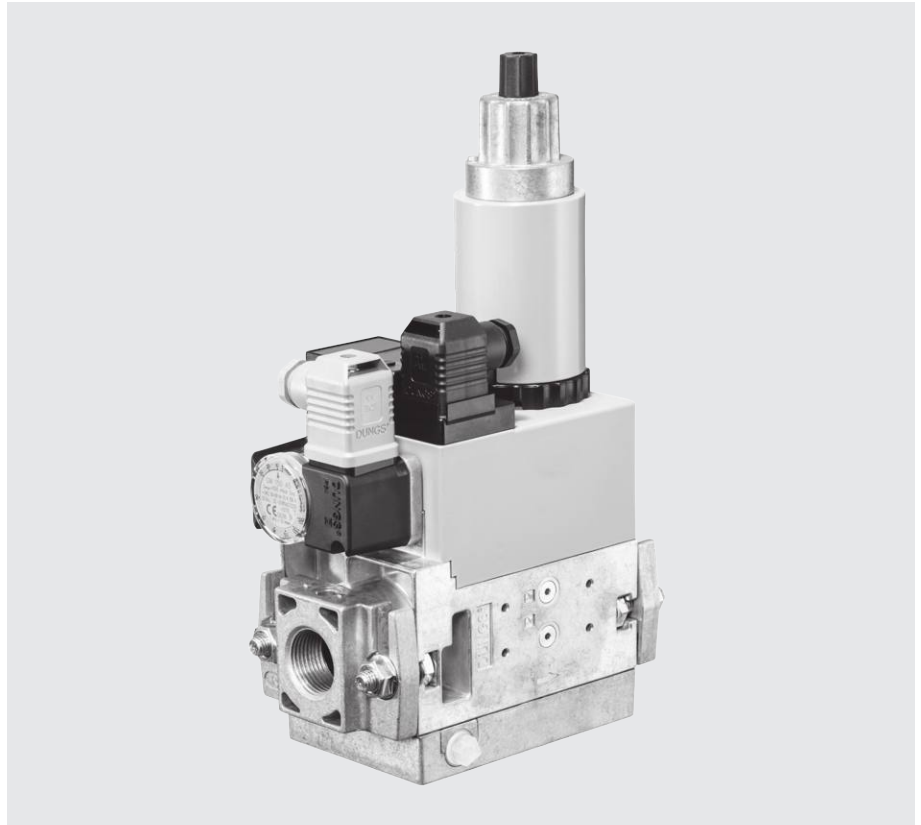


**GasMultiBloc®**  
**Combined regulator and**  
**safety shut-off valves**  
**Two-stage function**

**MB-ZRD(LE) 405 - 412 B01**

**DUNGS®**  
Combustion Controls

7.24



**Technical description**

The DUNGS GasMultiBloc® integrates filter, regulator, valves and pressure switches in one compact fitting.

- Dirt trap: Fine-mesh sieve
- One regulator and two main valves: B01
- One one-stage valve and one two-stage valve
- One valve is fast opening, one valve is slow or fast opening
- Solenoid valves up to 360 mbar (36 kPa) as per DIN EN 161 Class A Group 2
- Sensitive setting of output pressure by proportional regulator as per DIN EN 88 Class A Group 2
- High flow rates with low pressure drop
- DC solenoid drive interference degree N
- Main volume restrictor and partial volume restrictor at valve V2
- Hydraulic opening delay
- Flange connections with pipe threads as per ISO 7/1
- Simple mounting, compact, light-weight

The modular system permits individual solutions by using external ignition gas tap in connection with separately controlled valves, by adding a valve proving system, mini/maxi pressure switches, pressure limiters, limit switch and closing stroke limiter at valve V2, regulator blocking for liquid gas applications.

**Application**

The modular system permits individual solutions in gas safety and regulator engineering. Suitable for gases of families 1, 2, 3 and other neutral gaseous media.

**Approvals**

EC type testing certificate as per:

- EC-Gas Appliances Regulation
  - EC-Pressure Equipment Directive
- Approvals in other important gas consuming countries.

