Relief Valve

**Features**

1. Balanced piston relief valve.
2. Optimum pressure control for hydraulic circuit allows operation as a safety valve.
3. A vent port enables remote control of pressure and use of an unloading circuit.

**Specifications**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Screws Mounting</th>
<th>Gasket Mounting</th>
<th>Nominal Diameter (Size)</th>
<th>Maximum Working Pressure MPa(kgf/cm²)</th>
<th>Maximum Flow Rate l/min</th>
<th>Pressure adjustment range MPa(kgf/cm²)</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-03-1-12</td>
<td>H-03-1-12</td>
<td>R-G03-1-12</td>
<td>3/8</td>
<td>20</td>
<td></td>
<td>* to 10.2</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* to 25.5</td>
<td>4.3</td>
</tr>
<tr>
<td>R-06-1-12</td>
<td>H-06-1-12</td>
<td>R-G06-1-12</td>
<td>3/4</td>
<td>80</td>
<td></td>
<td>* to 71.4</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* to 21(35.7 to 214)</td>
<td>5.3</td>
</tr>
<tr>
<td>R-10-1-12</td>
<td>H-10-1-12</td>
<td>R-G10-1-12</td>
<td>1/4</td>
<td>170</td>
<td></td>
<td>* to 71(35.7 to 214)</td>
<td>7.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* to 21(35.7 to 214)</td>
<td>7.7</td>
</tr>
</tbody>
</table>

Note) See the Flow Rate - Low Pressure characteristics for information about items marked with an asterisk (*).

**Handling**

1. To adjust pressure, loosen the lock nut and then rotate the handle clockwise (rightward) to increase pressure or counterclockwise (leftward) to decrease it.
2. Make sure that tank port back pressure is no greater than 0.2MPa (2.0kgf/cm²). For tank piping of the A and B type pressure adjustment ranges, return directly to the tank without connecting any other piping and eliminate back pressure.
3. The pressure adjustment range for the high vent type is 1.3MPa (13.3kgf/cm²). Note that R-T/G03 is not a high vent type.
4. When using a relief valve as a safety valve, use a pressure override that is higher than the required circuit pressure.
5. When using a remote control valve, connect piping to the relief valve port. Pipe capacity can be a source of vibration. Use of thick iron pipe with an inside diameter of no more than 4mm and a connection length of no more than three meters is recommended.
6. Pressure becomes unstable when at slow control flow rates. Use a flow rate of no less than 8 l/min for the 03, 06 sizes, and 10 l/min for the 10 size. Use a drain type relief valve in the case of a flow rate that is less than the minimum flow rate.
7. Use the following table for specification when a sub plate is required.

**Understanding Model Numbers**

- R: Pressure control
- T: Screw connection
- G: Gasket type
- 03, 06, 10: Nominal diameter (Size)
- -1: Pressure adjustment range 1, 3, A, B
- -H: High vent (excluding 03 size)
- -20: Design number

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Bolt Dimensions</th>
<th>Qty</th>
<th>Tightening Torque N·m(=kgf·cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-G03-^-12</td>
<td>M10 x 75 i</td>
<td>4</td>
<td>45 to 55 (490 to 560)</td>
</tr>
<tr>
<td>R-G06-^-20</td>
<td>M16 x 80 i</td>
<td>4</td>
<td>190 to 235 (1940 to 2400)</td>
</tr>
<tr>
<td>R-G10^-20</td>
<td>M20 x 105 i</td>
<td>4</td>
<td>370 to 460 (3770 to 4690)</td>
</tr>
</tbody>
</table>

Note) For mounting bolts, use 12T or equivalent.
Installation Dimension Drawings

R-T03-*-12 (Screw Mounting)

Pressure adjusting handle
(Changeable to three other directions)

Vent connection port
Rc 3/8

Pressure gauge attachment port
Rc 1/4

Model No. | A  | B | C | D | E | F | G | H | J |
----------|----|---|---|---|---|---|---|---|---|
R-T06-*-20 | 128.5 | 61.5 | 47.5 | 45 | 90 | 54 | 36.5 | 71 | 3/4|
R-T12-*-20 | 153.5 | 72 | 62 | 62.5 | 125 | 69 | 47 | 94 | 1/4|

R-G03-*-12 (Gasket Mounting)

Pressure adjusting handle
(Changeable to three other directions)

Vent connection port
Rc 3/8

Pressure gauge attachment port
Rc 1/4

Model No. | A  | B | C | D | E | F | G | H | J |
----------|----|---|---|---|---|---|---|---|---|
R-G06-*-20 | 151 | 101.5 | 98.5 | 102 | 58 | 40 | 65 | 69.5 | 26 | 18 | 25.1|
R-G10-*-20 | 162.5 | 145 | 110 | 127 | 88 | 50 | 86 | 70.5 | 32 | 22 | 37.7|

R-T**-*-20 (Screw Mounting)

Pressure adjusting handle
(Changeable to three other directions)

Vent connection port
Rc 3/8

Pressure gauge attachment port
Rc 1/4

Model No. | A  | B | C | D | E | F | G | H | J |
----------|----|---|---|---|---|---|---|---|---|
R-T06-*-20 | 128.5 | 61.5 | 47.5 | 45 | 90 | 54 | 36.5 | 71 | 3/4|
R-T10-*-20 | 153.5 | 72 | 62 | 62.5 | 125 | 69 | 47 | 94 | 1/4|

R-G**-*-20 (Gasket Mounting)

Pressure adjusting handle
(Changeable to two other directions)

From back
4-6x4 countersunk
4X holes

Pressure gauge attachment port
Rc 1/4

Model No. | A  | B | C | D | E | F | G | H | J |
----------|----|---|---|---|---|---|---|---|---|
R-G06-*-20 | 151 | 101.5 | 98.5 | 102 | 58 | 40 | 65 | 69.5 | 26 | 18 | 25.1|
R-G10-*-20 | 162.5 | 145 | 110 | 127 | 88 | 50 | 86 | 70.5 | 32 | 22 | 37.7|
Pressure Control Valve

Sub Plate MR-03-10

Sample text from the image:

Performance Curves

Pressure - Flow Rate Characteristics

Flow Rate - Minimum Pressure Characteristics

Note: The performance curves do not include T port back pressure.
Cross-sectional Drawing

Part No. | Part Name
--------|---------
1 | Body
2 | Cover
3 | Spool
4 | Poppet
5 | Seat
6 | Seat
7 | Plunger
8 | Retainer
9 | Collar
10 | Spring
11 | Spring
12 | Spring
13 | Handle
14 | Nut
15 | Spring pin
16 | O-ring
17 | O-ring
18 | O-ring
19 | O-ring
20 | Screw
21 | Plug
22 | Plug
23 | Nameplate

Note) The No. 12 spring is not included when auxiliary symbol H is selected (except with the 03 size).

Seal Part List

Kit Model Number RRS-*** (03 size)
RRBS-*** (06, 10 size)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Part Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>O-ring IB-G30 IB-G30 IB-G30 IB-G30 IB-G40 IB-G40 1</td>
</tr>
<tr>
<td>17</td>
<td>O-ring IA-P11 IA-P11 IA-P11 IA-P11 IA-P11 IA-P11 1</td>
</tr>
<tr>
<td>18</td>
<td>O-ring IB-P7 – IB-P9 – IB-P9 – 1</td>
</tr>
<tr>
<td>19</td>
<td>O-ring IB-P20 – IB-P26 – IB-G35 – 2</td>
</tr>
</tbody>
</table>

Note) O-ring 1A/1B ** refers to JIS B2401-1A/1B.
*** in the kit number is used for specification of the valve size (G03, T06, etc.)
RI Series Relief Valve
(ISO Mounting, Balanced Piston Type)

Features
① High pressure capacity balanced piston relief valve.
② Optimum pressure control for hydraulic circuit allows operation as a safety valve.
③ A vent port enables remote control of pressure and use of an unloading circuit.
④ ISO standard mounting service (see table below).

Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Nominal Diameter (Size)</th>
<th>Maximum Working Pressure MPa{kgf/cm²}</th>
<th>Maximum Flow Rate l/min</th>
<th>Pressure adjustment range MPa{kgf/cm²}</th>
<th>Weight kg</th>
<th>Gasket Surface Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI-G03-C-20</td>
<td>3/8</td>
<td>35{357} P, X Ports</td>
<td>40</td>
<td>0.15 to 3.5{1.5 to 35.7}</td>
<td>4.5</td>
<td>ISO 6264-AR-06-2-A</td>
</tr>
<tr>
<td>RI-G03-1-20</td>
<td>3/8</td>
<td>150</td>
<td>0.8 to 7{8.2 to 71.4}</td>
<td>3.5 to 25{35.7 to 255}</td>
<td>4.5</td>
<td>ISO 6264-AS-08-2-A</td>
</tr>
<tr>
<td>RI-G06-1-20</td>
<td>3/4</td>
<td>320</td>
<td>0.8 to 7{8.2 to 71.4}</td>
<td>3.5 to 25{35.7 to 255}</td>
<td>5.6</td>
<td>ISO 6264-AS-08-2-A</td>
</tr>
</tbody>
</table>

Handling
① To adjust pressure, loosen the lock nut and then rotate the handle clockwise (rightward) to increase pressure or counterclockwise (leftward) to decrease it.
② Make sure that tank port back pressure is no greater than 0.2MPa{2.0kgf/cm²}.
③ For use as a safety valve, use a pressure override that is higher than the required circuit pressure.
④ When using a remote control valve, connect piping to the relief valve port. Pipe capacity can cause vibration. Use of thick iron pipe with an inside diameter of no more than 4mm and a connection length of no more than three meters is recommended.
⑤ The following are the bundled mounting bolts. Use a drain type relief valve in the case of a flow rate that is less than the minimum flow rate. Use the following table for specification when a sub plate is required.

Understanding Model Numbers

RI - G - 06 - 1 - 20

- Design number
- Pressure adjustment range C, 1, 3, 5
- Nominal diameter (size)
- Mounting method G: Gasket type

RI series relief valve

Note) For mounting bolts, use 12T or equivalent.
⑥ A small control flow rate can cause pressure instability. Use a control flow rate that is at least 8 l/min.
Installation Dimension Drawings

RI-G**-*20

Sub Plate MRI-03*-10
(Maximum Operating Pressure: 25MPa)

Sub Plate MRI-06*-10
(Maximum Operating Pressure: 25MPa)

Attach a plug when the vent (X) port is not used.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>X</th>
<th>YF</th>
<th>YH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI-03-10</td>
<td>82.5</td>
<td>13.2</td>
<td></td>
</tr>
<tr>
<td>MRI-03X-10</td>
<td>100.7</td>
<td>4.7</td>
<td></td>
</tr>
</tbody>
</table>
### Performance Curves

**Hydraulic Operating Fluid Viscosity 32mm²/s**

#### Pressure - Flow Rate Characteristics

**RI-G03-C-20**

- **Pressure** vs **Flow Rate**

**RI-G06-**

- **Pressure** vs **Flow Rate**

*Note:* The performance curves do not include T port back pressure.

### Cross-sectional Drawing

**RI-G**

#### Cross-sectional Drawing

- **Part No.**
- **Part Name**
- **Nominal Diameter/Part Number**

**Seal Part List (Kit Model Number REBS-***):**

- **Part No.**
- **Part Name**
- **Nominal Diameter/Part Number**
- **Q'ty**

---

*Note:* O-ring 1A/B-** refers to JIS B 2401-1A/1B-**.

For the *** part of the kit number, specify the valve size (G03, G06).
### Features

1. Connecting a relief valve or reducing valve to the vent port of a balanced piston type pressure control valve provides simple remote control of pressure.

2. RCD type can also be used as a direct type relief valve.

### Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Gasket mounting</th>
<th>Nominal Diameter (Size)</th>
<th>Maximum Working Pressure MPa{kgf/cm²}</th>
<th>Maximum Flow Rate r/min</th>
<th>Pressure adjustment range MPa{kgf/cm²}</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCD-T02-1-11</td>
<td>–</td>
<td>1/4</td>
<td>21(214) P, V ports</td>
<td>15</td>
<td>0.8 to 7(8.2 to 71.4), 3.5 to 21(35.7 to 214)</td>
<td>2.1</td>
</tr>
<tr>
<td>RCD-T02-1-12</td>
<td>RC-G02-1-21</td>
<td>3-31</td>
<td></td>
<td>2</td>
<td>0.8 to 7(8.2 to 71.4), 3.5 to 21(35.7 to 214)</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Note) The pressure adjustment range indicates cracking pressure.

### Understanding Model Numbers

- **RC** - Design number
- **G** - Adjusting bolt type (gasket type only)
- **02** - Pressure adjustment range 1, 3
- **1** - Nominal diameter (size)
- **K** - Mounting method
  - T: Screw connection type
  - G: Gasket type
- **21** - Remote control relief valve

### Installation Dimension Drawings

RCD-T02-*-11 (Screw Mounting)

- **T port** Rc 1/4
- **P port** Rc 1/4

### Handling

1. To adjust pressure, loosen the lock nut and then rotate the handle clockwise (rightward) to increase pressure or counterclockwise (leftward) to decrease it.

2. Make sure that drain port back pressure is no greater than 0.2MPa {2.0kgf/cm²}.

3. When configuring pipes for the pressure control valve and remote control valve, use of thick iron pipe with an inside diameter of no more than 4mm and a connection length of no more than three meters is recommended. Pipe capacity can be a source of vibration.

4. When an adjustment bolt type is required for the pressure adjustment block, insert K for the type specification. See the dimension drawings, RC-G02 only.

5. Use the following to specify a sub plate.

### Mounting Bolts

- **Model No.** MRC-02-20
- **Weight kg** 1.0

### Bolt Dimensions

- **RC-G02-*-21** M8 x 25
- **Tightening Torque** N m 20 to 25 {205 to 255}

Note) For mounting bolts, use 12T or equivalent.
**Features**

1. This valve adds a wet type solenoid valve to a balanced type piston type relief valve to form a hydraulic device unload circuit.
2. The shockless type has an internal structure that prevents shock generated during unloading. This valve can also be used in a pressure relief circuit, and has a maximum adjustment time of three seconds. See the pressure relief circuit example.

**Specifications**

### Screw Mounting
- **Model No.**
- **Screw Mounting**
- **Gasket Mounting**
- **Nominal Diameter (Size)**
- **Maximum Working Pressure (MPa/Bar)**
- **Stainless Steel Port (Min)**
- **Pressure adjustment range (MPa/Bar)**
- **Weight kg**
- **JIS Symbol**
- **Used Solenoid Valve Model Number**

### Shockless Type
- **Model No.**
- **Screw Mounting**
- **Gasket Mounting**
- **Nominal Diameter (Size)**
- **Maximum Working Pressure (MPa/Bar)**
- **Stainless Steel Port (Min)**
- **Pressure adjustment range (MPa/Bar)**
- **Weight kg**
- **G Type**
- **Used Solenoid Valve Model Number**

**Handling**
- 1. To adjust pressure, loosen the lock nut and then rotate the adjusting bolt clockwise (rightward) to increase pressure or counterclockwise (leftward) to decrease it.
- 2. To adjust the time from unload to unload, loosen the lock nut and rotate the restrictor adjusting bolt clockwise (rightward) to make the time longer, or counterclockwise (leftward) to make it shorter.
- 3. Make sure that tank port back pressure is no greater than 0.2MPa (2.0kg/cm²).
- 4. The ** before the design number in the model number of the solenoid valve used shows voltage. See the voltage symbols in the model number explanation.
- 5. Pressure becomes unstable when at slow control flow rates. Use a flow rate of no less than 8 ℓ/min for the 03, 06 sizes, and 10 ℓ/min for the 10 size.
- 6. Use 90 to 110% of rated voltage.
- 7. The pressure adjustment range for the high vent type is 1.3MPa (13.3kgf/cm²). Note that RSS (RSA) -T/G03 is not a high vent type.
- 8. Use the following table for specification when a sub plate is required.
- 9. The following are the bundled mounting bolts.
- 10. The coil surface temperature increases if this pump is kept continuously energized. Install the valve so there is not chance of it being touched directly by hand.

