Solenoid actuator MB 7

- Robust design for a long service life
- Simple installation using fastening set
- Valve disc position indicator
- Burner output adjustment by integrated air volume control for minimum and maximum flow rate
- Suitable for intermittent operation due to large number of operating cycles
1 Application

Solenoid actuator MB 7 indicates the position of the valve disc. The air volumes for low and high fire can be controlled independently.

Due to the large number of operating cycles of solenoid actuator MB 7, the butterfly valve BVHM is suitable for intermittent operation.

See Technical Information BV., IB...

The solenoid actuator MB 7 serves as a drive for the butterfly valve BVHM. The unit made up of solenoid actuator MB 7 and butterfly valve BVHM can be used for staged control of industrial installations in cold or hot air operating mode.
1.1 Application examples

1.1.1 Cooling air for bogie hearth furnace

A fan introduces additional cooling air into the furnace through air nozzles. The air volume is controlled by the solenoid actuator MB 7 without damping unit and the butterfly valve BVHM.

1.1.2 Large number of operating cycles for intermittent operation

Solenoid actuator MB 7 with butterfly valve BVHM is suitable for intermittent operation. The air volumes for low and high fire can be set independently on the solenoid actuator MB 7.
The air supply to the forging furnace is controlled by the solenoid actuator MB 7 with slow opening and slow closing damping unit in conjunction with the butterfly valve BVHM. Since the valve disc is provided with a stop, the oxygen level in the furnace atmosphere is reduced in order to prevent scale formation on the material to be treated to an even larger extent.
2 Certification
Certificates – see www.docuthek.com

EU certified

- 2014/35/EU (LVD), Low Voltage Directive
- 2014/30/EU (EMC), Electromagnetic Compatibility Directive

Eurasian Customs Union

The products MB 7 meet the technical specifications of the Eurasian Customs Union.
3 Function

The solenoid actuator MB 7 is tailored to the butterfly valve BVHM. Via a coupling pin and ring, the solenoid actuator moves the butterfly valve to the Open or Closed position, see page 10 (Fastening set). The position of the valve can be read on a valve disc position indicator on the outside of the solenoid actuator.

In the event of a mains voltage failure, the solenoid actuator closes the butterfly valve. This prevents air from flowing into the furnace without being under control.

The solenoid actuator can be supplied in three versions:
- MB 7N: quick opening, quick closing,
- MB 7R: slow opening, slow closing, for High/Low control,
- MB 7L: slow opening, quick closing, for On/Off control.

3.1 Connection diagram

Wiring to EN 60204-1.

The actuator with butterfly valve is closed when de-energized.

**MB 7..3 with cable gland**

L1 (+)  
N (-)

**MB 7..6 with standard socket**

1 = N (-)  
2 = L1 (+)
4 Selection

4.1 ProFi

A web app selecting the correct product is available at www.adlatus.org.

4.2 Type code

<table>
<thead>
<tr>
<th>MB</th>
<th>Solenoid actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Actuator size 7 for DN 40-100</td>
</tr>
<tr>
<td>N</td>
<td>Quick opening, quick closing</td>
</tr>
<tr>
<td>R</td>
<td>Slow opening, slow closing</td>
</tr>
<tr>
<td>L</td>
<td>Slow opening, quick closing</td>
</tr>
<tr>
<td>W</td>
<td>Mains voltage 230 V AC, 50/60 Hz</td>
</tr>
<tr>
<td>Q</td>
<td>Mains voltage 120 V AC, 50/60 Hz</td>
</tr>
<tr>
<td>K</td>
<td>Mains voltage 24 V DC</td>
</tr>
<tr>
<td>3</td>
<td>Terminal connection box, IP 65</td>
</tr>
<tr>
<td>6</td>
<td>Connection box with 3-pin standard socket, IP 65</td>
</tr>
</tbody>
</table>

4.3 Differential pressure

The actuators with butterfly valve are designed for the following maximum differential pressures $\Delta p$:

<table>
<thead>
<tr>
<th>Type</th>
<th>Max. inlet pressure $p_u$</th>
<th>max. $\Delta p_{100}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB 7 + BVHM 40</td>
<td>150 mbar (2.18 psi)</td>
<td>150 mbar (2.18 psi)</td>
</tr>
<tr>
<td>MB 7 + BVHM 50</td>
<td>150 mbar (2.18 psi)</td>
<td>130 mbar (1.88 psi)</td>
</tr>
<tr>
<td>MB 7 + BVHM 65</td>
<td>150 mbar (2.18 psi)</td>
<td>95 mbar (1.38 psi)</td>
</tr>
<tr>
<td>MB 7 + BVHM 80</td>
<td>150 mbar (2.18 psi)</td>
<td>55 mbar (0.80 psi)</td>
</tr>
<tr>
<td>MB 7 + BVHM 100</td>
<td>150 mbar (2.18 psi)</td>
<td>20 mbar (0.29 psi)</td>
</tr>
</tbody>
</table>
5 Project planning information

5.1 Installation
Solenoid actuator MB 7 and butterfly valve BVHM are supplied separately. Easy assembly with the butterfly valve BVHM using the fastening set, see page 10 (Fastening set), consisting of coupling pin, coupling ring and 2 screws, can be carried out either before or after installation of the butterfly valve in the pipework.
Solenoid actuator MB 7 and butterfly valve BVHM must not be in contact with masonry – minimum clearance 20 mm (0.79”).
The solenoid actuator heats up during operation. Surface temperature approx. 85°C (approx. 185°F) pursuant to EN 60730-1.

