**Flow Control Valve**

**Throttle (and Check) Valve**

- **Features**
  1. Compact and lightweight, requires very little space for installation.
  2. Special needle valve configuration provides smooth flow rate control.
  3. Pressure is internally balanced for light handle operation, even at high pressure.

**Specifications**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Nominal Diameter (Size)</th>
<th>Maximum Flow Rate ℓ/min</th>
<th>Cracking pressure MPa(kgf/cm²)</th>
<th>Maximum Working Pressure MPa(kgf/cm²)</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw Mounting</td>
<td>Gasket Mounting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(C)FR-T03-10</td>
<td>(C)FR-G03-10</td>
<td>3/8</td>
<td>30</td>
<td>0.15(1.5)</td>
<td>1.3</td>
</tr>
<tr>
<td>(C)FR-T06-10</td>
<td>(C)FR-G06-10</td>
<td>3/4</td>
<td>75</td>
<td>0.1 (1.0)</td>
<td>3.0</td>
</tr>
<tr>
<td>(C)FR-T10-10</td>
<td>(C)FR-G10-10</td>
<td>1¼</td>
<td>190</td>
<td>21(214)</td>
<td>5.6</td>
</tr>
</tbody>
</table>

**Handling**

1. The control flow rate is increased by counter clockwise (leftward) rotation of the flow rate control handle.
2. The control flow rate does not become zero even if the handle is fully turned.
3. There is no pressure or temperature compensation mechanism.
4. Bi-directional restriction is possible when there is no check valve.
5. Use the table to the right for specification when a sub plate is required.
6. See the table to the right for installation hex socket bolts. However, bolts are not included for a screw mounting type.

**Applicable Pump Model**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Bolt Size</th>
<th>Q’ty</th>
<th>Tightening Torque N·m(kgf·cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(C)FR-G03-10</td>
<td>M8 × 65ℓ</td>
<td>4</td>
<td>20 to 25 (205 to 255)</td>
</tr>
<tr>
<td>(C)FR-G06-10</td>
<td>M12 × 75ℓ</td>
<td>4</td>
<td>75 to 95 (765 to 969)</td>
</tr>
<tr>
<td>(C)FR-G10-10</td>
<td>M14 × 90ℓ</td>
<td>4</td>
<td>120 to 150 (1220 to 1530)</td>
</tr>
</tbody>
</table>

**Note:** For mounting bolts, use bolts of 12.9 strength classification or equivalent.

**Sub Plate**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Pipe Diameter</th>
<th>Recommended Flow Rate ℓ/min</th>
<th>Weight kg</th>
<th>Applicable Valve Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFR-03-10</td>
<td>3/8</td>
<td>30</td>
<td>1.0</td>
<td>(C)FR-G03-10</td>
</tr>
<tr>
<td>MFR-06-10</td>
<td>3/4</td>
<td>75</td>
<td>2.2</td>
<td>(C)FR-G06-10</td>
</tr>
<tr>
<td>MFR-10-10</td>
<td>1¼</td>
<td>190</td>
<td>4.1</td>
<td>(C)FR-G10-10</td>
</tr>
</tbody>
</table>

**Explanation of model No.**

(C)FR – G 03 – 10

- Design number
- Nominal diameter (size)
- Mounting method: T: Screw Mounting, G: Gasket Mounting
- Throttle valve
- Throttle and check valve
Installation Dimension Drawings

(C)FR-T**-10 (Screw Mounting)

(C)FR-G**-10 (Gasket Mounting)

Model Number | LA | LB | LC | LD | LE | LF | LG | LH | LI | LJ | LL | BA | BB | BC | BE | HA | HB | HC | HD | HE | HF | HG | HH
(C)FR-G03-10 | 130.5 | 85 | 45 | 15 | 65 | 10 | 45 | 35 | 22.5 | 5 | 10 | 45 | 100 | 80 | 60 | 40 | 20 | 63 | 60 | 52 | 40 | 25 | 20 | 8.6 | 18
(C)FR-G05-10 | 175.5 | 123 | 52 | 14 | 96 | 13 | 70 | 55 | 35 | 15 | 14 | 68 | 132 | 106 | 80 | 54 | 27 | 71 | 68 | 57 | 40 | 30 | 25 | 13 | 20
(C)FR-G10-10 | 206.5 | 150 | 56 | 14 | 120 | 15 | 90 | 72.5 | 45 | 17.5 | 16 | 88 | 154 | 122 | 90 | 60 | 30 | 83 | 80 | 68 | 45 | 40 | 35 | 15.2 | 25

Sub Plate MFR-**-10

DB | DC | DD | MA | MB | SA | SB | SC
---|---|---|---|---|---|---|---|
14 | 8.8 | 12 | 8 | 3/8 | 7 | 6 | 1
20 | 13 | 20 | 12 | 3/4 | 10 | 9 | 1
23 | 15 | 30 | 14 | 1 1/4 | 14 | 12 | 2
Flow Control Valve

**Performance Curves**

**Stroke – Flow Rate Characteristics**

- **(C)FR-*03-10**
- **(C)FR-*06-10**
- **(C)FR-*10-10**

**Pressure Loss Characteristics**

- **(C)FR-*03-10**
- **(C)FR-*06-10**
- **(C)FR-*10-10**

**Cross-sectional Drawing**

CFR-G**-10

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

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Part Name</th>
<th>CFR-G03-10 Q’ty</th>
<th>CFR-G06-10 Q’ty</th>
<th>CFR-G10-10 Q’ty</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>O-ring</td>
<td>NBR-90 P8</td>
<td>NBR-90 P8</td>
<td>NBR-90 F8</td>
</tr>
</tbody>
</table>

Note: The materials and hardness of the O-ring conforms with JIS B2401.

*** in the kit number is used for specification of the valve size (G03, T06, etc.)