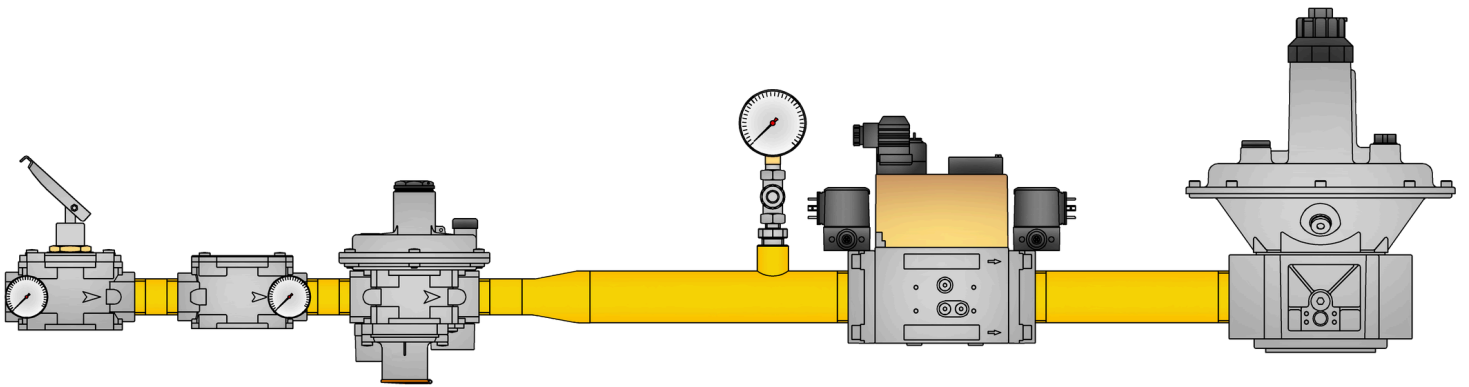


Manual de instalação e operação dos componentes do rack de gás



TAG-3989B



Prezado Cliente,

Obrigado por adquirir os produtos CPGAS.

Informamos que antes do despacho, toda a rede de gás foi montada em nossa empresa e devidamente testada com ar comprimido; porém, após a desmontagem, embalagem, transporte e montagem, algum dano pode ter ocorrido. Portanto, para sua segurança, após a montagem do cavalete em sua posição definitiva, sugerimos que o mesmo seja testado com gás inerte ou com ar comprimido, desde que tomadas as devidas precauções, à pressão de operação do cavalete em sua entrada.

Todos os flanges e roscas devem ser testados com espuma para localização de vazamentos que, caso existente, devem ser totalmente eliminados antes do início da operação com gás.

Caso exista alguma dúvida, o manual em anexo foi elaborado para auxiliá-los; porém, a CPGAS disponibiliza um departamento de engenharia para dirimir quaisquer dúvidas inerentes aos produtos fornecidos e sua aplicação à luz da NBR 12.313.

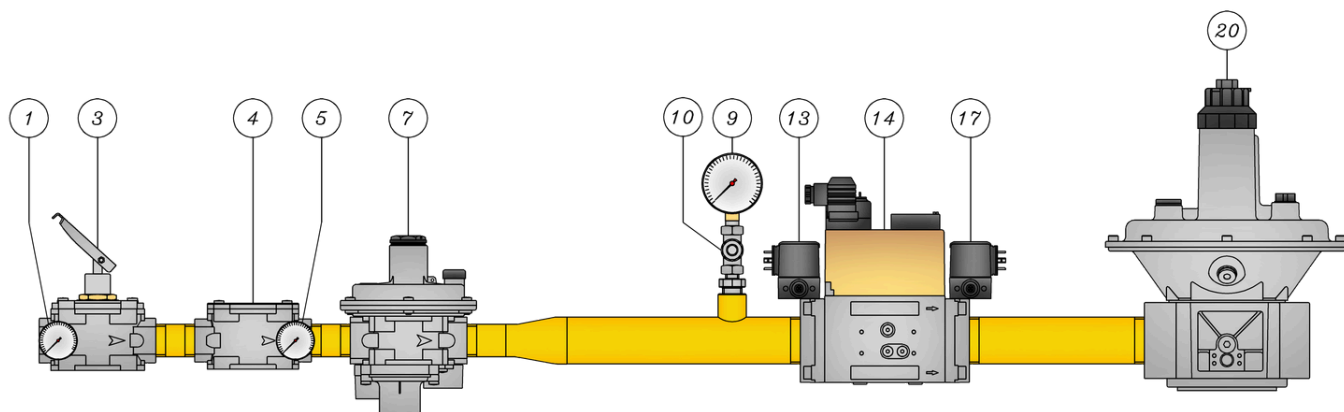
Atenciosamente,



(011) 2095-7500



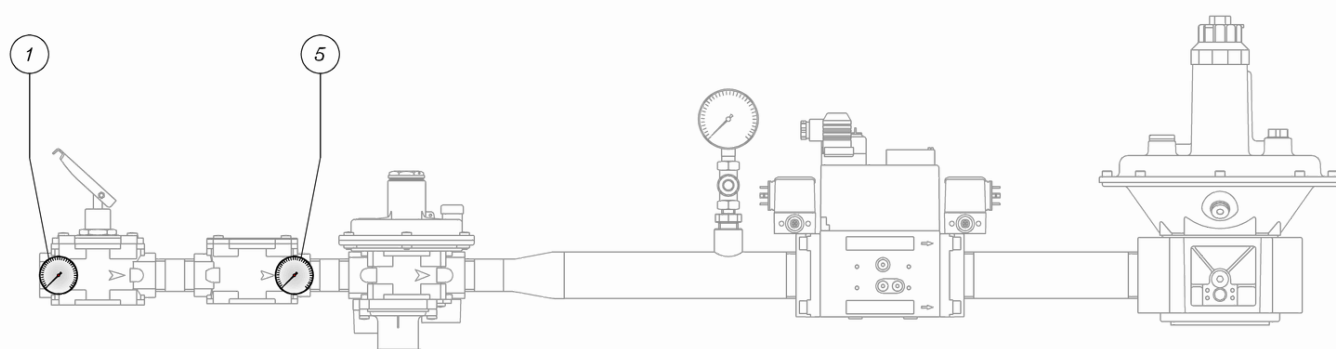
Depto. de Engenharia CPGÁS
Engenharia @cpgas.com.br



ÍNDICE

Item 01	Manômetro de alta pressão.....I
Item 03	Válvula de bloqueio manual..... II
Item 04	Filtro para gás.....III
Item 05	Manômetro de alta pressão.....I
Item 07	Válvula reguladora de pressãoIV
Item 09	Manômetro de baixa pressão.....V
Item 10	Válvula push-button.....VI
Item 13	Pressostato de baixa pressão.....VII
Item 14	Válvula dupla de bloqueio automático.....VIII
Item 17	Pressostato de alta pressãoVII
Item 20	Válvula estabilizadora..... IX
	Informativo técnico..... X
	Desenho do equipamento.....XI

Itens 01 e 05 - Manômetros de alta pressão



Pressure Gauges

Service intended

For water - level - indicator, heating, steam, sterilises, pressing equipment.

Design

EN 837-1

Nominal size

40, 50, 63, 80 and 100 mm

Accuracy class per EN 837-1 /5)

40, 50 and 63 mm: 1.6/2.5
 80 and 100 mm: 1.6

Scale ranges per EN 837-1/5

0/0.6 to 0/400 bar for 40mm
 0/0.6 to 0/40 bar with 2nd scale of mmH₂O/mws
 or other equivalent units of pressure or vacuum

Working pressure

Steady: $\frac{3}{4}$ of full scale value
 Fluctuating: $\frac{2}{3}$ of full scale value
 Short time: full scale value

Operating Temperature

Ambient: -40... +80 °C
 Medium: +60 °C maximum

Temperature error

Additional error when temperature of the pressure element deviates from +20 °C

Standard features
Pressure connection

Material: Alpaca
 Threaded entry (radial or back) per EN 837-1 /7.3
 40 mm: G $\frac{1}{8}$ A, 12/14 mm flats
 50 and 63 mm: G $\frac{1}{4}$ A, 14 mm flats
 up 80 mm: G $\frac{1}{2}$ A, 22 mm flats

Pressure element

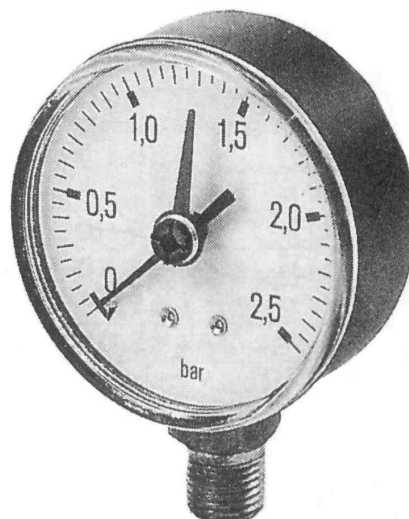
Material: Cu-alloy
 ≤ 40 bar: C-type
 > 60 bar: helical type

Movement

Cu-alloy

Dial

40, 50, 63mm: white aluminium, white plastic, with pointer stop pin
 up 80mm: white aluminium, with pointer stop pin
 With black lettering

Protections: IP55-65

Pointer

Black plastic
 up 63mm: black aluminium

Case

black plastic / steel painted

Window

Crystal-clear plastic, snap-fit

Bezel ring

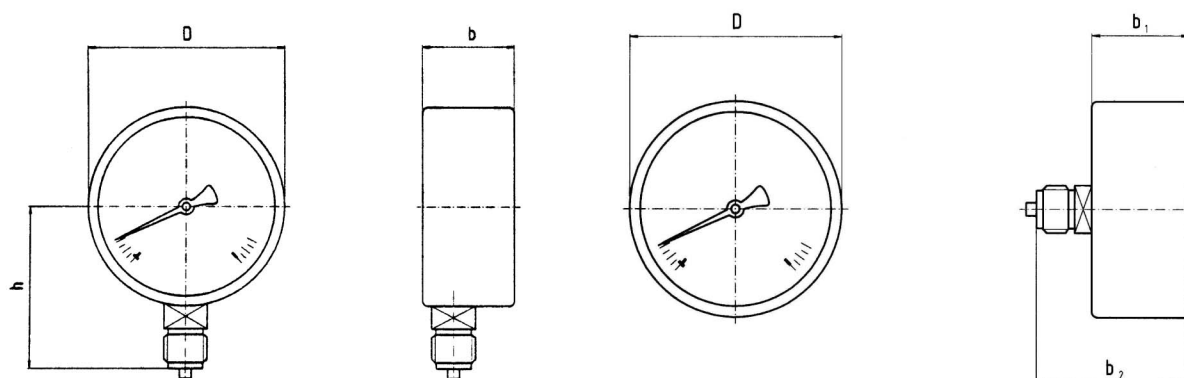
Only for steel case type, chromed steel

Optional extras

- Other pressure connection
- Black finish steel case / Bezel chromed ring
- Slip-on bezel
- 3-hole surface mounting flange
- Max temperature 300°C
- U bracket for clamp fixing
- Welding element in silver alloy
- Red pointer fixed on transparent or on dial
- Dragged pointer of MIN / MAX
- Throat element
- Cut glass
- Red mark
- Thread $\frac{1}{8}$ - $\frac{1}{4}$ - 9x1 - 10x1 : BSP - BSPT - NPT

Dimensions

Standard version



Nominal Size	Dimensions [mm]					Weight [g]
	h	b	b1	b2	D	
40	37	25	25	45	41	50
50	45	29	29	49	51	70
63	50	31	31	51	61	90
80	65	31	31	51	82	160
100	85	31	31	51	102	400

Ordering information

State:

Pressure gauge model / Nominal size / Scale range / Size of connection / Optional extras required

Specification and dimension given in this leaflet represent the state of engineering at the time of printing.

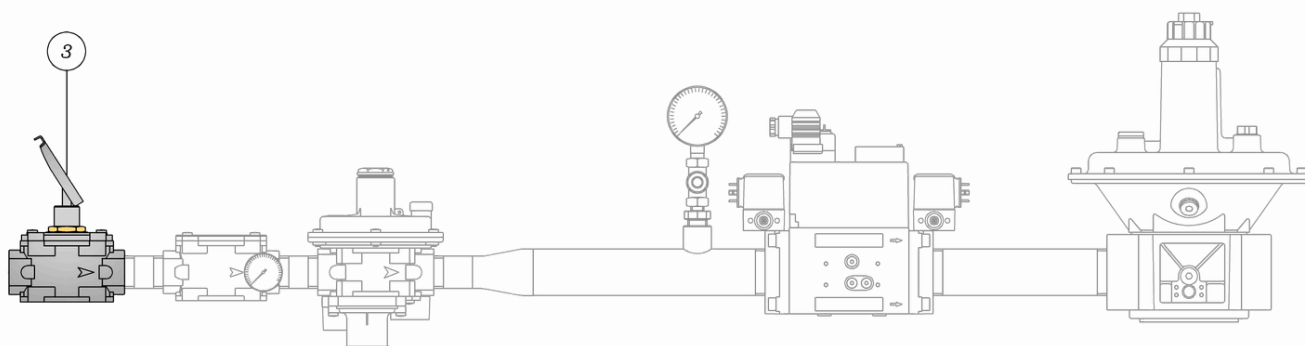
Modifications may take place and materials specified may be replaced by others without prior notice

MANROS Italy srl - C.so Vittorio Emanuele 208/I - 29121 PIACENZA (ITALY)

Factory: Via Bricchi 16 – 29013 Carpaneto P.no (Piacenza) Italy

Tel: +39 0523 859571 - Fax: +39 0523 852354 - Mobile: +39 335 7019302

Item 03 – Válvula de bloqueio manual



JERK HANDLE ON/OFF VALVE



CE 0497

MADE IN ITALY

	IT	EN	FR	ES
Pressione massima di esercizio Maximum operating pressure Pression maximum de fonctionnement Presión máxima de funcionamiento	2 - 6 bar			
Attacchi filettati / Threaded connections Raccords filetés / Conexiones roscadas	DN 15 - DN 20 - DN 25 - DN 32 - DN 40 - DN 50			
Attacchi flangiati/ Flanged connections Raccords à brides / Conexiones embrizadas	DN 25* - DN 32 - DN 40 - DN 50 - DN 65 - DN 80 - DN 100 - DN 125 - DN 150			
	* su richiesta con flange girevoli	* with swivel flanges on request	* sur demande avec brides tournantes	* bajo petición con bridas locas
In conformità a In conformity with Conforme a Conforme	Direttiva PED 2014/68/UE	PED Directive 2014/68/EU	Directive PED 2014/68/UE	Direttiva PED 2014/68/UE

1.0 - GENERAL INFORMATION

This manual shows you how to safely install, operate and use the device.

The instructions for use **ALWAYS** need to be available in the facility where the device is installed.

ATTENTION: installation/maintenance need to be carried out by qualified staff (as explained in section 1.3) using appropriate personal protective equipment (PPE).

For any information pertaining to installation/wiring/maintenance or in any case problems that cannot be resolved with the use of the instructions, it is possible to contact the manufacturer from the address and phone numbers provided on the last page.

1.1 - DESCRIPTION

It is a valve that allows to open or close manually the flow of the fluid inside the pipe.

Thanks to its total passage it has a small load loss and the remote interception operation makes the closing easier and faster than traditional ball valves. For the remote actuation of the valve a special kit must be used (available separately upon request).

1.2 - KEY OF SYMBOLS



DANGER: In the event of inobservance, this may cause damage to tangible goods.



DANGER: In the event of inobservance, this may cause damage to tangible goods, to people and/or pets.



ATTENTION: Attention is drawn to the technical details intended for qualified staff.

1.3 - QUALIFIED STAFF

These are people who:

- Are familiar with product installation, assembly, start-up and maintenance;
- Know the regulations in force in the region or country pertaining to installation and safety;
- Are trained in first aid.



1.4 - USING NON-ORIGINAL SPARE PARTS

- To perform maintenance or change parts **ONLY** manufacturer-recommended parts can be used. Using different parts not only voids the product warranty, it could compromise correct device operation.
- The manufacturer is not liable for malfunctions caused by unauthorised tampering or use of non-original parts.



1.5 - IMPROPER USE

- The product must only be used for the purpose it was built for.
- It is not allowed to use different fluids than those expressly stated.
- The technical data set forth on the rating plate must not be exceeded whatsoever. The end user or installer is in charge of implementing proper systems to protect the device, which prevent exceeding the maximum pressure indicated on the rating plate.
- The manufacturer is not responsible to damage caused by improper use of the device.

2.0 - TECHNICAL DATA

- Use : gasoil, naphta, non-aggressive gases of the three families (dry gases)
- Ambient temperature (TS) : -15 ÷ +100 °C
- Maximum operating pressure : 2 or 6 bar (see product label)
- Mechanical resistance : Group 2 according to EN 10226
- Rp Threaded connections (brass body) : (DN 15 - DN 20) secondo EN 10226
- Rp Threaded connections : (DN 15 - DN 20 - DN 25 - DN 32 - DN 40 - DN 50) according to EN 10226
- Flanged connections to be coupled with PN 16 flanges : (DN 25* - DN 32 - DN 40 - DN 50 - DN 65 - DN 80 - DN 100 - DN 125 - DN 150) according to ISO 7005
- NPT threaded or ANSI 150 flanged connections : request feasibility
- Quick closing valve
- In compliance with : PED Directive 2014/68/EU

* DN 25 with swivel flanges.

3.0 - COMMISSIONING THE DEVICE



3.1 - OPERATIONS PRIOR TO INSTALLATION

- It is necessary to close the gas upstream of the valve prior to installation;
 - Make sure that the line pressure **DOES NOT EXCEED** the maximum pressure declared on the product label;
 - Any protective caps (if any) must be removed prior to installation;
 - Valve pipes and insides must be clear of any foreign bodies;
- If the device is threaded:
- make sure that the pipe thread is not too long, to prevent damaging the body of the device when screwing it on;
- If the device is flanged:
- make sure the inlet and outlet counter-flanges are perfectly coaxial and parallel in order to prevent unnecessary mechanical stress to the body. Also calculate the space to insert the seal gasket;
 - With regard to tightening operations, equip yourself with one or two calibrated torque wrenches or other controlled locking tools;

Common procedures (threaded and flanged devices):

- The safety regulations on handling loads in force in the country of installation must be complied with. If the device to be installed exceeds the weight allowed, suitable mechanical equipment and adequate slings must be used. Necessary precautions must be taken during the handling phases so as not to damage/ruin the external surface of the device.
- With outdoor installation, it is advisable to install a protective roof to prevent rain from oxidising or damaging parts of the device.



- According to the plant geometry, check the risk of explosive mixture arising inside the piping;
- If the valve is installed near other devices or as part of an assembly, compatibility between the valve and this other device must be evaluated beforehand;
- Provide a protection against impacts or accidental contacts if the valve is accessible to unqualified personnel.



3.2 - INSTALLATION (see example in 3.4)

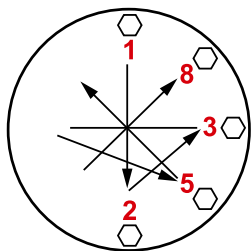
Threaded devices:

- Assemble the device by screwing it, with the due seals, onto the plant with pipes and/or fittings whose threads are consistent with the connection being attached;
- The arrow, shown on the body (**6**) of the device, needs to be pointing towards the application;

Flanged devices:

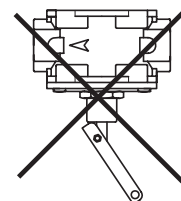
- Assemble the device by flanging it, with the due seals, onto the plant with pipes whose flanges are consistent with the connection being attached. The gaskets must be free from defects and must be centred between the flanges;
- If, after installing the gaskets, there is still an excessive space in between, do not try to reduce the said gap by excessively tightening the bolts of the device;

- The arrow, shown on the body (**6**) of the device, needs to be pointing towards the application;
- Insert the relative washers inside the bolts in order to prevent damage to the flanges during tightening;
- When tightening, be careful not to “pinch” or damage the gasket;
- Tighten the nuts or bolts gradually, in a “cross” order (see the example below);
- Tighten them, first by 30%, then by 60%, and finally 100% of the maximum torque (see the table below according to EN 13611);



Diameter	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
Max. torque (N.m)	30	50	50	50	50	50	80	160	160

- Tighten each nut and bolt again clockwise at least once, until the maximum torque has been achieved uniformly;
- Common procedures (threaded and flanged devices):
- The device can also be installed vertically without prejudicing correct operation. It cannot be put in upside down (with its reset handgrip in downward position);
- During installation, avoid debris or metal residues from getting into the device;
- To guarantee mechanical tension-free assembly, we recommend using compensating joints, which also adjust to the pipe's thermal expansion;
- If the device is to be installed in a ramp, it is the installer's responsibility to provide suitable supports or correctly sized supports, to properly hold and secure the assembly. Never, for any reason whatsoever, leave the weight of the ramp only on the connections (threaded or flanged) of the individual devices;
- In any case, following installation, check the tightness of the plant;



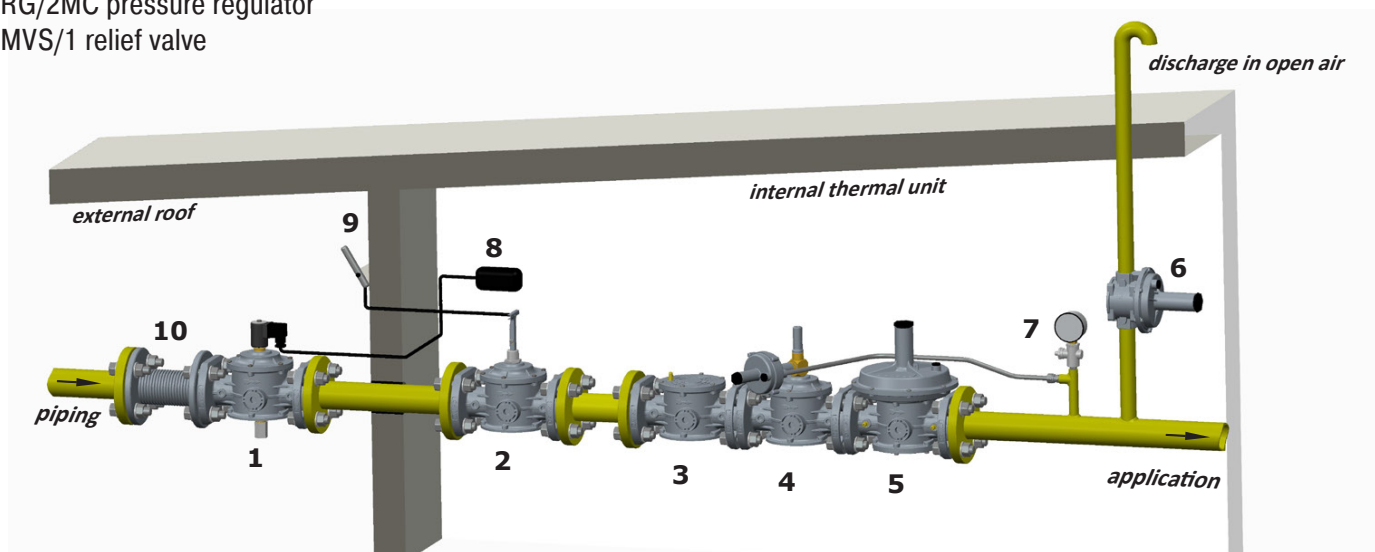
3.3 - INSTALLATION IN PLACES WHERE THERE IS THE RISK OF EXPLOSION (DIRECTIVE 2014/34/EU)

The valve is not suitable for use in potentially explosive areas.

