</td>
<td>321</td>
<td>35.0</td>
</tr>
<tr>
<td>125A</td>
<td>400</td>
<td>388</td>
<td>49.0</td>
</tr>
<tr>
<td>150A</td>
<td>480</td>
<td>448</td>
<td>76.0</td>
</tr>
<tr>
<td>200A</td>
<td>600</td>
<td>575</td>
<td>130.5</td>
</tr>
</tbody>
</table>

* Face-to-face dimension: EN 558-1 series 1.
Pressure and Temperature Rating

- This chart shows PT rating of PN16 for cast iron flanges and of PN25 for ductile cast iron flanges according to EN 1092-2.
- BSV-2EN PN16 flanged can be used in orange region. BSV-2EN PN25 flanged can be used in orange and green regions.
- If detailed values of maximum fluid temperature and maximum pressure are needed, please see the following table:

<table>
<thead>
<tr>
<th>Material</th>
<th>PN</th>
<th>-10 up to 120</th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast iron</td>
<td>16</td>
<td>1.60 MPa</td>
<td>1.44 MPa</td>
<td>1.28 MPa</td>
<td>1.12 MPa</td>
<td>0.96 MPa</td>
<td>--</td>
</tr>
<tr>
<td>Ductile cast iron</td>
<td>25</td>
<td>2.50 MPa</td>
<td>2.43 MPa</td>
<td>2.30 MPa</td>
<td>2.18 MPa</td>
<td>2.00 MPa</td>
<td>1.75 MPa</td>
</tr>
</tbody>
</table>
GLV-1

Wetted parts of GLV-1 are made of bronze or dezincification resistant brass. Widely applicable for steam, air, water or oil application.

Specifications

<table>
<thead>
<tr>
<th>Application</th>
<th>Steam, Air, Cold and hot water, Oil, Other non dangerous fluids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum pressure</td>
<td>1.0 MPa</td>
</tr>
<tr>
<td>Maximum temperature</td>
<td>185˚C</td>
</tr>
<tr>
<td>Body</td>
<td>Bronze</td>
</tr>
<tr>
<td>Bonnet</td>
<td>Brass or bronze</td>
</tr>
<tr>
<td>Disc</td>
<td>Brass or bronze</td>
</tr>
<tr>
<td>Connection</td>
<td>JIS Rc screwed</td>
</tr>
</tbody>
</table>

* Valve is closed at the time of shipment from factory.

Dimensions (mm) and Weight (kg)

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>d</th>
<th>L</th>
<th>H</th>
<th>D</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15A</td>
<td>Rc 1/2</td>
<td>50</td>
<td>76</td>
<td>54</td>
<td>0.3</td>
</tr>
<tr>
<td>20A</td>
<td>Rc 3/4</td>
<td>57</td>
<td>86</td>
<td>61</td>
<td>0.4</td>
</tr>
<tr>
<td>25A</td>
<td>Rc 1</td>
<td>65</td>
<td>100</td>
<td>68</td>
<td>0.6</td>
</tr>
<tr>
<td>32A</td>
<td>Rc 1-1/4</td>
<td>75</td>
<td>123</td>
<td>77</td>
<td>0.9</td>
</tr>
<tr>
<td>40A</td>
<td>Rc1-1/2</td>
<td>85</td>
<td>135</td>
<td>77</td>
<td>1.1</td>
</tr>
<tr>
<td>50A</td>
<td>Rc 2</td>
<td>100</td>
<td>159</td>
<td>83</td>
<td>1.7</td>
</tr>
</tbody>
</table>

GLV-16

Wetted parts of GLV-16 are made of ductile cast iron. Widely applicable for steam, air, water or oil application.

Specifications

<table>
<thead>
<tr>
<th>Application</th>
<th>Steam, Air, Cold and hot water, Oil, Other non dangerous fluids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum pressure</td>
<td>2.2 MPa</td>
</tr>
<tr>
<td>Maximum temperature</td>
<td>220˚C</td>
</tr>
<tr>
<td>Body</td>
<td>Ductile cast iron</td>
</tr>
<tr>
<td>Bonnet</td>
<td>Ductile cast iron</td>
</tr>
<tr>
<td>Disc</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Connection</td>
<td>JIS Rc screwed</td>
</tr>
</tbody>
</table>

Dimensions (mm) and Weights (kg)

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>d</th>
<th>L</th>
<th>H</th>
<th>D</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15A</td>
<td>Rc 1/2</td>
<td>75</td>
<td>126</td>
<td>83</td>
<td>0.9</td>
</tr>
<tr>
<td>20A</td>
<td>Rc 3/4</td>
<td>90</td>
<td>135</td>
<td>105</td>
<td>1.1</td>
</tr>
<tr>
<td>25A</td>
<td>Rc 1</td>
<td>105</td>
<td>150</td>
<td>112</td>
<td>1.7</td>
</tr>
<tr>
<td>32A</td>
<td>Rc 1-1/4</td>
<td>120</td>
<td>162</td>
<td>132</td>
<td>2.7</td>
</tr>
<tr>
<td>40A</td>
<td>Rc1-1/2</td>
<td>135</td>
<td>183</td>
<td>132</td>
<td>3.8</td>
</tr>
<tr>
<td>50A</td>
<td>Rc 2</td>
<td>160</td>
<td>186</td>
<td>132</td>
<td>5.6</td>
</tr>
</tbody>
</table>
**Ball Valve**

**BLV-1**

Body of BLV-1 is made of bronze and ball is made of chrome-plated or stainless steel.
Widely applicable for steam, air, water or oil application

### Specifications

<table>
<thead>
<tr>
<th>Application</th>
<th>Steam, Air, Cold and hot water, Oil, Other non dangerous fluid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum pressure</td>
<td>Saturated steam: 1.0 MPa, Water, oil, air or other non-dangerous fluid at 40˚C or lower: 4.12 MPa</td>
</tr>
<tr>
<td>Material</td>
<td>Body: Bronze, Ball: Cr plated brass or stainless steel, Stem: Brass</td>
</tr>
<tr>
<td>Connection</td>
<td>JIS Rc screwed</td>
</tr>
</tbody>
</table>

* Valve (ball) is closed at the time of shipment from factory.
* There is no restriction on flow direction.

### Dimensions (mm) and Weight (kg)

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>d₁</th>
<th>d</th>
<th>L</th>
<th>H</th>
<th>W</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>8A Rc 1/4</td>
<td>10</td>
<td>49</td>
<td>47</td>
<td>106</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>10A Rc 3/8</td>
<td>10</td>
<td>49</td>
<td>47</td>
<td>106</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>15A Rc 1/2</td>
<td>12.7</td>
<td>53</td>
<td>47</td>
<td>106</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>20A Rc 3/4</td>
<td>15</td>
<td>56</td>
<td>52</td>
<td>106</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>25A Rc 1</td>
<td>20</td>
<td>68</td>
<td>55</td>
<td>106</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>32A Rc 1-1/4</td>
<td>25</td>
<td>86</td>
<td>66</td>
<td>136</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>40A Rc 1-1/2</td>
<td>31.8</td>
<td>96</td>
<td>72</td>
<td>136</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>50A Rc 2</td>
<td>38</td>
<td>108</td>
<td>77</td>
<td>136</td>
<td>1.8</td>
<td></td>
</tr>
</tbody>
</table>

### Precautions for installation

- Store the product indoors in a dust free, low humidity, dry and ventilated environment.
- Installation should be conducted by suitably trained personnel, wearing protective head, eye, hand and foot protection.
- The product can be used for “complete opening” and “complete closing”. If the product is used at intermediate opening, ball and ball seat may be damaged.
- Be careful that the threaded connection between the mating pipe and the internal threaded connections of the valves are in line to avoid piping stresses in the valves.
- During transportation or storage of the product leakage may occur from the washer of packing due to decreasing of tightening pressure by stress relaxation of the packing. Be sure to retighten the washer of packing before use.
- When connecting the product and the piping, apply seal agent (such as seal tape) to the screw part of the piping. Use seal agent appropriate for temperature, fluid, etc.
- In case that the product is expected to be frozen, be sure to conduct freezing prevention measures or water draining treatment (after use).
- For Globe valve, sliding of stem may lead to mix the chipping of packing with the inside of fluid at the stage of valve open and close operation by turning the handle. To avoid mixing of packing chipping with the inside of fluid, place the filter under the globe valve.
- Globe valve can be used (fully opened)/(fully closed) operation. It can be damaged to the valve body and valve seat area by erosion when using partially open and close condition.
- Please be sure to open and close operation of globe valve by manual. Do not apply the turning of handle. If doing so, it may cause damage.
- To connect the product to piping, use appropriate tool such as spanner with spanner apply part near the piping. In addition, do not make piping work with applying a pipe wrench to the product. If doing so, it leads to malfunction of the product. (see fig. 1)

