RB 1700 - 3/4”
Commercial & Industrial Regulator

The RB 1700 regulator is designed for commercial applications, appliance pressure regulation, secondary regulation of plant distribution piping, and all installations with continuous consumption and rapid flow rate variations, such as burners, industrial ovens, boilers, etc.

**DESCRIPTION**
The RB 1700 model is a direct-acting, spring-loaded regulator with an optional built-in safety shut-off device. Its balanced valve design ensures constant outlet pressure when the upstream pressure varies. An optional built-in shut-off valve offers protection against over-pressure and over-and under-pressure. Its bypass system eases the shut-off valve relatching.

**Technical Features**
- Inlet pressure: 19 bar
- Outlet pressure: 0.1 bar - 4.8 bar
- Accuracy & lock-up pressure: Up to AC 10 / up to SG 20
- Operating temperature: -20°C to +60°C
- Ambient temperature: -30°C to +60°C (body material)
- Acceptable gases: Natural gas, town gas, propane, butane, air, nitrogen or any non-corrosive gas
- Safety devices: Optional built-in safety shut-off valve: over-pressure shut-off (OPSO) and under-pressure shut-off (UPSO)

**Sizes & Connections**
- Body sizes: 3/4”
- Connections: Parallel internal thread according to ISO 7-1, ISO 228-1 or NPT

**Materials**
- Body: Spheroidal graphite cast iron EN 1563 grade EN-GJS-400-15
- Head: Pressed steel UNI EN 10025
- Internal parts: Stainless steel and brass
- Seals: Nitrile rubber
- Diaphragm: Synthetic rubber with fabric reinforcement

**KEY BENEFITS**
- High flow accuracy
- Easy maintenance
- Rugged construction for durability
- Balanced valve design eliminates inlet pressure effect
- EN 334 compliant

**Operational Diagram**
Accuracy class (AC), lock-up pressure class (SG) and lock-up pressure zone:
- RB 172x 0.1 - 0.4 bar AC 20 / SG 30
- RB 172x 0.4 - 1.3 bar AC 10 / SG 20
- RB 173x 0.5 - 2.5 bar AC 10 / SG 20

The typical lock-up pressure zone is:
Qmin, Pu 2.5
Qmax, Pu 100

Inlet Pressure
Outlet Pressure
SAFETY SHUT-OFF VALVE
The RB 1700 Series regulators can be fitted with a safety shut-off valve for over-pressure (OPSO) or combined under-and over-pressure (UPSO/OPSO) protection. The SSV trip pressure can easily be adjusted independently of the regulator set point. The closing plug of the SSV controller is used as a pulling tool to relatch the valve.

A built-in bypass, for balancing pressure before relatching the safety shut-off valve, is operated by pulling the valve stem.

Accuracy class (AG)
- 0.3 - 5.7 bar AG 10

Minimum difference between regulator and SSV settings (ΔPw):
- 15%, of set point

OUTLET PRESSURE RANGE
Regulator 3/4" Spring Code | Spring Characteristic | Spring Range
--- | --- | ---
20565141 | 3.5 35 80 8 0.12 - 0.40 bar | •
20565142 | 4 35 80 8 0.21 - 0.65 bar | •
20565143 | 4.5 35 80 8 0.34 - 0.92 bar | •
20565144 | 5 35 80 8 0.55 - 1.32 bar | •
20565127 | 3.5 35 50 6 0.50 - 0.85 bar | •
20565128 | 4 35 50 6 0.80 - 1.30 bar | •
20565129 | 4.5 35 50 6 1.20 - 2.30 bar | •
20565130 | 4.5 35 60 6.5 2.00 - 3.30 bar | •
20565131 | 5 35 60 6.5 2.00 - 4.80 bar | •

Safety Shut-off Valve
Over Pressure Shut-off Springs (OPSO)

<table>
<thead>
<tr>
<th>Spring Code</th>
<th>Spring Characteristic</th>
<th>Spring Range</th>
</tr>
</thead>
</table>
| 20563124 | 2.2 25 35 5.5 0.30 - 0.60 bar | •
| 20563121 | 2.5 25 35 5 0.50 - 1.10 bar | •
| 20563115 | 3 25 35 5.5 1.10 - 2.10 bar | •
| 20563116 | 3.5 25 35 5.5 2.00 - 4.00 bar | •
| 20563119 | 3.8 25 36.5 5.5 4.00 - 5.70 bar | •