**Table Examples**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>No.</th>
<th>Right.</th>
<th>Applicable Valve Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR-03-10</td>
<td>3/8</td>
<td>1.6</td>
<td>RSS (RSA) G03-***-15</td>
</tr>
<tr>
<td>MR-06-20</td>
<td>3/4</td>
<td>3.5</td>
<td>RSS (RSA) G06-***-23</td>
</tr>
<tr>
<td>MR-08-20</td>
<td>1</td>
<td>8.5</td>
<td>RSS (RSA) G10-***-23</td>
</tr>
<tr>
<td>MR-10-20</td>
<td>1/4</td>
<td>8.5</td>
<td>RSS (RSA) G10-***-23</td>
</tr>
</tbody>
</table>

**Note** See page relief valve page item on F-3 for dimensions.
Understanding Model Numbers

**RSS (RSA) - G 06 - A Q 1 - (H) - C1 - 23**

- **Design number**
- **Voltage symbol**
  - C1: AC100V 50/60Hz
  - C2: AC200V 50/60Hz
  - D1: DC12V
  - D2: DC24V
  - E1: AC100V 50/60Hz
  - E2: AC200V 50/60Hz
- **Auxiliary symbol**
  - H: High vent (excluding 03 size)
  - F: With shock canceller
  (See shockless type item.)
- **Pressure adjustment range 1, 3**
- **Stop position flow path**
  - Q: Open
  - R: Blocked
  (Not required with the shockless type.)
- **Operation method**
  - A: Spring offset
  - S: Solenoid controlled relieve valve
    (with SA type solenoid valve)
  - S: Solenoid controlled relieve valve
    (with SS type solenoid valve)
- **Nominal diameter (size)**
- **Mounting method**
  - T: Screw connection type
  - G: Gasket type
- **Solenoid controlled relieve valve**
  (with SA type solenoid valve)
- **Solenoid controlled relieve valve**
  (with SS type solenoid valve)

**Installation Dimension Drawings**

**RSS (RSA) - T****-A****-**-15, 23

- Note) Dimensions marked with * are for the RSA type.
- Note) Dimensions in parentheses apply in the case of a DC solenoid valve.

**Model No.**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSS (RSA) T03-A**-**-15</td>
<td>214.5</td>
<td>129</td>
<td>90</td>
<td>53</td>
<td>56</td>
<td>101</td>
<td>66</td>
<td>134 (391)</td>
<td>85</td>
<td>42.5</td>
<td>32.5</td>
<td>65</td>
<td>3/8</td>
<td>221.5</td>
</tr>
<tr>
<td>RSS (RSA) T06-A**-**-23</td>
<td>214.5</td>
<td>129</td>
<td>90</td>
<td>47.5</td>
<td>61.5</td>
<td>101</td>
<td>66</td>
<td>136.5 (403.5)</td>
<td>90</td>
<td>45</td>
<td>35.5</td>
<td>71</td>
<td>3/4</td>
<td>221.5</td>
</tr>
<tr>
<td>RSS (RSA) T10-A**-**-23</td>
<td>239</td>
<td>153.5</td>
<td>111.5</td>
<td>62</td>
<td>72</td>
<td>98</td>
<td>63</td>
<td>144.5 (471.2)</td>
<td>125</td>
<td>62.5</td>
<td>47</td>
<td>94</td>
<td>11/4</td>
<td>246</td>
</tr>
</tbody>
</table>

**RSS (RSA) - T03-A****-**-15**

- Lead wire outlet port

**RSS (RSA) - T06-A****-**-23**

- Manual operation pin

**RSS (RSA) - T10-A****-**-23**

- Pressure gauge attachment port

Pressure gauge attachment port

Pressure adjusting bolt

Manual operation pin

Lead wire outlet port

Installation Dimension Drawings

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSS (RSA) T03-A**-**-15</td>
<td>214.5</td>
<td>129</td>
<td>90</td>
<td>53</td>
<td>56</td>
<td>101</td>
<td>66</td>
<td>134 (391)</td>
<td>85</td>
<td>42.5</td>
<td>32.5</td>
<td>65</td>
<td>3/8</td>
<td>221.5</td>
</tr>
<tr>
<td>RSS (RSA) T06-A**-**-23</td>
<td>214.5</td>
<td>129</td>
<td>90</td>
<td>47.5</td>
<td>61.5</td>
<td>101</td>
<td>66</td>
<td>136.5 (403.5)</td>
<td>90</td>
<td>45</td>
<td>35.5</td>
<td>71</td>
<td>3/4</td>
<td>221.5</td>
</tr>
<tr>
<td>RSS (RSA) T10-A**-**-23</td>
<td>239</td>
<td>153.5</td>
<td>111.5</td>
<td>62</td>
<td>72</td>
<td>98</td>
<td>63</td>
<td>144.5 (471.2)</td>
<td>125</td>
<td>62.5</td>
<td>47</td>
<td>94</td>
<td>11/4</td>
<td>246</td>
</tr>
</tbody>
</table>
RSS (RSA)**-G**-A**-**-15, 23

Note) Dimensions marked with ③ are for the RSA type.
Note) Dimensions in parentheses apply in the case of a DC solenoid valve.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>P</th>
<th>Q</th>
<th>d</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSS (RSA)-G03-A**-**-15</td>
<td>214.5</td>
<td>129</td>
<td>109</td>
<td>90</td>
<td>80</td>
<td>141</td>
<td>106</td>
<td>130.5</td>
<td>(137.5)</td>
<td>72.5</td>
<td>40</td>
<td>13</td>
<td>17.5</td>
<td>10.8</td>
<td>11</td>
</tr>
<tr>
<td>RSS (RSA)-G06-A**-**-23</td>
<td>237</td>
<td>151.5</td>
<td>131.5</td>
<td>112.5</td>
<td>102</td>
<td>141</td>
<td>106</td>
<td>151.5</td>
<td>(159.5)</td>
<td>58</td>
<td>40</td>
<td>16.1</td>
<td>26</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>RSS (RSA)-G10-A**-**-23</td>
<td>248</td>
<td>162.5</td>
<td>143</td>
<td>120.5</td>
<td>127</td>
<td>148</td>
<td>113</td>
<td>152</td>
<td>(159)</td>
<td>80</td>
<td>50</td>
<td>17.7</td>
<td>30</td>
<td>1</td>
<td>22</td>
</tr>
</tbody>
</table>

Note) For gasket surface dimensions, see R-G**-* 12/20.