---

**GLV-1 Globe valve/BLV-1 Ball valve**

---

**Please refer to the manual attached to the product for procedures for installation and operation.**

**CAUTION**

---

**Fig. 1**

**N.G.**

**O.K.**
Pneumatic Pressure Reducing Valve

GD-37U standard unit for manipulation

Standard unit for manipulation of pneumatic pressure reducing valve is a combination of necessary equipment such as pressure reducing valve with filter for air (GD-37), pressure gauge, needle valve, combination adapter and bracket for installation. It is designed to make good use of performance of pneumatic pressure reducing valve. It is also usable for operation of air operated valves (PD-1, PD-2, and PD-3).

* Pneumatic pressure reducing valve with filter (GD-37) is available as an individual item.
* Connection size is JIS Rc 1/4.

GD-37 pressure reducing valve with filter

### Specifications and Dimensions

<table>
<thead>
<tr>
<th>Application</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet pressure</td>
<td>0.99 MPa or lower</td>
</tr>
<tr>
<td>Reduced pressure</td>
<td>0.05-0.85 MPa</td>
</tr>
<tr>
<td>Temperature</td>
<td>5-60°C</td>
</tr>
<tr>
<td>Pressure resistance of body</td>
<td>1.5 MPa</td>
</tr>
<tr>
<td>Nominal filtration rating</td>
<td>5 μm</td>
</tr>
<tr>
<td>Pressure gauge connection size</td>
<td>JIS Rc 1/4</td>
</tr>
<tr>
<td>Weight</td>
<td>0.35 kg</td>
</tr>
</tbody>
</table>

* Pressure gauge is equipped with limit indicator and the maximum indicated pressure is 1.0 MPa.

### Precautions for Handling

- Please do flushing of air pipe before installation.
- Since the material of the filter case is polycarbonate, please avoid application of (or use in atmosphere of) chemicals such as thinner, carbon tetrachloride, chloroform, acetate, aniline, cyclohexane, trichloroethylene, acetone, alkali, sulfuric acid, lactic acid and so on.
DD-37 3/2 way solenoid valve

DD-37 3/2 way solenoid valve is suitable for automatic control (ON-OFF) of pneumatic pressure reducing valve and air operated valve (PD-1, PD-2, and PD-3). It is also usable for controlling small flow rate of water or oil.

Specifications and Dimensions

<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Air, Water, Oil</td>
</tr>
<tr>
<td>Connection size</td>
<td>JIS Rc 1/4</td>
</tr>
<tr>
<td>Orifice diameter</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>Cv value</td>
<td>0.08</td>
</tr>
<tr>
<td>Maximum differential pressure</td>
<td>0.7 MPa</td>
</tr>
<tr>
<td>Pressure resistance of body</td>
<td>2.0 MPa</td>
</tr>
<tr>
<td>Voltage and frequency</td>
<td>AC100V 50 / 60Hz</td>
</tr>
<tr>
<td></td>
<td>AC200V 50 / 60Hz</td>
</tr>
</tbody>
</table>

![Image of DD-37 3/2 way solenoid valve]
AO-2

**Features**
1. Body larger than nominal size slows the velocity of water, and the baffle effectively separates air.
2. Prevents noise of water hammer caused by air.
3. Prevents corrosion of piping system caused by air.

**Specifications**

<table>
<thead>
<tr>
<th>Application</th>
<th>Cold and hot water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. pressure</td>
<td>1.0 MPa</td>
</tr>
<tr>
<td>Max. temperature</td>
<td>120°C</td>
</tr>
<tr>
<td>Material</td>
<td>Bronze</td>
</tr>
<tr>
<td>Connection</td>
<td>JIS Rc screwed</td>
</tr>
</tbody>
</table>

**Dimensions (mm) and Weights (kg)**

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>d</th>
<th>L</th>
<th>H</th>
<th>H₁</th>
<th>d₂</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>20A</td>
<td>Rc 3/4</td>
<td>120</td>
<td>84</td>
<td>27.5</td>
<td>Rc 1/2</td>
<td>1.1</td>
</tr>
<tr>
<td>25A</td>
<td>Rc 1</td>
<td>140</td>
<td>84</td>
<td>27.5</td>
<td>Rc 1/2</td>
<td>1.2</td>
</tr>
<tr>
<td>32A</td>
<td>Rc 1-1/4</td>
<td>155</td>
<td>113.5</td>
<td>33.5</td>
<td>Rc 1/2</td>
<td>2.0</td>
</tr>
<tr>
<td>40A</td>
<td>Rc 1-1/2</td>
<td>205</td>
<td>136.5</td>
<td>43.5</td>
<td>Rc 1/2</td>
<td>3.6</td>
</tr>
<tr>
<td>50A</td>
<td>Rc 2</td>
<td>205</td>
<td>136.5</td>
<td>43.5</td>
<td>Rc 1/2</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Select and install suitable air vent from chapter 14.
SCV-2

The SCV-2 is an inline type check valve to prevent fluid backflow. It is used widely for steam or water (hot water) piping, etc. and effective in preventing water hammer.

■ Features
1. Compact piping.
2. Can be connected in any direction (horizontal or vertical).

■ Specifications

<table>
<thead>
<tr>
<th>Application</th>
<th>Steam, Cold and hot water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum pressure</td>
<td>1.6 MPa</td>
</tr>
<tr>
<td>Application temperature</td>
<td>5-220°C</td>
</tr>
<tr>
<td>Minimum valve opening pressure</td>
<td>0.003 MPa</td>
</tr>
<tr>
<td>Material</td>
<td>Cast stainless steel</td>
</tr>
<tr>
<td>Body</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Disc</td>
<td>JIS Rc screwed</td>
</tr>
</tbody>
</table>

A small amount of fluid leaks out of the product. So, it should not be used for applications requiring complete closing.

■ Dimensions (mm) and Weights (kg)

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>d</th>
<th>L</th>
<th>W</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15A</td>
<td>Rc 1/2</td>
<td>57</td>
<td>50</td>
<td>0.5</td>
</tr>
<tr>
<td>20A</td>
<td>Rc 3/4</td>
<td>57</td>
<td>50</td>
<td>0.45</td>
</tr>
<tr>
<td>25A</td>
<td>Rc 1</td>
<td>72</td>
<td>69</td>
<td>1.1</td>
</tr>
<tr>
<td>40A</td>
<td>Rc 1-1/2</td>
<td>88</td>
<td>89</td>
<td>2.0</td>
</tr>
<tr>
<td>50A</td>
<td>Rc 2</td>
<td>88</td>
<td>89</td>
<td>1.5</td>
</tr>
</tbody>
</table>

■ Piping Example

The SCV-2 is installed in the piping system to prevent fluid backflow. It is effective in preventing water hammer.
Pressure Loss Chart (For water)

V: Flow rate L/min

ΔP: Pressure loss MPa

300
200
100
70
50
30
20
10
7
5
3
2
1

0.001 0.003 0.005 0.01 0.03 0.05

40A-50A
25A
16A-20A
Check Valve

SCV-3

The SCV-3 is a shape of body check valve to prevent fluid backflow. It is used widely for steam or water (hot water) piping, etc. and effective in preventing water hammer.

■Features

1. Can be installed between a lot of major flange types and connection standards without measuring device due to the shape of body.
2. Can be connected in any direction (horizontal or vertical).

