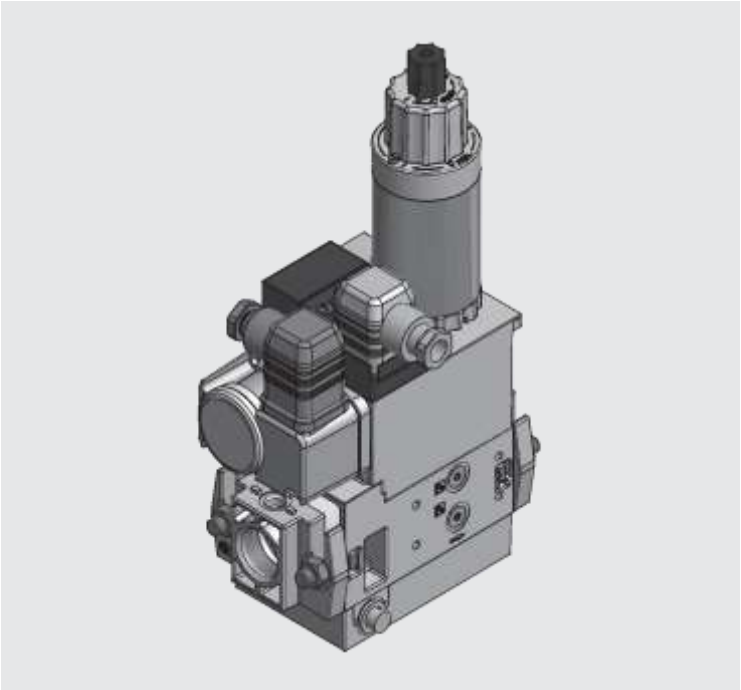
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GasMultiBloc® Combined regulator and safety shut-off valves Two-stage function

MB-ZRD(LE) 405-412 B01

DUNGS®
Combustion Controls



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 test approval as per EC Gas Appliance Directive:
MB-ZR...405-412 B01 CE-0085 AP 3156
EC type test approval as per EC Pressure Equipment Directive:
MB-ZR...405-412 B01 CE0036
Approvals in other important gas consuming countries.

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Specifications

Nominal diameters Flange with pipe threads as per ISO 7/1 (DIN 2999)	MB-ZR…405/407 B01 Rp 1/2, 3/4 and their combinations	MB-ZR…410/412 B01 Rp 3/4, 1, 1 1/4 and their combinations
Max. operating pressure	**360 mbar (36 kPa)**	
Output pressure ranges	**MB-… S20/S22 p_a: 4 mbar (0.4 kPa) to 20 mbar (2 kPa)** **MB-… S50/S52 p_a: 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 dismounting the fitting.	
Pressure switches	Types GW…A5, ÜB…A2 / NB…A2 to DIN EN 1854 may be attached. 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. 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	

	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

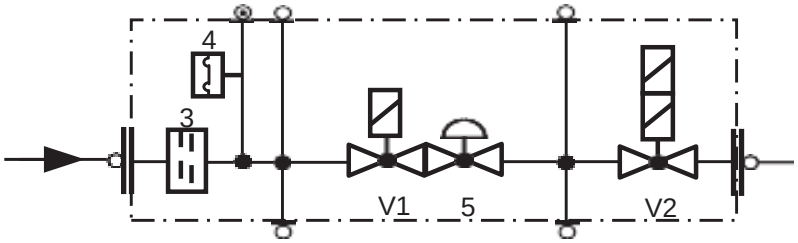
Measuring / Ignition gas connection	For G 1/8 as per DIN ISO 228, refer to Pressure taps on page 2	
Burner pressure monitor p_{Br}	Connection downstream of valve V2, pressure switch A2 mountable on adapter laterally	
Voltage / Frequency	50-60 Hz 220-230 V AC -15 % +10 % Other preferred voltages: 240 V AC, 110-120 V AC, 48 VDC, 24-28 VDC	
Electrical connection	Plug connection as per DIN EN 175301-803 for valves and pressure switches	
Rating / Power consumption Switch-on duration Degree of protection Radio interference	Refer to Dimensions on page 5 100 % IP 54 as per IEC 529 (EN 60529) Interference degree N	
Materials of gas conveying parts	Housing Diaphragms, seals Solenoid drive	aluminium die casting NBR basis, Silopren (silicone rubber) 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	

