GasMultiBloc
Combined regulator and safety shut-off valves
Single-stage function

DUNGS®

MB-D(LE) 403 B01
MB-D(LE) 053 B01

7.07

Technical description
The DUNGS GasMultiBloc integrates filter, regulator, valves and pressure switches in one compact fitting. Various designs are possible by the modular system:

- Dirt trap: microfilter
- One regulator and two main valves: B01
- Two valves are fast opening
- One valve is fast opening, one valve is slow opening
- Solenoid valves up to 200 mbar 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 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, partial volume setting by closing stroke limiter at valve V2 and 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
EU type test approval as per EU Gas Appliance Directive.

MB-...403...B01	CE-0085 AQ 0810
MB-...053...B01	CE-0085 AQ 0810

Approvals in other important gas-consuming countries.

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Functional description of gas flow

1. When the valves V1 and V2 are closed, chamber A is under inlet pressure.
2. A hole D in the filter housing connects min. pressure switch with chamber A. If the inlet pressure applied to the pressure switch exceeds the incoming reference value, it switches through to the automatic burner control.
3. After release by the automatic burner control, valves V1 and V2 open. The gas flows through chambers A, B and C of the GasMultiBloc.

Operating method of valve-regulator combination on valve V1

A regulator, compensating for residual pressure is integrated in valve V1 (pressure regulating part). Armature 7 is not connected to valve plate unit 3. When it opens, armature 7 pretensions compression spring (V1) 5 and releases the valve plate unit. When the valve closes, the armature acts directly on the valve plate unit. The output pressure upstream of valve V2 is defined by pretensioning regulating spring 8 (tension spring) via setting screw 16. The output pressure acts via opening E on the working diaphragm of regulator part 1. In regulated state, setting spring inlet pressure and pressure of working diaphragm are in force equilibrium.

Operating method of valve V2

Armature 13 of valve V2 is connected to valve plate unit 11. When it opens, armature 13 pretensions closing spring 12. The maximum valve opening can be set by limiting the armature stroke by means of the main volume restrictor 17.

Min. opening (residual stroke) of valve (0.5 to 1.0 mm)

Main volume restrictor 17 is set by rotating the adjusting plate or the hydraulic brake 19. The fast and/or slow opening characteristic is influenced by setting the fast stroke 18 at the hydraulic brake 19 under the cover.

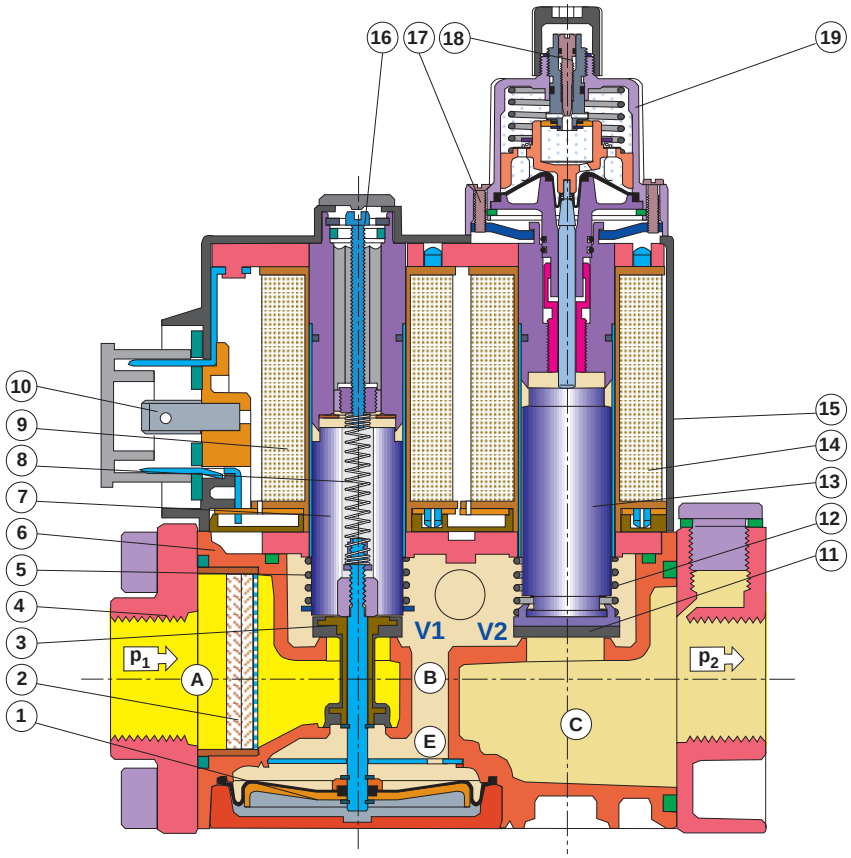
Closing function

When the supply voltage to the solenoid coils of valves V1 and V2 is interrupted, they are closed within < 1 s by the compression springs.