■Specifications

<table>
<thead>
<tr>
<th>Application</th>
<th>Steam, Cold and hot water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum pressure</td>
<td>2.0 MPa</td>
</tr>
<tr>
<td>Maximum temperature</td>
<td>220°C</td>
</tr>
<tr>
<td>Minimum opening pressure</td>
<td>0.003 MPa</td>
</tr>
<tr>
<td>Material Body</td>
<td>Cast stainless steel</td>
</tr>
<tr>
<td>Material Disc</td>
<td>Cast stainless steel</td>
</tr>
<tr>
<td>Connection Wafer</td>
<td></td>
</tr>
</tbody>
</table>

* A small amount of fluid leaks at the valve seat. So, it should not be used for applications requiring complete closing.
* See another table regarding applicable connection standard.

■Dimensions (mm) and Weights (kg)

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>φ₁d</th>
<th>L</th>
<th>φ₂D</th>
<th>A</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15A</td>
<td>35.0</td>
<td>16.0</td>
<td>43.0</td>
<td>63.0</td>
<td>0.20</td>
</tr>
<tr>
<td>20A</td>
<td>45.0</td>
<td>19.5</td>
<td>53.0</td>
<td>69.5</td>
<td>0.30</td>
</tr>
<tr>
<td>25A</td>
<td>51.0</td>
<td>22.0</td>
<td>63.0</td>
<td>80.5</td>
<td>0.40</td>
</tr>
<tr>
<td>32A</td>
<td>60.5</td>
<td>28.0</td>
<td>72.5</td>
<td>90.5</td>
<td>0.70</td>
</tr>
<tr>
<td>40A</td>
<td>70.0</td>
<td>31.5</td>
<td>82.0</td>
<td>101.0</td>
<td>0.90</td>
</tr>
<tr>
<td>50A</td>
<td>90.0</td>
<td>40.0</td>
<td>95.5</td>
<td>115.0</td>
<td>1.50</td>
</tr>
<tr>
<td>65A</td>
<td>102.0</td>
<td>45.0</td>
<td>116.0</td>
<td>142.0</td>
<td>2.20</td>
</tr>
<tr>
<td>80A</td>
<td>121.0</td>
<td>50.0</td>
<td>129.5</td>
<td>153.5</td>
<td>2.90</td>
</tr>
<tr>
<td>100A</td>
<td>145.0</td>
<td>60.0</td>
<td>154.5</td>
<td>180.0</td>
<td>4.50</td>
</tr>
</tbody>
</table>

Concerning with piping, please connect the part of body line shape to the bolt as shown in the figure and please together in the center of products and flange.
Pressure Loss Chart (For water)

Overview of Applicable Connection Standard

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>JIS</th>
<th>ASME</th>
<th>PN (EN/DIN/GB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15A</td>
<td>○</td>
<td>150lb</td>
<td>6</td>
</tr>
<tr>
<td>20A</td>
<td>○</td>
<td>150lb</td>
<td>16</td>
</tr>
<tr>
<td>25A</td>
<td>○</td>
<td>150lb</td>
<td>25</td>
</tr>
<tr>
<td>32A</td>
<td>○</td>
<td>150lb</td>
<td>25</td>
</tr>
<tr>
<td>40A</td>
<td>×</td>
<td>300lb</td>
<td></td>
</tr>
<tr>
<td>50A</td>
<td>×</td>
<td>300lb</td>
<td></td>
</tr>
<tr>
<td>65A</td>
<td>○</td>
<td>300lb</td>
<td></td>
</tr>
<tr>
<td>80A</td>
<td>×</td>
<td>300lb</td>
<td></td>
</tr>
<tr>
<td>100A</td>
<td>×</td>
<td>300lb</td>
<td>×</td>
</tr>
</tbody>
</table>

Mark (○) on the above table are possible piping. Mark (×) are not possible piping.
SCV-4, 4EN

SCV-4 check valve prevents backflow of fluid. It is widely used in steam pipelines or cold and hot water pipelines.

**Features**

1. The valve body and valve seat are made by stainless steel that have excellent durability.

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>SCV-4</th>
<th>SCV-4EN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>15-50A</td>
<td>15-250A</td>
</tr>
<tr>
<td>Application</td>
<td>Steam, Air, Cold and hot water, Oil, Other non-dangerous fluids</td>
<td></td>
</tr>
<tr>
<td>Maximum pressure</td>
<td>1.6 MPa</td>
<td></td>
</tr>
<tr>
<td>Maximum temperature</td>
<td>200°C</td>
<td>300°C</td>
</tr>
<tr>
<td>Installation posture</td>
<td>Horizontal, vertical *1</td>
<td></td>
</tr>
<tr>
<td>Connection</td>
<td>JIS Rc, NPT screwed</td>
<td>BS PN16 flanged</td>
</tr>
<tr>
<td>Minimum valve</td>
<td>0.05 MPa</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Body EN-GJL-250 JL1040 (JIS FC250)</td>
<td>Valve X20Cr13 1.4021 (JIS SUS420J1)</td>
</tr>
</tbody>
</table>

*1 When installing on vertical piping, please make the flow direction of the fluid from the ground to the top.
* This product is not be disassembled.
* A small amount of fluid leaks at the valve seat. So, it should not be used for applications requiring complete closing.

**Dimensions (mm) and Weights (kg)**

- **SCV-4**

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>d</th>
<th>H</th>
<th>L</th>
<th>D</th>
<th>A</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15A</td>
<td>15</td>
<td>56</td>
<td>90</td>
<td>15</td>
<td>41</td>
<td>0.7</td>
</tr>
<tr>
<td>20A</td>
<td>20</td>
<td>56</td>
<td>100</td>
<td>20</td>
<td>41</td>
<td>0.9</td>
</tr>
<tr>
<td>25A</td>
<td>25</td>
<td>67</td>
<td>120</td>
<td>25</td>
<td>50</td>
<td>1.2</td>
</tr>
<tr>
<td>32A</td>
<td>32</td>
<td>76</td>
<td>140</td>
<td>32</td>
<td>60</td>
<td>1.7</td>
</tr>
<tr>
<td>40A</td>
<td>40</td>
<td>89</td>
<td>170</td>
<td>40</td>
<td>68</td>
<td>2.2</td>
</tr>
<tr>
<td>50A</td>
<td>50</td>
<td>96</td>
<td>200</td>
<td>50</td>
<td>84</td>
<td>3.6</td>
</tr>
</tbody>
</table>

- **SCV-4EN**

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>d</th>
<th>H</th>
<th>L</th>
<th>Flange BSEN PN16</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15A</td>
<td>15</td>
<td>56</td>
<td>130</td>
<td>D 95 C 65 G 46 n-h 4-14</td>
<td>2.1</td>
</tr>
<tr>
<td>20A</td>
<td>20</td>
<td>56</td>
<td>150</td>
<td>105 75 56 8-14</td>
<td>2.7</td>
</tr>
<tr>
<td>25A</td>
<td>25</td>
<td>67</td>
<td>160</td>
<td>115 85 65 4-14</td>
<td>3.8</td>
</tr>
<tr>
<td>32A</td>
<td>32</td>
<td>76</td>
<td>180</td>
<td>140 100 76 4-19</td>
<td>5.5</td>
</tr>
<tr>
<td>40A</td>
<td>40</td>
<td>89</td>
<td>200</td>
<td>150 110 84 4-19</td>
<td>7.4</td>
</tr>
<tr>
<td>50A</td>
<td>50</td>
<td>96</td>
<td>230</td>
<td>165 125 99 4-19</td>
<td>9.5</td>
</tr>
<tr>
<td>65A</td>
<td>65</td>
<td>104</td>
<td>290</td>
<td>185 145 118 4-19</td>
<td>15.0</td>
</tr>
<tr>
<td>80A</td>
<td>80</td>
<td>124</td>
<td>310</td>
<td>200 160 132 8-19</td>
<td>20.0</td>
</tr>
<tr>
<td>100A</td>
<td>100</td>
<td>161</td>
<td>350</td>
<td>220 180 156 8-19</td>
<td>29.0</td>
</tr>
<tr>
<td>125A</td>
<td>125</td>
<td>174</td>
<td>400</td>
<td>250 210 184 8-19</td>
<td>41.0</td>
</tr>
<tr>
<td>150A</td>
<td>150</td>
<td>197</td>
<td>480</td>
<td>285 240 211 8-23</td>
<td>66.0</td>
</tr>
<tr>
<td>200A</td>
<td>200</td>
<td>248</td>
<td>600</td>
<td>340 295 266 12-23</td>
<td>111</td>
</tr>
<tr>
<td>250A</td>
<td>250</td>
<td>295</td>
<td>730</td>
<td>405 355 319 12-23</td>
<td>196</td>
</tr>
</tbody>
</table>
■ Pressure Loss Chart (For water)
Everlasting Valve
Made-to-Order Product

Unique Valve Structure, able to replace other valves or rotary feeders by resolving dissatisfaction of the conventional valve concern with leak life. Able to operate until Max Pressure 70.3 MPa and Max Temperature 816°C.