3.4 - GENERIC EXAMPLES OF AN INSTALLATION

EXAMPLE 1 (gas plant)

- | | |
|--|--|
| 1. M16/RM N.C. Manual reset solenoid valve | 7. Pressure gauge and relative button |
| 2. SM jerk ON/OFF valve | 8. Gas detector |
| 3. FM gas filter | 9. SM remote jerk ON/OFF valve lever control |
| 4. OPSO series MVB/1 MAX shut off valve | 10. Expansion joint/anti-vibration mount |
| 5. RG/2MC pressure regulator | |
| 6. MVS/1 relief valve | |



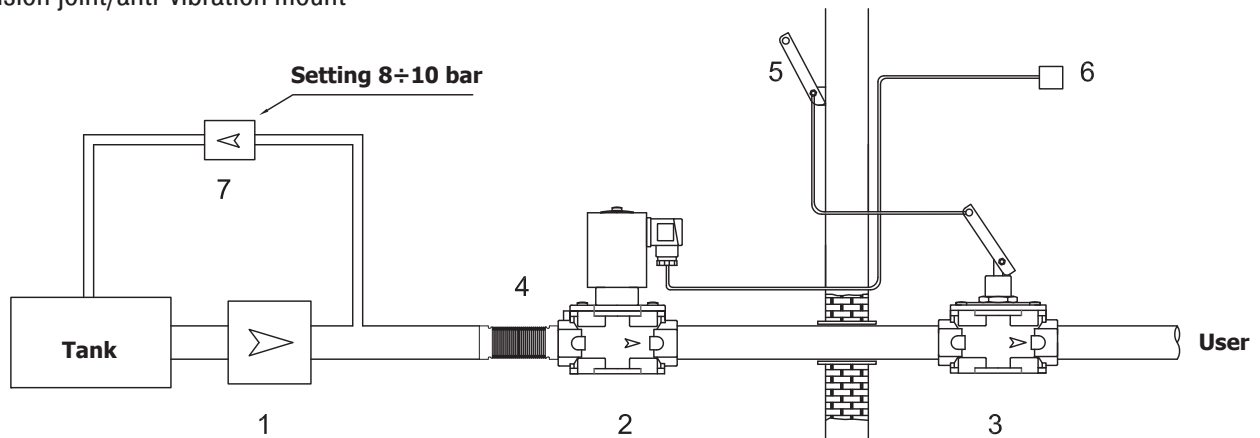
EXAMPLE 2 (naphta plant)

1. Bottom valve or non return valve
2. MN28 interception solenoid valve

3. SM jerk handle valve

4. Expansion joint/anti-vibration mount

5. Exhaust valve
6. SM jerk handle valve remote lever
7. Valve control



4.0 - MANUEL RESET (valve opening)

To reset the valve:

- Pull the reset handgrip (1), turn the reset hand-grip (1) from position “B” to position “A” and wait a few instants in order to get the pressure balance between upstream and downstream of the valve.
- Subsequently bring the reset handle (1) in position “A” (vertical position).



5.0 - FIRST START-UP



- Before start-up make sure that all of the instructions on the rating plate, including the direction of flow, are observed;
- After having gradually pressurised the system, check tightness and operation of the valve.



5.1 - RECOMMENDED PERIODIC CHECKS

- Use a suitable calibration tool to ensure the bolts are tightened as indicated in 3.2;
- Check tightness of the flanged/threaded connections on the system;
- Check the tightness and operation of the valve and any remote control;

It is the responsibility of the final user or installer to define the frequency of these checks based on the severity of the service conditions.



6.0 - MAINTENANCE

No maintenance operations need to be carried out inside the device.

If an internal inspection is required, it is advisable to:

- Also check the integrity of the obturator (7) and, if necessary, replace the rubber seal (8);
- Replace the gaskets before reassembling.



- In any case, before carrying out any dismantling operation on the device, make sure that there is no pressurised gas or fluid inside.

On completion of the operations described below, repeat the procedure indicated in paragraph 5.

7.0 - TRANSPORT, STORAGE AND DISPOSAL

- During transport the material needs to be handled with care, avoiding any impact or vibrations to the device;
- If the product has any surface treatments (ex. painting, cataphoresis, etc) it must not be damaged during transport;
- The transport and storage temperatures must observe the values provided on the rating plate;
- If the device is not installed immediately after delivery it must be correctly placed in storage in a dry and clean place;
- In humid facilities, it is necessary to use driers or heating to avoid condensation;
- At the end of its service life, the product is to be disposed of in compliance with the legislation in force in the country where this operation is performed.

8.0 - WARRANTY

The warranty conditions agreed with the manufacturer at the time of the supply apply.

For damage caused by:

- Improper use of the device;
- Failure to observe the requirements described herein;
- Failure to observe the regulations pertaining to installation;
- Tampering, modification and use of non-original spare parts;

are not covered by the rights of the warranty or compensation for damage.

The warranty also excludes maintenance work, other manufacturers's assembling units, making changes to the device and natural wear.

9.0 - RATING PLATE DATA

The rating plate data (see example provided here) includes the following:

- Manufacturer's name/logo and address (possible distributor name/logo)
 - = device name/model followed
 - by the connection diameter
- NS...(if it is present) = Ministerial approval
 - = Maximum pressure at which product operation is guaranteed
 - = Maximum allowable pressure
 - = Temperature range within which product operation is guaranteed
-  0497
 - = In compliance with PED Dir. followed by Notified Body No.
 - = Year of manufacture
- U1812
 - = Product serial number (see explanation below)
- 7634
 - = Lot issued in year 2018 in the 12th week
- 00001
 - = progressive job order number for the indicated year
 - = progressive number referring to the quantity of the lot

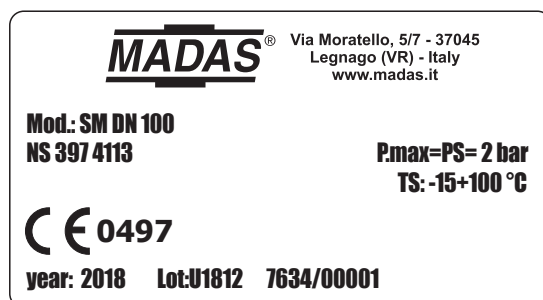
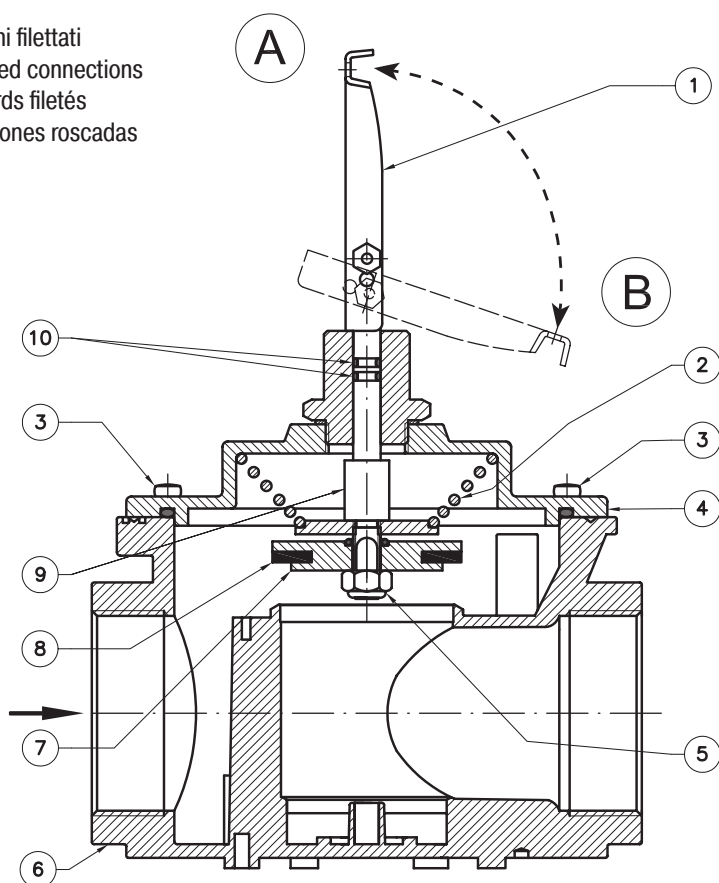


fig. 1

Attacchi filettati
Threaded connections
Raccords filetés
Conexiones roscadas

**EN****fig. 1 and 2**

1. Reset handgrip
2. Closing spring
3. Cover fixing screws
4. Cover
5. Obturator locking nut
6. Body valve
7. Obturator
8. Seal washer
9. Central pin
10. Seal O Ring
11. Bottom (only DN 100 version)
12. Bottom fixing screws (on DN 100 only)

fig. 2

Attacchi flangiati
Flanged connections
Raccords à brides
Conexiones embridadas

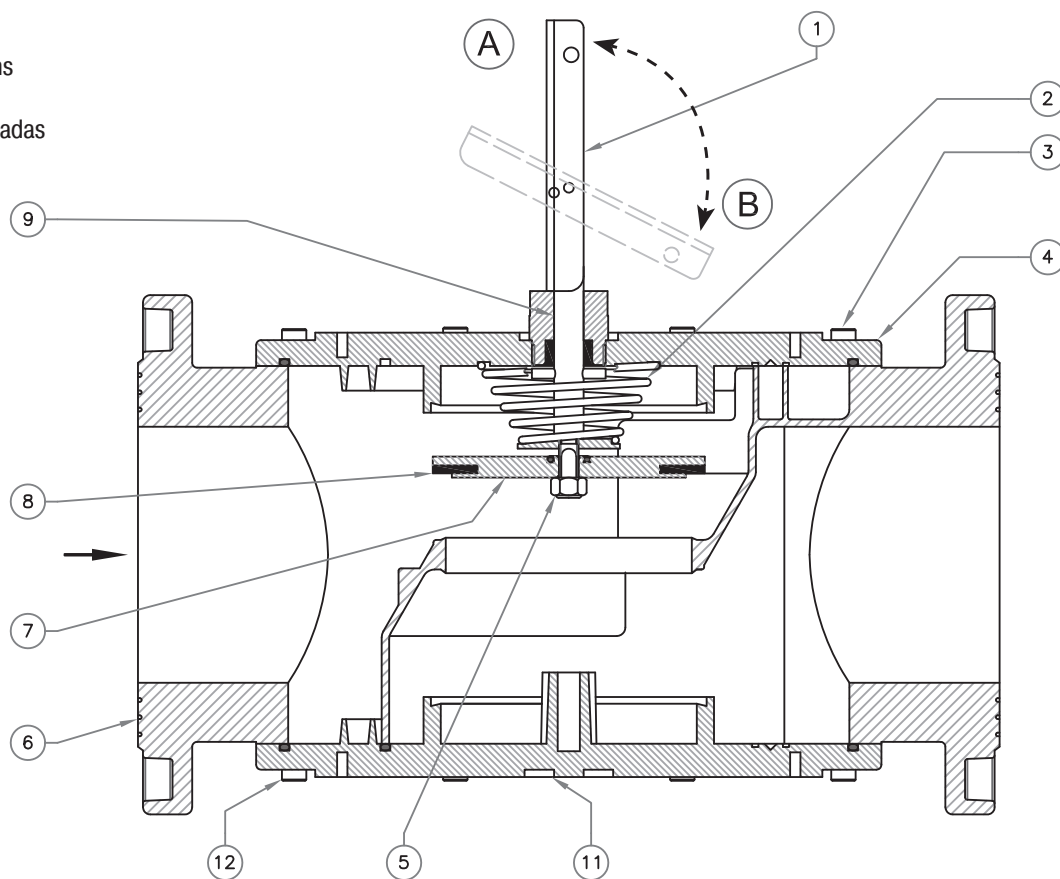
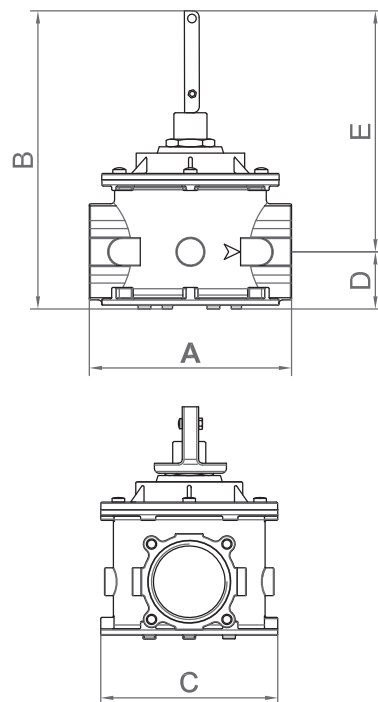


Tabella 1 - Table 1 - Tableau 1 - Tabla 1

Dimensioni di ingombro in mm - Overall dimensions in mm - Dimensions d'encombrement en mm - Dimensiones totales en mm

Attacchi filettati Threaded connections Raccords filetés Conexiones roscadas	Attacchi flangiati Flanged connections Raccords à brides Conexiones embridadas	fori holes trous orificios	A	B=(D+E)	C	D	E
DN 15* - DN 20*	-		55	139	60	15	124
DN 15 - DN 20 - DN 25	-		120	180	94	29,5	150,5
-	DN 25		191	187	115	57,5	129,5
DN 32 - DN 40	-		160	213	140	37	176
DN 50	-		160	238	140	57,5	180,5
-	PN 16 - DN 32 FL	4	230	265	165	67,5	197,5
-	PN 16 - ANSI 150 DN 40 FL - DN 50 FL	4	230	265	165	67,5	197,5
-	PN 16 - ANSI 150 - DN 65	4	290	315	211	90	225
-	PN 16 - DN 80	8	310	322	211	97	225
-	ANSI 150 - DN 80	4	290	315	211	90	225
-	PN 16 - ANSI 150 - DN 100	8	350	322	254	105	217
-	PN 16 - ANSI 150 - DN 125	8	480	545	322	125	420
-	PN 16 - ANSI 150 - DN 150	8	480	550	322	130	420



* = corpo ottone (SMO) - brass body (SMO) - corps en laiton (SMO) - cuerpo de latón (SMO)

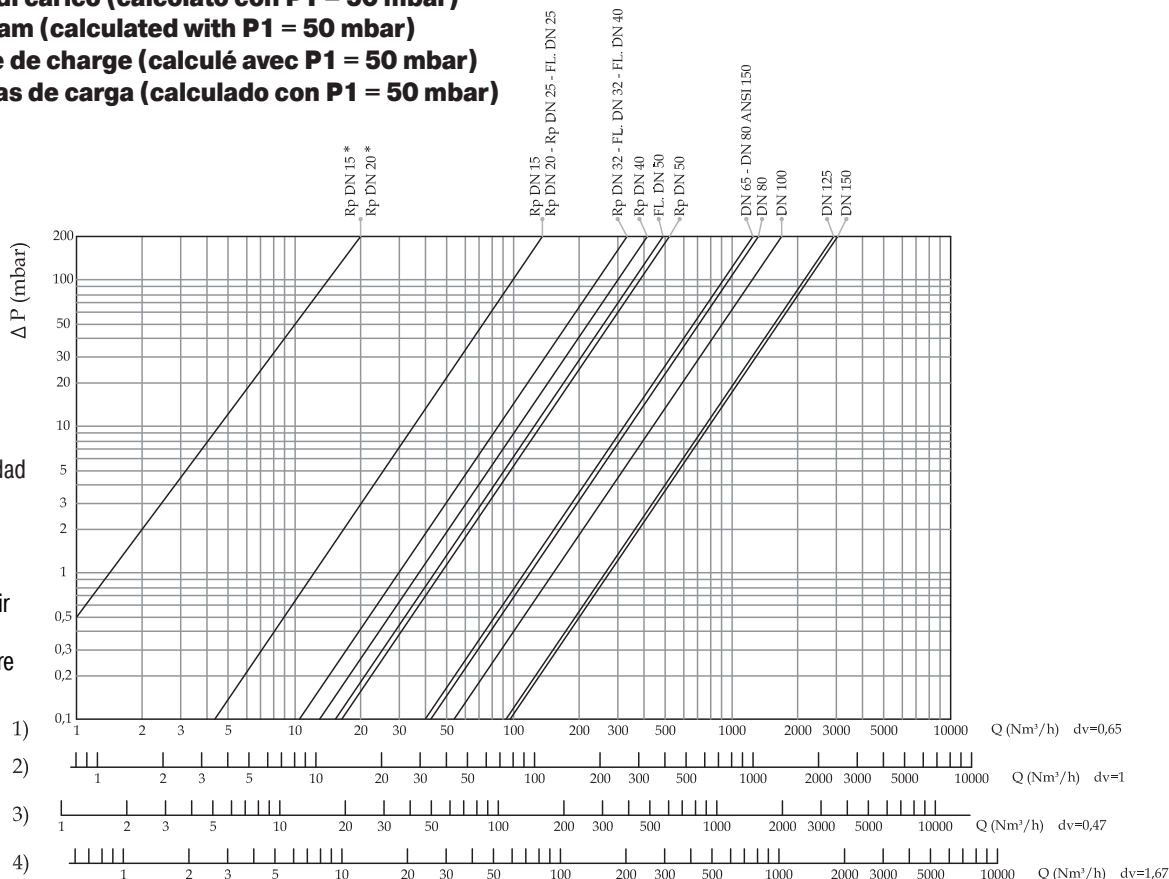
Le dimensioni sono indicative, non vincolanti - The dimensions are provided as a guideline, they are not binding
Les dimensions sont indicatives, non contractuelles - Las dimensiones son indicativas, no vinculantes

Diagramma perdite di carico (calcolato con P1 = 50 mbar)
Pressure drop diagram (calculated with P1 = 50 mbar)
Diagramme de perte de charge (calculé avec P1 = 50 mbar)
Diagrama de pérdidas de carga (calculado con P1 = 50 mbar)

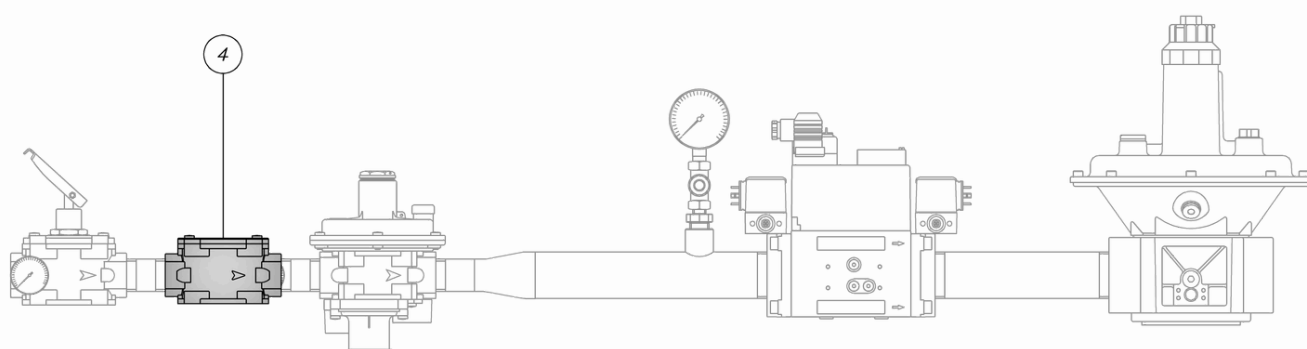
- 1) metano - methane
méthane - metano
- 2) aria - air - air - aire
- 3) gas di città - town gas
gaz de ville - gas de ciudad
- 4) gpl - lpg - gpl - gpl

dv = densità relativa all'aria
dv = density relative to the air
dv = densité relative à l'air
dv = densidad relativa del aire

* = corpo ottone
* = brass body
* = corps laiton
* = cuerpo de latón



Item 04 - Filtro para gás



GAS FILTER



CE-51AR1070

CE 0051
0497

MADE IN ITALY

	IT	EN	FR	ES
Pressione massima di esercizio Maximum operating pressure Pression maximum de fonctionnement Presión máxima de funcionamiento	2 - 6 bar			
Attacchi filettati Threaded connections Raccords filetés Conexiones roscadas	DN 15 - DN 20 - DN 25 - DN 32 - DN 40 - DN 50			
Attacchi flangiati Flanged connections Raccords à brides Conexiones embrizadas	DN 25* - DN 32 - DN 40 - DN 50			
	* su richiesta con flange girevoli	* with swivel flanges on request	* sur demande avec brides tournantes	* bajo petición con bridas locas
Norma di riferimento Reference standard Norme de référence Patrón de referencia	EN 126			
In conformità a In conformity with Conforme a Conforme	Regolamento (UE) 2016/426 Direttiva PED 2014/68/UE	Regulation (EU) 2016/426 PED Directive 2014/68/EU	Règlement (UE) 2016/426 Directive PED 2014/68/UE	Reglamento (UE) 2016/426 Directiva PED 2014/68/UE

1.0 - GENERAL INFORMATION

This manual shows you how to safely install, operate and use the device.

The instructions for use **ALWAYS** need to be available in the facility where the device is installed.

ATTENTION: installation/maintenance needs to be carried out by qualified staff (as explained in section 1.3) by using suitable personal protective equipment (PPE).

For any information pertaining to installation/maintenance or in case of problems that cannot be solved with the instructions, contact the manufacturer by using the address and phone numbers provided on the last page.

1.1 - DESCRIPTION

A device that retains dust particles conveyed by the gas and protects the elements in danger (burners, counters, boilers, pressure regulators, etc.) from rapid clogging.

IT consists of a filter cartridge made of washable synthetic material and can be entirely removed for full inspection, cleaning and/or replacement.

It can be supplied equipped with:

- pressure test nipples and/or connections to control the pressure and/or differential pressure.
- cap or drain valve for condensation drainage.

Only FGM versions:

- clogging indicator differential pressure gauge installation set-up;
- pressure gauge already installed.

Reference standards: EN 126 – EN 13611.

1.2 - KEY TO SYMBOLS



DANGER: Failure to observe this may cause damage to tangible goods.



DANGER: Failure to observe this may cause damage to tangible goods, injury to people and/or pets.



ATTENTION: Attention is drawn to the technical details intended for qualified staff.

1.3 - QUALIFIED STAFF

These are people who:

- Are familiar with product installation, assembly, start-up and maintenance;
- Know the regulations in force in the region or country pertaining to installation and safety;
- Are trained in first aid.