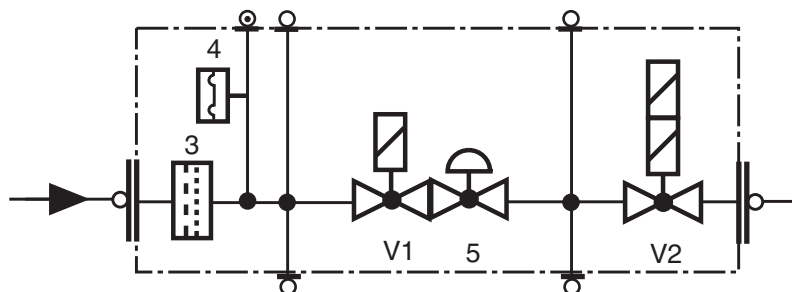
## Specifications

|                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------|---------------------------|------------------------|-------|--------------|------|---------|--------|--------------|------|------|----------|--------------|------|------|---------|--------------|------|---------|--|
| Nominal diameters<br>Flange with pipe threads as per ISO 7/1 (DIN 2999)                        | MB-ZR...405/407 B01<br>Rp 1/2, 3/4<br>and their combinations                                                                                                                                                                                                                                                                                                                                                                   | MB-ZR...410/412 B01<br>Rp 3/4, 1, 1 1/4<br>and their combinations                         |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Max. operating pressure                                                                        | 360 mbar (36 kPa)                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Output pressure ranges                                                                         | MB-... S20/S22 p <sub>a</sub> : 4 mbar (0.4 kPa) to 20 mbar (2 kPa)<br>MB-... S50/S52 p <sub>a</sub> : 4 mbar (0.4 kPa) to 50 mbar (5 kPa)                                                                                                                                                                                                                                                                                     |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Media                                                                                          | Gases of families 1, 2, 3 and other neutral gaseous media                                                                                                                                                                                                                                                                                                                                                                      |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Ambient temperature                                                                            | -15 °C to +70 °C (Do not operate MB-D below 0 °C in liquid gas systems. Only suitable for gaseous liquid gas, liquid hydrocarbons destroy sealing materials.)                                                                                                                                                                                                                                                                  |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Dirt trap                                                                                      | Fine-mesh sieve. Replacement only possible by dismantling the fitting.                                                                                                                                                                                                                                                                                                                                                         |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Pressure switches                                                                              | Types GW...A5, ÜB...A2 / NB...A2 to DIN EN 1854 may be attached.<br>For further information, refer to Datasheets 5.02 and 5.07 “Pressure Switches for DUNGS Multiple Actuators”                                                                                                                                                                                                                                                |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Pressure regulator                                                                             | Pressure regulator compensated for residual pressure, leakproof seal when switched off by means of valve V1 as per DIN EN 88 Class A.<br>Setpoint spring permanently installed (no spring exchange possible). A vent line above roof is not required. Internal pulse tap provided.                                                                                                                                             |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Solenoid valve V1                                                                              | Valve as per DIN EN 161 Class A Group 2, fast closing, fast opening                                                                                                                                                                                                                                                                                                                                                            |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Solenoid valve V2                                                                              | Valve as per DIN EN 161 Class A Group 2, fast closing                                                                                                                                                                                                                                                                                                                                                                          |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
|                                                                                                | <table><tr><td></td><td>Valve V2 design</td><td>Partial volume restrictor</td><td>Main volume restrictor</td></tr><tr><td>MB-ZR</td><td>fast opening</td><td>with</td><td>without</td></tr><tr><td>MB-ZRD</td><td>fast opening</td><td>with</td><td>with</td></tr><tr><td>MB-ZRDLE</td><td>slow opening</td><td>with</td><td>with</td></tr><tr><td>MB-ZRLE</td><td>slow opening</td><td>with</td><td>without</td></tr></table> |                                                                                           | Valve V2 design        | Partial volume restrictor | Main volume restrictor | MB-ZR | fast opening | with | without | MB-ZRD | fast opening | with | with | MB-ZRDLE | slow opening | with | with | MB-ZRLE | slow opening | with | without |  |
|                                                                                                | Valve V2 design                                                                                                                                                                                                                                                                                                                                                                                                                | Partial volume restrictor                                                                 | Main volume restrictor |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| MB-ZR                                                                                          | fast opening                                                                                                                                                                                                                                                                                                                                                                                                                   | with                                                                                      | without                |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| MB-ZRD                                                                                         | fast opening                                                                                                                                                                                                                                                                                                                                                                                                                   | with                                                                                      | with                   |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| MB-ZRDLE                                                                                       | slow opening                                                                                                                                                                                                                                                                                                                                                                                                                   | with                                                                                      | with                   |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| MB-ZRLE                                                                                        | slow opening                                                                                                                                                                                                                                                                                                                                                                                                                   | with                                                                                      | without                |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Measuring / Ignition gas connection                                                            | For G 1/8 as per DIN ISO 228, refer to Pressure taps on page 4                                                                                                                                                                                                                                                                                                                                                                 |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Burner pressure monitor p <sub>Br</sub>                                                        | Connection downstream of valve V2, pressure switch A2 mountable on adapter laterally                                                                                                                                                                                                                                                                                                                                           |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Voltage / Frequency                                                                            | 50-60 Hz 220-230 V AC -15 % +10 %<br>Other preferred voltages: 240 V AC, 110-120 V AC, 48 VDC, 24-28 VDC                                                                                                                                                                                                                                                                                                                       |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Electrical connection                                                                          | Plug connection as per DIN EN 175301-803<br>for valves and pressure switches                                                                                                                                                                                                                                                                                                                                                   |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Rating / Power consumption<br>Switch-on duration<br>Degree of protection<br>Radio interference | Refer on page 4<br>100 %<br>IP 54 as per IEC 529 (EN 60529)<br>Interference degree N                                                                                                                                                                                                                                                                                                                                           |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Materials of gas conveying parts                                                               | Housing<br>Diaphragms, seals<br>Solenoid drive                                                                                                                                                                                                                                                                                                                                                                                 | aluminium die casting<br>NBR basis, Silopren (silicone rubber)<br>steel, brass, aluminium |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Installation position                                                                          | Solenoid vertically upright or lying horizontally as well as its intermediate positions.                                                                                                                                                                                                                                                                                                                                       |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |
| Closed position signal contact                                                                 | Closed position signal contact, type K01/1 (DIN-tested), mountable on V2                                                                                                                                                                                                                                                                                                                                                       |                                                                                           |                        |                           |                        |       |              |      |         |        |              |      |      |          |              |      |      |         |              |      |         |  |