■Features
1. With each operation of disc-self rotating, seat lapping condition, enhance air-tight condition of seat surface.
2. Metal to Metal Seating - Abrasion resistance, wide temperature range by adoption of spring loaded connection between disc and drive allowing disc to compensate for thermal expansion or contraction, adjustable for weariness.
3. Smooth the seat surface by rotating and cutting the powder on the seat surface.
4. Wide Surface Seating, keep surface pressure at low and prevent trim wear even in high pressure condition. Allowable leakage class is over ANSI B 16.104 Standard Control Valve [Class VI].
5. No obstruction to flow. Minimal pressure drop.
6. Hard retention structure of internal valve body. Without losing system even in extracted fixation of fine elements and retention by distillation of fluid.
7. Flat-seating surface, due to minimal parts, simple structure, ease of maintenance, durability.
8. Available to flush valve cavity and internals while in operation.

■Specifications

<table>
<thead>
<tr>
<th>Application</th>
<th>Powder, Slurry, High temperature fluid, High pressure fluid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>15-450A</td>
</tr>
<tr>
<td>Maximum pressure</td>
<td>Vacuum-70.3 MPa</td>
</tr>
<tr>
<td>Maximum temperature</td>
<td>816°C *1</td>
</tr>
<tr>
<td>Material Body</td>
<td>Carbon steel, Stainless steel, Alloys</td>
</tr>
<tr>
<td>Disc &amp; Seat</td>
<td>Stellite, 440 Stainless steel, Tungsten carbide etc</td>
</tr>
<tr>
<td>Connection</td>
<td>Screwed: NPT, Flanged: ANSI standard (150 lb, 300 lb etc) JIS standard (10 K, 20 K, 30 K etc), Butt weld: ANSI standard JIS standard (SW, BW)</td>
</tr>
<tr>
<td>Others (Actuator)</td>
<td>Manual lever, Hand wheel, Air cylinder, Electric etc</td>
</tr>
</tbody>
</table>

*1 It will be different depending on pressure and material.

■Allowable Leak Rates Shut Off and Isolation Valves

Everlasting valve standard manufacturing practices produce a seal that exceeds ANSI, AP, and DIN criteria.
### Operation Principal

Self lapping
Rotation of disc that produces an action that lapping the seating surface with each operation that cause the seat valve to long lasting tight shut-off.

### Disc structure

- **Single disc** (SD) series
- **Double disc** (DD) series
- **Lens disc** (LD) series
- **Rock bar disc** (RB) series

### Examples of actuator

- **Lever type**
- **Handle type**
- **Air cylinder type**
Example of Everlasting Valve Application

1. Reactor loading
2. Pneumatic conveying
3. Slurries
4. Diverting

Available to select the actuator base on the specifications.

Base on well experience and performance, adopting unique made-to-order system producing the products that selected organization of suitable structure and materials requested by customer’s specifications.

Concern with Inquiry

Due to adopting made-to-order system, sufficient specifications are necessary. Please contact us when you use since we prepare an inquiry sheet at our company. Please understand in case of taking time for quotation.
“Wear Jacket and save energy”

Easy handling, Environment-friendly
Comfortable work environment

- **Energy saving**: Y’s Jacket not only reduces energy loss due to heat radiation but eases temperature increase, which reduces load of air conditioner.

- **CO₂ emission cut**: Y’s Jacket contributes to reduction of CO₂ emission, which is a global goal.

- **Safety**: Y’s Jacket prevents accidents of burn or crash, which contributes to safe and comfortable work environment.

- **Environment**: Since Y’s Jacket is easy to install for any operator, it can be used many times after maintenance. This will generate no waste and environmentally-friendly.
Y’s Jacket

This specially designed jacket completely fits Yoshitake products in use at your site. The energy-saving and CO₂-reduction effects can be estimated prior to order.

■ Features

1. Energy saving
   Prevents room temperature rise as well as energy loss caused by heat release.

2. CO₂-reduction effect
   Contributes to CO₂-reduction of the global issue.

3. Safety
   Prevents accidents, such as burns or bruises and brings a safe and comfortable work environment.

4. Environmental enhancement
   Easy to set and reusable after valve maintenance, it produces no waste and thus is environment-friendly.

■ Specifications

<table>
<thead>
<tr>
<th>Material</th>
<th>Surface material</th>
<th>Inner material</th>
<th>Insulating material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Glass cloth + Silicone coating</td>
<td>Glass cloth + Silicone coating</td>
<td>Needle punched mat made of glass fibre</td>
</tr>
<tr>
<td>Thickness</td>
<td>20 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

■ Effect

Example...
Pressure reducing valve GP-2000 50A
Strainer SY-40 50A
Drain separator DS-1 50A

If this line wears Y’s Jacket...

JPY 152,024/year of cost-saving effect
Y’s Jacket Lineup

Perfect fit for Yoshitake product in use

Y’s Jacket can be installed and removed easily even for pipe or valves with complicated shape. It can also be used for insulation of general pipes, ordinary valves or whole the equipment.

Lineup of genuine Jacket for Yoshitake products (Please contact us for other products)

- Pressure reducing valve
- Strainer
- Drain Separator

Lineup of Jacket for general pipes & fittings (Please contact us for other products)

- Pipe
- Elbow
- Tee

CO₂ Emission of current system can be achieved by installing Y’s Jacket on uninsulated area.
SP-1 Smart Plate is used on airtight test at the time of piping construction. In the traditional process requiring substitute pipes, Smart Plate makes it possible to conduct airtight test effectively and safely.

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>SP-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>15-150A</td>
</tr>
<tr>
<td>Applications</td>
<td>Compressed air, Water and Other non-dangerous fluids</td>
</tr>
<tr>
<td>Maximum pressure</td>
<td>1.0 MPa</td>
</tr>
<tr>
<td>Connection</td>
<td>JIS Rc 1/4 screwed</td>
</tr>
<tr>
<td>Applicable flange</td>
<td>JIS 10K flange</td>
</tr>
<tr>
<td>Material</td>
<td>Stainless steel (SUS304)</td>
</tr>
</tbody>
</table>

### Dimensions (mm) and Weights (kg)

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>D</th>
<th>S</th>
<th>T</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15A</td>
<td>57</td>
<td>95</td>
<td>4</td>
<td>0.18</td>
</tr>
<tr>
<td>20A</td>
<td>62</td>
<td>95</td>
<td>4</td>
<td>0.19</td>
</tr>
<tr>
<td>25A</td>
<td>74</td>
<td>95</td>
<td>4</td>
<td>0.22</td>
</tr>
<tr>
<td>32A</td>
<td>84</td>
<td>105</td>
<td>4</td>
<td>0.25</td>
</tr>
<tr>
<td>40A</td>
<td>89</td>
<td>105</td>
<td>4</td>
<td>0.28</td>
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<tr>
<td>50A</td>
<td>104</td>
<td>105</td>
<td>4</td>
<td>0.34</td>
</tr>
<tr>
<td>65A</td>
<td>124</td>
<td>115</td>
<td>4</td>
<td>0.45</td>
</tr>
<tr>
<td>80A</td>
<td>134</td>
<td>115</td>
<td>4</td>
<td>0.5</td>
</tr>
<tr>
<td>100A</td>
<td>159</td>
<td>135</td>
<td>6</td>
<td>1.0</td>
</tr>
<tr>
<td>125A</td>
<td>190</td>
<td>155</td>
<td>6</td>
<td>1.4</td>
</tr>
<tr>
<td>150A</td>
<td>220</td>
<td>165</td>
<td>8</td>
<td>2.5</td>
</tr>
</tbody>
</table>

### Installation and Usage

In the structure of Smart Plate, vent hole to the inside pipe and socket are connected by duct. Please install on the flange connection part as figure 1 and flow testing fluid.
■**SP-1 Installation Diagram Example**

When there is device which cannot be involved in airtight test, please connect the by-pass line with air hose etc.