Closing stroke limitation (option)

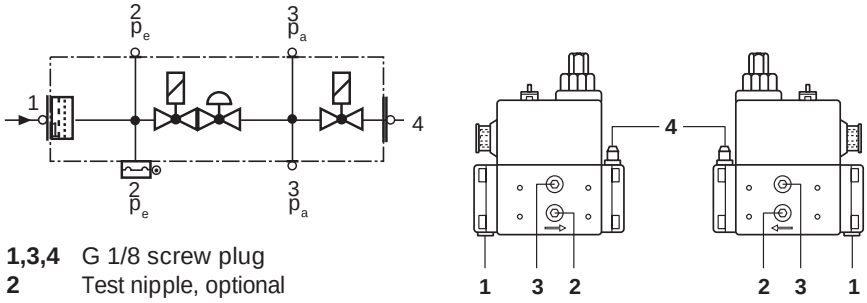
A partial volume setting is possible by means of a closing stroke limiter. Valve V2 becomes a regulating actuator without zero shutoff. Partial volume and main volume are adjustable.

Sectional drawing of MB-DLE...



1	Pressure regulator	8	Regulating spring	15	Solenoid housing
2	Microfilter	9	Solenoid V1		Setting:
3	Valve V1	10	Electrical connection	16	- Gas pressure p_a
4	Connection flange	11	Valve V2	17	- Main volume
5	Closing spring V1	12	Closing spring V2	18	- Fast stroke
6	Housing	13	Armature V2	19	Hydraulic brake
7	Armature V1	14	Solenoid V2		

Pressure taps

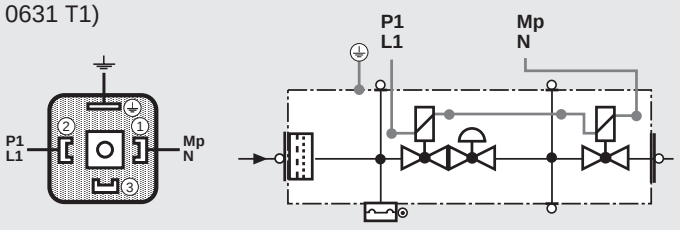


1,3,4 G 1/8 screw plug
2 Test nipple, optional

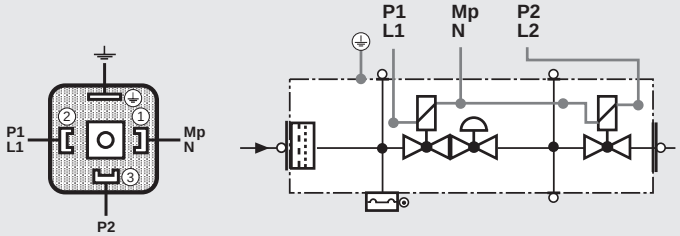
Electrical connection

IEC 730-1 (VDE 0631 T1)

S 20/S 50



S 22/S 52



Specifications

Nominal diameters Flange with pipe threads as per ISO 7/1 (DIN 2999)	MB-…403/053 B01 Rp 3/8, 1/2 and their combinations	
Max. operating pressure	**MB-…403** **MB-…053**	**$p_{max.}$ = 200 mbar (20 kPa)** **$p_{max.}$ = 60 mbar (6 kPa)**
Output pressure ranges	**MB-…403/053 B01 S20/S22**	**p_a: 4 mbar to 20 mbar**

Pressure stage	PN 1
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	Sieve with 0.8 mm mesh width, filter made of random laid nonwoven fabric, microfilter, two-layer, changing the filter is possible without removing the valve.
Pressure switches	Types GW A5, GW A2, NB A2, ÜB A2 mountable as per DIN EN 1854. For further information, refer to Datasheet GW A2 No. 215 183 and Datasheet GW A5 No. 225 901.
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

	Valve V2 design		Main volume restrictor
MB	fast closing	fast opening	without
MB-D	fast closing	fast opening	with
MB-DLE	fast closing	slow opening	with
MB-LE	fast closing	slow opening	without

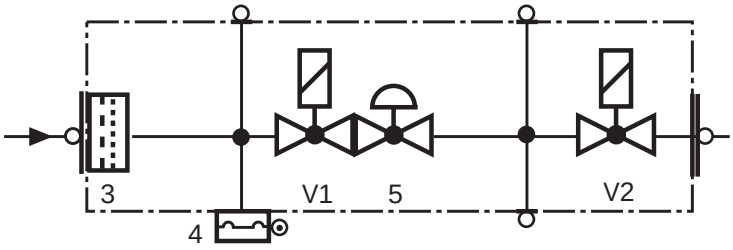
Measuring/ignition gas connection	For G 1/8 as per DIN ISO 228, refer to Pressure taps on page 2
Voltage / frequency	50-60 Hz, 220 - 230 V AC, -15% +10% Other preferred voltages: 240 VAC, 110-120 VAC, 48 VDC, 24-28 VDC
Electrical connection	Plug connection as per DIN 43 650, IEC 335, IEC 730 (VDE 0700, VDE 0722) for valves and pressure switches or DIN 43642 for safety extra-low voltage
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	aluminium die casting
	Diaphragms, seals	NBR basis, Silopren (silicone rubber)
	Solenoid drive	steel, brass, aluminium
Installation position	Solenoid vertically upright or lying horizontally as well as its intermediate positions.	