RSS (RSA)**-T**-**-F**-**-15, 23

Note) Dimensions marked with ③ are for the RSA type.
Note) Dimensions in parentheses apply in the case of a DC solenoid valve.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSS (RSA)-T03-<strong>-</strong>-15</td>
<td>254.5</td>
<td>129</td>
<td>90</td>
<td>53</td>
<td>56</td>
<td>101</td>
<td>66</td>
<td>104</td>
<td>(106)</td>
<td>85</td>
<td>42.5</td>
<td>32.5</td>
<td>65</td>
<td>32</td>
<td>3/8</td>
</tr>
<tr>
<td>RSS (RSA)-T06-<strong>-</strong>-23</td>
<td>254.5</td>
<td>129</td>
<td>90</td>
<td>47.5</td>
<td>61.5</td>
<td>101</td>
<td>66</td>
<td>156.5</td>
<td>(163.5)</td>
<td>90</td>
<td>45</td>
<td>35.5</td>
<td>71</td>
<td>33</td>
<td>3/4</td>
</tr>
<tr>
<td>RSS (RSA)-T10-<strong>-</strong>-23</td>
<td>279</td>
<td>153.5</td>
<td>111.5</td>
<td>62</td>
<td>72</td>
<td>98</td>
<td>63</td>
<td>164.5</td>
<td>(171.5)</td>
<td>125</td>
<td>62.5</td>
<td>47</td>
<td>94</td>
<td>32.5</td>
<td>1/4</td>
</tr>
</tbody>
</table>

Pressure Control Valve
F Pressure Control Valve

RSS (RSA) G**-F-**-15, 23

Note: Dimensions marked with □ are for the RSA type. Note: Dimensions in parentheses apply in the case of a DC solenoid valve.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>Q</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSS (RSA) G03-</td>
<td>254.5</td>
<td>129</td>
<td>109</td>
<td>90</td>
<td>80</td>
<td>141</td>
<td>106</td>
<td>72.5</td>
<td>40</td>
<td>13</td>
<td>32</td>
<td>261.5</td>
<td>17.5</td>
<td>10.8</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>RSS (RSA) G06-</td>
<td>277</td>
<td>151.5</td>
<td>131.5</td>
<td>112.5</td>
<td>102</td>
<td>141</td>
<td>106</td>
<td>58</td>
<td>40</td>
<td>16.1</td>
<td>33</td>
<td>284</td>
<td>26</td>
<td>1</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>RSS (RSA) G10-</td>
<td>288</td>
<td>162.5</td>
<td>143</td>
<td>120.5</td>
<td>127</td>
<td>148</td>
<td>113</td>
<td>80</td>
<td>50</td>
<td>17.7</td>
<td>32.5</td>
<td>295</td>
<td>32</td>
<td>1</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

Note: For gasket surface dimensions, see R-G**-* 12/20.

Cross-sectional Drawing

RSS-G**-F-**-15, 23

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Part Name</th>
<th>Part No.</th>
<th>Part Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>20</td>
<td>Spring</td>
</tr>
<tr>
<td>2</td>
<td>Cover</td>
<td>21</td>
<td>Nut</td>
</tr>
<tr>
<td>3</td>
<td>Spool</td>
<td>22</td>
<td>Screw</td>
</tr>
<tr>
<td>4</td>
<td>Seat</td>
<td>23</td>
<td>Plug</td>
</tr>
<tr>
<td>5</td>
<td>Spring</td>
<td>24</td>
<td>Plug</td>
</tr>
<tr>
<td>6</td>
<td>Screw</td>
<td>25</td>
<td>Plug</td>
</tr>
<tr>
<td>7</td>
<td>Nut</td>
<td>26</td>
<td>Nut</td>
</tr>
<tr>
<td>8</td>
<td>Retainer</td>
<td>27</td>
<td>Spring pin</td>
</tr>
<tr>
<td>9</td>
<td>Plunger</td>
<td>28</td>
<td>Spring pin</td>
</tr>
<tr>
<td>10</td>
<td>Spring</td>
<td>29</td>
<td>O-ring</td>
</tr>
<tr>
<td>11</td>
<td>Poppet</td>
<td>30</td>
<td>O-ring</td>
</tr>
<tr>
<td>12</td>
<td>Seat</td>
<td>31</td>
<td>O-ring</td>
</tr>
<tr>
<td>13</td>
<td>Collar</td>
<td>32</td>
<td>O-ring</td>
</tr>
<tr>
<td>14</td>
<td>Nameplate</td>
<td>33</td>
<td>O-ring</td>
</tr>
<tr>
<td>15</td>
<td>Body</td>
<td>34</td>
<td>O-ring</td>
</tr>
<tr>
<td>16</td>
<td>Spool</td>
<td>35</td>
<td>O-ring</td>
</tr>
<tr>
<td>17</td>
<td>Throttle</td>
<td>36</td>
<td>Solenoid Valves</td>
</tr>
<tr>
<td>18</td>
<td>Retainer</td>
<td>37</td>
<td>Screw</td>
</tr>
<tr>
<td>19</td>
<td>Spring guide</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Seal Parts List (Kit Model Number RSBS-***F)

<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>29</td>
<td>O-ring</td>
<td>1B-G30</td>
<td>1</td>
</tr>
<tr>
<td>30</td>
<td>O-ring</td>
<td>1A-P11</td>
<td>1</td>
</tr>
<tr>
<td>31</td>
<td>O-ring</td>
<td>1B-P20</td>
<td>1</td>
</tr>
<tr>
<td>32</td>
<td>O-ring</td>
<td>1B-P7</td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>O-ring</td>
<td>1B-P4</td>
<td>1</td>
</tr>
<tr>
<td>34</td>
<td>O-ring</td>
<td>1B-P9</td>
<td>2</td>
</tr>
<tr>
<td>35</td>
<td>O-ring</td>
<td>1B-P12.5</td>
<td>2</td>
</tr>
</tbody>
</table>

Note: 1. O-ring 1A/B-** refers to JIS B2401-1A/B.
2. For the *** part of the kit number, specify the valve size (G03, G06, G10).
3. SS (SA)-G01 pilot valve seal is available separately. For details, see pages E-11 (E-23).
Features

1. This valve adds a wet type solenoid valve to a balanced type piston type relief valve to form a hydraulic device unload circuit.
2. The shockless type has an internal structure that prevents shock generated during unloading. This valve can also be used in a pressure relief circuit, and has a maximum adjustment time of three seconds. See the pressure relief circuit example.
3. A two-pressure control circuit can be configured by adding a relief modular valve. Contact your agent for more information.

Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Nominal Diameter (Size)</th>
<th>Maximum Flow Rate (Size)</th>
<th>Pressure adjustment range (Size)</th>
<th>Weight</th>
<th>Gasket Surface Dimensions</th>
<th>JIS Symbol</th>
<th>Used Solenoid Valve Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIS-G03-AQ-**-21</td>
<td>3/8 150</td>
<td>35(357)</td>
<td>Type 1: 3.5 to 5 (35.7 to 255)</td>
<td>6.0</td>
<td>ISO 6264-AR-06-2-A</td>
<td>SS-G01-A3X-**-31</td>
<td></td>
</tr>
<tr>
<td>RIS-G06-AQ-**-21</td>
<td>3/4 320</td>
<td>35(357)</td>
<td>Type 3: 3.5 to 15 (35.7 to 255)</td>
<td>7.1</td>
<td>ISO 6264-AS-08-2-A</td>
<td>SS-G01-AR-**-31</td>
<td></td>
</tr>
<tr>
<td>RIS-G03-AR-**-21</td>
<td>3/8 150</td>
<td>35(357)</td>
<td>Type 3: 3.5 to 15 (35.7 to 255)</td>
<td>6.0</td>
<td>ISO 6264-AR-06-2-A</td>
<td>SS-G01-A3X-**-31</td>
<td></td>
</tr>
<tr>
<td>RIS-G06-AR-**-21</td>
<td>3/4 320</td>
<td>35(357)</td>
<td>Type 5: 3.5 to 35 (35.7 to 357)</td>
<td>8.1</td>
<td>ISO 6264-AS-08-2-A</td>
<td>SS-G01-AR-**-31</td>
<td></td>
</tr>
</tbody>
</table>

Shockless Type

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pipe Diameter</th>
<th>Weight</th>
<th>Applicable Pump Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIS-G03-3-F-**-21</td>
<td>3/8 150</td>
<td>7.0</td>
<td>ISO 6264-AR-06-2-A</td>
</tr>
<tr>
<td>RIS-G06-3-F-**-21</td>
<td>3/4 320</td>
<td>8.1</td>
<td>ISO 6264-AS-08-2-A</td>
</tr>
</tbody>
</table>

Note) For electrical specifications, see the SS type solenoid valve item on page E-1.