![Installation Diagram](image)

■**SP-1 Special Storage Case**

SP-1 comes with special storage case. It reduces the risk of breakage or loss during carriage or storage.

■**Contents of SP-1 Set**

- **Set S**
  
<table>
<thead>
<tr>
<th>Nominal size</th>
<th>15A</th>
<th>20A</th>
<th>25A</th>
<th>32A</th>
<th>40A</th>
<th>50A</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pieces</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>24</td>
</tr>
</tbody>
</table>

- **Set L**

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>65A</th>
<th>80A</th>
<th>100A</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pieces</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

![Special Storage Case](image)
SF FLOW METER & FLOW SWITCH

Types:  
SF-M:  Instantaneous flow indicator  
SF-MA: Instantaneous flow indicator + lower (or upper) microswitch  
SF-MAA: Instantaneous flow indicator + lower & upper microswitches  

Diameter:  
3/8B-12B flanged type  
Rc 3/8-Rc 1-1/2 screwed type  

Withstanding Pressure:  
Standard:  1.0 MPa  
Special order:  30 MPa  

Temperature:  
Standard:  80˚C or less  
Special order:  300˚C or less  

Accuracy:  ±3% of readings  

Contact Capacity:  
Microswitches used for contacts are classified into the following three types according to diameter and flow rate:  
· 15A:  125, 250 or 480 VAC  
0.5A:  125 VDC  
0.25A:  250 VDC  
· 5A:  125 or 250 VAC  
0.5A:  125 VDC  
0.25A:  250 VDC  
· 10A:  125 or 250 VAC  

Characteristics:  
· Most suitable for opaque liquids (oils, etc), high-temperature and high-pressure fluids. No restrictions on flow direction.  
· The contact of the SF-MA-MAA standard flow switch is internally variable, but an external variable type can also be manufactured for frequent variations.  
· Complete waterproof type (IEC IP67) is also manufactured for outdoor or severe-atmosphere use.  

Construction:  
Body:  FC250, CAC406  
SS400, SUS304, SUS316, SUS316L  
Main parts:  C3604B  
SUS304, SUS316, SUS316L  

Note  
· For use in high vibration places, use vibration-proof type.

SA FLOW METER & FLOW SWITCH  
(Proximity switches are used for small flow rate)

Types:  
SA-M:  Instantaneous flow indicator  
SA-MA: Instantaneous flow indicator + lower (or upper) proximity switch contact  
SA-MAA: Instantaneous flow indicator + lower & upper proximity switch contacts  

Diameter:  
3/8B-1B flanged type  
Rc 3/8-Rc 1 screwed type  

Withstanding Pressure:  
Standard:  1.0 MPa  

Temperature:  
Standard:  80˚C or less  
Special order:  300˚C or less  

Accuracy:  ±3% of readings  

Contact Capacity:  
50 W:  0.5A, 125 VAC  
Self-holding proximity switch  

Characteristics:  
· Most suitable for relatively small flow rates (0-15 L/min in water) of opaque liquids (oils, etc.), high-temperature and high-pressure fluids.  
· No restrictions on the flow direction.  

Construction:  
Body:  FC250, CAC406  
SS400, SUS304, SUS316, SUS316L  
Main parts:  C3604B  
SUS304, SUS316, SUS316L  

Note  
· For use in high vibration places, use vibration-proof type.
SH FLOW METER (SF Type with Electronic Transmitter)

This flow meter is an SF type incorporating a transmitter that transmits instantaneous flow rates. Characteristics etc., are the same as those of the SF type.

- Diameter: 3/8B-12B flanged type  
  Rc 3/8-Rc 1/2 screwed type  
- Withstanding Pressure: 1.0 MPa  
- Accuracy: ±3% of readings  
- Power Source: 100 V / 200 VAC, 12 V / 24 VDC  
- Output: 4-20 mA DC, 1-5 V DC  
- Structure of Transmitter:  
  - Body: FC250, CAC406, SUS304, SUS316, SUS316L  
  - Main parts: C3604B, SUS304, SUS316, SUS316L

FY FLOW METER & FLOW SWITCH (Compact SF Type)

- Types: FY-M: Instantaneous flow indicator  
  FY-MA: Instantaneous flow indicator + lower (or upper) microswitch  
- Diameter: 3/8B-5B flanged type  
  Rc 3/8-Rc 1-1/2 screwed type  
- Withstanding Pressure: 1.0 MPa  
- Temperature: Standard: 80˚C or less  
- Accuracy: ±3% of readings  
- Contact Capacity: 5A: 125 or 250 VAC  
  0.5A: 125 VDC  
  0.25A: 250 VDC  
- Characteristics:  
  · Most suitable for opaque liquids (oils, etc), high-temperature and high-pressure fluids. No restrictions on flow direction.  
  · Available with external contact variable type.  
- Construction:  
  - Body: FC250, CAC406, SUS304  
  - Main parts: C3604B, SUS304  
- Note:  
  · For use in high vibration places, use vibration-proof SF type.  
  · For 1.0 MPa or higher operating pressure, use the SF type designed for high pressure.  
  · Complete waterproof type (IEC IP67) is also manufactured for outdoor or severe-atmosphere use.
KY FLOW METER & FLOW SWITCH

Types:  
KY-M: Instantaneous flow indicator  
KY-MA: Instantaneous flow indicator + lower (or upper) microswitch

Diameter:  
3/8B-5B flanged type  
Rc 3/8-Rc 1-1/2 screwed type

Withstanding Pressure: 1.0 MPa

Temperature: 80˚C or less

Accuracy: ±5% of reading

Contact Capacity:  
15A: 125, 250 or 480 VAC  
0.5A: 125 VDC  
0.25A: 250 VDC

Applications:  
Most suitable for flow rate indications and alarms for lubricating oil and fluids containing iron powder.

Characteristics:  
· Most suitable for opaque liquids because the indicating section is mechanically sealed from fluid.  
· No restrictions on the flow direction.  
· The contact position is variable.

Construction:  
Body: FC250, CAC406, SUS304  
Main parts: C3604B, SUS304

Note:  
· For use in high vibration places, use vibration-proof SF type.  
· For 1.0 MPa or greater operating pressure, use the SF type designed for high pressure.  
· The scale range is 0-30 L/min in water terms, and 0-20 L/min in oil terms.

FLOW KILLER (Thermistor Flow Meter)

Type: FK  
This flow meter, using thermistor characteristics, has no movable parts structurally. Fluids to be measured include water or aqueous solutions.

Diameter: 1B-12B flanged type

Operating Pressure: 1.0 MPa

Withstanding Pressure: 1.5 MPa

Liquid Temperature: 0-80˚C

Ambient Temperature: -20˚C to +60˚C

Accuracy: ±3% FS

Indication: LED

Output: 4-20 mA DC, two switching points: S1 and S2 can be set independently.

Power Source: 100, 200 VAC

Characteristics:  
· Little or no trouble and no pressure loss because there are no movable parts.  
· No restrictions on installation of piping, allowing horizontal and vertical piping (in a full condition).  
· This flow meter can be used in magnetic fields because of LED indication, and can be used for pure water measurement.  
· The waterproof class is IEC IP67 and can be used outdoors.
RIVER FLOW (Gear Type Flow Meter)

RF-Ⅰ: Field Indication Type (Instantaneous + Integrated Indication)

This compact high-precision flow meter measures not only water and oils, but also chemicals. The rotations of two three-lobe elliptic gears output signals directly proportional to flow rates. Receiving the signals, the indicator provides field indication of instantaneous flow rates or integrated flow rates.