Under-Pressure Shut-off Springs (UPSO)

<table>
<thead>
<tr>
<th>Spring Code</th>
<th>Spring Characteristic</th>
<th>Spring Range</th>
</tr>
</thead>
</table>
| 20560516 | 1 10 30 5.5 0.10 - 0.22 bar | •
| 20560517 | 1.2 10 30 5 0.22 - 0.45 bar | •

FLOW CAPACITY
The following table gives the maximum flow capacity - in m³/h at standard conditions. More data are available in the leaflet “RB 1700 Capacity Tables”.

<table>
<thead>
<tr>
<th>Inlet Pressure</th>
<th>RB 1720 150 mbar</th>
<th>RB 1720 300 mbar</th>
<th>RB 1720 500 mbar</th>
<th>RB 1720 0.8 bar</th>
<th>RB 1720 2 bar</th>
<th>RB 1720 4 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 mbar</td>
<td>9</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>500 mbar</td>
<td>17</td>
<td>16</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>700 mbar</td>
<td>20</td>
<td>22</td>
<td>19</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>1 bar</td>
<td>26</td>
<td>30</td>
<td>30</td>
<td>10</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>1.5 bar</td>
<td>32</td>
<td>38</td>
<td>44</td>
<td>20</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>3 bar</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>36</td>
<td>34</td>
<td>•</td>
</tr>
<tr>
<td>5 bar</td>
<td>50</td>
<td>70</td>
<td>100</td>
<td>50</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>7 bar</td>
<td>50</td>
<td>70</td>
<td>140</td>
<td>70</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>≥ 10 bar</td>
<td>50</td>
<td>70</td>
<td>170</td>
<td>95</td>
<td>110</td>
<td>140</td>
</tr>
</tbody>
</table>

In order to limit the noise emission it is recommended not to exceed a gas velocity of 100 m/s at the regulator outlet.
FLOW CAPACITY
For a 0.6 specific gravity gas, the wide-open orifice flow (Q) may be calculated using the following equations:

- Sub-critical flow behaviour: \( Q = K_G V_P (P_u - P_d) \) where \( |P_u - P_d| \leq 0.5 P_u \)
- Critical flow behaviour: \( Q = K_G \frac{P_u}{2} \) where \( |P_u - P_d| > 0.5 P_u \)

Wide-open Flow Coefficient KG
90 (without safety shut-off valve)

Overall Dimensions

<table>
<thead>
<tr>
<th>DN</th>
<th>Actuator</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>G (mm)</th>
<th>Weight (kg) with SSV</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot;</td>
<td>Ø 165</td>
<td>100</td>
<td>185</td>
<td>32</td>
<td>165</td>
<td>60</td>
<td>46</td>
<td>3.0</td>
<td>4.0</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Ø 90</td>
<td>100</td>
<td>175</td>
<td>32</td>
<td>90</td>
<td>60</td>
<td>46</td>
<td>2.2</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Vent and Sensing Lines

- Regulator sensing line: internal
- Regulator vent line: G 1/2” as option
- SSV sensing line: internal
- SSV vent line: Rp 1/8

Type Designation

<table>
<thead>
<tr>
<th>R B I 1 7</th>
<th>X</th>
<th>X</th>
<th>- DN</th>
<th>X</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>Medium pressure</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>High pressure</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>No safety device</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>Over-pressure shut-off valve</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>Over-and under-pressure shut-off valve</td>
</tr>
</tbody>
</table>

where:

\[ Q = \text{volumetric flow rate in } m^3/h \text{ at standard conditions} \]

\[ P_u = \text{absolute inlet pressure in bar} \]

\[ P_d = \text{absolute outlet pressure in bar} \]

Information to be specified when ordering:

- Regulator type code
- Minimum and maximum inlet pressures
- Outlet pressure range setting
- Outlet pressure setting
- Connection type
  - OPSO setting*
  - UPSO setting*

* if requested
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