Handling

1. To adjust pressure, loosen the lock nut and then rotate the handle clockwise (rightward) to increase pressure or counterclockwise (leftward) to decrease it.
2. To adjust the time from onload to unload, loosen the lock nut and rotate the restrictor adjusting bolt clockwise (rightward) to make the time longer, or counterclockwise (leftward) to make it shorter.
3. Make sure that tank port back pressure is no greater than 0.2MPa (2.0kgf/cm²).
4. The "" before the design number in the model number of the solenoid valve used shows voltage. See the voltage symbols in the model number explanation.
5. A small control flow rate can cause pressure instability. Use a control flow rate that is at least 8 ℓ/min. Use a drain type relief valve in the case of a flow rate that is less than the minimum flow rate.
6. Use 90 to 110% of rated voltage.
7. Use the following table for specification when a sub plate is required. Maximum operating pressure is 25MPa (255kgf/cm²).
8. The following are the bundled mounting bolts.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Bolt Diameter</th>
<th>Tightening Torque N·m(kgf·cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIS-G03-**-21</td>
<td>M12 x 1.25</td>
<td>70 to 95 (96 to 769)</td>
</tr>
<tr>
<td>RIS-G06-**-21</td>
<td>M16 x 1.5</td>
<td>160 to 235 (1949 to 2400)</td>
</tr>
</tbody>
</table>

Note) For mounting bolts, use 12T or equivalent.

The coil surface temperature increases if this pump is kept continuously energized. Install the valve so there is no chance of it being touched directly by hand.
Understanding Model Numbers

RIS - G 06 - A Q 1 - (F) - C1 - 21

- Design number
- Voltage symbol
  - C1: AC100V 50/60Hz
  - C2: AC200V 50/60Hz
  - E1: AC100V 50/60Hz
  - E2: AC200V 50/60Hz
- Auxiliary symbol
  - F: With shock canceller
    (See shockless type item.)
- Pressure adjustment range: 1, 3, 5
- Stop position flow path
  - Q: Open
  - R: Blocked
- Operation method
  - A: Spring offset
- Nominal diameter (size)
- Mounting method
  - G: Gasket type
- RI Series solenoid controlled relieve valve
  (with SS type solenoid valve)

Installation Dimension Drawings

RI Series solenoid controlled relieve valve
(with SS type solenoid valve)

Model No. | A | B | C | D | E | F | G | H | J | a | b
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
RIS-G03-***-21 | 78 | 32 | 80 | 153 (160) | 106 | 31 | 53.8 | 13.1 | 53.8 | 20 | 14
RIS-G06-***-21 | 83 | 36 | 100 | 162 (169) | 119 | 37 | 66.7 | 15 | 70 | 26 | 17.5

Note: For gasket surface dimensions, see RI-G**-* on page F-5.
Seal Part List (Kit Model Numbers: Main REBS-***, Restrictor Valve DFS-01H)

<table>
<thead>
<tr>
<th>Component Parts</th>
<th>Part No.</th>
<th>Part Name</th>
<th>Nominal Diameter/Part Number</th>
<th>Q'ty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main</strong></td>
<td>22</td>
<td>O-ring</td>
<td>G03</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>O-ring</td>
<td>1B-P9</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>O-ring</td>
<td>1B-F10A</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>O-ring</td>
<td>1A-P11</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>O-ring</td>
<td>1B-P16</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>O-ring</td>
<td>1B-G25</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>O-ring</td>
<td>1B-G30</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Backup ring</td>
<td>T2-P10A</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>Backup ring</td>
<td>T2-G30</td>
<td>1</td>
</tr>
<tr>
<td><strong>Restrictor Valve</strong></td>
<td>46</td>
<td>O-ring</td>
<td>1B-P4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>47</td>
<td>O-ring</td>
<td>1B-P9</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>O-ring</td>
<td>1B-P12.5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>O-ring</td>
<td>T2-P16</td>
<td>1</td>
</tr>
</tbody>
</table>

**Note:**
1. O-ring 1A/1B-** refers to JIS B 2401-1A/1B-**.
2. For the *** part of the kit number, specify the valve size (G03, G06).
3. The restrictor valve kit is required only when a shockless valve is included.
4. SS (SA)-G01 pilot valve seal is available separately. For details, see pages E-11 (E-23).
Pressure Reducing (and Check) Valve

**Features**

1. This valve is used when part of the circuit uses pressure that is lower than the main circuit.
2. Even when pressure changes in the primary main circuit, the reduced secondary pressure is automatically and maintained at a constant level.
3. Connecting a remote control valve to the vent port allows remote control of adjustment pressure.
4. The mounting surface of the gasket conforms to the ISO standards shown in the table below.

**Specifications**

<table>
<thead>
<tr>
<th>Design number</th>
<th>Pressure adjustment range (MPa/ψ/min)</th>
<th>Gasket Surface Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>T/S R</td>
<td>Maximum Working Pressure (MPa/ψ/cm²)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight (kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gasket Surface Dimensions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ISO 5781-AG-06-2-A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ISO 5781-AH-08-2-A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ISO 5781-AJ-10-2-A</td>
<td></td>
</tr>
</tbody>
</table>

Weight values in parentheses are for when a check valve is included. The cracking pressure of the check valve is 0.1MPa (1.0kgf/cm²).

**Understanding Model Numbers**

Design number

- Pressure adjustment ranges 1, 3, A, B
- Mounting method
  - T: Screw connection type
  - G: Gasket type
- Nominal diameter (Size)
- Reducing valve
- Reducing and check valve

**Installation Dimension Drawings**

G-T***-21 (Screw Mounting)

- Pressure adjusting handle (Changeable to two other directions)
- MAX.104.5

**Model No.**

- G-T03*: 3/8
- G-T06*: 3/4
- G-T10*: 1 1/4

- Dimensions (mm)
  - Model No.: G-T03*: A 146, B 118.5, C 52, D 23, E 32.5, F 18
  - Model No.: G-T06*: A 174, B 148, C 66.5, D 27, E 64, F 24
  - Model No.: G-T10*: A 203.5, B 178.5, C 80.5, D 28, E 73, F 30

- Dimensions (mm)
  - Model No.: G-T03*: A 35, B 70, C 40, D 32, E 63, F 36, G 3/8
  - Model No.: G-T06*: A 47.5, B 95, C 50, D 37, E 73, F 54, G 3/4
  - Model No.: G-T10*: A 54, B 108, C 165.5, D 47.5, E 95, F 69, G 1 1/4

- Vent connection port
- Rc 1/4
- Rc 1/4 (Secondary pressure)
- Rc 1/4

**Note**

- For mounting bolts, use 12T or equivalent.