Diameter: Rc 1/8-Rc 3/8
Operating Pressure: 1.0 MPa
Withstanding Pressure: 1.5 MPa
Liquid Viscosity: 1,000 mm²/s or less
Ambient Temperature: –5°C to +40°C
Liquid Temperature: 0–80°C
Operating Humidity: 45–85% RH
Accuracy: ±1%
Indication: Instantaneous flow rate indication: 4 digits
Integrated flow rate indication: 8 digits

RF-Ⅱ: Electronic Transmission Type
Field indication type (integrated type)
Remote transmission type (separate type)
(instantaneous + integrated indication + analog output + high/low alarm contact)

Pulse (contact) signals from the transmitter (RF-S) can be output variously by using a converter in accordance with the application. Available with integrated type (RF-Ⅱ) in which the transmitter (sensor section), converter and indicating section are integrated, and separate type (RF-Ⅱ-S).

Power Source: AC 100 V / 200 V ±10%
DC 12 V / 24 V (option)
Output Signals: Current Output: 4-20 m ADC
Voltage Output: 0-1 V, 0-5 V, 0-10 V, 1-5 V
Relay Output: Instantaneous high/low alarm contact
RFH for High-Viscosity and High-Pressure Fluids
(Instantaneous + Integrated Indication)

This RIVER FLOW is modified for high-viscosity and high-pressure fluids, which is most suitable for measuring the flow rates of greases, and in hydraulic circuits of construction equipment, earthmoving equipment, etc.

Diameter:  Rc 1/4-Rc 1/2
Operating Pressure:  21 MPa
Withstanding Pressure:  31 MPa
Operating NLGL No. and Consistency:  NLGL:   NLGL NO. 066-6
Consistency range:  85-475
Ambient Temperature:  -5˚C to +40˚C
Liquid Temperature:  0˚C to 80˚C
Accuracy:  ±1%
Indication:  Instantaneous flow rate indication:  4 digits
Integrated flow rate indication:  8 digits
Characteristics:
· No restrictions on the installation location in piping lines as it can be used in 21 MPa oil pressure lines.
· Can be used for grease of any consistency.
· Can also be used as a stroke gauge on construction equipment, earthmoving equipment, etc.

FS-C / FS-N SIGHT FLOW INDICATORS WITH NEEDLE VALVE

Types:  FS-C: The capped needle valve prevents access by unauthorized personnel after setting the oil level.
FS-N: The needle valve is a vibration-proof 2.0 MPa type, allowing high-precision adjustment of trace amounts.
Diameter:  FS-C:  Rc 1/4 to Rc 1-1/2
FS-N:  Rc 1/4 to Rc 1
Withstanding Pressure:  1.0 MPa
Temperature:  80˚C or less
Construction:  FS-C: Flow sight body  FCD450
              Needle valve body  CAC406
              main parts   C2801P
              C3604B
              FS-N: Flow sight body  FCD450
              Needle valve body  C3771B
              main parts   C3604B
Note
· In order to prevent damage to window glass, the FS-K type, complying with fire laws, with a steel protective cover and with no window glass, is also available. For small flow rates and for measuring deep-black oils, use the FS-O type.
FI SIGHT FEED INDICATOR

Types: FI-1 to FI-12

The flow direction is from side to bottom, and the inlet side is provided with a needle valve so that oil amounts can be controlled.

Diameter:  
<table>
<thead>
<tr>
<th>Inlet</th>
<th>Outlet</th>
<th>max. flow rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>FI-1: Rc 1/4 × Rc 1/2</td>
<td>max. flow rate 3 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-2: Rc 3/8 × Rc 1/2</td>
<td>max. flow rate 3 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-3: Rc 1/2 × Rc 1/2</td>
<td>max. flow rate 3 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-4: Rc 1/4 × Rc 3/4</td>
<td>max. flow rate 5 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-5: Rc 3/8 × Rc 3/4</td>
<td>max. flow rate 5 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-6: Rc 1/2 × Rc 3/4</td>
<td>max. flow rate 5 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-7: Rc 3/4 × Rc 3/4</td>
<td>max. flow rate 5 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-8: Rc 1/4 × Rc 1</td>
<td>max. flow rate 5 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-9: Rc 3/8 × Rc 1</td>
<td>max. flow rate 5 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-10: Rc 1/2 × Rc 1</td>
<td>max. flow rate 5 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-11: Rc 3/4 × Rc 1</td>
<td>max. flow rate 5 L/min.</td>
<td></td>
</tr>
<tr>
<td>FI-12: Rc 1 × Rc 1</td>
<td>max. flow rate 10 L/min.</td>
<td></td>
</tr>
</tbody>
</table>

Withstanding Pressure: 1.0 MPa
Temperature: 80˚C or less
Construction: Body: AC-8BT6  
Main parts: C3604B  
Needle valve: SUS304

Note

· In order to prevent damage to the window glass, a steel-protective-cover-equipped type, complying with fire laws, is also manufactured.

KFS FLOWING INDICATOR

Types: KFS

The flow direction is from bottom to top, and the inlet side is provided with a needle valve so that oil amounts can be controlled. Rough flow rates can be known from the float moving up and down according to changes in oil level.

Diameter: Inlet Rc 3/8 × Outlet Rc 3/8
Flow rate: 0-0.5 L/min. at 150 mm²/s & 0.2 MPa
Withstanding Pressure: 0.5 MPa
Temperature: 80˚C or less
Construction: Body: SS400  
Main parts: S25C  
Float: C3604B

Note

· A 3-4 point flow rate scale is optionally available.
MFI MULTIPLE SIGHT FLOW INDICATORS

Types: MFI-1 to MFI-10 (1-10 Sights)
Diameter: Inlet Rc 3/8-Rc 3/4
Outlet Rc 3/8
Flow rate: 0-6 L/min. at 220 mm²/s & 0.2 MPa
Withstanding Pressure: 0.5 MPa
Temperature: 80°C or less
Construction: Body: SS400. C3604B. SUS304
Main parts: S25C. C3604B. SUS304
Float: C3604B. SUS304

Note
· A 3-4 point flow rate scale is optionally available.

B-MFI BLACK MULTIPLE SIGHT FLOW INDICATORS

The multiple sight flow indicators of this type are for black lubricating oils.
The flow rates of oils, the indications of which are difficult to see for the MFI type, can clearly be seen because of indications out of contact with liquids.

Types: B-MFI-1 to B-MFI-10 (1-10 Sights)
Diameter: Inlet Rc 1/2, Rc 3/4
Outlet Rc 3/8
Flow rate: Inlet Rc 1/2
0-3 L/min at 320 mm²/s & 0.2 MPa
Inlet Rc3/4
0-5 L/min at 320 mm²/s & 0.2 MPa
Withstanding Pressure: 0.1 MPa
Temperature: 80°C or less
Construction: Body: SS400. C3604B
Main parts: S25C. C3604B. SUS304
Float: C3604B. SUS304

Note
· A 3-4 point flow rate scale is optionally available.
NF FLOW SWITCH

This flow switch, working as a water (oil) failure/reduction relay, is used for detection and check of flow rates of cooling water, oils, etc.

Types:  NF- I (fixed contact type)  The set point cannot be moved.  NF- II (variable contact type)  The set point can be moved.

Diameter:  3/8B-3B flanged type  Rc 3/8-Rc 2 screwed type

Withstanding Pressure:  1.0 MPa

Temperature:  80˚C or less

Contact Capacity:  15A:  125, 250 or 480 VAC  0.5A:  125 VDC  0.25A:  250 VDC

Construction:  Body:  FC250, CAC406, SS400, SUS304, SUS316, SUS316L  Main parts:  C3604B, SUS304, SUS316, SUS316L

INF FLOW METER & FLOW SWITCH

This flow meter & flow switch is an NF flow switch equipped with an indicator. Though an area flow meter, it is a compact flow meter that can measure the flow rates of liquids and gases in horizontal piping.

Type:  INF-M:  Instantaneous flow rate indicator  INF-MA:  Instantaneous flow rate indicator +1 contact

Diameter:  3/8B-3B flanged type  Rc 3/8-Rc 2 screwed type

Withstanding Pressure:  1.0 MPa

Temperature:  80˚C or less

Contact Capacity:  5A:  125 or 250VAC  0.5A:  125 VDC  0.25A:  250VDC

Construction:  Body:  FC250, CAC406, SS400, SUS304, SUS316, SUS316L  Main parts:  C3604B, SUS304, SUS316, SUS316L
CY FLOW SWITCH (Flow Switch for Unfilled Conditions)

This flow switch is most suitable for unfilled return oil (water) piping in which the piping is not filled with oil (water). This includes a needle for variable contact, the adjustment of which allows variations of the set flow rate.