1.4 - USING NON-ORIGINAL SPARE PARTS

- To perform maintenance or change spare parts (e.g. filter element, O-ring, etc.) **ONLY USE** manufacturer-recommended parts. Using different parts not only voids the product warranty, it could compromise correct operation of the device.
- The manufacturer is not liable for malfunctions caused by unauthorised tampering or use of non-original spare parts.



1.5 - IMPROPER USE

- The product must only be used for the purpose it was built for.
- It is not allowed to use fluids other than those expressly stated.
- The technical data set forth on the rating plate must not, under any circumstances, be exceeded. The end user or installer is in charge of implementing proper systems to protect the device, which ensure the maximum pressure indicated on the rating plate is not exceeded.
- The manufacturer is not responsible for any damage caused by improper use of the device.

2.0 - TECHNICAL DATA

• Use	: non-aggressive gases of the three families (dry gases)
• Ambient temperature (TS)	: -40 ÷ +70°C
• Maximum operating pressure	: 2 or 6 bar (see product label)
• Mechanical strength	: Group 2 (according to EN 13611)
• Rp threaded connections	: (DN 15 - DN 20 - DN 25 - DN 32 - DN 40 - DN 50) according to EN 10226
• Flanged connections that can be coupled to PN 16 flanges	: (DN 25* - DN 32 - DN 40 - DN 50) ISO 7005 / EN 1092-1
• NPT threaded or ANSI 150 flanged connections	: on request
• Filter element	: Filtering 10-20-50 µm
• In compliance with	: Regulation (EU) 2016/426 (Appliances burning gaseous fuels) PED Directive 2014/68/EU

* DN 25 with swivel flanges.

2.1 - MODEL IDENTIFICATION

FM:	Standard Filter (with winding cartridge)	- Max P = 2 or 6 bar
FGM:	Filter with central cartridge flat surface	- Max P = 2 or 6 bar

3.0 - COMMISSIONING THE DEVICE



3.1 - OPERATIONS PRIOR TO INSTALLATION

- It is necessary to close the gas upstream of the device prior to installation;
- Make sure that the line pressure **DOES NOT EXCEED** the maximum pressure declared on the product label;
- Any protective caps (if any) must be removed prior to installation;
- The pipes and inside of the device must be clear of any foreign bodies;
If the device is threaded:
 - make sure that the pipe thread is not too long, to prevent damaging the body of the device when screwing it on;

If the device is flanged:

- make sure the inlet and outlet counter-flanges are perfectly coaxial and parallel in order to prevent unnecessary mechanical stress to the body. Also calculate the space to insert the seal gasket;
- With regard to tightening operations, equip yourself with one or two calibrated torque wrenches or other controlled locking tools;

Common procedures (threaded and flanged devices):

- Consider the clearance requirements to replace the filter element;
- With outdoor installation, it is advisable to install a protective roof to prevent rain from oxidising or damaging parts of the device.



- According to the plant geometry, check the risk of an explosive mixture arising inside the piping;
- If the filter is installed near other devices or as part of an assembly, compatibility between the filter and these devices must be evaluated beforehand;
- Provide a protection against impacts or accidental contacts if the device is accessible to unqualified personnel.



3.2 - INSTALLATION (see example in 3.4)

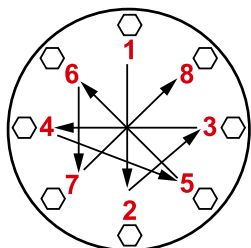
Threaded devices:

- Assemble the device by screwing it, with the due seals, onto the plant with pipes and/or fittings whose threads are consistent with the connection being attached.
- The arrow, shown on the body (**3**) of the device, needs to be pointing towards the application;

Flanged devices:

- Assemble the device by flanging it, with the due seals, onto the plant with pipes whose flanges are consistent with the connection being attached. The gaskets must be free from defects and must be centred between the flanges;

- If, after installing the gaskets, there is still an excessive space in between, do not try to reduce said gap by excessively tightening the bolts of the device;
- The arrow, shown on the body (**3**) of the device, needs to be pointing towards the application;
- Insert the relative washers inside the bolts in order to prevent damage to the flanges during tightening;
- When tightening, be careful not to “pinch” or damage the gasket;
- Tighten the nuts or bolts gradually, in a “cross” pattern (see the example below);
- Tighten them, first by 30%, then by 60% and finally 100% of the maximum torque (see the table below according to EN 13611);

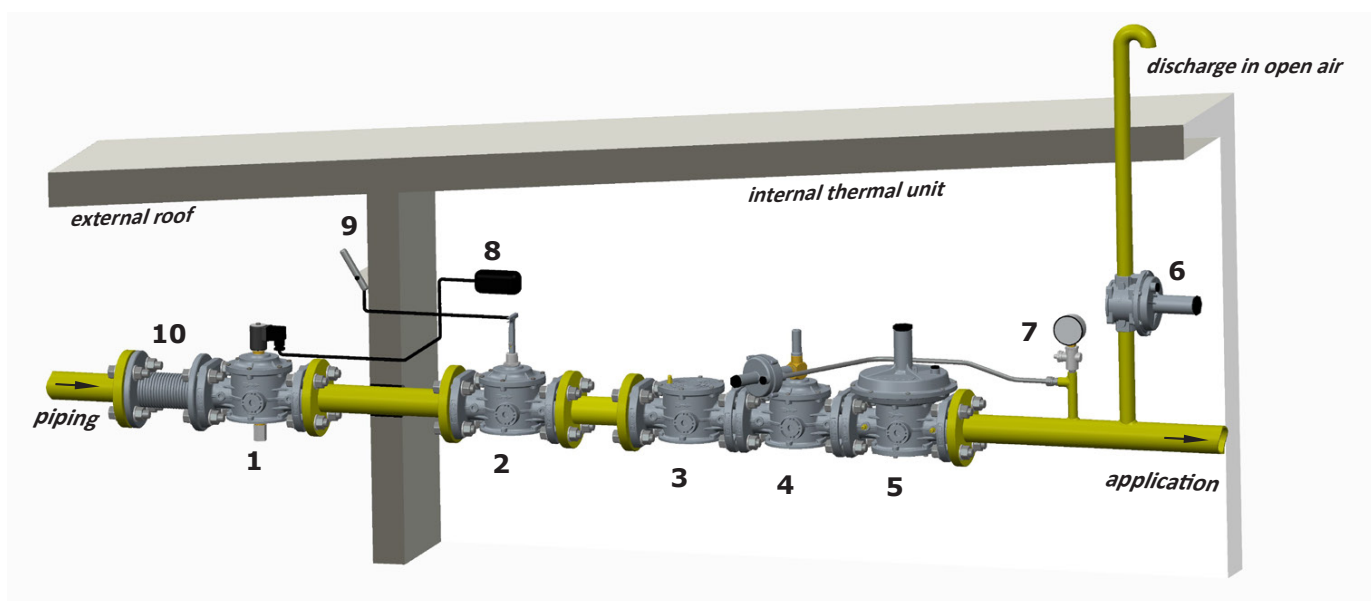


Diameter	DN 25	DN 32	DN 40	DN 50
Max. torque (N.m)	30	50	50	50

- Tighten each nut and bolt again clockwise at least once, until the maximum torque has been achieved uniformly;
- Common procedures (threaded and flanged devices):
 - The filter can be installed in any position as long as the arrow, indicated on the body (**3**) of the appliance, faces the application;
 - During installation, avoid debris or metal residues from getting into the device;
 - To guarantee mechanical tension-free assembly, we recommend using compensating joints, which also adjust to the pipe's thermal expansion;
 - If the device is to be installed in a ramp, it is the installer's responsibility to provide suitable or correctly sized supports to hold and secure the assembly. Never, for any reason whatsoever, leave the weight of the ramp only on the connections (threaded or flanged) of the individual devices;
 - In any case, following installation, check the tightness of the plant;

3.4 - GENERIC EXAMPLE OF AN INSTALLATION

- | | |
|--|--|
| 1. M16/RM N.C. Manual reset solenoid valve | 6. MVS/1 relief valve |
| 2. SM jerk ON/OFF valve | 7. Pressure gauge and relative button |
| 3. FM gas filter | 8. Gas detector |
| 4. OPSO series MVB/1 MAX shut off valve | 9. SM remote jerk ON/OFF valve lever control |
| 5. RG/2MC pressure regulator | 10. Expansion joint/anti-vibration mount |





4.0 - FIRST START-UP



- Before start-up make sure that all of the instructions on the rating plate, including the direction of flow, are observed;
- After having gradually pressurised the system, check the tightness and operation of the filter.



4.1 - RECOMMENDED PERIODIC CHECKS

- Use a suitable calibration tool to ensure the bolts are tightened as indicated in 3.2;
 - Check the tightness of the flanged/threaded connections on the system;
 - Check the tightness and operation/efficiency of the filter;
- It is the responsibility of the final user or installer to define the frequency of these checks based on the severity of the service conditions.



5.0 - MAINTENANCE



- Before carrying out any dismantling operation on the device, make sure that there is no pressurised gas inside.



REPLACING THE FILTER ELEMENT (2)

- Remove the cover (1) by loosening the fastening screws (5);
- Extract the filter element and check its conditions. Blow it and clean it and, if necessary, replace it.
- Reassemble it in its initial position, checking that it is placed between the special guides (4) (see Fig. 1-2-3-4);
- Check the conditions of the sealing O-Ring (6) of the cover (1), and replace it if necessary (recommended);
- Make sure the O-Ring (6) of the cover (1) is inside the provided groove;
- Reassemble the cover and secure it in its original position, being very careful not to “pinch” or damage the O-ring during tightening;
- Tighten the screws (5) gradually, following a “cross” pattern, until the torque (tolerance -15%) indicated in the table at the side is reached. Use a calibrated torque wrench to do this.
- Check the body/cover seal;

Screw	M5	
	Galvanised	Stainless Steel
Max. torque (N.m)	6	4.5

6.0 - TRANSPORT, STORAGE AND DISPOSAL

- During transport the material needs to be handled with care, avoiding any impact or vibrations to the device;
- If the product has any surface treatments (ex. painting, cataphoresis, etc) it must not be damaged during transport;
- The transport and storage temperatures must observe the values provided on the rating plate;
- If the device is not installed immediately after delivery it must be correctly placed in storage in a dry and clean place;
- In humid facilities, it is necessary to use driers or heating to avoid condensation.
- At the end of its service life, the product is to be disposed of in compliance with the legislation in force in the country where this operation is performed.

7.0 - WARRANTY

The warranty conditions agreed with the manufacturer at the time of the supply apply.

For damage caused by:

- Improper use of the device;
- Failure to observe the requirements described in this document;
- Failure to observe the regulations pertaining to installation;
- Tampering, modification and use of non-original spare parts;

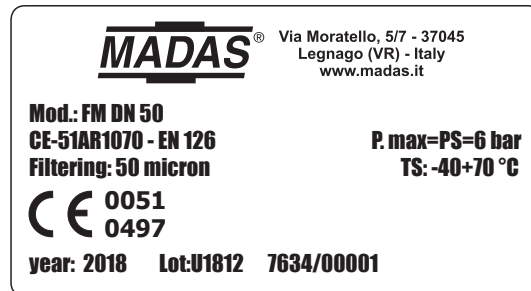
are not covered by the rights of the warranty or compensation for damage.

The warranty also excludes maintenance work, the assembly of devices of other manufacturers, making changes to the device and natural wear.

8.0 - RATING PLATE DATA

The rating plate data (see example provided here) includes the following:

- Manufacturer's name/logo and address (possible distributor name/logo)
- Mod.: = device name/model followed by the connection diameter
- CE-51AR1070 = certification pin number
- EN 126 = Product reference regulation
- P. max = Maximum pressure at which product operation is guaranteed
- PS = Allowable maximum pressure
- Filtering = Filtering
- TS = Temperature range within which product operation is guaranteed
-  0051 = Conformity with Regulation (EU) 2016/426 followed by Notified Body No.
-  0497 = In compliance with PED directive followed by the no. of the Notified Body
- year = Year of manufacture
- Lot = Product serial number (see explanation below)
 - U1812 = Lot issued in year 2018 in the 12th week
 - 7634 = progressive job order number for the indicated year
 - 00001 = progressive number referring to the quantity of the lot



9.0 - FILTER SIZING EXAMPLE

Usage data

$Q_n = 270 \text{ [Nm}^3/\text{h]}$ Methane

$P_i = 2.6 \text{ [bar]}$

To use the diagram, you have to convert the usage data to the diagram conditions ($P_i=0$) and vice versa.

- Conversion to the flow rate at the diagram conditions:

$$Q_d \text{ [Nm}^3/\text{h}] = \left(\frac{Q_n \text{ [Nm}^3/\text{h}]}{P_i + 1 \text{ [bar]}} \right) = \left(\frac{270 \text{ [Nm}^3/\text{h}]}{2.6 + 1 \text{ [bar]}} \right) = 75 \text{ [m}^3/\text{h}]$$

- Choosing the filter diameter:

Maximum flow rates in m ³ /h of methane gas considering a max flow speed through the pipes of 20 m/s					
DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
13.0 m ³ /h	23.1 m ³ /h	36.1 m ³ /h	59.2 m ³ /h	92.5 m ³ /h	145 m ³ /h

- Identify the Q_d flow rate on the Gas line used and go up with a vertical line until you cross the straight line for the selected diameter (see example diagram on page 32);
- From this newly identified point, move left until you cross the graph axis and read the ΔP_d
- Converting the ΔP_d measured on the diagram at the system conditions:

$$\Delta P_r \text{ [mbar]} = \Delta P_d \text{ [mbar]} \times (P_i + 1) \text{ [bar]} = 1.5 \text{ [mbar]} \times (2.6 + 1) \text{ [bar]} = 5.4 \text{ [mbar]}$$

- Follow the same procedure in the diagrams on pages 32 and 33 to calculate the pressure drop of the filters to the various filtering points (50 μm - 20 μm - 10 μm).

KEY

Q_n : Usage flow rate [Nm³/h]

Q_d : Flow rate at the diagram conditions [m³/h]

P_i : System pressure

ΔP_d : ΔP measured on the diagram

ΔP_r : ΔP normalised to the system condition

P_1 : Diagram tracing pressure

10.0 - DIFFERENTIAL PRESSURE GAUGE CLOGGING INDICATOR

10.1 - DESCRIPTION

The differential pressure gauge used to point the clogging degree of the cartridge filters.

It is equipped of adjust maximum index (red arrow) able to supply the best ΔP value occurred.

Can be supplied already mounted **ONLY** on the filter FGM series (as in figure 6 and 7) or as accessory to be mounted later.

Generally it is supplied (on request) mounted on filters as indicated in fig. 6, namely:

- arrow on the filter body left to right;
- readable dial frontally;
- + mark on the back left

It is possible to supply it even as stated in fig. 7 (reverse type "R"), namely:

- arrow on the filter body left to right;
- readable dial from the back;
- + mark on the left (in this case the marks + and – are specified with proper labels).

Both versions can be supplied with a built in proximity sensor too to transmit a maximum differential pressure signal from remote ("S" type).

The sensore is normally open type and supplies a signal when the ΔP pointer reaches 100 mbar point.

Different settings on request.



10.2 - INSTALLATION

If the differential pressure gauge is supplied as accessory it is necessary to close the gas before installation.

We suggest the pressure gauge installation on filters with premounting connections then with 2 G 1/8 threaded holes (distance between them 55 mm) already present on the cover (see fig. 6 and 7).

If the filter do not have this premounting connections you must do a connection as show in fig. 8 using pipes and/or connections having matching threads with the connection to be connected and suitable for gas use.

The filter on which the pressure gauge have to be mount must be equipe at least with an inlet and outlet pressure test point.

After mounting make a working and a leak test.

Once the filter is mounted, before the plant start up, reset the red arrow.

Check the ΔP with new filter and with flow in the plant.

We recommend replacing the cartridge when the differential pressure is doubled comparing the original value obtained with new filter.

10.3 - TECHNICAL DATA

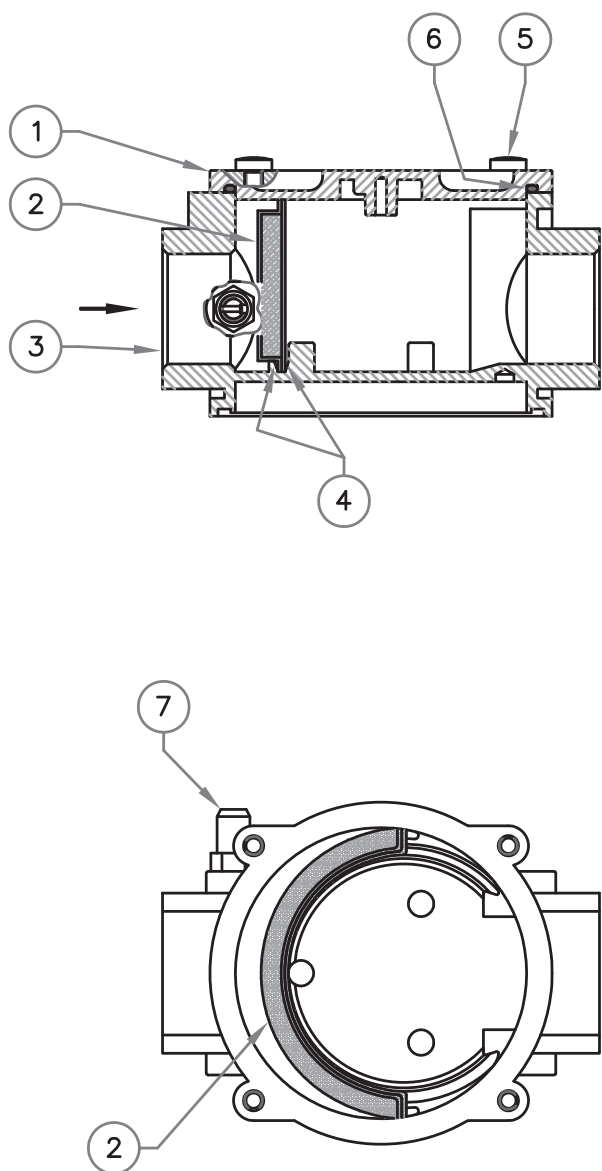
- Gauge P. max: 20 bar
- Standard maximum ΔP : 150 mbar (different ΔP on request)
- Environment temperature: $-40 \div +60$ °C

Proximity sensor features

- Maximum voltage: 30 Vdc
- Maximum power: 100 mA
- Protection degree: IP55
- Protection way: EEx ia IIC T6
- Cable length: 2 m

fig. 1 - FM

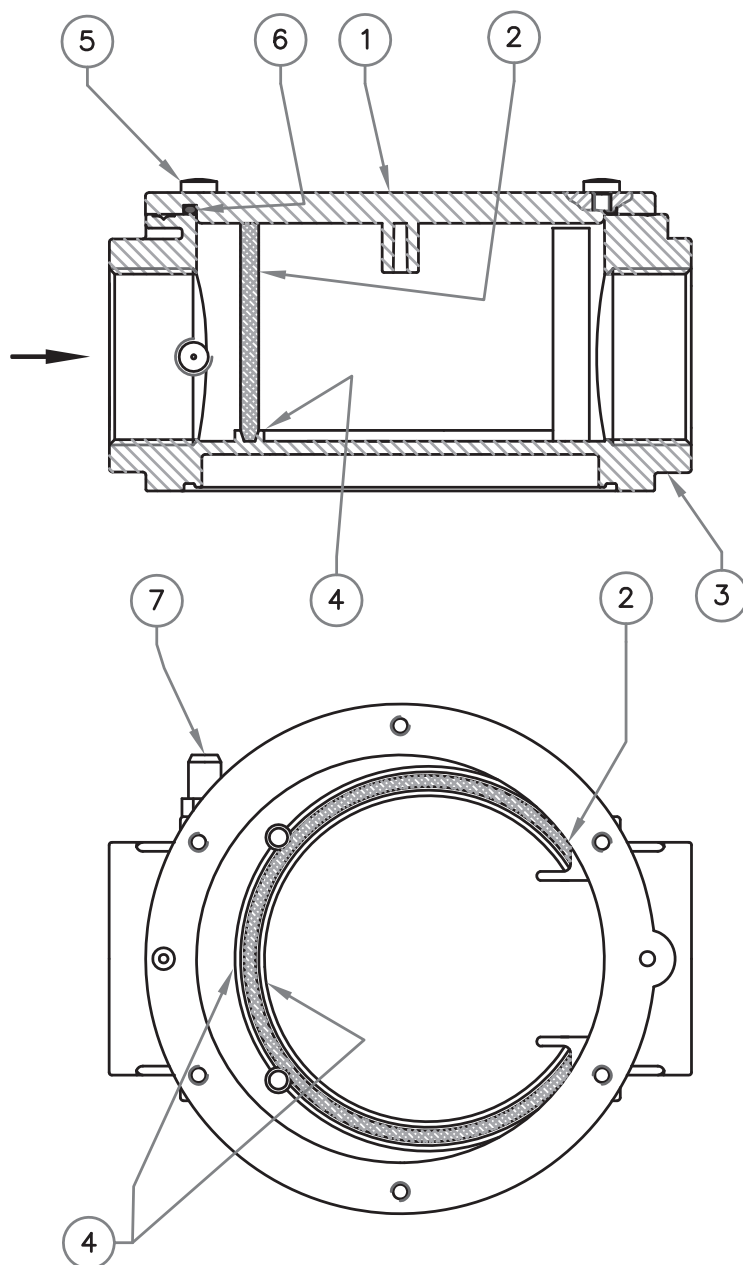
Rp (DN 15 - DN 20 - DN 25)

**fig. 2 - FM**

Rp (DN 25M - DN 32 - DN 40 - DN 50)

DN 25M =

attacchi DN 25 con corpo DN 32
DN 25 connections with DN 32 body
fixations DN 25 avec corps DN 32
roscas DN 25 con cuerpo DN 32



vista dall'alto senza coperchio
view from above without cover
vue du haut sans couvercle
vista superior sin tapa

IT**fig. 1, 2, 3 e 4**

- 1 - Coperchio
- 2 - Organo filtrante
- 3 - Corpo
- 4 - Guide per organo filtrante
- 5 - Viti di fissaggio coperchio
- 6 - O-Ring di tenuta coperchio
- 7 - Presa di pressione (optional)

EN**fig. 1, 2, 3 and 4**

- 1 - Cover
- 2 - Filter element
- 3 - Body
- 4 - Filter element guides
- 5 - Cover fastening screws
- 6 - Cover sealing O-Ring
- 7 - Pressure test nipple (optional)

FR**fig. 1, 2, 3 et 4**

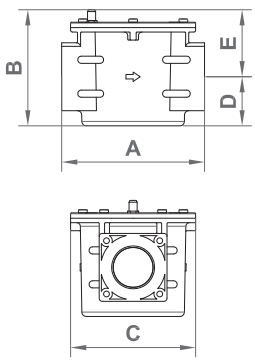
- 1 - Couvercle
- 2 - Organe filtrant
- 3 - Corps
- 4 - Guides pour organe filtrant
- 5 - Vis de fixation du couvercle
- 6 - Joint torique d'étanchéité du couvercle
- 7 - Prise de pression (en option)