**Model No.**

- G-T03*: M10 x 75 4
- G-T06*: M10 x 85 4
- G-T10*: M10 x 105 6

- Dimensions (mm)
  - Model No.: G-T03*: A 17, B 29, C 52, D 63, E 47.5
  - Model No.: G-T06*: A 20, B 40, C 63, D 63, E 36, F 5/8
  - Model No.: G-T10*: A 23, B 48, C 80.5, D 108, E 165.5, F 47.5, G 95

- Pressure gauge attachment port

- Pressure gauge attachment port

- Note: For mounting bolts, use 12T or equivalent.
G-G**-**-21 (Gasket Mounting)

- Pressure adjusting handle
- Pressure gauge attachment port
  Rc 1/4 (Primary pressure)
- Pressure gauge attachment port
  Rc 1/4 (Secondary pressure)
- Vent connection port
  Rc 1/4
- Drain port
  Rc 1/4
- From back
  L - Ø17.5x1 counterbore
  Ø11 holes

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-G03**-21</td>
<td>146</td>
<td>118.5</td>
<td>62</td>
<td>45.1</td>
<td>52.5</td>
<td>19</td>
<td>35</td>
<td>70</td>
<td>60</td>
<td>88</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>G-G06**-21</td>
<td>174</td>
<td>148</td>
<td>82</td>
<td>51.4</td>
<td>64</td>
<td>24</td>
<td>40</td>
<td>80</td>
<td>70</td>
<td>102</td>
<td>4</td>
<td>70</td>
</tr>
<tr>
<td>G-G10**-21</td>
<td>203.5</td>
<td>178.5</td>
<td>102</td>
<td>54</td>
<td>73</td>
<td>30</td>
<td>51</td>
<td>102</td>
<td>92</td>
<td>122</td>
<td>6</td>
<td>92</td>
</tr>
</tbody>
</table>

Note) After the orientation of the pressure adjusting handle has been changed, also modify the cover alignment surface ring (1B-P6).

CG-T**-**-21 (Screw Mounting)

- Pressure adjusting handle
  (Changeable to one other direction)
- Pressure gauge attachment port
  Rc 1/4 (Primary pressure)
- Pressure gauge attachment port
  Rc 1/4 (Secondary pressure)
- Vent connection port
  Rc 1/4
- Drain port
  Rc 1/4
- 3- Rc "P"

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG-T03**-21</td>
<td>146</td>
<td>118.5</td>
<td>52</td>
<td>23</td>
<td>52.5</td>
<td>19</td>
<td>35</td>
<td>70</td>
<td>60</td>
<td>88</td>
<td>36</td>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td>CG-T06**-21</td>
<td>174</td>
<td>148</td>
<td>66.5</td>
<td>27</td>
<td>64</td>
<td>24</td>
<td>47.5</td>
<td>95</td>
<td>60</td>
<td>80</td>
<td>73</td>
<td>54</td>
<td>3/4</td>
</tr>
<tr>
<td>CG-T10**-21</td>
<td>203.5</td>
<td>178.5</td>
<td>80.5</td>
<td>28</td>
<td>73</td>
<td>30</td>
<td>108</td>
<td>58.5</td>
<td>80</td>
<td>95</td>
<td>69</td>
<td>1 1/4</td>
<td></td>
</tr>
</tbody>
</table>

Note) After the orientation of the pressure adjusting handle has been changed, also modify the cover alignment surface ring (1B-P6).
CG-G**-21 (Gasket Mounting)

Pressure adjusting handle

Pressure gauge attachment port
Rc 1/4
(Primary pressure)
Pressure gauge attachment port
Rc 1/4
(Secondary pressure)

IN
OUT

Dimensions mm

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG-G03*-21</td>
<td>146</td>
<td>118.5</td>
<td>62</td>
<td>45.1</td>
<td>52.5</td>
<td>19</td>
<td>35</td>
<td>89</td>
<td>60</td>
<td>88</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>CG-G06*-21</td>
<td>174</td>
<td>148</td>
<td>82</td>
<td>51.4</td>
<td>64</td>
<td>24</td>
<td>40</td>
<td>100</td>
<td>70</td>
<td>102</td>
<td>4</td>
<td>70</td>
</tr>
<tr>
<td>CG-G10*-21</td>
<td>203.5</td>
<td>178.5</td>
<td>152</td>
<td>54</td>
<td>73</td>
<td>30</td>
<td>51</td>
<td>131</td>
<td>92</td>
<td>122</td>
<td>6</td>
<td>92</td>
</tr>
</tbody>
</table>

Note) The orientation of the pressure adjusting handle cannot be change.

Sub Plate MG-***-20

Dimensions mm

| Model No. | AA   | BB   | CC   | DD   | EE   | FF   | GG   | HH   | JJ   | KK   | LL   | MM   | NN   | PP   | QQ   | RR   | SS   | TT   | UU   | VV   | WW   | XX   | YY   | ZH   |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| MG-03-20  | 128  | 106.4| 88   | 66.6 | 58.7 | 33.3 | 7.9  | 76   | 62   | 42.9 | 31.8 | -    | 21.4 | 7.2  | 3.5  | 21.5 | 35.7 | 39.5 | 4    | 14   | 11   | 30   | 3/8  | 1/2  |
| MG-03X-20 | 146  | 132.8| 102  | 79.3 | 72.9 | 39.7 | 6.4  | 110  | 82   | 60.3 | 44.5 | -    | 20.6 | 11.1 | 3.7  | 39.7 | 49.2 | 56.7 | 4    | 22   | 16   | 40   | 3/4  | 1    |
| MG-06-20  | 146  | 123.8| 102  | 79.3 | 72.9 | 39.7 | 6.4  | 110  | 82   | 60.3 | 44.5 | -    | 20.6 | 11.1 | 3.7  | 39.7 | 49.2 | 56.7 | 4    | 22   | 16   | 40   | 3/4  | 1    |
| MG-06X-20 | 160  | 136.1| 122  | 96.8 | 92.9 | 48.4 | 3.9  | 150  | 102  | 84.1 | 62.7 | 42.1 | 24.6 | 16.7 | 4.1  | 59.5 | 67.5 | 80.1 | 6    | 30   | 15   | 53   | 1/4a | 1/2  |
| MG-10-20  | 160  | 136.1| 122  | 96.8 | 92.9 | 48.4 | 3.9  | 150  | 102  | 84.1 | 62.7 | 42.1 | 24.6 | 16.7 | 4.1  | 59.5 | 67.5 | 80.1 | 6    | 30   | 15   | 53   | 1/4a | 1/2  |
| MG-10X-20 | 160  | 136.1| 122  | 96.8 | 92.9 | 48.4 | 3.9  | 150  | 102  | 84.1 | 62.7 | 42.1 | 24.6 | 16.7 | 4.1  | 59.5 | 67.5 | 80.1 | 6    | 30   | 15   | 53   | 1/4a | 1/2  |
Performance Curves

Hydraulic Operating Fluid Viscosity 32mm²/s

Pressure Loss Characteristics
(C)G-G03-*-21

(C)G-T03-*-21

(C)G-G06-*-21

(C)G-T06-*-21

Secondary Pressure – Flow Rate Characteristics
(C)G-***-*-21

Pressure – Drain Flow Rate Characteristics
(C)G-G06-*-21

(C)G-T06-*-21

(C)G-G10-*-21

(C)G-T10-*-21

Secondary Pressure – Flow Rate Characteristics
(C)G-*03_A-21B
Cross-sectional Drawing

(C)G-G**-A_B-21

Part No. | Part Name
---|---
1 | Body
2 | Cover
3 | Cover
4 | Piston
5 | Spring
6 | Handle
7 | Nut
8 | Retainer
9 | Spring pin
10 | Push rod
11 | Spring
12 | Poppet
13 | Seal
14 | Collar
15 | Poppet
16 | Spring
17 | Spring guide
18 | Screw
19 | Plug
20 | Plug
21 | O-ring
22 | O-ring
23 | O-ring
24 | O-ring
25 | O-ring
26 | O-ring
27 | Nameplate

Note: Part numbers 15, 16, 17, and 25 are not required when there is no check valve.

Seal Part List (Kit Model Number RGBS-***)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Part Name</th>
<th>Part Number</th>
<th>Q'ty</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>O-ring</td>
<td>1B-P22</td>
<td>1B-P22</td>
</tr>
<tr>
<td>22</td>
<td>O-ring</td>
<td>1B-P20</td>
<td>–</td>
</tr>
<tr>
<td>23</td>
<td>O-ring</td>
<td>1B-P12</td>
<td>1B-P12</td>
</tr>
<tr>
<td>24</td>
<td>O-ring</td>
<td>1A-P11</td>
<td>1A-P11</td>
</tr>
<tr>
<td>25</td>
<td>O-ring</td>
<td>1B-P11</td>
<td>1B-P11</td>
</tr>
<tr>
<td>26</td>
<td>O-ring</td>
<td>1B-P6</td>
<td>1B-P6</td>
</tr>
</tbody>
</table>

Note: O-ring 1A/B-** refers to JIS B2401 1A/B-**.