| Equipment variants<br>GasMultiBloc®...B01<br>Two-stage function | 405 B01 | 407 B01 | 410 B01 | 412 B01 |                                                      |
|-----------------------------------------------------------------|---------|---------|---------|---------|------------------------------------------------------|
| MB-ZR                                                           | •       | •       | •       | •       |                                                      |
| MB-ZRD                                                          | •       | •       | •       | •       |                                                      |
| MB-ZRDLE                                                        | •       | •       | •       | •       |                                                      |
| MB-ZRLE                                                         | •       | •       | •       | •       |                                                      |
| Microfilter with sieve                                          | •       | •       | •       | •       |                                                      |
| Gas pressure switch<br>downstream of filter                     | •       | •       | •       | •       |                                                      |
| downstream of valve V2 on adapter laterally                     | •       | •       | •       | •       |                                                      |
| Pressure regulator                                              | •       | •       | •       | •       |                                                      |
| Valve V1, double seat                                           | •       | •       | •       | •       |                                                      |
| Valve V2, single seat                                           | •       | —       | •       | —       |                                                      |
| Valve V2, double seat                                           | —       | •       | —       | •       |                                                      |
| Valves opening together                                         | •       | •       | •       | •       | S 20, S 50                                           |
| Valves opening separately                                       | •       | •       | •       | •       | S 22, S 52                                           |
| Flange Rp 1/2                                                   | •       | •       | —       | —       | • = possible<br>(•) = on request<br>- = not possible |
| Rp 3/4                                                          | •       | •       | •       | •       |                                                      |
| Rp 1                                                            | —       | —       | •       | •       |                                                      |
| Rp 1 1/4                                                        | —       | —       | •       | •       |                                                      |