Equipment variants GasMultiBloc...B017 Single-stage function	403 B01	053 B01	
MB	•	•	
MB-D	•	•	
MB-DLE	•	•	
MB-LE	•	•	
Microfilter (standard) with sieve	•	•	
Gas pressure switch downstream of filter	•	•	
Pressure regulator	•	•	
Valve V1, double seat	•	•	
Valve V2, single seat	•	•	
Closing stroke limitation	(•)	(•)	V2 becomes an actuator without shutoff
Valves opening together	•	•	S 20
Valves opening separately	(•)	(•)	S 22
Flange Rp 3/8	•	•	• = possible
Rp 1/2	•	•	(•) = on request
			- = not possible

MB-...B01 version

V1 = Valve 1
V2 = Valve 2
3 = Filter
4 = Pressure switch
5 = Regulator



Mounting of VPS 504 valve proving system possible

Type key of MultiBloc

MB- XX XXX XX BOX 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)

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

Design type (generation) B

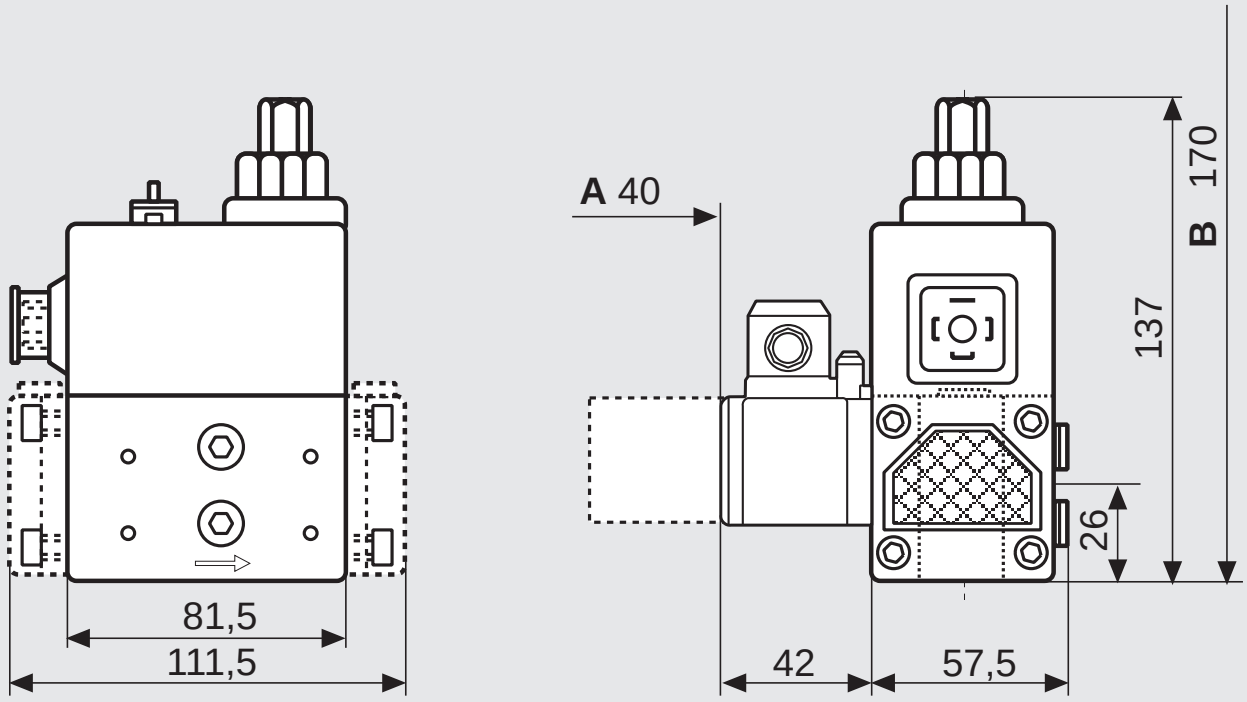
Construction size, nominal diameter
403 = DN 10, V2 = Single-seat valve
405 = DN 15, V2 = Single-seat valve
407 = DN 20, V2 = Double-seat valve
410 = DN 25, V2 = Single-seat valve
412 = DN 32, V2 = Double-seat valve
415 = DN 40, V2 = Double-seat valve
420 = DN 50, V2 = Double-seat valve