*** in the kit number is used for specification of the valve size (G03, T06, etc.) To specify inclusion of a check valve, add C to the end.
NACHi

BALANCING VALVE (PRESSURE REDUCING AND RELIEF VALVE)

Balancing Valve (Pressure Reducing and Relief Valve)

30 to 50 l/min 14MPa

Features

1. 2-in-1 operation allows a simpler circuit configuration.
2. Combination valve that provides both pressure reducing and counter balance functions.

Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Nominal Diameter (Size)</th>
<th>Minimum Working Pressure (MPa)</th>
<th>Maximum Flow Rate P/min</th>
<th>Pressure adjustment range MPa(kgf/cm²)</th>
<th>Weight (kg)</th>
<th>Gasket Surface Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>GR-G01-A1-20 A2</td>
<td>1/8</td>
<td>0.8 to 7 (71.4) 3.5 to 14 (53.57)</td>
<td>60</td>
<td>30 to 50</td>
<td>1.5</td>
<td>ISO 4401-03-02-0-94</td>
</tr>
<tr>
<td>GR-G03-A1-B(20) A2</td>
<td>3/8</td>
<td>1.0 to 7 (71.4) 3.5 to 14 (53.57)</td>
<td>60</td>
<td>50</td>
<td>3.5</td>
<td>ISO 4401-05-04-0-94</td>
</tr>
</tbody>
</table>

Understanding Model Numbers

- Design number
  - Note: For 03 size, relationship between mounting bolts and design number is indicated as J20: M6, 20: M8.
- Auxiliary symbol
  - B: External drain (03 size only)
  - K: With handle
- Control port: A port
- Nominal diameter (size)
- Mounting method: G. Gasket type
- Balancing valve

Installation Dimension Drawings

- GR-G01-A*-20
- GR-G03-A*-B-20

Adjusting Handle (Option)

- Lock nut
- Adjusting handle

- Note) For mounting bolts, use 12T or equivalent.

Handling

1. To adjust pressure, loosen the lock nut and then rotate the adjusting screw (bolt) clockwise (rightward) to increase pressure or counterclockwise (leftward) to decrease it.
2. For the 01 size, draining is from the gasket side B port.
3. For the drain of a 03 size valve when auxiliary symbol B is specified, run a pipe from the drain discharge port directly to the tank. The drain discharge port can also be plugged for direct draining from the gasket side B port. In the case of modification, be sure to change the valve type marking on the nameplate. When using drain piping, use a tightening torque of 22 to 25N•m (215 to 245kgf•cm) for pipe joints.
4. The drain of 03 size valve that does not have a B auxiliary symbol can be directly from the T port.
5. Make sure that drain back pressure is no greater than 0.2MPa (2.0kgf/cm²).
6. When an adjustment handle is required for pressure adjustment block, insert K for the type specification.
7. Use the following table for specification when a sub plate is required.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pipe Outlet Size</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSA-01Y-10</td>
<td>3/8</td>
<td>1.2</td>
</tr>
<tr>
<td>MS-03-30</td>
<td>3/8</td>
<td>3.8</td>
</tr>
<tr>
<td>MS-03X-30</td>
<td>1/2</td>
<td></td>
</tr>
</tbody>
</table>

The following are the bundled mounting bolts.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Bolt Size</th>
<th>Diameter (mm)</th>
<th>Diameter (inch)</th>
<th>Tightening Torque (N•m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GR-G01-A*-20</td>
<td>M5 x 45</td>
<td>5.0 (0.20)</td>
<td>1/8</td>
<td>5 to 7 (51 to 71)</td>
</tr>
<tr>
<td>GR-G03-A*-30</td>
<td>M8 x 30</td>
<td>8.0 (0.31)</td>
<td>5/16</td>
<td>20 to 25 (205 to 255)</td>
</tr>
<tr>
<td>GR-G03-A*-J20</td>
<td>M6 x 50</td>
<td>6.35 (0.25)</td>
<td>5/32</td>
<td>10 to 13 (102 to 133)</td>
</tr>
</tbody>
</table>

Note) 1. For size 03, an escape valve with piping from the drain discharge port is standard for the drain (GR-G03-A*-B-20).
   - To change from internal drain to external drain, install a plug (NPTF 1/16) in part S, and remove the drain discharge port plug (RC 1/4).
   - To change from external drain to internal drain, install a plug (RC 1/4) into the drain discharge port, and remove the S part plug (NPTF 1/16).
   - In this case, however, the B port cannot be used as the tank port.
2. Dimensions in parentheses show dimensions with handle (K type).
### Performance Curves

**Pressure – Flow Rate Characteristics**

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

**Hydraulic Operating Fluid Viscosity 32mm²/s**

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

### Cross-sectional Drawing

**GR-G01-A*-20**

Note: O-ring 1A/B-** refers to JIS B2401-1A/B-**.

<table>
<thead>
<tr>
<th>Seal Part List (Kit Model Number RJBS-G01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No.</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>16</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
<td>18</td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td>20</td>
</tr>
</tbody>
</table>

**GR-G03-A*-B-20**

<table>
<thead>
<tr>
<th>Seal Part List (Kit Model Number RJBS-G03)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No.</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>21</td>
</tr>
<tr>
<td>22</td>
</tr>
<tr>
<td>23</td>
</tr>
<tr>
<td>24</td>
</tr>
</tbody>
</table>
Features

1. This circuit control valve works as a sequence valve, unloading valve, and counter balance valve.
2. Maximum operating pressure is 21MPa (214kgf/cm²).
3. Though a direct type valve, there is little pressure override.
4. The mounting surface of the gasket conforms to the ISO standards shown in the table below.

Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Screw Mounting</th>
<th>Nominal Diameter (Size)</th>
<th>Pressure Control (and Check) Valve</th>
<th>Weight (kg)</th>
<th>Gasket Surface Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>(C)Q-T03-3/8-A-21</td>
<td>B C D E</td>
<td>Type A</td>
<td>0.25 to 0.85</td>
<td>2.9 (3.1)</td>
<td>ISO 5781-AG-03-2-A</td>
</tr>
<tr>
<td>(C)Q-G03-3/8-A-21</td>
<td>B C D E</td>
<td>Type C</td>
<td>0.6 to 2.3</td>
<td>5.2 (6.0)</td>
<td>ISO 5781-AG-03-2-A</td>
</tr>
<tr>
<td>(C)Q-G06-3/8-A-21</td>
<td>B C D E</td>
<td>Type D</td>
<td>1.7 to 7</td>
<td>9.0 (11.5)</td>
<td>ISO 5781-AG-03-2-A</td>
</tr>
</tbody>
</table>

Weight values in parentheses are for when a check valve is included. The cracking pressure of the check valve is 0.1MPa (1.0kgf/cm²).

Example circuit 1
When using type 2.

Example circuit 2
When using type 3.