### MB-ZR...B01 version

**V1 = Valve 1**  
**V2 = Valve 2**  
**3 = Dirt trap**  
**4 = Pressure switch**  
**5 = Regulator**



Mounting of VPS 504 valve proving system possible  
 Mounting of K01/1 closed position signal contact possible

### Type key of MultiBloc®

**MB- XX XXX XX BOX SXX**

#### Control of V1 and V2

0 = common  
 2 = separated

#### Outlet pressure

2 = 4 - 20 mbar  
 5 = 4 - 50 mbar

#### Inlet pressure

up to 360 mbar  
 up to 360 mbar

#### S = Series (type-independent)

#### Gas train schematic diagram

1 = two A valves for main gas + regulator  
 7 = two A valves for main gas, one A valve together with V1 as internal bypass around V2 + regulator

#### Design type (generation) B

#### Construction size, nominal diameter

403 = DN 10, V2 = Single-seat valve  
 405 = DN 15, V2 = Single-seat valve  
 407 = DN 20, V2 = Double-seat valve  
 410 = DN 25, V2 = Single-seat valve  
 412 = DN 32, V2 = Double-seat valve  
 415 = DN 40, V2 = Double-seat valve  
 420 = DN 50, V2 = Double-seat valve

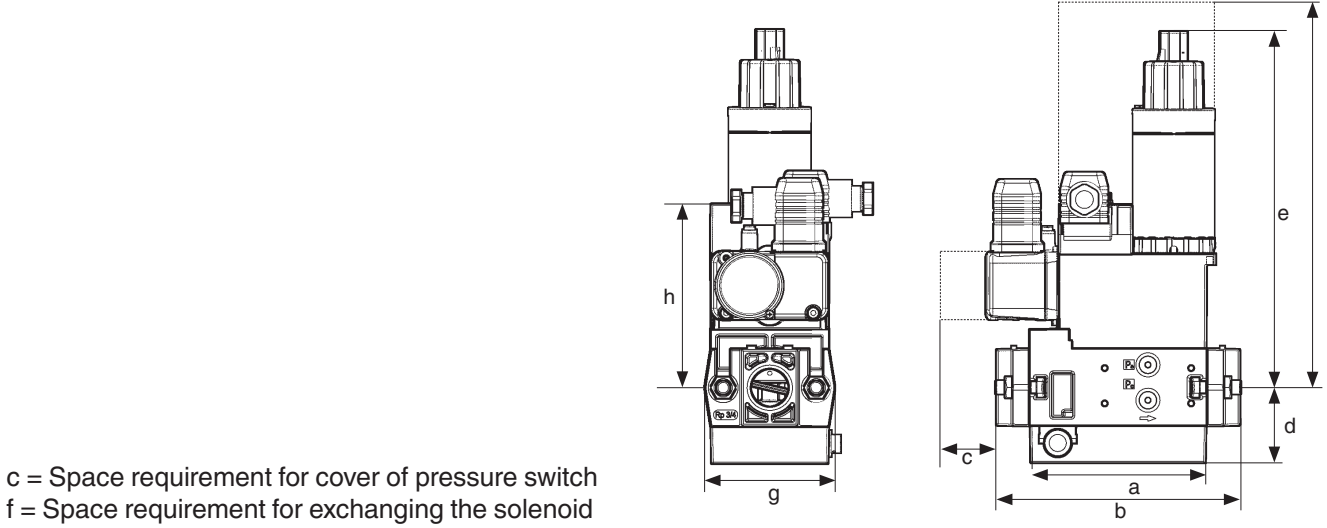
#### Opening behaviour + main volume restrictor

without = (MB or MB-ZR)  
 -D = Main volume restrictor  
 -LE = adjustable opening behaviour  
 -DLE = D + LE combination

without = single stage  
 ZR = double-stage with partial volume setting first stage