Type: CY- I Standard type
   Direction of flow: Side → bottom
Diameter: 3/8B-6B flanged type
Withstanding Pressure: 0.5 MPa
Temperature: 80˚C or less
Contact Specifications: For 220 VAC as standard.
   Max. contact capacity: 50 VAAC, 50 WDC
   Max. operating current: 0.5 AAC, 0.5 ADC
   Max. operating voltage: 300 VAC, 300 VDC
   Max. contact resistance: 0.1Ω
Construction: Body: SS400, SUS304, SUS316
   Main parts: C3604B, SUS304, SUS316

SR FLOW METER

Types: SR- I : Ribbed Pyrex glass tapered tube flow meter
   SR- II: Inorganic glass tapered tube flow meter
   SR- III: Methacrylic resin tapered tube flow meter
Diameter: SR- I: 3/8B-2B flanged type
   SR- II: 3/8B-2B flanged type
   SR- III: 3/8B-3B flanged type
Withstanding Pressure: SR- I: 3/8B-3/4B 1.0 MPa
   1B-2B 0.7 MPa
   SR- II: 3/8B-3/4B 1.0 MPa
   1B-3B 0.7 MPa
   SR- III: 3/8B-3/4B 1.0 MPa
   1B-3B 0.7 MPa
Temperature: SR- I: 80˚C or less
   SR- II: 60˚C or less
   SR- III: 50˚C or less
Accuracy: ±2% FS
Construction: Body: FC250, SS400, SUS304, SUS316, SUS316L, PVC
   Float: SUS304, SUS316, SUS316L, PTFE, PVC, Ti
   Stay: SS400, SUS304, SUS316
This SR flow meter for relatively small flow rates is modified for panel mounting or a stand type. The outlet side or inlet side can also be equipped with a flow control needle valve.

Diameter: Rc 1/4-Rc 1/2
Flow rates: Gas (air) max. Liquid (water) max.
   Rc 1/4  1 L/min-10 L/min 30 cc/min-300 cc/min
   Rc 3/8  3 L/min-30 L/min 0.1 L/min-1 L/min
   Rc 1/2  10 L/min-100 L/min 0.3 L/min-3 L/min

Withstanding Pressure: 1.0 MPa
Temperature: 60˚C or less
Accuracy: ±2% FS
Construction: Body: C3604B, SUS304, SUS316
Float: SUS304, SUS316, PTFE, PVC, Glass

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**SR-Ⅱ-P FLOW METER (Panel Type)**

This SR flow meter for relatively small flow rates is modified for panel mounting or a stand type. The outlet side or inlet side can also be equipped with a flow control needle valve.

Diameter: Rc 1/4-Rc 1/2
Flow rates: Gas (air) max. Liquid (water) max.
   Rc 1/4  1 L/min-10 L/min 30 cc/min-300 cc/min
   Rc 3/8  3 L/min-30 L/min 0.1 L/min-1 L/min
   Rc 1/2  10 L/min-100 L/min 0.3 L/min-3 L/min

Withstanding Pressure: 1.0 MPa
Temperature: 60˚C or less
Accuracy: ±2% FS
Construction: Body: C3604B, SUS304, SUS316
Float: SUS304, SUS316, PTFE, PVC, Glass

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**TR FLOW METER (Simple Type)**

Types: TR-I: Pyrex glass tapered tube flow meter
       TR-III: Methacrylic resin tapered tube flow meter
Diameter: TR-I: Rc 1/4-Rc 3/4
          TR-III: Rc 1/4-Rc 3/4

Withstanding Pressure: TR-I: 1.0 MPa
                      TR-III: 1.0 MPa

Temperature: TR-I: 80˚C or less
             TR-III: 50˚C or less

Accuracy: ±2% FS
Construction: Body: C3604B, SS400, SUS304, SUS316
             Float: SUS304, SUS316, PTFE, PVC, Ti
             Outer casing: SGP, SUS304TPA, SUS316TPA

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**TR FLOW METER (Simple Type)**

Types: TR-I: Pyrex glass tapered tube flow meter
       TR-III: Methacrylic resin tapered tube flow meter
Diameter: TR-I: Rc 1/4-Rc 3/4
          TR-III: Rc 1/4-Rc 3/4

Withstanding Pressure: TR-I: 1.0 MPa
                      TR-III: 1.0 MPa

Temperature: TR-I: 80˚C or less
             TR-III: 50˚C or less

Accuracy: ±2% FS
Construction: Body: C3604B, SS400, SUS304, SUS316
             Float: SUS304, SUS316, PTFE, PVC, Ti
             Outer casing: SGP, SUS304TPA, SUS316TPA

---

**TR FLOW METER (Simple Type)**

Types: TR-I: Pyrex glass tapered tube flow meter
       TR-III: Methacrylic resin tapered tube flow meter
Diameter: TR-I: Rc 1/4-Rc 3/4
          TR-III: Rc 1/4-Rc 3/4

Withstanding Pressure: TR-I: 1.0 MPa
                      TR-III: 1.0 MPa

Temperature: TR-I: 80˚C or less
             TR-III: 50˚C or less

Accuracy: ±2% FS
Construction: Body: C3604B, SS400, SUS304, SUS316
             Float: SUS304, SUS316, PTFE, PVC, Ti
             Outer casing: SGP, SUS304TPA, SUS316TPA
**KNR FLOW METER** (Purge Meter)

This glass tapered tube flow meter measures micro flow rates of gases and liquids as it is mounted on a panel, directly mounted to piping, or mounted on a stand to monitor the flow rates of analytical instruments and measuring instruments.

Without valve  With valve

Types:  
- KNR-100  KNR-100V
- KNR-1125  KNR-1225
- KNR-1150  KNR-1250
- KNR-1175  KNR-1275
- KNR-3100  KNR-3200
- KNR-4000
- KNR-5000

Diameter:  
- Rc 1/8, Rc 1/4, Rc 1/2

Flow rates:  
- Rc 1/8  
  - Gas: 30-300 cc/min
  - Liquid: 5-50 cc/min
- Rc 1/4  
  - KNR-3100: 10-100 L/min 0.3-3 L/min
  - KNR-4000: 10-100 L/min 0.3-3 L/min
- Rc 1/2  
  - KNR-5000: 30-300 L/min 2.5-25 L/min

Withstanding Pressure: 1.0 MPa

Temperature: 60°C or less

Accuracy: ±2% FS

Construction:  
- KNR-100, KNR-1125  KNR-3100, KNR-4000
- KNR-1150, KNR-1175  KNR-5000

Body:  
- C3604B  Jurakan, PVC

Float:  
- Carbon ball, SUS304  Glass, SUS304

Tapered tube:  
- Hard glass  Pyrex
PMF/MMF FLOW METER

Types:  
PMF: Panel-mounted type  
MMF: Metal-tube area mini flow meter  

Diameter: 1/2B-1B flanged type  
Rc 1/2-Rc 1 screwed type  

Flow rates:  
<table>
<thead>
<tr>
<th>Type</th>
<th>Flow direction</th>
<th>Gas</th>
<th>Liquid</th>
<th>1/2B</th>
<th>10 L/h-100 L/h</th>
<th>0.3-3 L/h</th>
<th>3/4B</th>
<th>0.2 m³/h-2 m³/h</th>
<th>10-100 L/h</th>
<th>1B</th>
<th>2.5 m³/h-25 m³/h</th>
<th>120-1,200 L/h</th>
</tr>
</thead>
</table>

Withstanding Pressure: 1.0 MPa  
Special specifications up to 30 MPa can be manufactured.  

Temperature: 100°C or less  
Special specifications up to 400°C can be manufactured.  

Accuracy: ±3% FS  
Construction:  
Body: SUS304. SUS316  
Main parts: SUS316. Ti

SMF FLOW METER (Metal-tube Area Type)

Types:  
SMF-B: Flow direction: Bottom → Side  
SMF-V: Flow direction: Bottom → Top  
SMF-H: Flow direction: Horizontal  

Diameter: 1/2B-8B flange type  

Withstanding Pressure: 1.0 MPa  
Special specifications up to 50 MPa can be manufactured.  