ES**fig. 1, 2, 3 y 4**

- 1 - Tapa
- 2 - Cartucho filtrante
- 3 - Cuerpo
- 4 - Guías para el cartucho filtrante
- 5 - Tornillos de fijación de la tapa
- 6 - Junta tórica de estanqueidad de la tapa
- 7 - Toma de presión (opcional)

Tabella 1 - Table 1 - Tableau 1 - Tabla 1

Dimensioni di ingombro in mm - Overall dimensions in mm - Mesures d'encombrement en mm - Medidas de estorbo en mm

Attacchi filettati Rp Rp threaded connections Fixations filetees Rp Conexiones roscadas Rp	Attacchi flangiati Flanged connections Fixations bridees Conexiones de brida	P. max (bar)	A	B	C min	D	E	
FM DN 15 - DN 20 - DN 25	-	2	120	71	94	29,5	41,5	
FM DN 15 - DN 20 - DN 25	-	6	120	75	94	29,5	45,5	
-	FM DN 25	2 - 6	191	115	115	57,5	57,5	
-	FM DN 25M	2 - 6	230	115	140	57,5	57,5	
-	FGM DN 25M	2 - 6	230	135,5	140	57,5	78	
FM DN 25M - DN 32 - DN 40	-	2 - 6	160	87	140	37	50	
FGM DN 25M - DN 32 DN 40 - DN 50	-	2 - 6	160	133	140	55	78	
-	FGM DN 32 FL - DN 40 FL DN 50 FL	2 - 6	230	152	165	67,5	84,5	
FM DN 50	-	2 - 6	160	113	140	45,5	67,5	

Le dimensioni sono indicative, non vincolanti - The dimensions are provided as a guideline, they are not binding
 Les dimensions sont indicatives et non contractuelles - Las dimensiones son indicativas, no vinculantes

Diagramma esempio - Example diagram
Diagramme exemple - Diagrama Δp de ejemplo

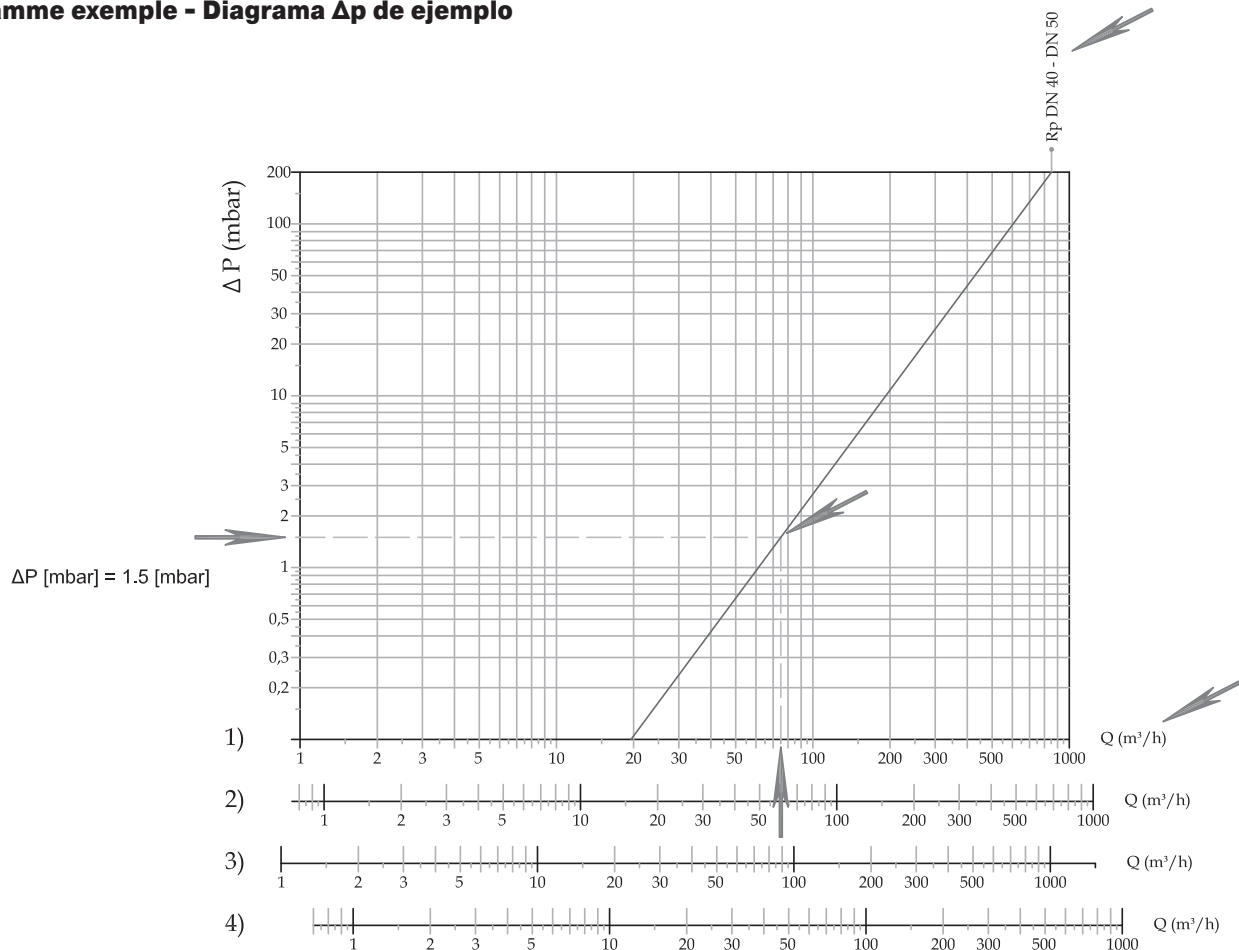


Diagramma perdite di carico FM-FGM filtraggio 50 μm (calcolato con P1 = 0 mbar)
FM-FGM pressure drop diagram filtering 50 μm (calculated with P1 = 0 mbar)
Diagramme de perte de charge FM-FGM filtrage 50 μm (calculé avec P1 = 0 mbar)
Diagrama de pérdidas de carga filtración 50 μm (calculado con P1 = 0 mbar)

DN 25M =

attacchi DN 25 con corpo DN 32
 DN 25 connections with DN 32 body
 fixations DN 25 avec corps DN 32
 roscas DN 25 con cuerpo DN 32

- 1) metano - methane
méthane - metano
- 2) aria - air - air - aire
- 3) gas di città - town gas
gas de ville - gas ciudad
- 4) gpl - lpg - gaz liquide
gas líquido

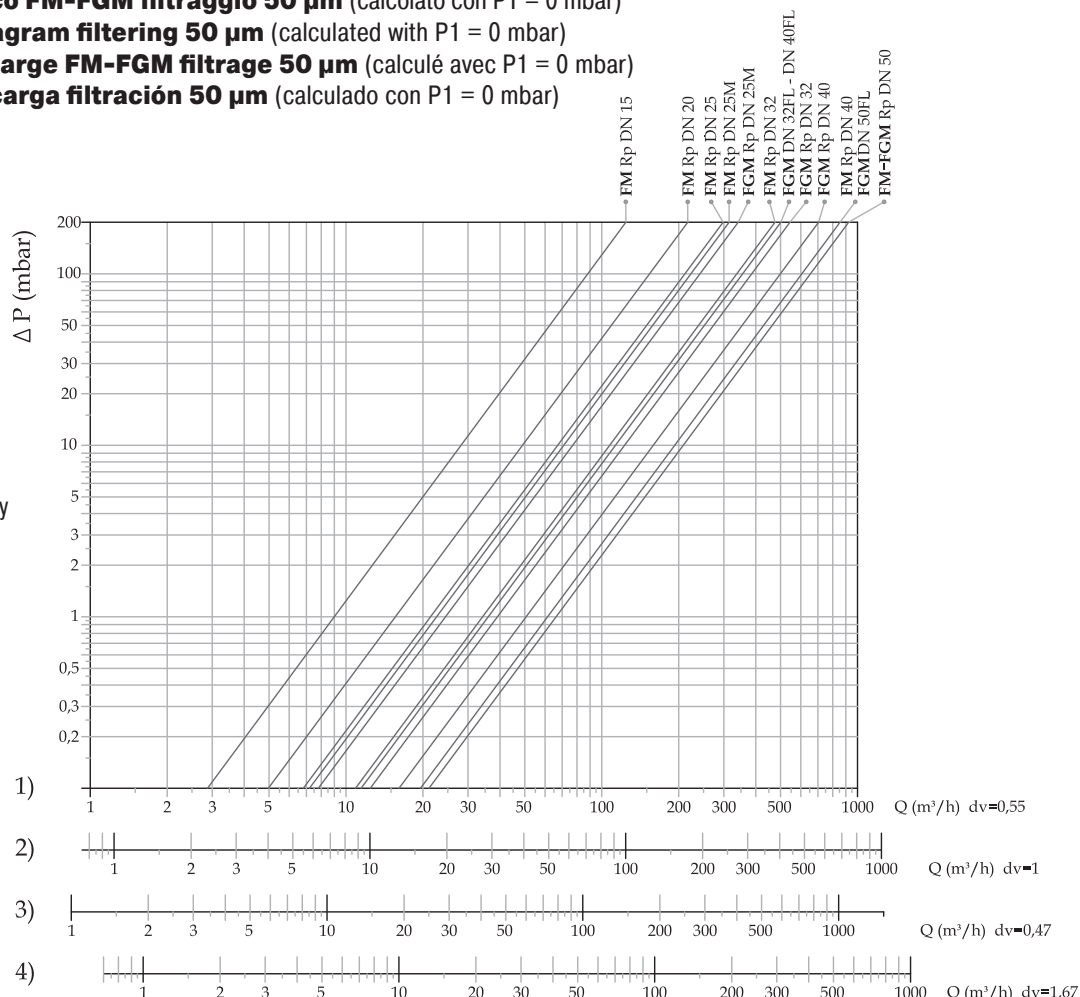


Diagramma perdite di carico FM-FGM filtraggio 20 µm (calcolato con P1 = 0 mbar)
FM-FGM pressure drop diagram filtering 20 µm (calculated with P1 = 0 mbar)
Diagramme de perte de charge FM-FGM filtrage 20 µm (calculé avec P1 = 0 mbar)
Diagrama de pérdidas de carga filtración 20 µm (calculado con P1 = 0 mbar)

DN 25M =
attacchi DN 25 con corpo DN 32
DN 25 connections with DN 32 body
fixations DN 25 avec corps DN 32
roscas DN 25 con cuerpo DN 32

- 1) metano - methane
méthane - metano
- 2) aria - air - air - aire
- 3) gas di città - town gas
gaz de ville - gas ciudad
- 4) gpl - lpg -gas liquide
gas líquido

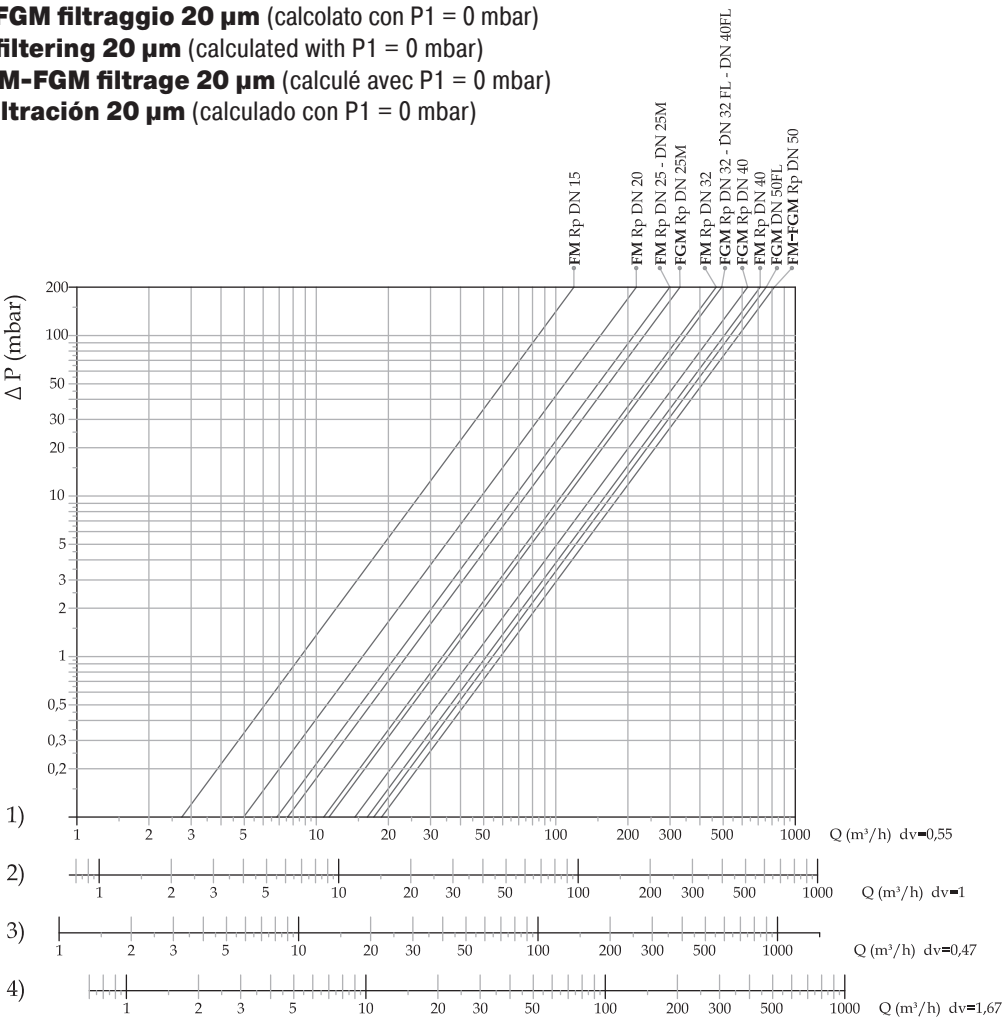
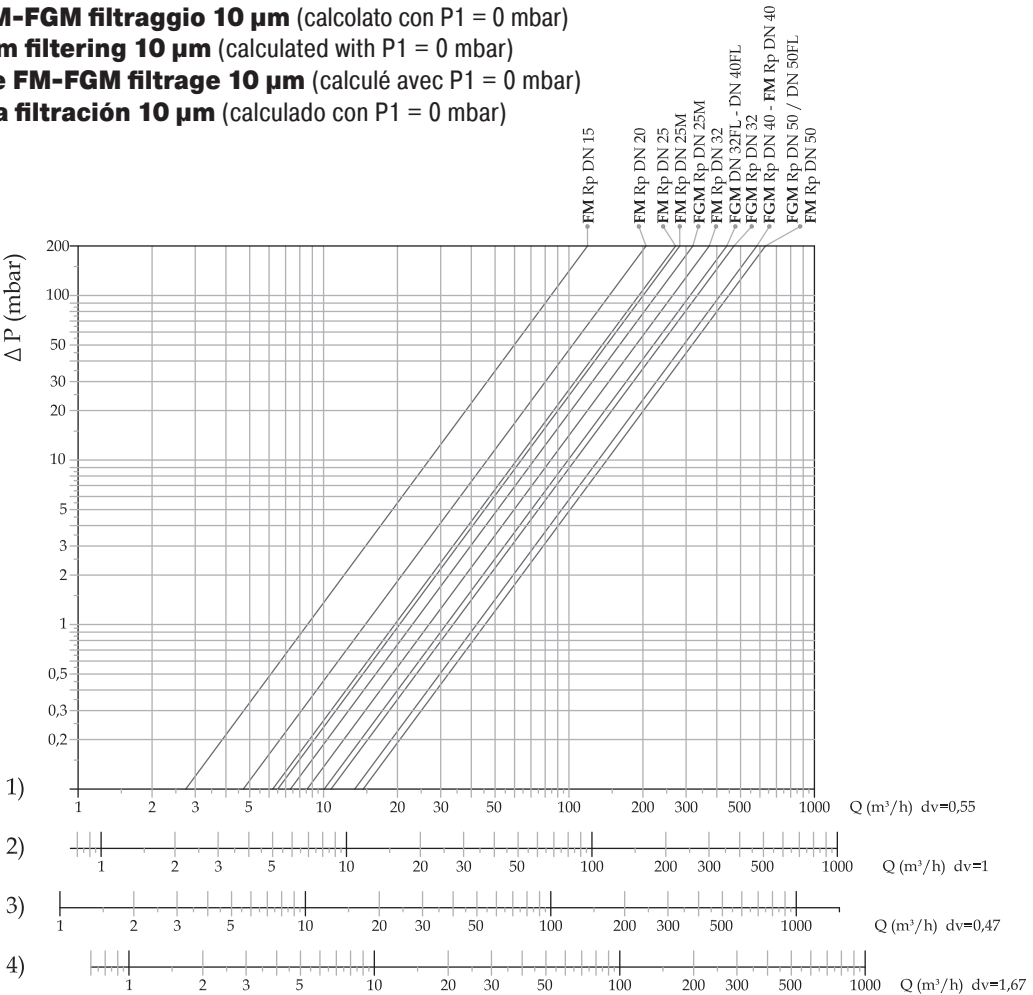


Diagramma perdite di carico FM-FGM filtraggio 10 µm (calcolato con P1 = 0 mbar)
FM-FGM pressure drop diagram filtering 10 µm (calculated with P1 = 0 mbar)
Diagramme de perte de charge FM-FGM filtrage 10 µm (calculé avec P1 = 0 mbar)
Diagrama de pérdidas de carga filtración 10 µm (calculado con P1 = 0 mbar)

DN 25M =
attacchi DN 25 con corpo DN 32
DN 25 connections with DN 32 body
fixations DN 25 avec corps DN 32
roscas DN 25 con cuerpo DN 32

- 1) metano - methane
méthane - metano
- 2) aria - air - air - aire
- 3) gas di città - town gas
gaz de ville - gas ciudad
- 4) gpl - lpg -gas liquide
gas líquido



**PREDISPOSIZIONE INSTALLAZIONE MANOMETRO DIFFERENZIALE INDICATORE INTASAMENTO
CLOGGING INDICATOR DIFFERENTIAL PRESSURE GAUGE INSTALLATION SET-UP
PRÉDISPOSITION INSTALLATION MANOMÈTRE DIFFÉRENTIEL INDICATEUR OBSTRUCTION
PREDISPOSICIÓN PARA INSTALACIÓN DEL MANÓMETRO DIFERENCIAL INDICADOR DE OBSTRUCCIÓN**

Aggiungere le lettere
"PM" dopo il modello

Add the letters "PM"
after model

Ajouter les lettres
"PM" après le modèle

Añadir las letras "PM" a
continuación del modelo

Es. / E.g. / Ex. / Ej.
FGMPM07 B20

**COMBINAZIONI POSSIBILI / POSSIBLE COMBINATIONS
COMBINAISONS POSSIBLES / POSIBLES COMBINACIONES**

È possibile combinare
tra di loro le versioni.

It is possible to combine
the above mentioned
versions.

Les versions peuvent
être combinées entre
elles.

Es posible combinar las
versiones entre sí.

Es. / E.g. / Ex. / Ej.
FF50AK B50

NOTE: È consigliato chiedere SEMPRE la fattibilità. / **NOTE:** We suggest to ask ALWAYS for the feasibility.

NOTE: Il est recommandé de TOUJOURS demander la faisabilité. / **NOTE:** Se aconseja consultar SIEMPRE la viabilidad.

MODELLI / MODELS / MODELES / VERSIONES

IT

- A = Senza prese di pressione o tappi
- B = 1 Presa di pressione G 1/8 in entrata
- C = 1 Presa di pressione G 1/4 in entrata
- D = Presa di pressione G 1/8 in entrata e uscita
- F = 1 Tappo G 1/8 in entrata
- H = Tappo G 1/8 in entrata e uscita
- I = 4 Tappi G 1/4
- J = Tappo G 1/4 in entrata e uscita
- L = 2 Prese di Pressione + 2 Tappi G 1/8
- M = Presa di pressione G 1/4 in entrata e uscita
- N = 4 Prese di pressione G 1/4
- O = 2 Prese di Pressione + 2 Tappi G 1/4
- Q = Tappo G 1/4 in entrata

EN

- A = Without pressure nipples or caps
- B = Inlet G 1/8 pressure nipple
- C = Inlet G 1/4 pressure nipple
- D = Inlet and outlet G 1/8 pressure nipple
- F = Inlet G 1/8 cap
- H = Inlet and outlet G 1/8 cap
- I = 4 G 1/4 caps
- J = Inlet and outlet G 1/4 cap
- L = 2 G 1/8 pressure nipples and 2 G 1/8 caps
- M = Inlet and outlet G 1/4 pressure nipple
- N = 4 G 1/4 pressure nipples
- O = 2 G 1/4 pressure nipples and 2 G 1/4 caps
- Q = Inlet G 1/4 cap

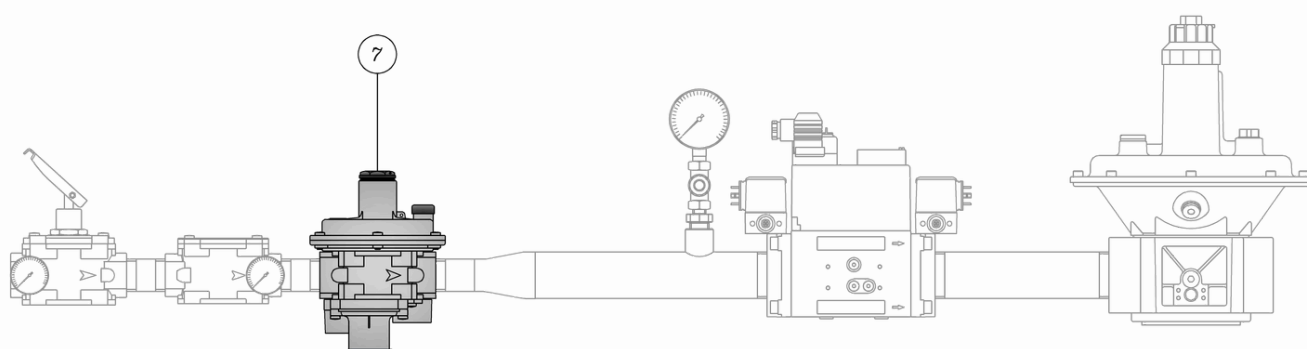
FR

- A = Sans prises de pression ou bouchons
- B = Prise de pression G 1/8 en 'entrée
- C = Prise de pression G 1/4 en 'entrée
- D = Prise de pression G 1/8 en entrée/sortie
- F = 1 Bouchon G 1/8 en entrée
- H = Bouchon G 1/8 en entrée/sortie
- I = 4 Bouchons G 1/4
- J = Bouchon G 1/4 en entrée/sortie
- L = 2 Prises de Pression + 2 Bouchons G 1/8
- M = Prise de pression G 1/4 en entrée/sortie
- N = 4 Prises de pression G 1/4"
- O = 2 Prises de pression + 2 Bouchons G 1/4
- Q = Bouchon G 1/4 en entrée

ES

- A = Sin tomas de presión o tapones
- B = 1 Toma de presión G 1/8 en entrada
- C = 1 Toma de presión G 1/4 en entrada
- D = Toma de presión G 1/8 en entrada/salida
- F = 1 Tapón G 1/8 en entrada
- H = Tapón G 1/8 en entrada/salida
- I = 4 Tapones G 1/4
- J = Tapón G 1/4 en entrada/salida
- L = 2 Tomas de presión + 2 Tapones G 1/8
- M = Toma de presión G 1/4 en entrada/salida
- N = 4 Tomas de presión G 1/4
- O = 2 Tomas de presión + 2 Tapones G 1/4
- Q = Tapón G 1/4 en entrada

Item 07 - Regulador de pressão



GAS PRESSURE REGULATOR



FRG/2MBC



FRG/2MB

CE  II 2G - II 2D

CE 0497

MADE IN ITALY

	IT	EN	FR	ES
Range pressione di esercizio Operating pressure range Plage de pression de fonctionnement Rango de la presión de funcionamiento	Pe: 0,5÷5 bar			
Attacchi filettati / Threaded connections Raccords filetés / Conexiones roscadas	DN 15 - DN 20 - DN 25			
Attacchi flangiati / Flanged connections Raccords à brides / Conexiones embreadas	DN 25*			
	* su richiesta con flange girevoli	* with swivel flanges on request	* sur demande avec brides tournantes	* bajo petición con bridas locas
Norma di riferimento / Reference standard Norme de référence / Patrón de referencia	EN 88-2			
In conformità a * In conformity with * Conforme a * Conforme *	Direttiva PED 2014/68/UE	PED Directive 2014/68/EU	Directive PED 2014/68/UE	Directiva PED 2014/68/UE

1.0 - GENERAL INFORMATION

This manual shows you how to safely install, operate and use the device.