#### MultiBloc

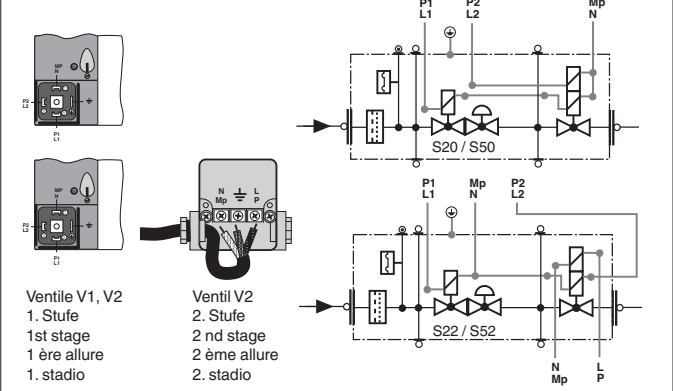
Dimensions [mm]



c = Space requirement for cover of pressure switch  
f = Space requirement for exchanging the solenoid

| Typ                   | Rp       | Opening time | Dimensions [mm] |     |    |    |     |     |    |     | Weight [kg] |
|-----------------------|----------|--------------|-----------------|-----|----|----|-----|-----|----|-----|-------------|
|                       |          |              | a               | b   | c  | d  | e   | f   | g  | h   |             |
| MB-ZRD 405 B.../407   | Rp 1/2   | < 1 s        | 110             | 151 | 40 | 46 | 180 | 250 | 74 | 115 | 3,3         |
| MB-ZRDLE 405 B.../407 | Rp 3/4   | < 20 s       | 110             | 151 | 40 | 46 | 220 | 250 | 74 | 115 | 3,4         |
| MB-ZRD 410 B.../412   | Rp 1     | < 1 s        | 140             | 185 | 40 | 55 | 220 | 300 | 90 | 135 | 6,3         |
| MB-ZRDLE 410 B.../412 | Rp 1 1/4 | < 20 s       | 140             | 185 | 40 | 55 | 260 | 300 | 90 | 135 | 6,4         |

Electrical connection

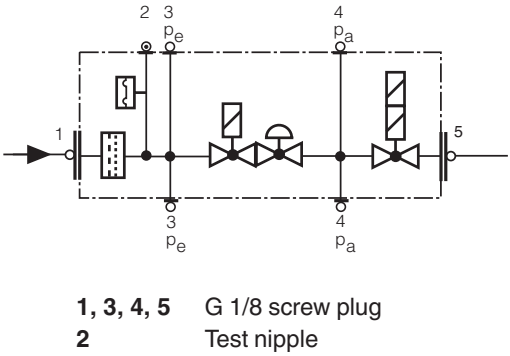
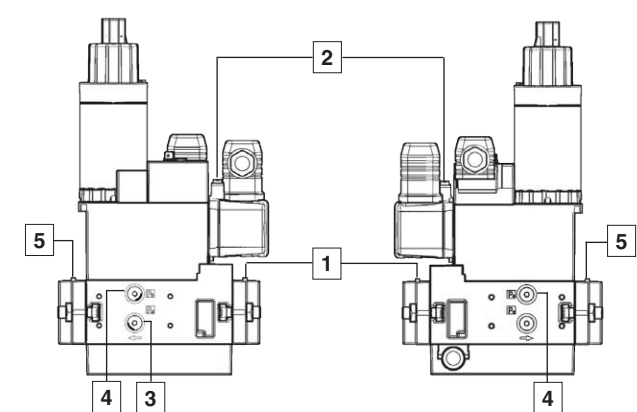


Rating/power consumption

[VA] ~(AC) 230 V; +20 °C:

|                 |     |
|-----------------|-----|
| MB 405/407 S 20 | 65  |
| MB 405/407 S 50 | 65  |
| MB 405/407 S 22 | 70  |
| MB 405/407 S 52 | 70  |
| MB 410/412 S 20 | 80  |
| MB 410/412 S 50 | 80  |
| MB 410/412 S 22 | 120 |
| MB 410/412 S 52 | 120 |

