GasBloc
Multifunctional gas control
Combined regulator and safety shut-off valves
Electrically modulating
GB-M(P) 057 D01

Two stage operating mode
GB-(LEP)Z 057 D01

Technical Description
Multifunctional gas control according to EN 126 comprising electro-magnetically controlled regulator unit for modulating or two stage mode:
- Modulator with adjustable min. and max. limiter
- Ignition gas, optional
- Constant volume flow using servo pressure regulator with servo regulator
- Max. operating pressure 65 mbar (6.5 kPa)
- Different variants according to application

Application
For gas-fired boilers and air heaters with forced-draft burners and pre-mix burners.
Suitable for gases according to EN 437 and other gaseous inert media.

Approvals
EU type test approval according to EU Gas Appliance Directive.
GB-M(P) 057 D01 CE-0085 CM 0036
GB-(LEP)Z 057 D01 CE-0085 CM 0036
CSA 240 9198

Approvals in other important gas-consuming countries.
Combinations

<table>
<thead>
<tr>
<th>Specification</th>
<th>Two stage switchable</th>
<th>Valve class to (EN 161)</th>
<th>Valve class to (EN 161)</th>
<th>Minimum modulator current (mA)</th>
<th>Maximum modulator current (mA)</th>
<th>Two stage control</th>
<th>Max. and max. burner pressure adjustable</th>
<th>Min. &amp; max. burner pressure adjustable</th>
<th>Mist &amp; max. burner pressure adjustable</th>
<th>Ignition gas connection</th>
<th>Gas pressure switch</th>
<th>Line socket</th>
<th>MPA 10X</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB-M 057 D01</td>
<td>○</td>
<td>B</td>
<td>B</td>
<td>50</td>
<td>165</td>
<td>50</td>
<td></td>
<td></td>
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<td></td>
<td>○</td>
<td>○</td>
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<td></td>
<td></td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

- ○ standard
- ○ optional
- -- not available

### Multifunctional gas control valve GB-M(P) 057 D01

#### Description of main components

**Pressure regulator and modulator**
The pressure control unit and servo regulator compensates for pressure fluctuations in the supply network. This ensures a constant volume flow at constant injector pressure. The injector pressure can be regulated by controlling an electrical modulator between adjustable minimum and maximum values.

In the two-stage operating mode, the control toggles between the maximum and minimum values.

**Solenoid safety valves**
Solenoid safety valves according to EN 161, Class B. DC coils are protected against voltage transients.

**Filter**
Fine-meshed strainer to protect fitting.

**Pilotgas**
Pilotgas connection between solenoid safety valves V1 and V2.

**Gas pressure switch**
Optional equipment
Monitors gas pressure on the inlet side for gas leakage protection. The pressure switch can be pre-adjusted and sealed to customer specifications.

### Pressure instrument glands
On inlet and outlet sides

#### Solenoid safety valve modes

**Mode 1**
Solenoid safety valves V1 and V2 can be activated and opened either together or separately.

**Mode 2**
Solenoid safety valves V1 and V2 are opened and activated separately. Pilotgas outlet is released and V1 opens. When the flame has been detected, release is performed and V2 opens.

### Block diagram

- A Filter
- B Automatic shut-off valves
- C Pressure regulator
- D Servo-pressure regulator
- E Electrical modulator
- F Pilotgas outlet
- P1 Test nipple, inlet
- P2 Test nipple, outlet

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**Gas train schematic diagram**
1 = two class B solenoid safety valves with pressure regulator
2 = two class B solenoid safety valves without pressure regulator