The instructions for use **ALWAYS** need to be available in the facility where the device is installed.

ATTENTION: installation/maintenance needs to be carried out by qualified staff (as explained in section 1.3) by using suitable personal protective equipment (PPE).

For any information pertaining to installation/maintenance or in case of problems that cannot be solved with the instructions, contact the manufacturer at the address and phone numbers provided on the last page.

1.1 - DESCRIPTION

Device which supplies a preset and constant “downstream” pressure value (Pa) (within the intended operating limits) according to variations in the inlet pressure (Pe) and/or the flow rate (Q). The compensated obturator ensures precision when adjusting the outlet pressure (Pa) even with high and sudden variations in the inlet pressure.

These regulators are used in both civil and industrial installations where natural gas, LPG or other non-corrosive gases (dry gases) are used. The **FRG/2MBC** versions (COMPACT) are preferable for small applications (up to 25 m³/h).

Reference standards: EN 88-2 – EN 13611.

They can be equipped with the following safety devices and accessories according to the system requirements:

- **downstream overpressure shut off device (OPSO):** stops supply when the regulator outlet pressure exceeds the setting value of the device. The OPSO device is always present on these devices.
- **downstream minimum pressure shut off device (UPSO):** stops supply when the regulator outlet pressure drops below the setting value of the device. It also intervenes in the event of an upstream power failure. They can also be supplied without the UPSO device.
- **relief valve:** discharges small gas flows outwards if overpressure occurs downstream of the regulator. This discharge can be conveyed outwards if the installation is in a poorly ventilated environment. They can also be supplied without the relief valve.
- **outlet pressure socket.**

1.2 - KEY TO SYMBOLS



DANGER: In the event of inobservance, this may cause damage to property.



DANGER: Inobservance may cause damage to property, people and/or pets.



ATTENTION: Attention is drawn to the technical details intended for qualified staff.

1.3 - QUALIFIED STAFF

These are people who:

- Are familiar with product installation, assembly, start-up and maintenance;
- Know the regulations in force in the region or country pertaining to installation and safety;
- Have first-aid training.



1.4 - USING NON-ORIGINAL SPARE PARTS

- To perform maintenance or replace spare parts (e.g. spring, filter element, etc.) **ONLY** manufacturer-recommended parts can be used. Using different parts not only voids the product warranty, it could compromise correct device operation.
- The manufacturer is not liable for malfunctions caused by unauthorised tampering or use of non-original spare parts.



1.5 - IMPROPER USE

- The product must only be used for the purpose it was built for.
- It is not allowed to use fluids other than those expressly stated.
- The technical data provided on the rating plate must not, under any circumstances, be exceeded. The end user or installer is in charge of implementing correct systems to protect the device, which prevent the maximum pressure indicated on the rating plate from being exceeded.
- The manufacturer is not responsible for any damage caused by improper use of the device.

2.0 - TECHNICAL DATA

• Use	: non-aggressive gases of the three families (dry gases)
• Ambient temperature (TS)	: -20 ÷ +60°C
• Minimum operating pressure	: 0.5 bar
• Max operating pressure	: 5 bar
• Allowable pressure PS	: 5 bar
• Safety lock closing time	: < 1 s
• Accuracy class	: AC=10 - (Pa ± 10%)
• Overpressure shut off accuracy unit	: AG=10
• Closing pressure class	: SG=30
• Relief valve	: tested according to the indications in EN 334
• Connecting the vent	: G 1/4
• Mechanical strength	: Group 2 (according to EN 13611)
• Rp threaded connections	: (DN 15 - DN 20 - DN 25) according to EN 10226
• NPT Threaded connections	: on request
• Flanged connections that can couple with PN 16 flanges	: on request DN 25 with swivel flanges
• Standard filter element	: filtering 50µm
• In compliance with	: PED Directive 2014/68/EU - ATEX Directive 2014/34/EU

2.1 - MODEL IDENTIFICATION (for configurations see pages 44 ÷ 50)

FRG/2MBC (Z-F-R-M): Pressure filter regulator - Compact version (up to 25 m³/h)

FRG/2MB (Z-F-R-M): Pressure filter regulator - Standard version

Z: Connections in line

F: Connections at 90° IN G 1/2

R: Connections at 90° OUT G 3/4

M: Connections at "U" IN G 1/2 - OUT G 3/4

3.0 - COMMISSIONING THE DEVICE



3.1 - OPERATIONS PRIOR TO INSTALLATION

- It is necessary to close the gas upstream of the device prior to installation;
- Make sure that the line pressure **DOES NOT EXCEED** the maximum pressure declared on the product label;
- Protective caps (if any) must be removed prior to installation;
- The pipes and inside of the device must be clear of any foreign bodies;

• IMPORTANT:

- to avoid possible pumping and/or disturbances in the gas flow, a straight pipe section equal to at least 5 DN must be installed (downstream of the regulator);
- install manual gas closing devices (e.g. ball valves) upstream and downstream of the regulator to protect it from any pipe leak test;
- do consider that if the regulator is equipped with a relief valve, the latter is suitable for small quantities of gas to be discharged and CANNOT replace the relief valve installed separately as a specific device;

If the device is threaded:

make sure that the pipe thread is not too long, to prevent damaging the body of the device when screwing it on;

If the device is flanged:

- make sure the inlet and outlet counter-flanges are perfectly coaxial and parallel in order to prevent unnecessary mechanical stress to the body. Also calculate the space to insert the seal gasket;
- With regard to tightening operations, equip yourself with one or two calibrated torque wrenches or other controlled locking tools;
- With outdoor installation, it is advisable to install a protective roof to prevent rain from oxidising or damaging parts of the device.



- According to the plant geometry, check the risk of an explosive mixture arising inside the piping;
- If the regulator is installed near other devices or as part of an assembly, compatibility between the regulator and these devices must be evaluated beforehand;
- Provide protection against impact or accidental contact if the device is accessible to unqualified personnel.



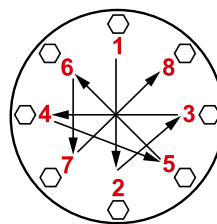
3.2 - INSTALLATION (see example in 3.4)

Threaded devices:

- Assemble the device by screwing it, with the due seals, onto the plant with pipes and/or fittings whose threads are consistent with the connection being attached;
- Do not use the neck of the top cover (**20**) as a lever to help you screw it on, but only use the specific tool;
- The arrow, shown on the body (**6**) of the device, needs to be pointing towards the application;

Flanged devices:

- Assemble the device by flanging it, with the due seals, onto the plant with pipes whose flanges are consistent with the connection being attached. The gaskets must be free from defects and must be centred between the flanges;
- If, after installing the gaskets, there is still too much space in between, do not try to reduce said gap by excessively tightening the bolts of the device;
- The arrow, shown on the body (**6**) of the device, needs to be pointing towards the application;
- Insert the relative washers inside the bolts in order to prevent damage to the flanges during the tightening stage;
- When tightening, be careful not to “pinch” or damage the gasket;
- Tighten the nuts or bolts gradually, in a “cross” pattern (see the example at the side);
- Tighten them, first by 30%, then by 60% and finally 100% of the maximum torque (see the table at the side according to EN 13611);
- Tighten each nut and bolt again clockwise at least once, until the maximum torque has been achieved uniformly;



Diameter	DN 25
Max. torque (N.m)	30

Common procedures (threaded and flanged devices):

- The regulator is normally positioned before the application. Previously evaluate the possibility of installing the regulator as shown in the installation example in 3.4;
- It can be installed in any position even if the installation shown in 3.4 (installation example) is preferred. A pressure outlet (**23**) is found outside the regulator, downstream from it, to control the regulation pressure (Pa);
- In STANDARD versions, it is recommended to connect the pulse outlet with a G 1/8 connection downstream of the regulator (see installation example) if the gas flow exceeds 40 Nm³/h. To do so, the cap (**29**) must be removed;
- Drain the relief valve (if present) outwards (as shown in 3.4) by removing the dust cap (**25**);
- It is always recommended to install a compensation joint;
- During installation, avoid debris or metal residues from getting into the device;
- To guarantee assembly free of any mechanical tension, we recommend using compensating joints, which also adjust to the pipe's thermal expansion;
- If the device is to be installed in a ramp, it is the installer's responsibility to provide suitable supports or correctly sized supports, to properly hold and secure the assembly. Never, for any reason whatsoever, leave the weight of the ramp only on the connections (threaded or flanged) of the individual devices;
- In any case, after installation check the tightness of the system, without subjecting the diaphragm of the regulator (therefore, the downstream pipe section) to a pressure higher than 300 mbar (valid only for versions with standard working diaphragm). For versions with reinforced diaphragm, check the tightness with a pressure equal to 1.5 times the regulator setting pressure.

3.3 - INSTALLATION IN PLACES WHERE THERE IS THE RISK OF EXPLOSION (DIRECTIVE 2014/34/EU)

The regulator complies with Directive 2014/34/EU (formerly 94/9/EC) as group II equipment, category 2G and as group II equipment, category 2D; consequently, it is suited for installation in zones 1 and 21 (in addition to zones 2 and 22) as classified in Annex I of Directive 99/92/EC. The regulator is not suited for use in zones 0 and 20 as defined in the aforementioned Directive 99/92/EC. To determine the qualification and size of the danger zones, please refer to standard IEC EN 60079-10-1.

If installed and subject to maintenance in full compliance with all conditions and technical instructions provided in this manual, the device does not pose a source of specific hazards: in particular, under conditions of normal operation, the regulator is expected to emit a flammable substance into the atmosphere only occasionally, and specifically:

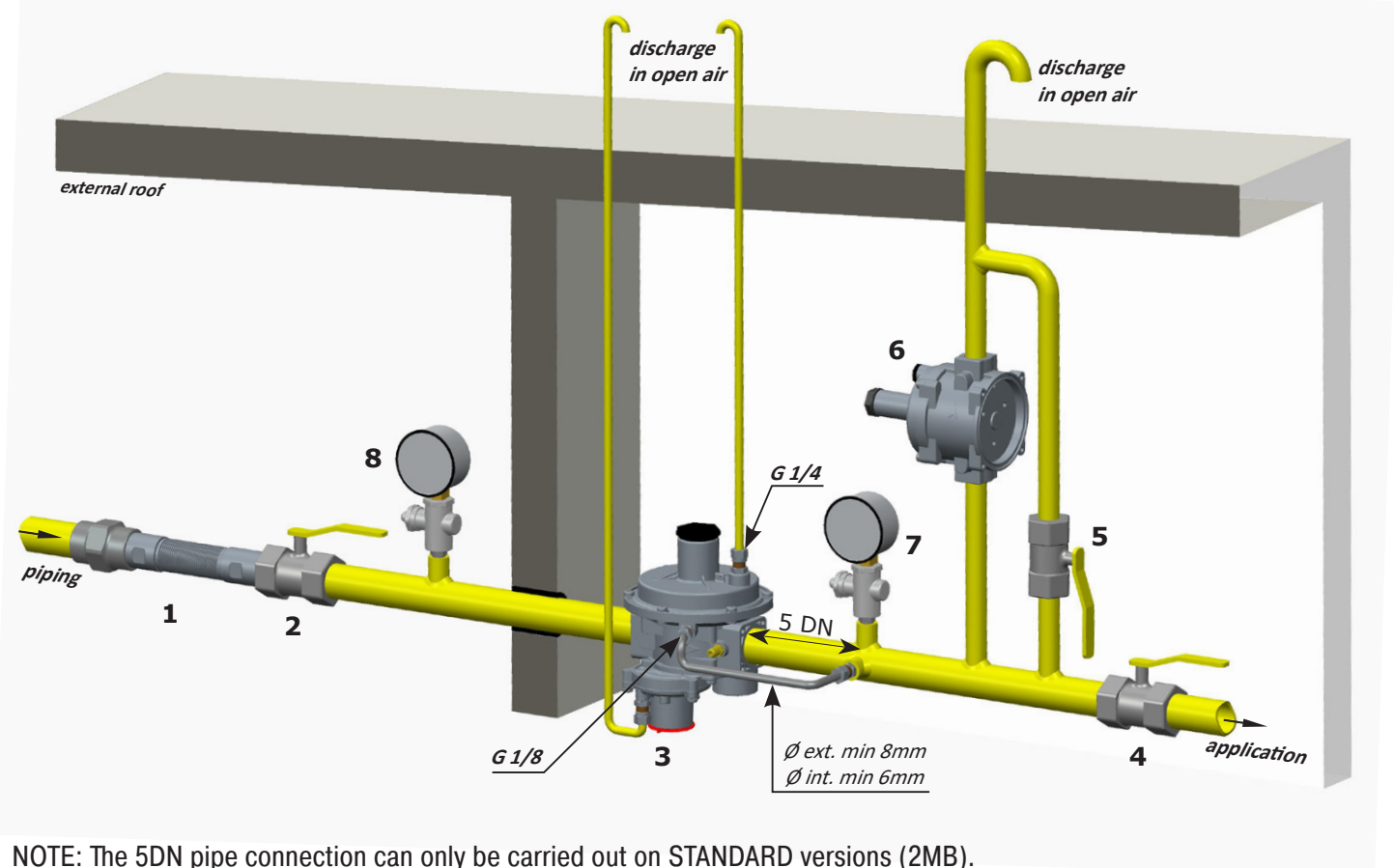
The regulator can be dangerous with respect to the presence of other devices nearby if the integrated relief valve is triggered or if the working diaphragm (**24**) or the blocking diaphragm (**14**) fails. If the diaphragm fails, the regulator becomes a source of explosive atmosphere emission of continuous degree and, as such, it can generate hazardous areas 0 as defined in Directive 99/92/EC.

In particularly critical installation conditions (unattended areas, poor maintenance or poor ventilation) and especially if there are potential sources of ignition and/or hazardous equipment near the regulator in regular operation, as they may generate electric arcs or sparks, a preliminary assessment of the compatibility between the regulator and such equipment must be carried out.

In any case, every useful precaution must be adopted so as to prevent the regulator from generating zones 0: for example, annually verify regular operation, possibility of changing the degree of emission of the source or intervening on the explosive substance discharge by directing it outwards. To do so, simply remove the dust caps (**25**) and (**29**) by connecting the specific pipe (respectively, G 1/4 and G 1/8) conveyed to the outside (see example of installation in 3.4).

3.4 - GENERIC EXAMPLE OF AN INSTALLATION

- | | |
|---|--|
| 1. Expansion joint/anti-vibration mount | 5. Vent valve |
| 2. Upstream ball valve | 6. Relief valve MVS/1 |
| 3. Filter regulator FRG/2MBZ | 7. Low pressure gauge and relative button |
| 4. Ball valve downstream of the regulator | 8. High pressure gauge and relative button |



NOTE: The 5DN pipe connection can only be carried out on STANDARD versions (2MB).



4.0 - MANUAL RESET

- Make sure that all valves and downstream taps are closed;
- Unscrew the cap (**10**);
- Lightly press the reset pin (**18**), wait a few moments for the pressure to balance and then fully press the reset pin (**18**);
- Hold down the reset pin (**18**), slowly open the ball valve downstream of the regulator;
- Release the reset pin (**18**), and pull it downwards slowly to prevent it from touching the centre pin (**13**);
- Then tighten the cap (**10**) back in the initial position.



5.0 - FIRST START-UP

Before commissioning, verify that:

- all of the instructions on the rating plate, including the direction of flow, are observed;
- the holes of the dust caps (**25**) and (**29**) are not clogged (regulator and shut off);



- **IMPORTANT:** The leak test of the piping must be performed without subjecting the diaphragm of the regulator (therefore, the downstream pipe section) to a pressure higher than 300 mbar (for reinforced diaphragm 1.5 times the regulator setting pressure). Use special manual gas closing devices to avoid damaging the regulator;
- The pressurisation manoeuvre of the equipment must be carried out very slowly so as to avoid possible damage.

NOTE: under no circumstances should a blind cap be installed in place of dust caps (**25**) and (**29**) as the regulator and/or the safety shut offs may not work;

- Close the ball valve downstream of the regulator and partially open the downstream relief valve;
- Slowly open the upstream shut-off devices;
- Close the vent valve;
- Proceed by manually resetting the regulator (see 4.0);
- Close the downstream valve so as to close the regulator (the Pa value increases the SG value to fully close the obturator);
- Check the tightness of the system seals and check the internal/external tightness of the regulator, of the relief valve and of the external sensor tube, if applicable;
- Slowly open the downstream valve and the shut-off valve;
- Check the operation of the regulator;



6.0 - SETTING

Before carrying out the operations, make sure that the supplied spring/s is/are suitable for the desired Pa - OPSO - UPSO and differential relief valve fields.

6.1 - Adjusting the maximum pressure shut off (OPSO)

- Unscrew the cap (**10**);
- Use the supplied key (**28**) to fully tighten the adjustment ring nut of the maximum shut off (**16**);
- Start the system, reset the shut off device as indicated in 4.0 and make sure that there is no gas consumption (close the applications downstream of the regulator);

Method 1:

1. Loosen and remove caps (**27**) and (**10**);
2. Use an 8 mm socket wrench (see fig. 1a and 2a) to press on the nut (**26**), slowly increasing the downstream pressure to the desired value and simultaneously keep the nut (**26**) pressed; use the supplied key (**28**) to loosen the ring nut (**16**) until the device is triggered;
3. Tighten the caps back to their original position and repeat the Pa setting steps;

Method 2:

1. Alternatively, use an auxiliary gas pressure to slowly increase the downstream pressure to the desired value and simultaneously, use the supplied key (**28**) to loosen the ring nut (**16**) until the device is triggered (so as to avoid having to set the Pa again);
- In both cases, reset the system by following the correct procedure and verify that the trigger value is that desired by repeating the release step 2-3 times;
 - If necessary, adjust the trigger value by turning the ring nut (**16**) with the specific key (**28**).

6.2 - Adjusting the minimum pressure shut off (UPSO)

- Unscrew the cap (**10**);
- Use the supplied key (**28**) to loosen the adjustment ring nut of the minimum shut off (**17**) to the minimum;
- Start the system and reset the shut off device as described in 4.0;
- Reduce the downstream pressure to the desired trigger value;
- Use the supplied key (**28**) to tighten the adjustment ring nut (**17**) until the minimum pressure shut off is triggered.
- Reset the system by following the correct procedure and verify that the trigger value is that desired by repeating the release step 2-3 times;
- If necessary, adjust the trigger value by turning the ring nut (**17**) with the specific key (**28**);

6.3 - Adjusting the relief valve (differential DfRv)

NOTE: The relief (if present) in these regulators is differential, therefore the value of the range (DfRv) indicated must be added to the value of the output pressure range (Pa).

Example: $Pa=20\div30$ mbar - $DfRv=10\div60$ mbar.

It means that the relief can be set from: $(Pa\ min + DfRv\ min) = 20+10=30$ mbar to: $(Pa\ max + DfRv\ max) = 30+60=90$ mbar
So the relief range (in this case) is $30\div90$ mbar.

- Start the system and set the shut off as described in point 4.0;
- Slowly close the valve downstream of the regulator;
- Loosen and remove the cap (**27**);
- Use the 8 mm socket spanner (see fig. 1a and 2a) to fully tighten the nut (**26**);
- Use the 8 mm socket spanner to press the adjustment nut (**26**) and increase the pressure Pa, reading it on the pressure gauge, up to the desired set value;
- Without pressing further, slowly loosen the adjustment nut (**26**) until the pressure Pa begins to decrease, shown on the pressure gauge;
- In this case, the relief valve is set to the desired value;
- Remove the socket spanner and close the cap (**27**).

6.4 - Adjusting the outlet pressure (Pa)

The outlet pressure Pa (unless specifically requested) is factory-set with the regulator installed as indicated in 3.4 and with the adjustment screw (**1**) set approximately at the minimum setting value. The safety shut offs/relief valve are set accordingly; If the regulator is installed in different positions, check and reset the outlet pressure Pa, and consequently the devices incorporated in the regulator;

Adjust the outlet pressure as follows:

- Unscrew the cap (**27**);
- Unscrew the adjustment screw (**1**) and set it to the minimum setting allowed (threaded end of the top cover (**20**));
- Start the system or make sure there is a minimum flow downstream of the regulator;
- To increase the pressure setting downstream of the regulator, tighten the adjustment screw (**1**) to the desired value. Perform the reading with a calibrated pressure gauge, installed downstream of the regulator to at least 5 DN (see example in 3.4);
- Screw the cap (**27**) back on and if necessary, seal it in that position using the appropriate seal holes (if any);
- Use pressure outlets (**23**) on the device only for zero flow or very low flow measurements.



7.0 - RECOMMENDED PERIODIC CHECKS

- Use a suitable calibrated tool to ensure that the bolts are tightened as indicated in 3.2;
 - Check the tightness of the flanged/threaded connections on the system;
 - Check the tightness and operation of the regulator/shut off/relief valve;
- The final user or installer is responsible for defining the frequency of these checks based on the severity of the service conditions.