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]



A = Space requirement for opening the cover of pressure switch
B = Space requirement for exchanging the solenoid

Type	Rp	Opening time	Weight [kg]
MB-D 403 B01	Rp 1/2	< 1 s	1.4
MB-DLE 403 B01	Rp 1/2	< 20 s	1.5
MB-D 053 B01	Rp 1/2	< 1 s	1.4
MB-DLE 053 B01	Rp 1/2	< 20 s	1.5

Rating / power consumption

	[VA] 230 V AC; +20°C
MB…403 B01 S 20	24
MB…403 B01 S 22	36
MB…053 B01 S 20	24
MB…053 B01 S 22	36

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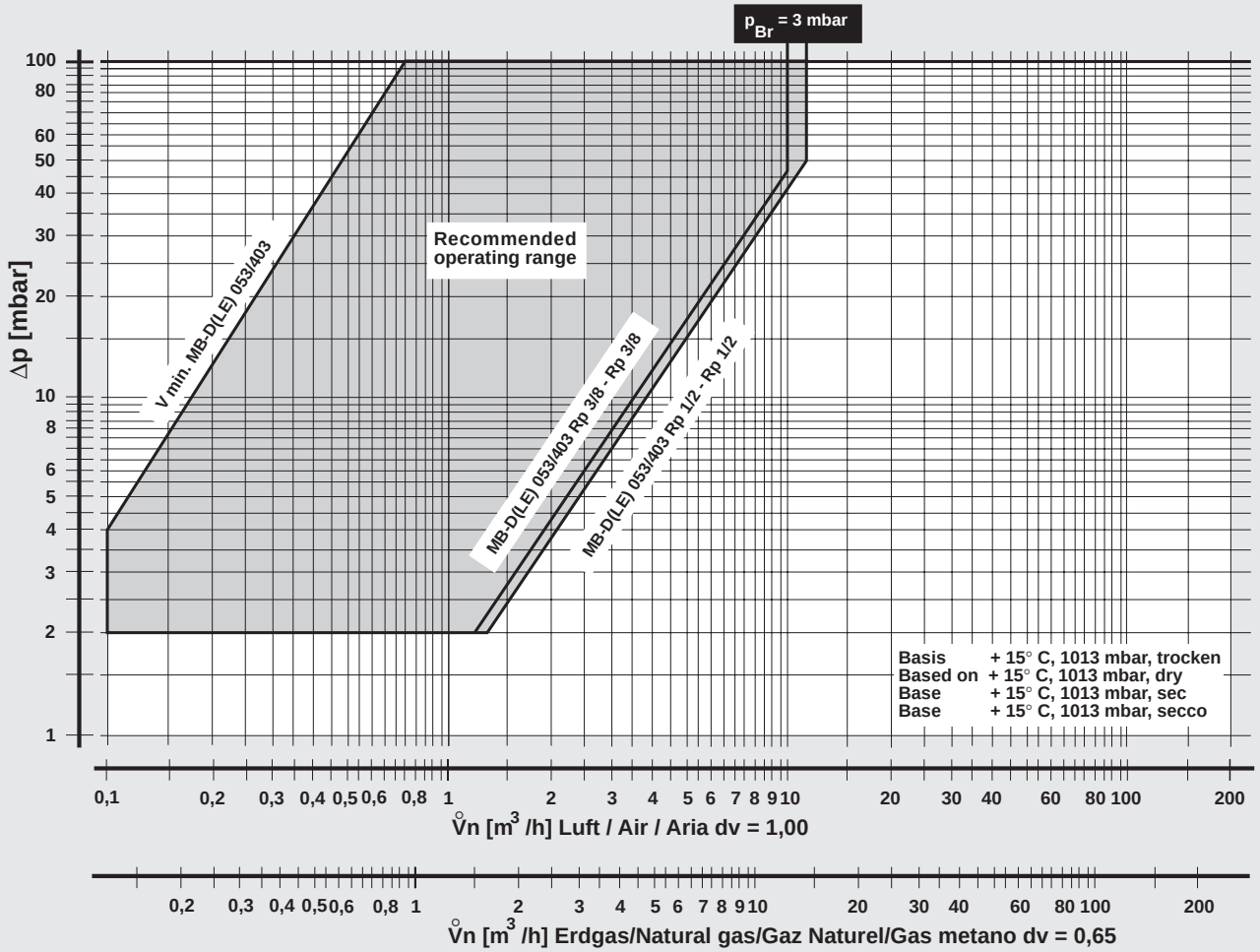
Volumetric flow pressure loss characteristics in regulated state with microfilter



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

Gas type	Density [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

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

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

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