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Equipment variants GasMultiBloc®...B01 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 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	•	•	–	–	
Rp 3/4	•	•	•	•	• = possible
Rp 1	–	–	•	•	(•) = on request
Rp 1 1/4	–	–	•	•	- = not possible

MB-ZR...B01 version

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



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

SXX
Control of V1 and V2
0 = common
2 = separated

Outlet pressure / Inlet pressure
2 = 4 - 20 mbar / up to 360 mbar
5 = 4 - 50 mbar / up to 360 mbar

S = Series (type-independent)

BOX
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

XX
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

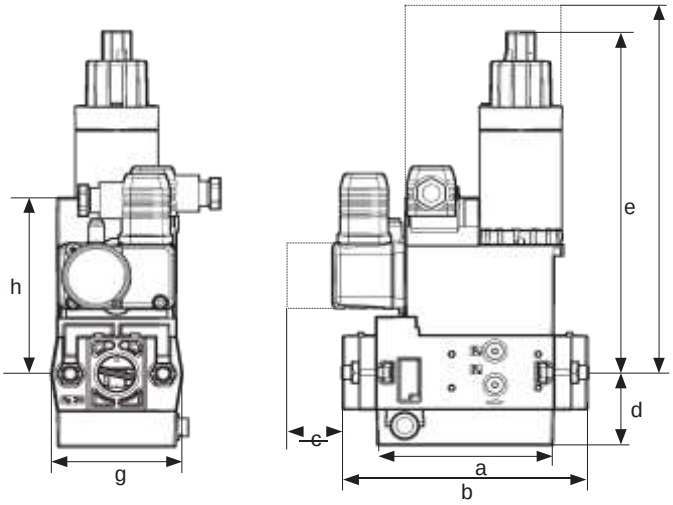
XXX
Opening behaviour + main volume restrictor
without = (MB or MB-ZR)
-D = Main volume restrictor
-LE = adjustable opening behaviour
-DLE = D + LE combination

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

MB-
MultiBloc

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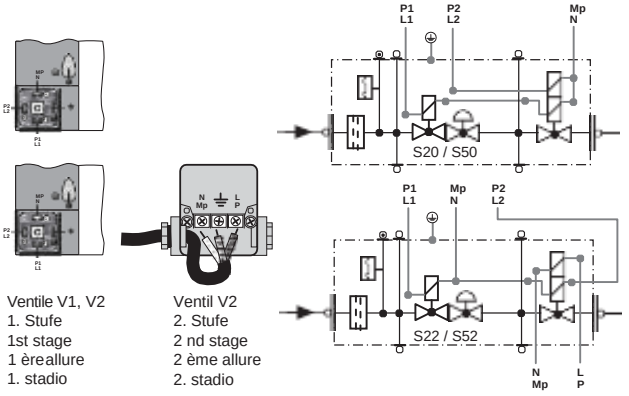
Dimensions [mm]



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



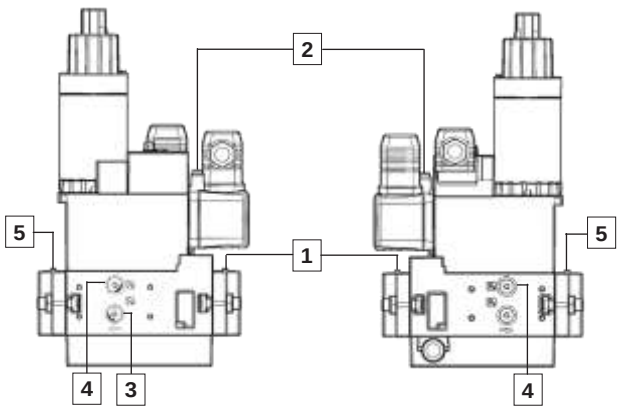
Ventile V1, V2
1. Stufe
1st stage
1 èreallure
1. stadio