**Type key of GasBloc**

<table>
<thead>
<tr>
<th>GB- XXXXX XXXX DXX SXX</th>
<th>Control of V1 and V2</th>
<th>Outlet pressure</th>
<th>Inlet pressure</th>
<th>Valve class, according to EN 161</th>
<th>Construction size, nominal diameter</th>
<th>Opening behaviour + main volume restrictor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>○ Double safety valve</td>
<td>○ 0 - 5 mbar</td>
<td>up to 65 mbar</td>
<td>V1</td>
<td>3 = Rp 1/4</td>
<td>Fast-opening</td>
</tr>
<tr>
<td></td>
<td>○ 0 - 5 mbar</td>
<td>up to 65 mbar</td>
<td></td>
<td>V2</td>
<td>5 = Rp 1/2</td>
<td>Fast-opening</td>
</tr>
<tr>
<td></td>
<td>○ 0 - 5 mbar</td>
<td>up to 65 mbar</td>
<td></td>
<td>V1 and V2</td>
<td>7 = Rp 3/4</td>
<td>Fast-opening</td>
</tr>
</tbody>
</table>

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**Indication of main components**

- A Filter
- B Automatic shut-off valves
- C Pressure regulator
- D Servo-pressure regulator
- E Electrical modulator
- F Pilotgas outlet
- P1 Test nipple, inlet
- P2 Test nipple, outlet

---

**Specification**

- Electro-magnetically controlled pressure regulator
- Two stage switchable pressure regulator
- Valve class to (EN 161) V1
- Valve class to (EN 161) V2
- Minimum modulator current (mA)
- Maximum modulator current (mA)
- Two stage control
- Min. & max. burner pressure adjustable
- Ignition gas connection
- Gas pressure switch
- Line socket
- MPA 10X

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**GB-M 057 D01**

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- MPA 10X
Functional diagram GB-M(P) 057 D01
GB-(LEP)Z 057 D01

Legend
1 Fine-meshed strainer
2 Housing
3 Solenoid safety valved V1
4 Closing spring
5 Plunger V1
6 Test nipple
7 Solenoid V1
8 Solenoid safety valved V2
9 Ignition gas connection
10 Solenoid V2
11 Working diaphragm
12 Return spring
13 Operating valve
14 Electrical connection
15 Servo-pressure regulator
16 Modulator coil

Current-pressure characteristic GB-M(P) 057 D01
for GB-(LEP)Z 057 D01: only on/off
Dimensions [mm]

Electrical connection

Standard
Box with cable connection IP 40
Molex Crimp System 3001

Adjusting devices

Reference value setting
min. and max. burner pressure

Solenoid coils

Pressure test nipple $P_2$
Pressure test nipple $P_1$

Volume flow pressure difference characteristic
GB-M(P) 057 D01 – electrical modulating according to DIN EN 126
GB-(LEP)Z 057 D01 – two stage according to DIN EN 126

Inlet pressure range (mbar)

<table>
<thead>
<tr>
<th>2nd gas family</th>
<th>$P_{\text{Nom.}}$</th>
<th>$P_{\text{Max.}}$</th>
<th>$P_{\text{Min.}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas-H-E</td>
<td>20</td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td>Natural gas-L</td>
<td>25</td>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>

Permissible deviation
Pressure regulator class C – 2nd gas family

$p_2 + 10\% - 15\%$ according to EN 126
### Volume flow pressure difference characteristic

**GB-M(P) 057 D01** – electrical modulating according to DIN EN 126

**GB-(LEP)Z 057 D01** – two stage according to DIN EN 126

<table>
<thead>
<tr>
<th>Inlet pressure range (mbar)</th>
<th>3rd gas family</th>
<th>( P_{\text{Nom.}} )</th>
<th>( P_{\text{Max.}} )</th>
<th>( P_{\text{Min.}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Propane</strong></td>
<td></td>
<td>37</td>
<td>45</td>
<td>25</td>
</tr>
</tbody>
</table>

**Permissible deviation**

Pressure regulator class C – 3rd gas family

\( p_2 \pm 10\% \) according to EN 126

### Volume flow pressure difference characteristic

**GB-M(P) 057 D01** – electrical modulating according to DIN EN 126

**GB-(LEP)Z 057 D01** – two stage according to DIN EN 126

<table>
<thead>
<tr>
<th>Inlet pressure range (mbar)</th>
<th>3rd gas family</th>
<th>( P_{\text{Nom.}} )</th>
<th>( P_{\text{Max.}} )</th>
<th>( P_{\text{Min.}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Butane/Propane</strong></td>
<td></td>
<td>50</td>
<td>57.5</td>
<td>42.5</td>
</tr>
</tbody>
</table>