7.1 - CHECK THAT THE MAXIMUM PRESSURE SHUT OFF VALVE IS WORKING (OPSO)

Reset the shut off device and close the valve downstream of the regulator;

Method 1:

1. Loosen and remove caps **(27)** and **(10)**;
2. Use the same tool (shown in fig. 1a and 2a) to press the nut **(26)** and slowly increase the downstream pressure until the device is triggered;
3. Tighten the caps back to their original position and repeat the Pa setting steps (6.4);

Method 2:

Alternatively, use an auxiliary gas pressure to slowly increase the downstream pressure until the device is triggered (so as to avoid having to set the Pa again).

7.2 - CHECK THAT THE MINIMUM PRESSURE SHUT OFF VALVE IS WORKING (UPSO)

- Reset the shut off device and close the ball valve upstream of the regulator;
- open the relief valve, downstream of the device, partially and slowly. As the outlet pressure decreases slowly it will cause the minimum shut off to trigger at its setting value;
- Repeat the trigger step 2-3 times to make sure that the system functions correctly. Between one trigger and another, set the downstream pressure back to the setting value.

7.3 - CHECK THE TIGHTNESS OF THE DEVICES (OPSO AND UPSO)

- Fully empty the downstream pipe section (wait a few seconds to allow it to empty completely). The downstream pressure must remain at zero when the relief valve is closed.

7.4 - CHECK THAT THE RELIEF VALVE IS WORKING PROPERLY

- Start the system and set the shut off as described in point 4.0;
- Slowly close the valve downstream of the regulator;
- Loosen and remove the cap **(27)**;
- Use an 8 mm socket spanner to press the adjustment nut **(26)** to increase the pressure Pa above the preset value, while preventing the OPSO shut off from being triggered. Use a calibrated pressure gauge for the reading;
- Remove the socket spanner. The generated overpressure will be discharged outwards and the Pa will begin to decrease to the relief valve setting value. Relief valve operation is verified;
- Close the cap **(27)**;
- Open the relief valve to discharge the created overpressure;
- Close the relief valve (the regulator goes to the closing pressure) and open the ball valve downstream of the regulator.



8.0 - MAINTENANCE



- No maintenance operations need to be carried out inside the device. If operations must be carried out inside the device (changing the spring, replacing the filter, etc.), it is advisable to contact the Technical Department. In any case, before carrying out any dismantling operation on the device, make sure that there is no pressurised gas inside.

9.0 - TRANSPORT, STORAGE AND DISPOSAL

- During transport the material needs to be handled with care, avoiding any impact or vibrations to the device;
- If the product has any surface treatments (ex. painting, cataphoresis, etc) it must not be damaged during transport;
- The transport and storage temperatures must observe the values provided on the rating plate;
- If the device is not installed immediately after delivery it must be correctly placed in storage in a dry and clean place;
- In humid facilities, it is necessary to use driers or heating to avoid condensation;
- At the end of its service life, the product must be disposed of in compliance with the legislation in force in the country where this operation is performed.

10.0 - WARRANTY

The warranty conditions agreed with the manufacturer at the time of the supply apply.

Damage caused by:

- Improper use of the device;
- Failure to observe the requirements described in this document;
- Failure to observe the regulations pertaining to installation;
- Tampering, modification and use of non-original spare parts;

is not covered by the rights of the warranty or compensation for damage.

The warranty also excludes maintenance work, the assembly of parts or non-original spare parts, making changes to the device and natural wear.

11.0 - RATING PLATE DATA



The rating plate data (see examples above) includes the following:

- Manufacturer's name/logo and address (possible distributor name/logo)
- Mod.: = name/model of the device followed by the connection diameter
- PS = Allowable pressure
- Pe = Maximum pressure or inlet pressure range that product operation is guaranteed at
- TS = Temperature range that product operation is guaranteed within
- Pa = Outlet pressure range
- Wdso = OPSO calibration range that can be achieved with the spring provided (without replacing any part)
- CE-51BT3739 (if it is present) = certification pin number
- AC = Accuracy class Pa
- SG = Closing pressure class
- AG = Overpressure shut off accuracy unit
- EN 88-2 = Product reference regulation
- Wdsu = UPSO calibration range that can be achieved with the spring provided (without replacing any part)
- DfRv = Differential relief valve range with respect to Pa
- year = Year of manufacture
- Lot = Product serial number (see explanation below)
 - U1823 = Lot issued in year 2018 in the 23rd week
 - 14216 = progressive job order number for the indicated year
 - 00001 = progressive number referring to the quantity of the lot
- = In compliance with ATEX Dir. followed by the protection mode
- (if it is present) = Compliance with (EU) Regulation 2016/426 followed by the no. of the Notified Body
- = In compliance with PED directive followed by the no. of the Notified Body

Tabella 1 - Table 1 - Tableau 1 - Tabla 1

PORTATE REGOLATORI / CAPACITIES OF REGULATORS / DÉBIT DES RÉGULATEURS / CAUDAL DE LOS REGULADORES

(Nm³/h) Gas naturale - Natural Gas - Gaz naturel - Gas natural

Modello Model Modèle Modelo	Pa (mbar)	Pressione di ingresso - Inlet Pressure - Pression d'entrée - Presión de entrada				
		0,5 bar	1 bar	2 bar	3 - 4 bar	5 bar
COMPACT 2MBC DN 15 - DN 20 - DN 25	20	25	25	25	25	25
	30	25	25	25	25	25
	50	25	25	25	25	25
	100	25	25	25	25	25
	200	25	25	25	25	25
2MB STANDARD* DN 15	20	25	27	30	30	37
	30	37	37	37	39	39
	50	50	50	50	50	50
	100	60	62	62	62	62
	200	85	85	85	85	85
	300	70	100	100	100	100
	350	40	75	90	90	90
	400	40	90	100	100	100
2MB STANDARD* DN 20	20	42	42	50	50	50
	30	50	50	55	55	55
	50	70	70	70	70	70
	100	100	100	100	100	100
	200	80	100	100	100	100
	300	80	100	100	100	100
	350	70	120	120	120	120
	400	65	120	120	120	120
2MB STANDARD* DN 25	20	100	100	100	100	100
	30	100	100	100	100	100
	50	100	100	100	100	100
	100	100	100	100	100	100
	200	80	100	100	100	100
	300	80	100	100	100	100
	350	75	120	120	120	120
	400	70	120	120	120	120

* Dati ricavati CON L'UTILIZZO del tubetto sensore esterno.

* Data obtained USING the external sensor tube.

* Données obtenues AVEC L'UTILISATION du tube capteur extérieur.

* Datos obtenidos USANDO el tubo sensor externo.

Aria - Air - Air - Aire = 0,806

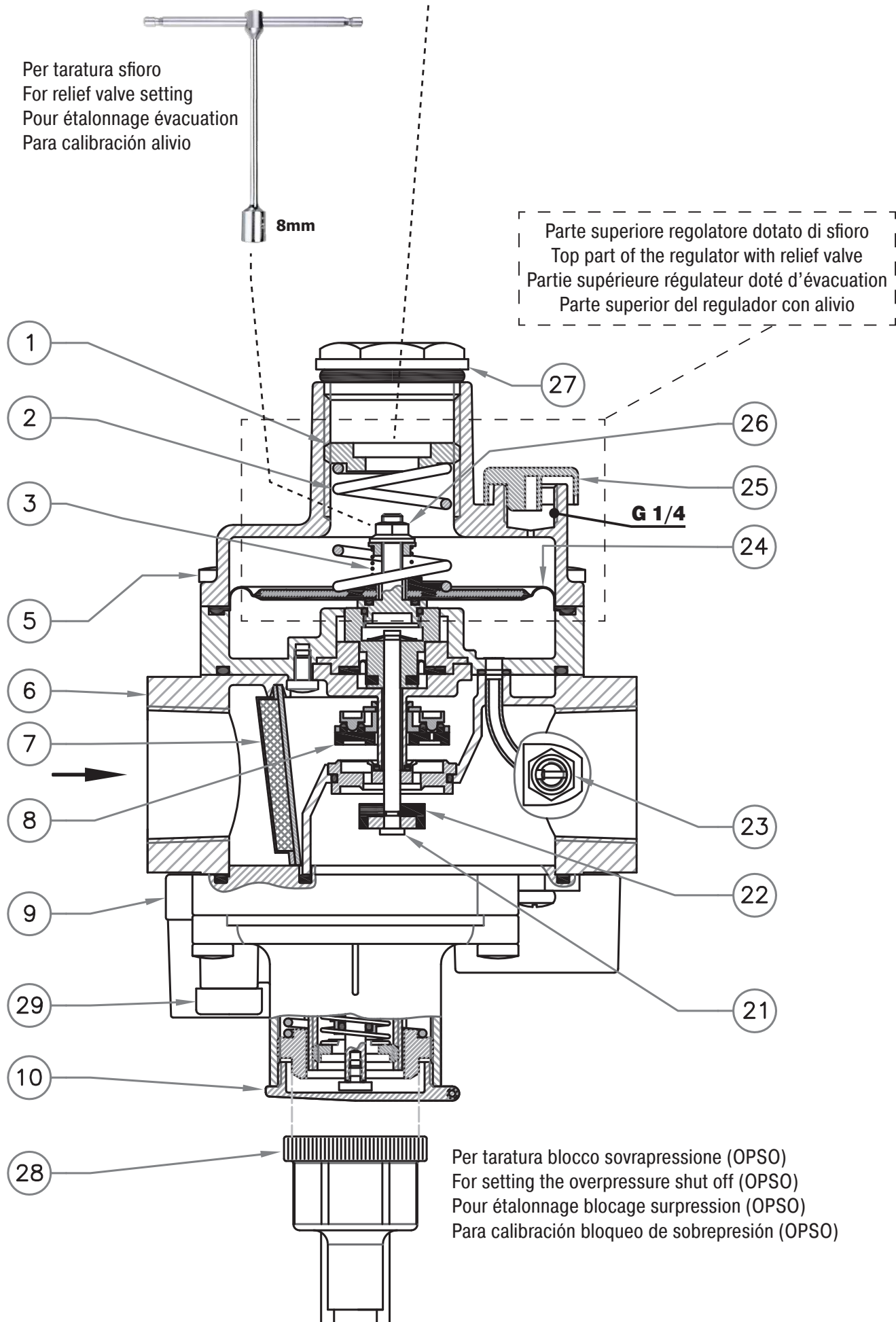
Gas naturale - Natural Gas - Gaz naturel - Gas natural = 1

Gas di città - Town gas - Gaz de ville - Gas de ciudad = 1.177

GPL - LPG - Gaz de pétrole liquéfié - Gas líquido = 0.62

fig. 1a - COMPACT

2MBC DN 15 - DN 20 - DN 25

(Q max = 25 Nm³/gas)

FRG/2MBC... (COMPACT)

● Utensile necessario per taratura Pa / Required tool for setting Pa
Outil nécessaire pour régler Pa / Herramienta requerida para calibración de Pa

Pa Range
(mbar)

con sfioro / with relief
avec évacuation / con alivio

senza sfioro / without relief
sans évacuation / sin alivio

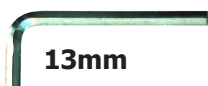
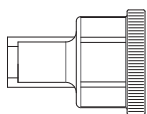
10 ÷ 25

25 ÷ 35

35 ÷ 80

80 ÷ 120

110 ÷ 200



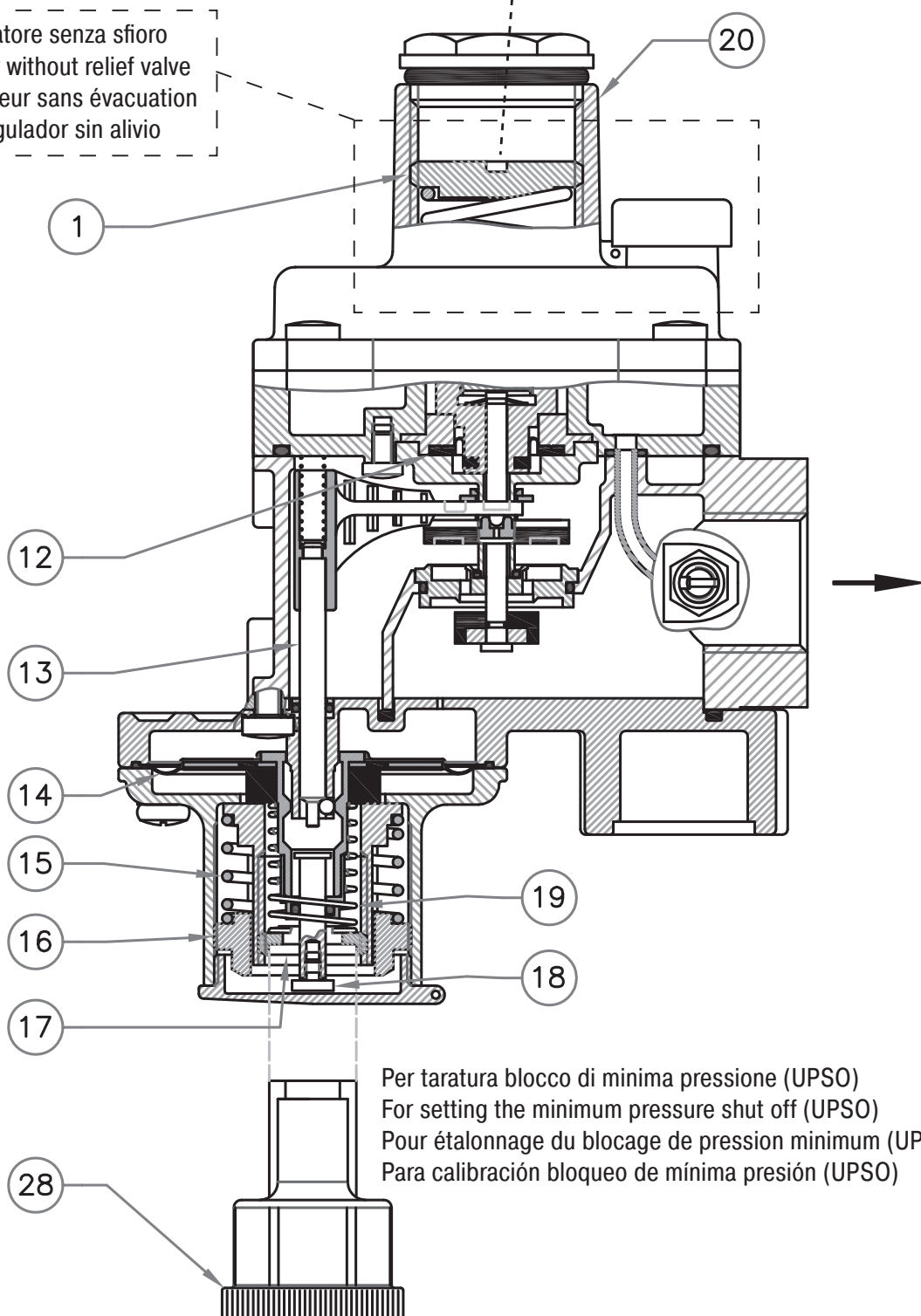
13mm

fig. 1b - COMPACT

2MBC DN 15 - DN 20 - DN 25

(Q max = 25 Nm³/ gas)

Parte superiore regolatore senza sfioro
Top part of the regulator without relief valve
Partie supérieure régulateur sans évacuation
Parte superior del regulador sin alivio

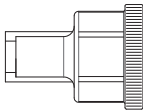


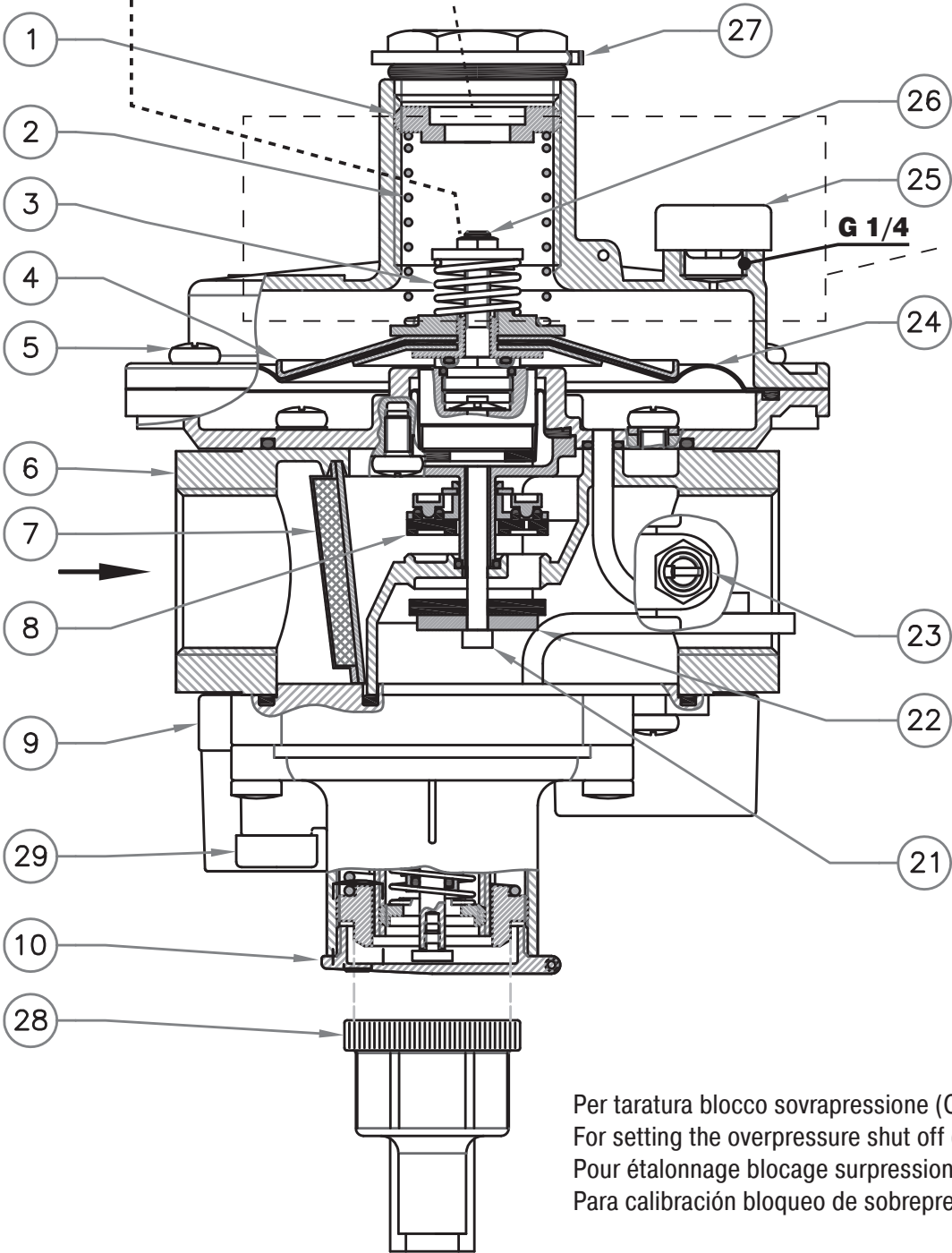
Per taratura blocco di minima pressione (UPSO)
For setting the minimum pressure shut off (UPSO)
Pour étalonnage du blocage de pression minimum (UPSO)
Para calibración bloqueo de mínima presión (UPSO)

fig. 2a - STANDARD
 2MB DN 15 - DN 20 - DN 25
 (Q max = 120 Nm³/gas)

Per taratura sfioro
 For relief valve setting
 Pour étalonnage évacuation
 Para calibración alivio



FRG/2MB... (STANDARD)		
● Utensile necessario per taratura Pa / Required tool for setting Pa ● Outil nécessaire pour régler Pa / Herramienta requerida para calibración de Pa		
Pa Range (mbar)	con sfioro / with relief avec évacuation / con alivio	senza sfioro / without relief sans évacuation / sin alivio
10 ÷ 25		
20 ÷ 30		
30 ÷ 60	 13mm	
60 ÷ 90		
90 ÷ 170		
110 ÷ 180	 13mm	

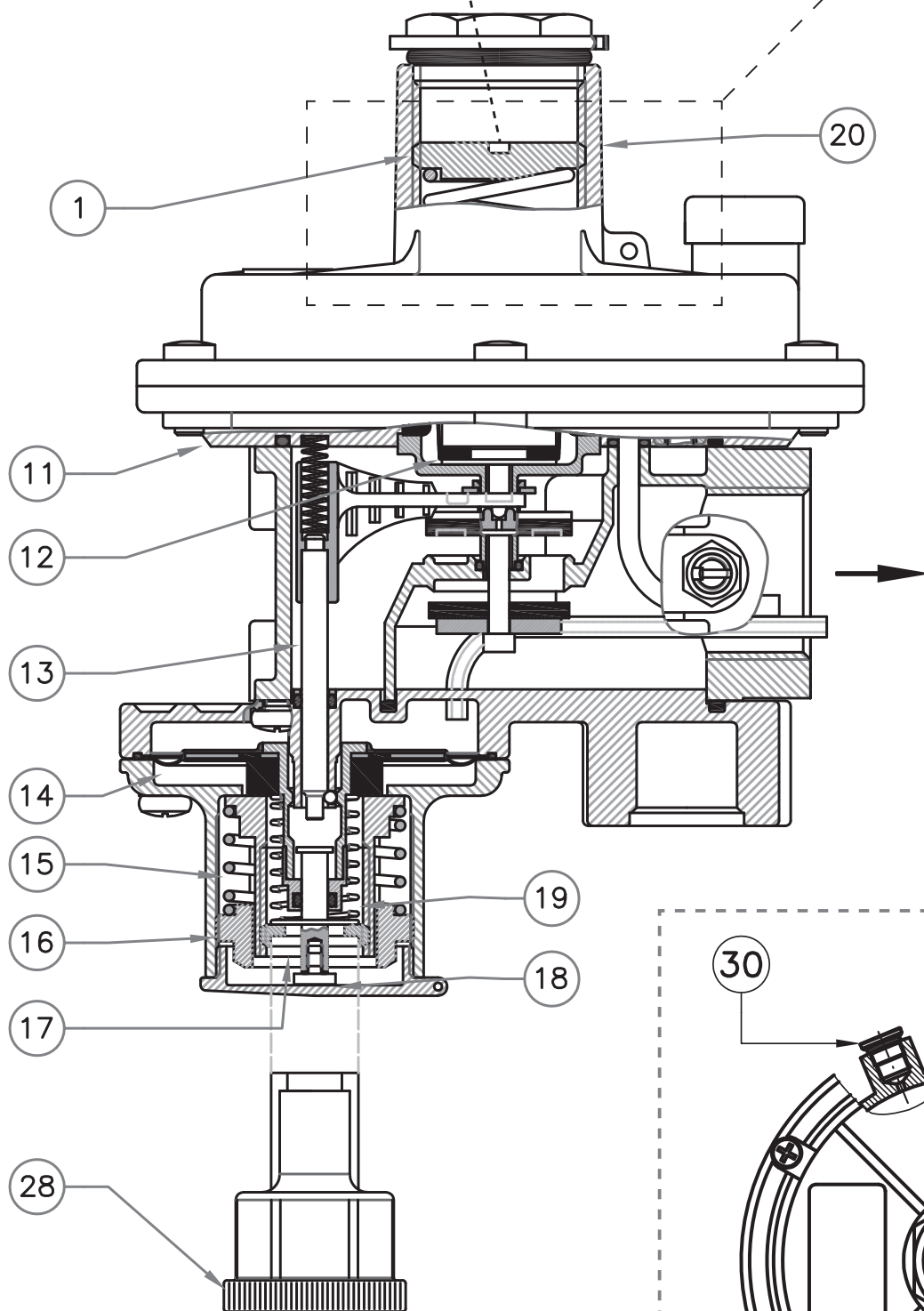


Parte superiore regolatore dotato di sfioro
 Top part of the regulator with relief valve
 Partie supérieure régulateur doté d'évacuation
 Parte superior del regulador con alivio