Handleing

1. To adjust pressure, loosen the lock nut and then rotate the adjusting bolt clockwise (rightward) to increase pressure or counterclockwise (leftward) to decrease it.
2. The pressure adjustment range is expressed in terms of cracking pressure.
3. Run the output port of Type 1 and 4 directly to the tank.
4. The following describes the method for using Types 2 and 3. Application of back pressure to the valve output side such as in the example circuit shown below, use Type 2 or Type 3 and run the drain port directly to the tank.
5. When two or more of these valves are ganged in sequence, make sure the setting pressure (cracking pressure) differential between them is at least 1MPa (10.2kgf/cm²).
6. For Type 1, there is no Type E pressure adjustment range (C)Q-***-1E-21.
7. Type 2 is standard. When Type 1, 3, or 4 is required, make modifications in accordance with the modification manual that comes with the product and with the figures on the next page. Modifications change the valve type, so be sure to change the markings on the nameplate.
8. Use the following table for specification when a sub plate is required.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pipe Diameter (Size)</th>
<th>Weight (kg)</th>
<th>Applicable Pump Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>MG-03-20</td>
<td>3/8</td>
<td>1.6</td>
<td>(C)Q-G03-***-21</td>
</tr>
<tr>
<td>MG-03X-20</td>
<td>1/2</td>
<td>3.9</td>
<td>(C)Q-G06-***-21</td>
</tr>
<tr>
<td>MG-06-20</td>
<td>3/4</td>
<td>6.7</td>
<td>(C)Q-G10-***-21</td>
</tr>
<tr>
<td>MG-06X-20</td>
<td>1</td>
<td>6.7</td>
<td>(C)Q-G10-***-21</td>
</tr>
</tbody>
</table>

Note) These sub plates can also be used for reducing valves.

Understanding Model Numbers

(C)Q ~ G 10 ~ 1 B ~ 21
- Design number
- Pressure adjustment range A, B, C, D, E
- Nominal diameter (size)
- Mounting method T: Screw connection G: Gasket type
- Pressure control valve
- Pressure control and check valve

Note) For mounting bolts, use 12T or equivalent.
Installation Dimension Drawings

Type 1

CQ-T**-2*.-21 (Screw Mounting)

Type 3

CQ-G**-2*-21 (Gasket Mounting)

Type 4

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>CQ-T03-**-21</td>
<td>179.5</td>
<td>58</td>
<td>88</td>
<td>58</td>
<td>23</td>
<td>81.5</td>
<td>19</td>
<td>64</td>
<td>40</td>
<td>70</td>
<td>35</td>
<td>63</td>
<td>61</td>
<td>76</td>
<td>38</td>
</tr>
<tr>
<td>CQ-T06-**-21</td>
<td>204.5</td>
<td>69.5</td>
<td>101.5</td>
<td>81.5</td>
<td>27</td>
<td>75</td>
<td>24</td>
<td>110</td>
<td>55</td>
<td>86</td>
<td>47.5</td>
<td>75</td>
<td>92.5</td>
<td>54</td>
<td>34</td>
</tr>
<tr>
<td>CQ-T10-**-21</td>
<td>251</td>
<td>83.5</td>
<td>132.5</td>
<td>87.5</td>
<td>28</td>
<td>89</td>
<td>30</td>
<td>148.5</td>
<td>108</td>
<td>54</td>
<td>95</td>
<td>62.5</td>
<td>69</td>
<td>1 1/4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>Q</th>
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<tbody>
<tr>
<td>CQ-G03-**-21</td>
<td>179.5</td>
<td>146</td>
<td>62</td>
<td>45.1</td>
<td>61.5</td>
<td>19</td>
<td>89</td>
<td>35</td>
<td>88</td>
<td>60</td>
<td>4</td>
<td>60</td>
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<tr>
<td>CQ-G06-**-21</td>
<td>204.5</td>
<td>171</td>
<td>82</td>
<td>51.4</td>
<td>75</td>
<td>24</td>
<td>100</td>
<td>40</td>
<td>102</td>
<td>70</td>
<td>4</td>
<td>70</td>
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<tr>
<td>CQ-G10-**-21</td>
<td>251</td>
<td>216</td>
<td>102</td>
<td>54</td>
<td>89</td>
<td>30</td>
<td>131</td>
<td>51</td>
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<td>92</td>
<td>6</td>
<td>92</td>
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</tr>
</tbody>
</table>
Sub Plate MG-***-20

Pressure Control Valve

Note 1) The figure shows size 10(X), with four M10 tap holes for size 03(X) and 06(X) valve mounting bolts.

Note 2) When a valve cover external drain and external pilot port are used, remove the plugs from the sub plate external drain and external pilot port.

Model No. AA BB CC DD EE FF GG HH JI JJ KK LL MM NN PP QQ RR SS TT UU VV WW XX YY
MG-03-20 128 106.4 88 86.6 58.7 33.3 7.9 76 62 42.9 31.8 – 21.4 7.2 3.5 21.4 35.7 39.5 4 14 11 30 3/8
MG-03X-20 160 123.8 102 79.3 72.9 39.7 6.4 110 82 60.3 44.5 – 20.6 11.1 3.7 39.7 49.2 56.7 4 22 16 40 3/4
MG-06-20 160 138.1 122 96.8 92.9 48.4 3.9 150 102 84.1 62.7 42.1 24.6 16.7 4.1 59.5 67.5 80.1 6 30 16 53 1
MG-06X-20 160 138.1 122 96.8 92.9 48.4 3.9 150 102 84.1 62.7 42.1 24.6 16.7 4.1 59.5 67.5 80.1 6 30 16 53 11/2
MG-10-20 160 138.1 122 96.8 92.9 48.4 3.9 150 102 84.1 62.7 42.1 24.6 16.7 4.1 59.5 67.5 80.1 6 30 16 53 1
MG-10X-20 160 138.1 122 96.8 92.9 48.4 3.9 150 102 84.1 62.7 42.1 24.6 16.7 4.1 59.5 67.5 80.1 6 30 16 53 1

Performance Curves

Hydraulic Operating Fluid Viscosity 32mm²/s

(C)Q-T03-**-21

(C)Q-T06-**-21

(C)Q-T10-**-21

(C)Q-G03-**-21

(C)Q-G06-**-21

(C)Q-G10-**-21
Pressure – Flow Rate Characteristics

(C)Q-*03-2A-21

(C)Q-*03-2B-21

(C)Q-*03-2C-21

(C)Q-*03-2D-21

(C)Q-*03-2E-21

(C)Q-*06-2A-21

(C)Q-*06-2B-21

(C)Q-*06-2C-21

Pressure – Flow Rate  Characteristics

Press rise

Pressure drop

Pressure

Flow rate

Pressure

Flow rate

Pressure

Flow rate

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Pressure – Flow Rate Characteristics

(C)Q-*06-2D-21

(C)Q-*06-2E-21

(C)Q-*10-2A-21

(C)Q-*10-2B-21

(C)Q-*10-2C-21

(C)Q-*10-2D-21

(C)Q-*10-2E-21
Cross-sectional Drawing

CQ-G**-**-21

Note) The illustration shows the configuration for pressure adjustment ranges Type C, Type D, and Type E. For Type A and Type B, the #6 piston is eliminated, and the #4 spool and #5 spring are different.

Seal Part List (Kit Model Number RQBS-***(C))

<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>19</td>
<td>O-ring</td>
<td>1B-P22</td>
<td>1B-P22</td>
</tr>
<tr>
<td>20</td>
<td>O-ring</td>
<td>1B-P6</td>
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<td>1B-P6</td>
<td>1B-P6</td>
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<tr>
<td>21</td>
<td>O-ring</td>
<td>1B-P11</td>
<td>1B-P16</td>
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<tr>
<td>22</td>
<td>O-ring</td>
<td>1B-P20</td>
<td>1B-P26</td>
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<tr>
<td>23</td>
<td>O-ring</td>
<td>1B-P12</td>
<td>1B-P12</td>
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<tr>
<td>24</td>
<td>O-ring</td>
<td>1B-P11</td>
<td>1B-P14</td>
</tr>
</tbody>
</table>

Note) O-ring 1B-** refers to JIS B2401-1B-**.

For the *** part of the kit number, specify the valve size (G03, T06). To specify inclusion of a check valve, add C to the end.

Note) Part numbers 11, 12, 13, and 24 are not required when there is no check valve.