**Permissible deviation**

Pressure regulator class C – 3rd gas family

\( p_2 \pm 10\% \) according to EN 126

### Volume flow pressure difference characteristic

**GB-M(P) 057 D01**

**GB-(LEP)Z 057 D01**

![Graph showing volume flow and pressure difference characteristics](image-url)
Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal diameter</td>
<td>DN 15</td>
<td></td>
</tr>
<tr>
<td>Gas connection</td>
<td>Rp 3/4 ISO 7/1</td>
<td></td>
</tr>
<tr>
<td>Flange with tube thread</td>
<td>Rp 3/4 ISO 7/1 ID</td>
<td></td>
</tr>
<tr>
<td>Pilotgas connection</td>
<td>M8 x 1 ø 4 mm</td>
<td></td>
</tr>
<tr>
<td>Max. inlet pressure</td>
<td>65 mbar (6.5 kPa)</td>
<td></td>
</tr>
<tr>
<td>Outlet pressure range of regulator</td>
<td>1.5 mbar (0.15 kPa) to 20 mbar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.0 kPa) – neutral gas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.0 mbar (0.30 kPa) to 37 mbar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(7.3 kPa) – liquid gas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( p_{2\text{max}} - p_{2\text{min}} \geq 3 \text{ mbar (0.3 kPa)} )</td>
<td></td>
</tr>
<tr>
<td>Nominal flow</td>
<td>5.3 m³/h (air) at ( \Delta p ) 5 mbar (0.5 kPa), governed</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>(-15 \degree \text{C to } +70 \degree \text{C} )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 \degree \text{C to } +70 \degree \text{C at LPG}</td>
<td></td>
</tr>
<tr>
<td>Automatic shut-off valves</td>
<td>Class B according to EN 126</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Pressure regulator</td>
<td>Class C</td>
<td></td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 40</td>
<td></td>
</tr>
<tr>
<td>Opening time</td>
<td>Fast-opening &lt; 1 s</td>
<td></td>
</tr>
<tr>
<td>Closing time</td>
<td>&lt; 1 s</td>
<td></td>
</tr>
<tr>
<td>Switch on duration</td>
<td>100 %</td>
<td></td>
</tr>
<tr>
<td>Voltage / frequency</td>
<td>(~(AC) 50 - 60 \text{ Hz} 24 \text{V} +10 % - 15 % )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(~(AC) 50 - 60 \text{ Hz} 230 \text{V} +10 % - 15 % )</td>
<td></td>
</tr>
<tr>
<td>Load of coil (24 V, 230 V)</td>
<td>2 x 12.5 VA</td>
<td></td>
</tr>
<tr>
<td>Electrical Data of Modulator GB-M</td>
<td>Operating voltage max, (DC) 28 V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating current max, 165 mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resistance at +20 \degree \text{C} 125 \text{O}</td>
<td></td>
</tr>
<tr>
<td>Electrical Data of Modulator GB-Z</td>
<td>Operating voltage 230 V AC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operates only with ebm-papst connecting plug</td>
<td></td>
</tr>
<tr>
<td>Electrical connection</td>
<td>Resistance at +20 \degree \text{C} 9800 \text{O}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Molex System connection coil or Option: Connection box with integrated cable</td>
<td></td>
</tr>
<tr>
<td>Optional equipment</td>
<td>Modulator connection 6.3 x 0.8 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flat plug-in sleeves</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electrical connections in Rast 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Automatic burner control MPA 109x</td>
<td></td>
</tr>
<tr>
<td>Installation position</td>
<td>Gas pressure switch GW A5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solenoid at any position between vertical and horizontal axis</td>
<td></td>
</tr>
</tbody>
</table>

We reserve the right to make any changes in the interest of technical progress.

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