Per taratura blocco sovrappressione (OPSO)
 For setting the overpressure shut off (OPSO)
 Pour étalonnage blocage surpression (OPSO)
 Para calibración bloqueo de sobrepresión (OPSO)

fig. 2b - STANDARD
 2MB DN 15 - DN 20 - DN 25
 (Q max = 120 Nm³/ gas)

Parte superiore regolatore senza sfioro
 Top part of the regulator without relief valve
 Partie supérieure régulateur sans évacuation
 Parte superior del regulador sin alivio



Per taratura blocco di minima pressione (UPS)
 For setting the minimum pressure shut off (UPS)
 Pour étalonnage du blocage de pression minimum (UPS)
 Para calibración bloqueo de mínima presión (UPS)

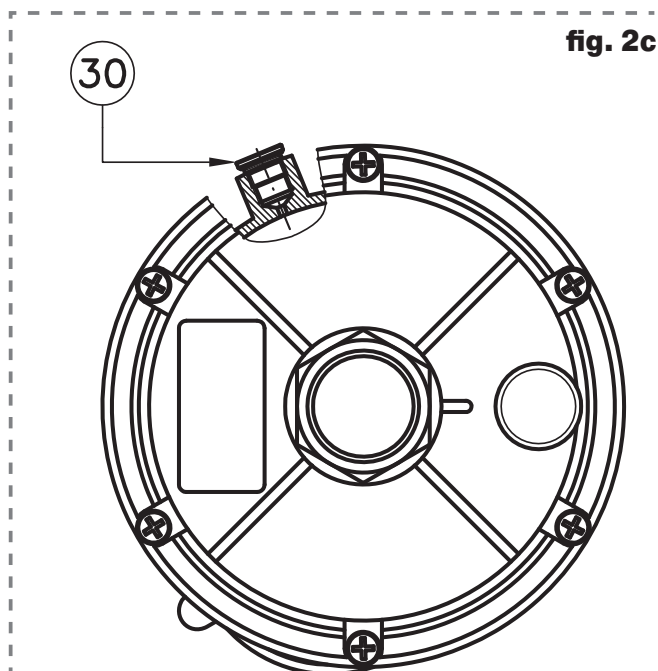
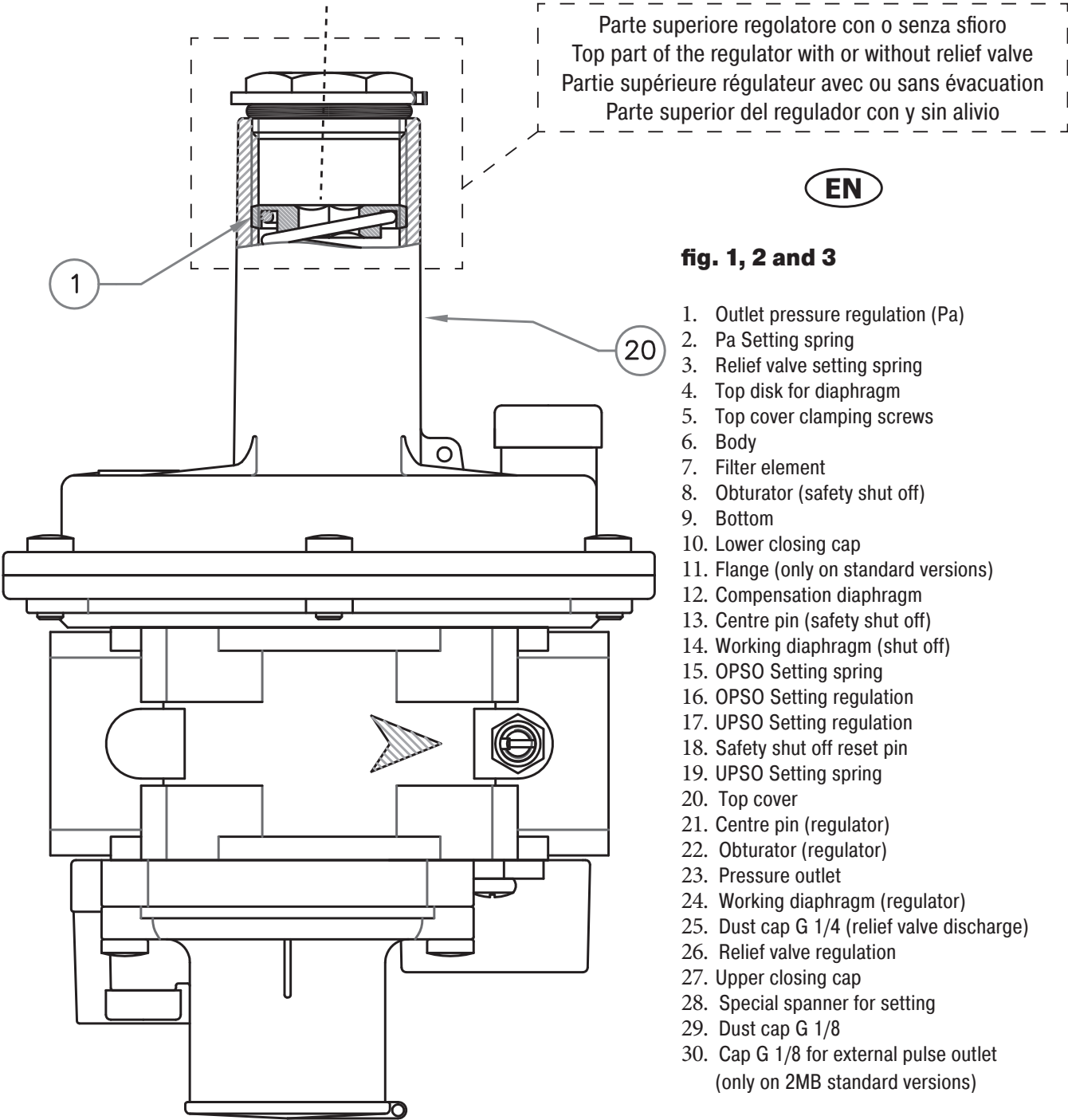


fig. 3 - STANDARD

Versione con membrana rinforzata
Version with reinforced diaphragm
Version avec membrane renforcée
Versión con membrana reforzada

2MB DN 15 - DN 20 - DN 25
(Q max = 120 Nm³/ gas)

FRG/2MB... (STANDARD)		
● Utensile necessario per taratura Pa / Required tool for setting Pa Outil nécessaire pour régler Pa / Herramienta requerida para calibración de Pa		
Pa Range (mbar)	con sfioro / with relief avec évacuation / con alivio	senza sfioro / without relief sans évacuation / sin alivio
170 ÷ 400*	 13mm	
300 ÷ 650*		
600 ÷ 900*		



Per taratura OPSO / UPSO / sfioro e collegamento a valle vedere fig. 2a, 2b e 2c
For OPSO / UPSO / relief valve setting and connection downstream see fig. 2a, 2b and 2c
Pour étalonnage OPSO/UPSO/évacuation et raccordement en aval voir fig. 2a, 2b et 2c
Para calibración OPSO / UPSO / alivio y conexión detrás, véase las fig. 2a, 2b y 2c

Tabella 2 - Table 2 - Tableau 2 - Tabla 2

Caratteristiche molle di regolazione - Regulation springs data

Caractéristiques ressorts de réglage - Características de los muelles de regulación

FRG/2MBC (Z-F-R-M) DN 15 - DN 20 - DN 25			FRG/2MB (Z-F-R-M) DN 15 - DN 20 - DN 25		
Molle di taratura Pa / Pa Setting springs Ressorts d'étalonnage Pa / Muelles de calibración Pa			Molle di taratura Pa / Pa Setting springs Ressorts d'étalonnage Pa / Muelles de calibración Pa		
Range (mbar)	Codice molla Spring code Code ressort Código muelle	dimensioni in mm dimensions in mm mesures en mm dimensiones en mm (d x De x Lo x it)	Range (mbar)	Codice molla Spring code Code ressort Código muelle	dimensioni in mm dimensions in mm mesures en mm dimensiones en mm (d x De x Lo x it)
10 ÷ 25	MO-0403	1,5x29x46x6	10 ÷ 25	MO-0403	1,5x29x46x6
25 ÷ 35	MO-0410	1,5x29x58x7	20 ÷ 30	MO-0410	1,5x29x58x7
35 ÷ 80	MO-0430	2x29x49x7	30 ÷ 60	MO-0430	2x29x49x7
80 ÷ 120	MO-0460	2x29x66x7	60 ÷ 90	MO-0460	2x29x66x7
110 ÷ 200	MO-0520	2,5x29x50x7	90 ÷ 170	MO-0520	2,5x29x50x7
			110 ÷ 180	MO-0540	2,5x29x60x7,75
			170 ÷ 400*	MO-1320	3,5x29,8x64x9
			300 ÷ 650*	MO-1305	3,5x29,8x98x11,5
			600 ÷ 900*	MO-2550	4x29x98x8
Molle di taratura OPSO / OPSO Setting springs Ressorts d'étalonnage OPSO / Muelles de calibración OPSO			Molle di taratura OPSO / OPSO Setting springs Ressorts d'étalonnage OPSO / Muelles de calibración OPSO		
20 ÷ 70	MO-0650	2x35x20x4	20 ÷ 70	MO-0650	2x35x20x4
40 ÷ 90	MO-0680	2x35x26x4	40 ÷ 90	MO-0680	2x35x26x4
50 ÷ 180	MO-0780	2,2x35x23,5x3,5	50 ÷ 180	MO-0780	2,2x35x23,5x3,5
120 ÷ 260	MO-0880	2,2x35x27x3	120 ÷ 260	MO-0880	2,2x35x27x3
200 ÷ 550	MO-0890	2,5x30x27x3	200 ÷ 550	MO-0890	2,5x30x27x3
			500 ÷ 1100*	MO-0990	3x35x33,5x3,5
Molle di taratura UPSO / UPSO Setting springs Ressorts d'étalonnage UPSO / Muelles de calibración UPSO			Molle di taratura UPSO / UPSO Setting springs Ressorts d'étalonnage UPSO / Muelles de calibración UPSO		
7 ÷ 20	MO-0104	0,8x17x40x6	7 ÷ 20	MO-0104	0,8x17x40x6
10 ÷ 30	MO-0153	0,9x17x45x7	10 ÷ 30	MO-0153	0,9x17x45x7
20 ÷ 50	MO-0204	1x17x40x6	20 ÷ 50	MO-0204	1x17x40x6
50 ÷ 110	MO-0205	1,2x15x40x5	50 ÷ 110	MO-0205	1,5x16,5x30,5x5
Molle differenziale sfioro / Differential relief valve springs Ressorts différentiel évacuation / Muelle diferencial de alivio			Molle differenziale sfioro / Differential relief valve springs Ressorts différentiel évacuation / Muelle diferencial de alivio		
5 ÷ 12	MO-0153	0,9x17x45x7	5 ÷ 10	MO-0153	0,9x17x45x7
10 ÷ 60	MO-1950	0,9x11x5x20,5x8	10 ÷ 60	MO-1950	0,9x11x5x20,5x8
60 ÷ 110	MO-2205	1,1x8x15x6	60 ÷ 110	MO-2205	1,1x8x15x6
			40 ÷ 200*	MO-2155	2x17x29x6

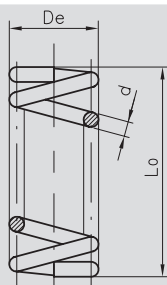
* = versioni con membrana rinforzata. Le tarature contrassegnate con * non sono intercambiabili con le versioni standard (quelle senza *).

* = versions with reinforced diaphragm. Settings marked with * are not interchangeable with standard settings (the one without *).

* = versions avec membrane renforcée. Les étalonnages marqués avec * ne sont pas interchangeables avec les versions standards (ceux sans *).

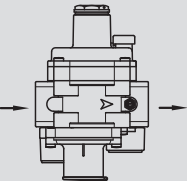
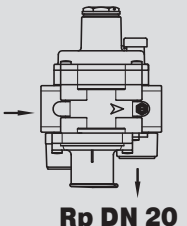
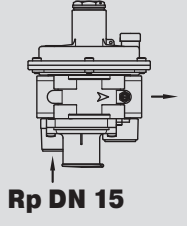
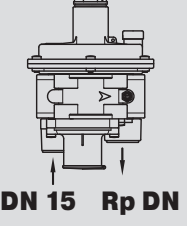
* = versiones con membrana reforzada. Las calibraciones marcadas con * no son intercambiables con las versiones estándar (sin *).

it= numero di spire totali
it= total number of turns
it= nombre total de spires
it= número total de espiras



Codifica prodotto / Product encoding / Codification du produit / Codificación del producto

Tabella costruzione codici FRG modelli 2MBC (Z-F-R-M) - 2MB (Z-F-R-M)
Code table construction 2MBC (Z-F-R-M) - 2MB (Z-F-R-M) models
Tableau construction code FRG modèles 2MBC (Z-F-R-M) - 2MB (Z-F-R-M)
Tabla de construcción de códigos FRG modelos 2MBC (Z-F-R-M) - 2MB (Z-F-R-M)

Modello Model Modèle Modelo	Attacchi Connections Raccords Conexiones	IN/OUT configuration	Pa spring No.	OPSO spring No.	UPSO spring No.	RELIEF spring No.
FBC	03	Z	1	1	2	2
Modello Compact con filtro Compact model with filter Modèle Compact avec filtre Modelo Compact con filtro	Connesioni in linea DN IN = DN OUT Connections in line DN IN = DN OUT		10 ÷ 25 mbar	20 ÷ 70 mbar	10 ÷ 30 mbar	10 ÷ 60 mbar
FBC	04/03	R	3	3	2	X
Modello Compact con filtro Compact model with filter Modèle Compact avec filtre Modelo Compact con filtro	IN Rp DN 25 OUT Rp DN 20		35 ÷ 80 mbar	50 ÷ 180 mbar	20 ÷ 50 mbar	senza sfioro without relief sans évacuation sin alivio
FB	02/03	F	1	2	1	2
Modello Standard con filtro Standard model with filter Modèle Standard avec filtre Modelo Estándar con filtro	IN Rp DN 15 OUT Rp DN 20		10 ÷ 25 mbar	40 ÷ 90 mbar	7 ÷ 20 mbar	10 ÷ 60 mbar
FB	04	M	5	5	X	X
Modello Standard con filtro Standard model with filter Modèle Standard avec filtre Modelo Estándar con filtro	IN Rp DN 25 OUT Rp DN 20		90 ÷ 170 mbar	200 ÷ 550 mbar	senza UPSO without UPSO sans UPSO sin UPSO	senza sfioro without relief sans évacuation sin alivio

IT

In tabella sono riportati alcuni esempi per illustrare come è possibile combinare tra di loro le molle di taratura.

Per i modelli compact "2MBC..." e standard "2MB..." DN 15 - DN 20 - DN 25:

- sono disponibili solo con filtro in dotazione;
- OPSO è sempre presente, si può omettere UPSO (indicare molla n°3 con "X"), si può omettere lo sfioro (indicare molla n°4 con "X");

Per le versioni con entrata/uscita in linea la connessione di ingresso è uguale a quella di uscita.

Per le versioni con entrata/uscita **NON** in linea (vedere pagina seguente):

- versioni "F" **IN** è sempre Rp DN 15;
- versioni "R" **OUT** è sempre Rp DN 20;
- versioni "M" **IN** è sempre Rp DN 15, **OUT** è sempre Rp DN 20.

Nei codici prodotto se i diametri di ingresso/uscita sono diversi, vengono indicati entrambi i diametri, vedere esempi pag. 44 e 46.

Non tutte le combinazioni sono possibili, devono essere funzionalmente compatibili. Si consiglia di contattare il nostro ufficio commerciale per la conferma della fattibilità.

EN

The table shows some examples to illustrate how you can combine the setting springs.

For compact models "2MBC ..." standard "2MB ..." DN 15 - DN 20 - DN 25:

- They are only available with built-in filter;
- OPSO is always present, you can omit UPSO (indicating spring No. 3 with "X"), you can omit the relief (indicating spring No. 4 with "X");

For versions with in-line input/output connection, the input connection is the same as the output connection.

For versions with **NOT**-inline input / output (see next page):

- versions "F" **IN** is always Rp DN 15;
- versions "R" **OUT** is always Rp DN 20;
- "M" versions **IN** is always Rp DN 15, **OUT** is always Rp DN 20.

In the product codes, if the inlet / outlet diameters are different, both diameters are indicated, see examples on pages 44 and 46.

Not all combinations are possible, they must be functionally compatible. It is advisable to contact our sales department for confirmation of feasibility.

FR

Le tableau reporte quelques exemples pour illustrer les possibilités de combinaison des ressorts d'étalonnage entre eux.

Pour les modèles compact « 2MBC... » et standard « 2MB... » DN 15 - DN 20 - DN 25 :

- sont disponibles seulement avec filtre en dotation ;
- OPSO est toujours présent, il est possible d'exclure UPSO (indiquer le ressort n° 3 avec « X »), il est possible d'exclure l'évacuation (indiquer le ressort n° 4 avec « X ») ;

Pour les versions avec connexion d'entrée / sortie en ligne, la connexion d'entrée est la même que la connexion de sortie.

Pour les versions avec entrée / sortie **NON** en ligne (voir page suivante):

- les versions «F» **IN** sont toujours Rp DN 15;
- les versions «R» **OUT** sont toujours Rp DN 20;
- les versions «M» **IN** sont toujours Rp DN 15, **OUT** est toujours Rp DN 20.

Dans les codes produits, si les diamètres d'entrée / sortie sont différents, les deux diamètres sont indiqués, voir exemples page. 44 et 46.

Pas toutes les combinaisons sont possibles, elles doivent être fonctionnellement compatibles. Il est conseillé de contacter notre bureau commercial pour la confirmation de la faisabilité.

ES

En la tabla aparecen algunos ejemplos para ilustrar cómo se pueden combinar entre ellos los muelles de calibración.

Para los modelos compact "2MBC..." y estándar "2MB..." DN 15 - DN 20 - DN 25:

- están disponibles solo con filtro suministrado;
- OPSO está siempre presente, se puede omitir UPSO (indicar muelle n.º 3 con "X"), se puede omitir el alivio (indicar muelle n.º 4 con "X");

Para versiones con conexión de entrada / salida en línea, la conexión de entrada es la misma que la conexión de salida.

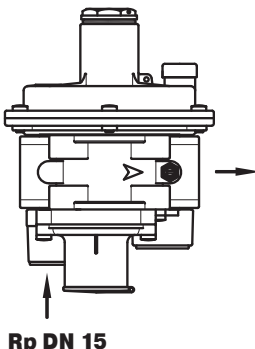
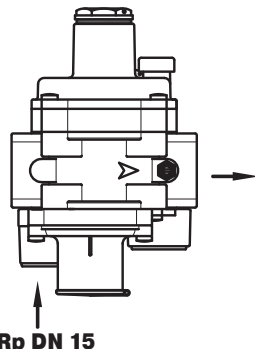
Para versiones con entrada / salida **NO** en línea (ver página siguiente):

- las versiones "F" **IN** son siempre Rp DN 15;
- las versiones "R" **OUT** siempre son Rp DN 20;
- las versiones "M" **IN** siempre son Rp DN 15, **OUT** siempre son Rp DN 20.

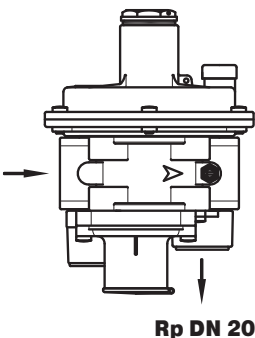
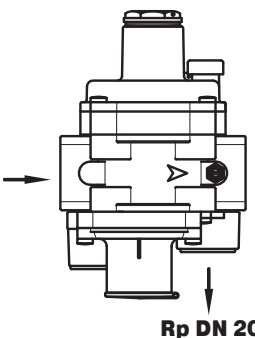
En los códigos de producto, si los diámetros de entrada / salida son diferentes, se indican ambos diámetros, consulte los ejemplos en la página. 44 y 46.

No todas las combinaciones son posibles, deben ser funcionalmente compatibles. Se recomienda contactar con nuestra oficina comercial para confirmar la factibilidad.