Pressure taps



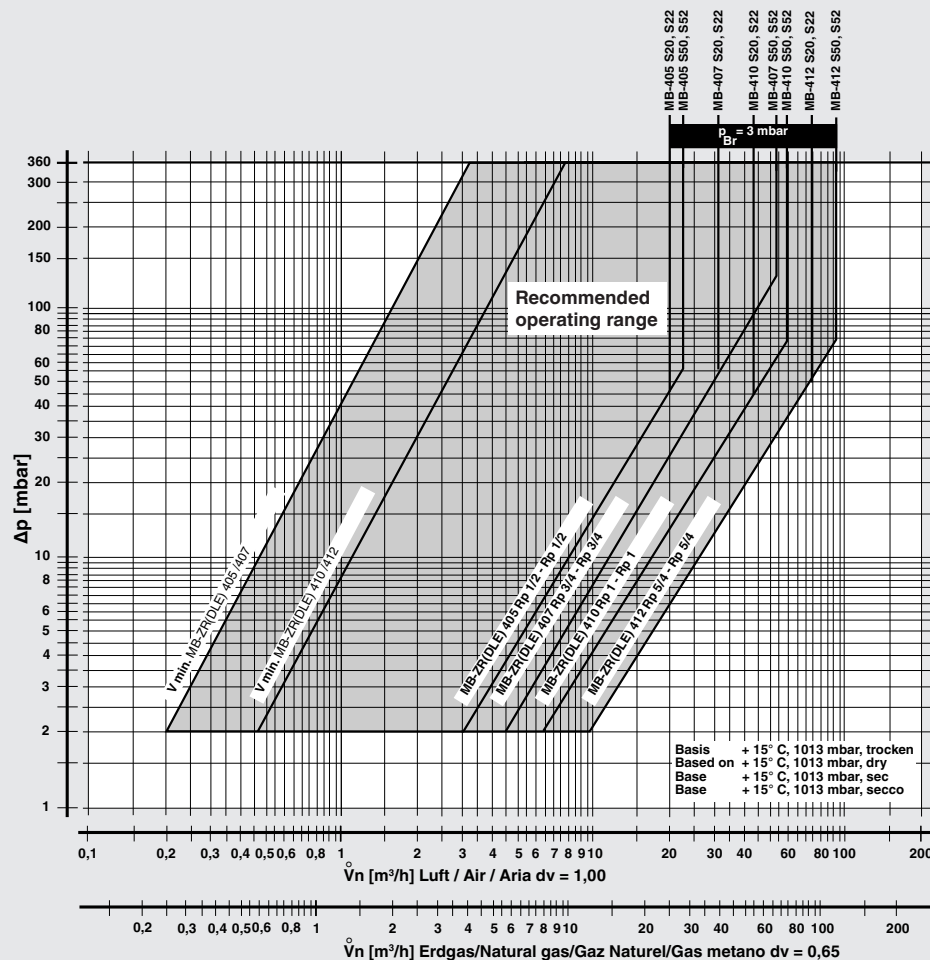
1, 3, 4, 5 G 1/8 screw plug  
2 Test nipple

**GasMultiBloc®**  
**Combined regulator and**  
**safety shut-off valves**  
**Two-stage function**

**MB-ZRD(LE) 405 - 412 B01**

**DUNGS®**  
**Combustion Controls**

**Volumetric flow pressure loss characteristics in regulated state with fine-mesh sieve**



**f =**

Dichte Luft  
 Spec. weight air  
 poids spécifique de l'air  
 peso específico aria

Dichte des verwendeten Gases  
 Spec. weight of gas used  
 poids spécifique du gaz utilisé  
 peso específico del gas utilizzato

| Gas type | Density<br>[kg/m³] | dv   | f    |
|----------|--------------------|------|------|
| Nat. gas | 0.81               | 0.65 | 1.24 |
| City gas | 0.58               | 0.47 | 1.46 |
| LPG      | 2.08               | 1.67 | 0.77 |
| Air      | 1.24               | 1.00 | 1.00 |

$$\dot{V}_{\text{verwendetes Gas/gas used/ gaz utilisé/gas utilizzato}} = \dot{V}_{\text{Luft/air/aria}} \times f$$

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

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