In conjunction with butterfly valve BVHM for hot air, the solenoid actuator can be used in temperatures of up to 250°C (480°F), with additional heat deflectors, see page 10 (Heat deflectors), it can be used in temperatures of up to 450°C (840°F).
If insulated pipelines are used, ensure that the flanges and the butterfly valve BVHM are kept free of insulating material.

5.2 Installation position
Black solenoid actuator in the vertical upright position or tilted up to the horizontal, not upside down.
When built into a vertical pipe, dirt may accumulate on the stop bar of butterfly valve BVHM, which may prevent the valve from closing properly. This is why we recommend selecting the direction of flow from bottom to top.
6 Accessories

6.1 Heat deflectors

In conjunction with the butterfly valve BVHM, the solenoid actuator can be used for hot air of:
- up to 250°C (480°F),
- up to 450°C (840°F) when heat deflectors are installed.

If you are using an insulated pipeline ensure that there is sufficient installation space to access the heat deflectors and the screw connectors near the valve.

Order No.: 74921670

6.2 Fastening set

This is required to attach the solenoid actuator MB 7 to the butterfly valve BVHM. The fastening set is delivered enclosed as an additional item.

Order No.: 74922222
7 Technical data

Mains voltage:
230 V AC, +10/-15%, 50/60 Hz,
120 V AC, +10/-15%, 50/60 Hz,
24 V DC, +20/-20%.
The electrical power is identical when switching on and in continuous operation.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>230 V AC</td>
<td>100 W</td>
</tr>
<tr>
<td>120 V AC</td>
<td>108 W</td>
</tr>
<tr>
<td>24 V DC</td>
<td>85 W</td>
</tr>
</tbody>
</table>

Current consumption:
Current I = power consumption [VA] / voltage [V]

Ambient temperature:
-20 to +60°C (-4 to +140°F).
Long-term use in the upper ambient temperature range accelerates the ageing of the elastomer materials and reduces the service life (please contact manufacturer).

Storage temperature:
-20 to +40°C (-4 to +104°F).
Enclosure: IP 65.

**MB 7R**
Slow opening: approx. 2 to 4 s
Slow closing: approx. 2 to 4 s

**MB 7N**
Quick opening: < 1 s
Quick closing: < 1 s

**MB 7L**
Slow opening: approx. 2 to 4 s
Quick closing: < 1 s

### Number of operating cycles

The solenoid actuators have been designed for a typical number of operating cycles as described below, pursuant to Elster internal design and construction specifications. These values are purely for information purposes and are not intended by Elster to be legally binding. Elster cannot accept liability for the durability or condition of the product beyond the scope described in the Standards.

The information given refers to an ambient temperature of +20°C (+68°F).

<table>
<thead>
<tr>
<th>Type</th>
<th>Switching operations</th>
<th>Δp</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB 7 + BVHM 40</td>
<td>5,000,000</td>
<td>150 mbar (2.18 psi)</td>
</tr>
<tr>
<td>MB 7 + BVHM 50</td>
<td>4,000,000</td>
<td>130 mbar (1.88 psi)</td>
</tr>
<tr>
<td>MB 7 + BVHM 65</td>
<td>3,000,000</td>
<td>95 mbar (1.38 psi)</td>
</tr>
<tr>
<td>MB 7 + BVHM 80</td>
<td>2,000,000</td>
<td>55 mbar (0.80 psi)</td>
</tr>
<tr>
<td>MB 7 + BVHM 100</td>
<td>1,000,000</td>
<td>20 mbar (0.29 psi)</td>
</tr>
</tbody>
</table>
7.1 Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>H2</th>
<th>H3</th>
<th>H4</th>
<th>D1</th>
<th>D2</th>
<th>D1</th>
<th>D2</th>
<th>F</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>kg</td>
</tr>
<tr>
<td></td>
<td>(inch)</td>
<td>(inch)</td>
<td>(inch)</td>
<td>(inch)</td>
<td>(inch)</td>
<td>(inch)</td>
<td>(inch)</td>
<td>(inch)</td>
<td>(lbs)</td>
</tr>
<tr>
<td>BVHM 40 + MB 7</td>
<td>234</td>
<td>46</td>
<td>91.5</td>
<td>92</td>
<td>–</td>
<td>92</td>
<td>85.7</td>
<td>92</td>
<td>11.79</td>
</tr>
<tr>
<td>BVHM 50 + MB 7</td>
<td>239</td>
<td>54</td>
<td>91.5</td>
<td>107</td>
<td>–</td>
<td>107</td>
<td>105</td>
<td>92</td>
<td>12.17</td>
</tr>
<tr>
<td>BVHM 65 + MB 7</td>
<td>243</td>
<td>64</td>
<td>91.5</td>
<td>127</td>
<td>–</td>
<td>127</td>
<td>124</td>
<td>92</td>
<td>13.05</td>
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<tr>
<td>BVHM 80 + MB 7</td>
<td>254</td>
<td>71</td>
<td>91.5</td>
<td>142</td>
<td>–</td>
<td>142</td>
<td>137</td>
<td>92</td>
<td>13.59</td>
</tr>
<tr>
<td>BVHM 100 + MB 7</td>
<td>265</td>
<td>88</td>
<td>91.5</td>
<td>175</td>
<td>162</td>
<td>175</td>
<td>–</td>
<td>92</td>
<td>14.97</td>
</tr>
</tbody>
</table>
8 Converting units

See www.adlatus.org
9 Maintenance cycles

MB 7 requires little servicing.

We recommend a function check once a year.
The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschröder and Maxon. To learn more about our products, visit ThermalSolutions.honeywell.com or contact your Honeywell Sales Engineer.

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