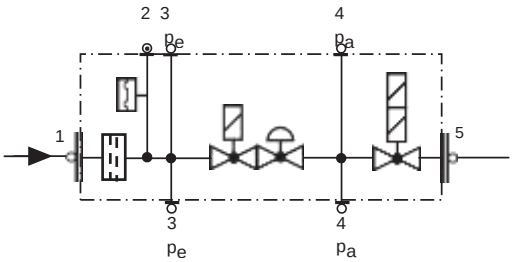
Ventil V2
2. Stufe
2 nd stage
2 ème allure
2. stadio

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 screwplug
2	Test nipple

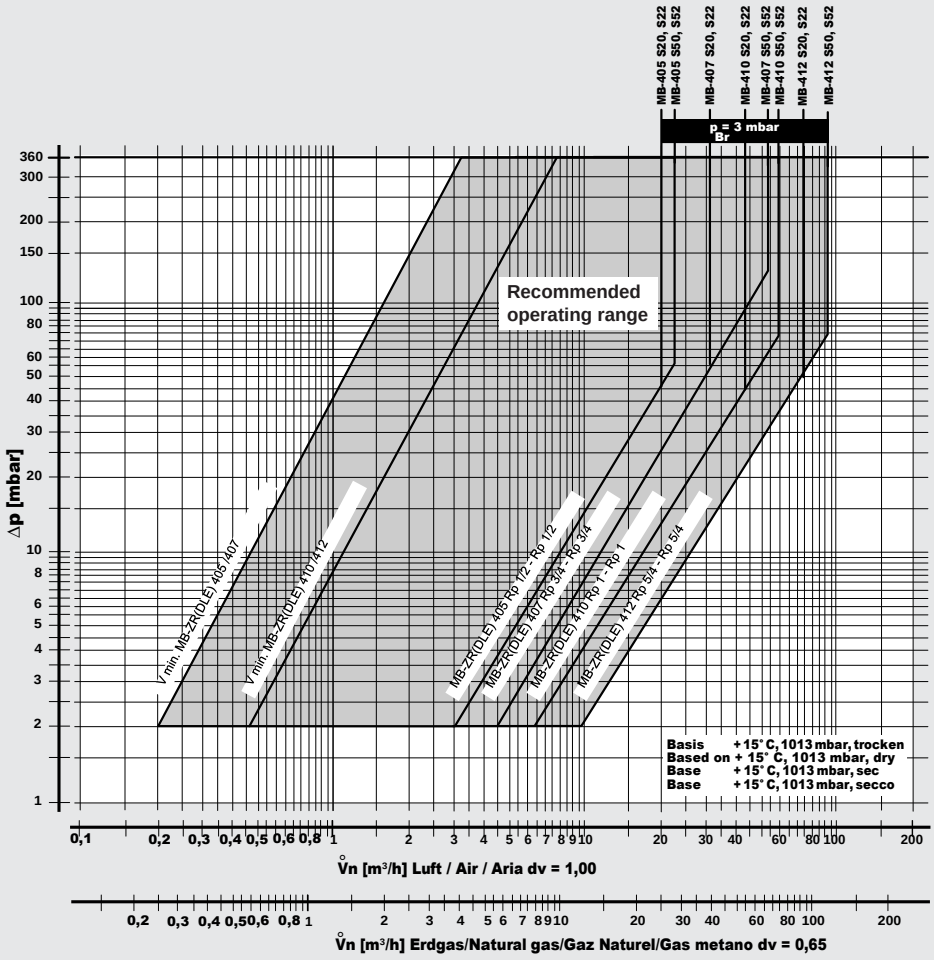
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Volumetric flow pressure loss characteristics in regulated state with fine-mesh sieve



$$f = \sqrt{\frac{\text{Dichte Luft / Spec. weight air / peso specifico aria}}{\text{Dichte des verwendeten Gases / Spec. weight of gas used / poids spécifique du gaz utilisé / peso specifico del gas utilizzato}}}$$

Gas type	Density	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.