Temperature: 100°C or less  
Special specifications up to 400°C can be manufactured.  

Accuracy: ±2% FS  
Construction:  
Body: SS400. SUS304. SUS316. PVC  
Main parts: SUS304. SUS316. PVC

SMC FLOW METER (Compact Type)

Types:  
SMC-B: Flow direction: Bottom → Side  
SMC-V: Flow direction: Bottom → Top  
SMC-H: Flow direction: Horizontal  

Diameter: 1/2B-2B flanged type  

Withstanding Pressure: 1.0 MPa  
Temperature: 100°C or less  

Accuracy: ±2% FS  
Construction:  
Body: SS400. SUS304. SUS316  
Main parts: SUS304. SUS316. Ti
**STF FLOW METER**

This area flow meter using a metal tapered tube, was developed specifically for measuring slurry fluids. This flow meter, using a ribbed glass tube for the indicating section, can also measure opaque liquids such as sludge, and does not cause a condition where the indication is difficult to read due to adhesion of scales, etc.

- **Diameter:** 1/2B-8B flanged type
- **Withstanding Pressure:** 0.7 MPa
- **Temperature:** 80°C or less
- **Accuracy:** ±2% FS
- **Construction:**
  - **Body:** SS400, SUS304, SUS316, SUS316L
  - **Main parts:** SUS304, SUS316, SUS316L
  - **Liquid-contact lining:** Rubber, Epoxy resin, PVC

**STF-T FLOW METER**

This STF flow meter provided with an air chamber between the connecting section and indicating section, was manufactured specifically for slurry fluids. Structurally, slurries have difficulty entering the indicating section even if large amounts of sand, dust, etc. are mixed in fluids.

- **Diameter:** 1/2B-8B flanged type
- **Withstanding Pressure:** 0.7 MPa
- **Temperature:** 80°C or less
- **Accuracy:** ±2% FS
- **Construction:**
  - **Body:** SS400, SUS304, SUS316, SUS316L
  - **Main parts:** SUS304, SUS316, SUS316L
  - **Liquid-contact lining:** Rubber, Epoxy resin, PVC
STF-S FLOW METER

This flow meter uses a metal tapered tube with the indicating section magnet-coupled out of liquids to be measured. There are two types: STF-S-I transmitting from remote locations through conversion into linear analog pneumatic signals between 0.02 and 0.098 MPa by pneumatic transmitter incorporated in the indication case, and STF-S-II transmitting electric signals.

Types:
- STF-S(A): Instantaneous field indication (with contact)
- STF-S-T: Instantaneous field indication +field integration
- STF-S-I: Instantaneous field indication +pneumatic transmission
- STF-S-II: Instantaneous field indication +electric transmission

Diameter: 1/2B-8B flanged type
Withstanding Pressure: 1.0 MPa
* Those for high pressure are also available.
Temperature: 80˚C or less
Accuracy: ±2% FS
Construction:
- Body: SS400, SUS304, SUS316, SUS316L
- Main parts: SUS304, SUS316, SUS316L

STF-H FLOW METER

The measurement principles of this flow meter use the same as that of the SR flow meters, except that the tapered tube section is made of metal for high-temperature and high-pressure opaque liquids with the indicating section taken at the top.

Diameter: 1/2B-6B flanged type
Withstanding Pressure: 0.7 MPa
Temperature: 80˚C or less
Accuracy: ±2% FS
Construction:
- Body: SS400, SUS304, SUS316, SUS316L
- Main parts: SUS304, SUS316, SUS316L
ODF ORIFICE FLOW METER

This flow meter measures the fluctuations the pressure difference developing before and after the orifice by the differential pressure gauge, and indicates the flow rates. This differential pressure gauge can also be equipped with an alarm contact that allows remote transmission.

Diameter: 1B-20B flanged type
Fluids: Liquids and gasses
Withstanding Pressure: 1.0 MPa
Temperature: 80˚C or less
Construction: Measuring Section: SS400. SUS304. SUS316. SUS316L. P.V.C
Indicating Section: SUS316

PU U-TUBE DIFFERENTIAL PRESSURE GAUGE

This U-tube differential pressure gauge measures the pressure difference between the inlet pressure and outlet pressure, which is most suitable for measuring the micro pressure difference of an orifice, duct, etc. Those for H₂O, Hg, oils, etc., are available. Specify the liquid to be measured.

Construction: Body: Wood
SS400
Liquid-contact section: C3604B
SS400
SUS304
Measuring tube: Pyrex glass
Methacrylic resin
Measuring range: ±1 kPa to ±20 kPa

PT LIQUID COLUMN PRESSURE GAUGE

This liquid column pressure gauge is provided with a tank at the back and coupled at the lower end to measure the pressure difference for simplifying the measurement of the U-tube differential pressure gauge. Those for H₂O and Hg are available. When ordering, specify which one.

Measuring Range: 0-40 kPa
Construction: Body: SS400
Liquid-contact section: C3604B
SS400
SUS304
FR AUTOMATIC FLOW CONTROL VALVE

This constant flow control valve maintains the outlet flow rate constant even if the inlet pressure fluctuates.

Applications: For maintaining feed oil (water) constant.
For protection including prevention of excessive flow rates, and functioning as a safety valve when hydraulic piping or the like bursts.
For uniform water supply equipment, and maintain flow rates constant in other cases.

Diameter: 3/8B to 2-1/2 flanged type
Rc 3/8-Rc 1-1/2 screwed type
Withstanding Pressure: 2.0 MPa-25 MPa
Temperature: 80°C or less
Construction: SS400. C3604B. SUS304
**SV SAFETY VALVE** (for High Pressure)

- Types:  
  - SV-I: Diameter Rc 3/4  
  - Maximum pressure 21 MPa  
  - SV-II: Diameter Rc 1  
  - Maximum pressure 11 MPa  
- Withstanding Pressure: 31.5 MPa  
- Operating Fluids: Oils  
- Characteristics:  
  - Its special valve structure has good response characteristics to severe blowouts.  
  - The high quality material of the spring assures excellent reproducibility of the set pressure.  
  - Through designed to resist high pressure, it is compact and low-priced.  
- Construction:  
  - Body: SS400  
  - Main Parts: SUS304  
  - Spring: SWOCV-V

**CV RUGGED CHECK VALVE** (for High Pressure)

- Types:  
  - CV-I: Diameter 2B  
  - CV-II: Diameter 4B  
  - CV-III: Diameter 6B  
- Operating Pressure: 11 MPa  
- Withstanding Pressure: 18 MPa  
- Characteristics:  
  - Reliable and quiet operation.  
  - Lightweight compared with other products.  
  - Low-priced and quick delivery.  
- Construction:  
  - Body: SS400  
  - Main Parts: SUS304
This flow meter has been developed for the purpose of measuring corrosive fluids (plating liquids, etc.). Conventionally, spring-incorporated or metal tapered tube flow meters would be used for measuring this kind of liquid, but the main parts of the flow meters would seriously deteriorate over time, and their service lives are extremely short due to corrosive fluids. This flow meter, having been then developed, operated on an absolutely physical principle, and it is highly durable, and its performance will not deteriorate when used with corrosive fluids.

Diameter: 2B-8B flanged type
Temperature: 80˚C or less (non-freezing)
Acid Resistance: pH1-7
Withstanding Pressure: 0.3 MPa
*0.5 MPa can also be ordered specially.

Characteristics:
- Most suitable for measuring corrosive fluids (plating liquids, etc.)
- Contaminated liquids can clearly be measured because of the indicating section out of contact with the liquid.
- The scale is relatively linear because it is balanced by using a special toggle link mechanism relative to the fluid energy.
- The absolutely physical flow meter hardly deteriorates over time.
- The flow meter is compact and lightweight.
- There are three flow directions: horizontal; left ⇔ right, and from bottom to top. The flow direction from top to bottom is not available.
- Can also be used in magnetic fields by using a magnetic shielding case.

Construction: Body: HTPVC (FRP lining)
Main parts: Ti. SUS16. SUS316L