Versioni possibili con “F” / Feasible versions with “F”

Standard	Compact	IN	OUT	Standard	Compact
FB02F...	FBC02F...	Rp DN 15	Rp DN 15		
FB02/03F...	FBC02/03F...	Rp DN 15	Rp DN 20		
FB02/04F...	FBC02/04F...	Rp DN 15	Rp DN 25		

Versioni possibili con “R” / Feasible versions with “R”

Standard	Compact	IN	OUT	Standard	Compact
FB02/03R...	FBC02/03R...	Rp DN 15	Rp DN 20		
FB03R...	FBC03R...	Rp DN 20	Rp DN 20		
FB04/03R...	FBC04/03R...	Rp DN 25	Rp DN 20		

Versioni possibili con “M” / Feasible versions with “M”

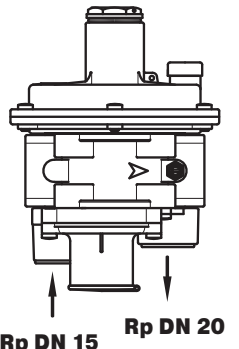
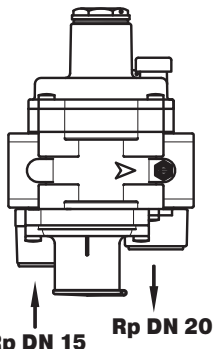
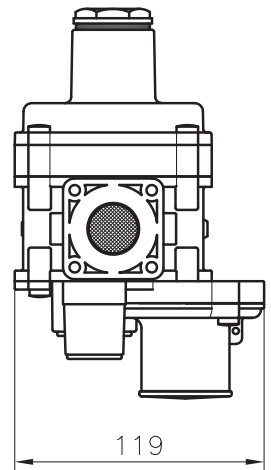
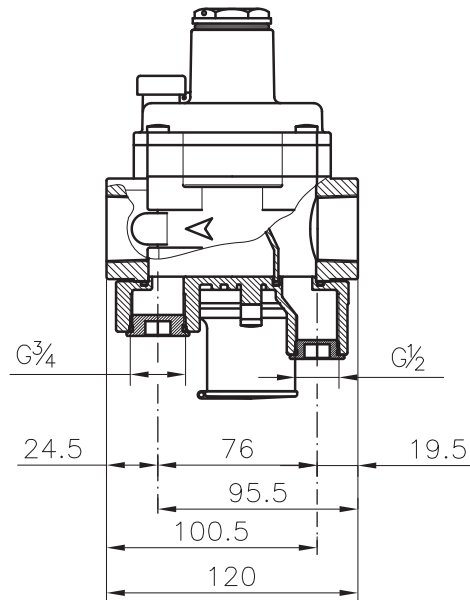
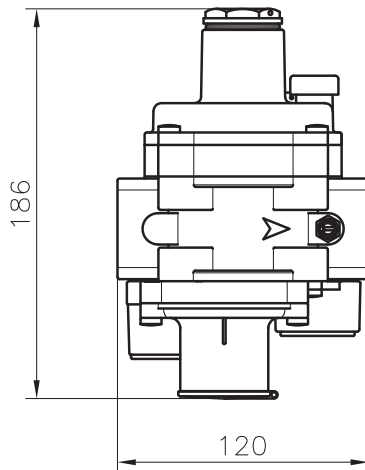
Standard	Compact	IN	OUT	Standard	Compact
FB02/03M...	FBC02/03M...	Rp DN 15	Rp DN 20		

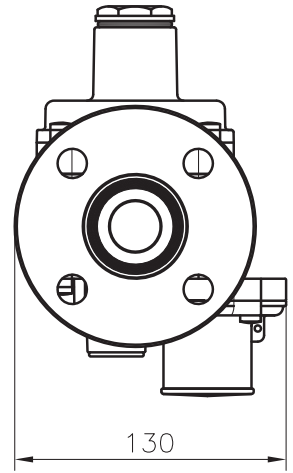
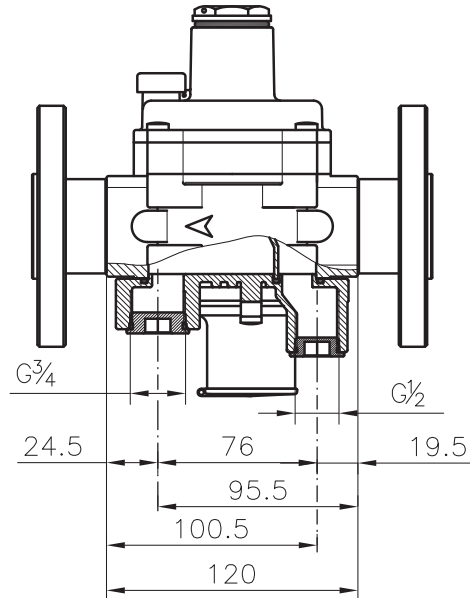
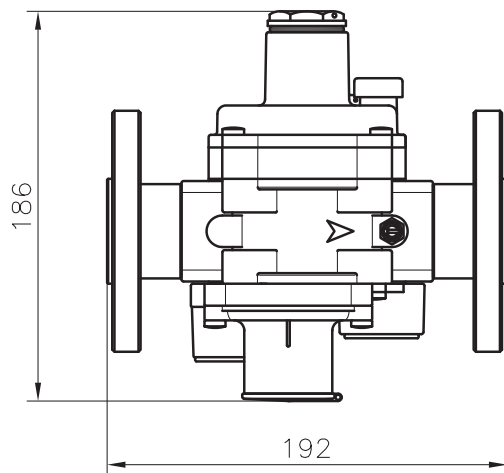
Tabella 3a - Table 3a - Tableau 3a - Tabla 3a

Dimensioni di ingombro in mm - Overall dimensions in mm - Mesures d'encombrement en mm - Dimensiones en mm

Versioni compact (2MBC)
Compact versions (2MBC)
Versions compact (2MBC)
Versiones compact (2MBC)



DN 25 FL



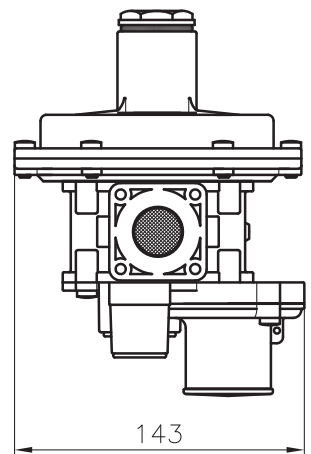
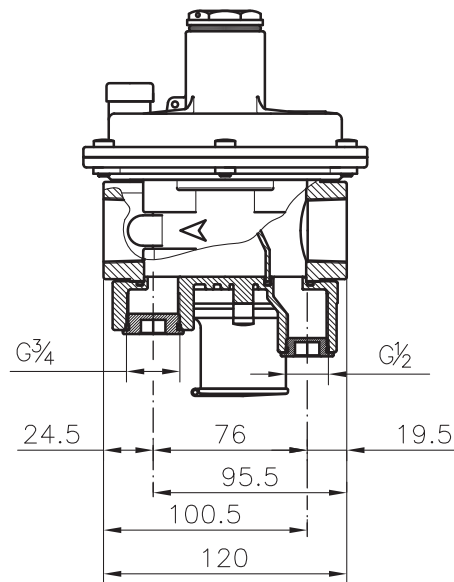
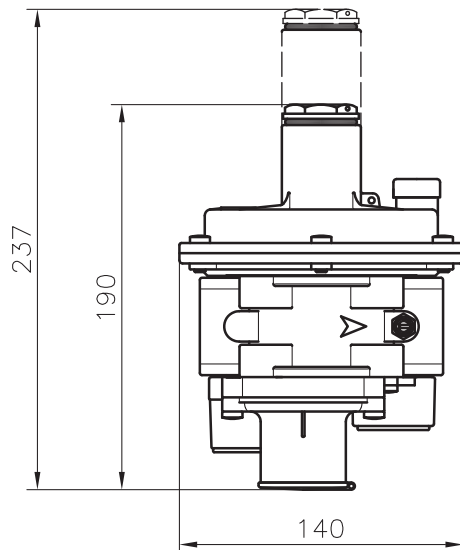
Su richiesta attacchi DN 25 con flange girevoli.
 DN 25 with swivel flanges on request.
 Sur demande DN 25 avec brides tournantes.
 Bajo petición DN 25 con bridas locas.

Le dimensioni sono indicative, non vincolanti - The dimensions are provided as a guideline, they are not binding
 Les dimensions sont indicatives, non contraignantes - Las dimensiones son indicativas, no vinculantes

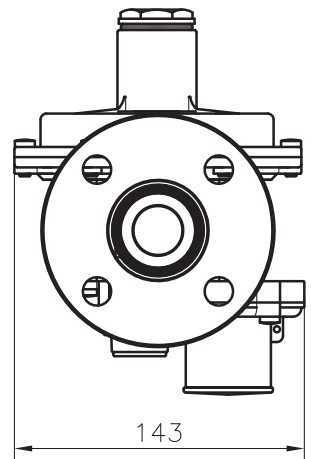
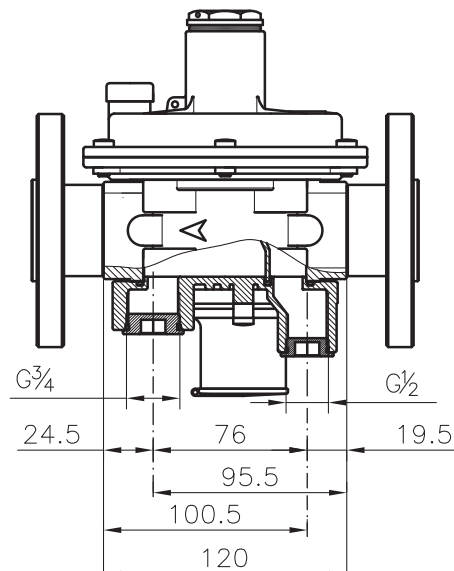
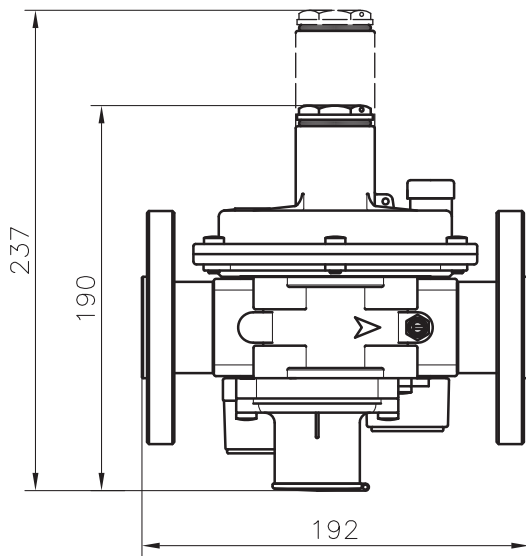
Tabella 3b - Table 3b - Tableau 3b - Tabla 3b

Dimensioni di ingombro in mm - Overall dimensions in mm - Mesures d'encombrement en mm - Dimensiones en mm

Versioni standard (2MB)
Standard versions (2MB)
Versions standard (2MB)
Versiones standard (2MB)



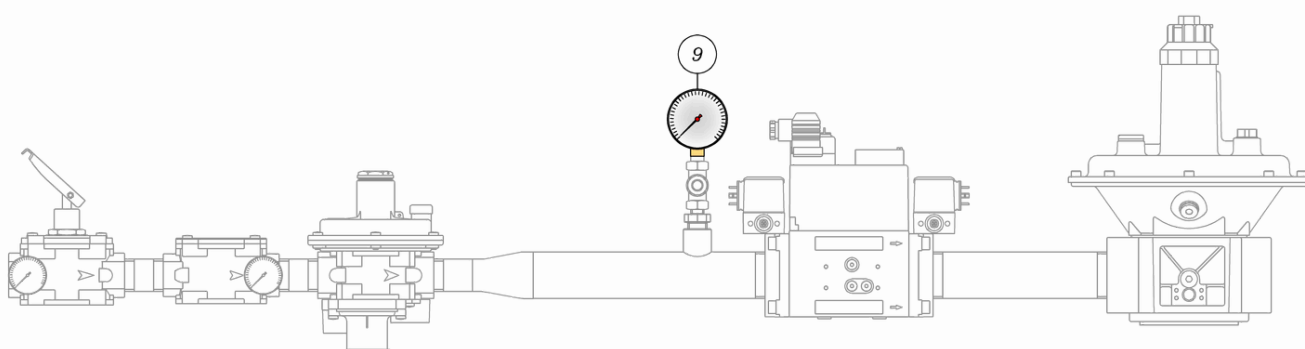
DN 25 FL



Su richiesta attacchi DN 25 con flange girevoli.
 DN 25 with swivel flanges on request.
 Sur demande DN 25 avec brides tournantes.
 Bajo petición DN 25 con bridas locas.

Le dimensioni sono indicative, non vincolanti - The dimensions are provided as a guideline, they are not binding
 Les dimensions sont indicatives, non contraignantes - Las dimensiones son indicativas, no vinculantes

Item 09 - Manômetro de baixa pressão



Pressure Gauges

Service intended

Suitable for dry and gaseous media that will not attack copper alloy parts.

Design

EN 837-3

Nominal size

63, 80, 100 mm

Accuracy class per EN 837-3/6

1.6

Scale ranges per EN 837-3/5

63, 80 mm: 0/25 to 0/600 mbar

100mm: 0/6 to 0/600 mbar

or other equivalent units of pressure or vacuum

Working pressure

Steady: full scale value

Fluctuating: 0.9 x full scale value

Operating Temperature

Ambient: -20... +60 °C

Medium: +100 °C maximum

Temperature error

Additional error when temperature of the pressure element deviates from +20 °C

Rising temperature: +0.3%/10K of true scale value

Falling temperature: -0.3%/10K of true scale value

Standard features

Pressure connection

Material: Cu-alloy

Threaded entry per DIN 26 288, G $\frac{1}{4}$ A, 14mm flats

63 mm: G $\frac{1}{4}$ B (male), 14mm flats

80, and 100 mm: G $\frac{1}{2}$ B (male), 22mm flats

Pressure element

Material: Cu-alloy

Sealing ring

NBR (Buna rubber)

Movement

Cu-alloy

Zero adjustment

Through window

Dial

White aluminium with black lettering

Protections

IP45



Pointer

Black aluminium

Case

Steel painted

Window

Crystal clear plastic

Bezel ring

Chromed steel

Optional extras

-Other pressure connection

-Slip-on bezel

-3-hole surface mounting flange

-U bracket for clamp fixing

-Red pointer fixed on transparent or on dial

-Dragged pointer of MIN / MAX

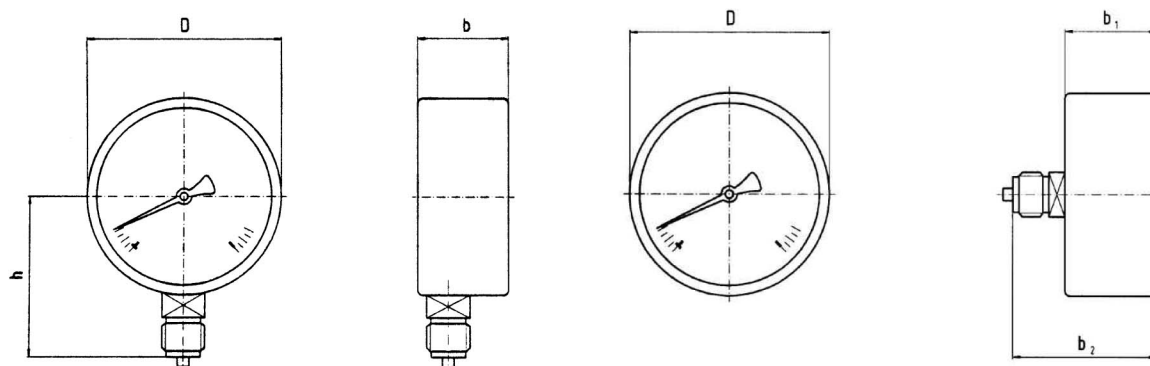
-Throat element

-Red mark

-Thread $\frac{1}{8}$ - $\frac{1}{4}$ - 9x1 - 10x1 : BSP - BSPT - NPT

Dimensions

Standard version



Nominal Size	Dimensions [mm]					Weight [g]
	h	b	b ₁	b ₂	D	
63	50	26	26	45	63	190
80	65	34	34	68	82	400
100	88	48	48	86	105	660

Ordering information

State:

Pressure gauge model / Nominal size / Scale range / Size of connection / Optional extras required

Specification and dimension given in this leaflet represent the state of engineering at the time of printing.

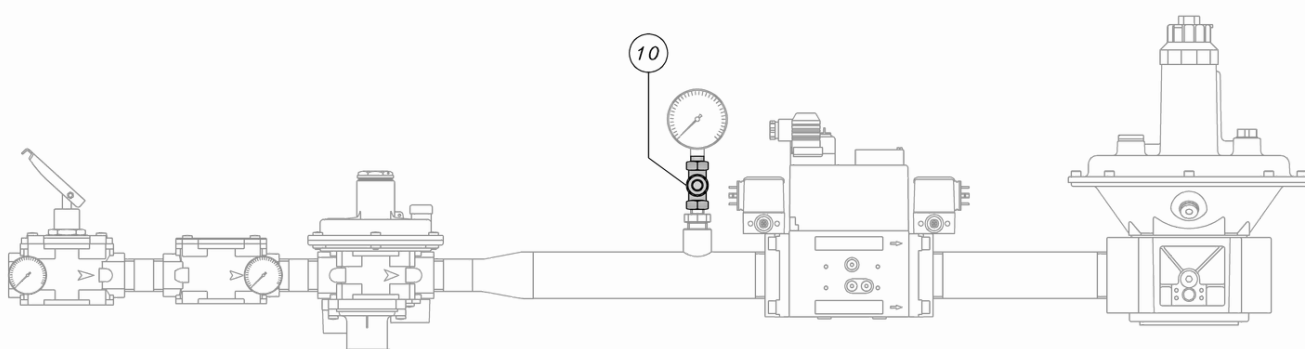
Modifications may take place and materials specified may be replaced by others without prior notice

MANROS Italy srl - C.so Vittorio Emanuele 208/I - 29121 PIACENZA (ITALY)

Factory: Via Bricchi 16 – 29013 Carpaneto P.no (Piacenza) Italy

Tel: +39 0523 859571 - Fax: +39 0523 852354 - Mobile: +39 335 7019302

Item 10 - Válvula push-button

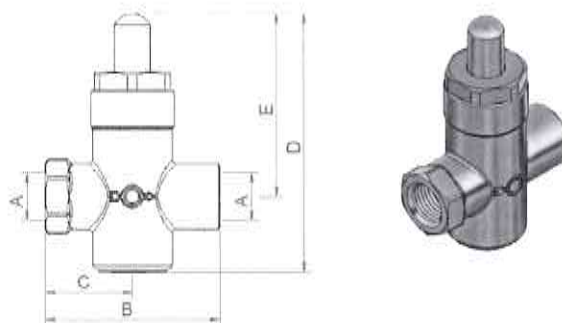


PORTAMANOMETRO A PULSANTE

DATI TECNICI

Codice:	Vedasi tabella specifica
Descrizione:	Rubinetto portamanometro con azionamento a pulsante
Finitura:	Trattamento superficiale di nickelatura
Materia:	Corpo in CW617N - 4MS (CuZn40Pb2) UNI EN 12165 Molla in acciaio O.ring in NBR
Fluidi ammessi:	Gas, vapori e liquidi non pericolosi (gruppo 2)
Pressione e temperatura:	Pressione nominale 4 bar, temperatura massima 70 °C
Filettatura:	Secondo EN ISO 228-1
Norma di riferimento:	DIR90/396/CE

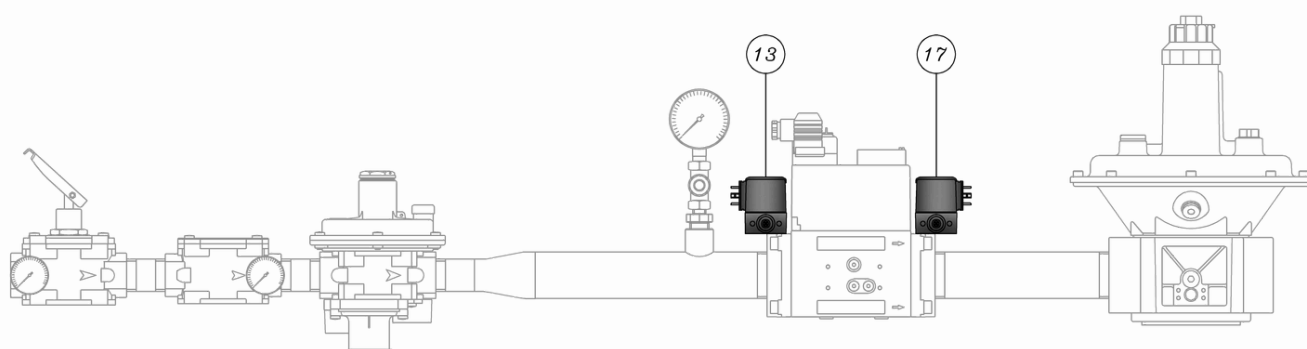
DISEGNO



CODICE	A	B [mm]	C [mm]	D [mm]	E [mm]
104014	G 1/4" - F	48	24	71	50
104138	G 3/8" - F	52	26	71	50
104212	G 1/2" - F	56	28	71	50

Le informazioni contenute nella presente scheda tecnica non sono vincolanti e possono essere variate senza preavviso

Itens 13 e 17 – Pressostatos de baixa e alta pressão



D**GB****F****I****DUNGS®**
Combustion Controls

Konformitäts- erklärung	Declaration of conformity	Déclaration de conformité	Dichiarazione di conformità
Gebrauchs- anleitung	Instructions	Notice d'utilisation	Istruzioni di esercizio e di montaggio
GW...A5, GW...A5/1			
Gas- und Luft- druckwächter	Gas and air pressure switch	Pressostat pour le gaz et l'air	Pressostato Gas e aria

**GW...A5, GW...A5/1**
227 048



EU-Konformitäts- erklärung

EU Declaration of conformity

Déclaration de conformité UE

Dichiarazione di conformità UE

Produkt / Product Produit / Prodotto	GW...A5, GW...A5/1	Gas- und Luftdruckwächter / Gas and air pressure switch / Pressostat pour le gaz et l'air / Pressostato Gas e aria	
Hersteller / Manufacturer Fabricant / Produttore	Karl Dungs GmbH & Co. KG · Karl-Dungs-Platz 1 · D-73660 Urbach/Germany		
bescheinigt hiermit, dass die in dieser Übersicht genannten Produkte einer EU-Baumusterprüfung (Baumuster) unterzogen wurden und die wesentlichen Sicherheitsanforderungen der: • EU-Gasgeräteverordnung (EU) 2016/426 • EU-Druckgeräterichtlinie 2014/68/EU • Niederspannungsrichtlinie 2014/35/EU in der gültigen Fassung erfüllen. Alle nach Druckgeräterichtlinie zugelassenen Komponenten sind Ausrüstungsteile mit Sicherheitsfunktion. Bei einer von uns nicht freigegebenen Änderung des Gerätes verliert diese Erklärung ihre Gültigkeit. Der oben beschriebene Gegenstand der Erklärung entspricht den einschlägigen Harmonisierungsrechtsvorschriften der Union. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.	certifies herewith that the products named in this overview were subjected to an EU-Type Examination (production type) and meet the essential safety requirements: • EU-Gas Appliances Regulation (EU) 2016/426 • EU-Pressure Equipment Directive "2014/68/EU" • Low-Voltage Directive "2014/35/EU" as amended. All of the components certified according to the Pressure Equipment Directive are equipment parts with safety function. In the event of an alteration of the equipment not approved by us this declaration loses its validity. The object of the declaration described above conforms with the relevant Union harmonisation legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.	certifie par la présente que le produit mentionné dans cette vue d'ensemble a été soumis à un examen UE de type (type de fabrication) et qu'il est conforme aux exigences en matières de sécurité des dernières versions en vigueur de : • Règlement européen sur les appareils brûlant des combustibles gazeux (UE) 2016/426 • Directive européenne relative aux appareils sous pression 2014/68/UE • Directive basse tension 2014/35/UE Tous les composants homologués conformément à la directive sur les dispositifs sous pression sont des éléments d'équipement à fonction de sécurité. Ce communiqué n'est plus valable si nous effectuons une modification libre de l'appareil. L'objet décrit ci-dessus de la présente déclaration correspond aux prescriptions légales applicables en matière d'harmonisation de l'Union. Le fabricant porte l'entière responsabilité pour l'établissement de la présente déclaration de conformité.	Con la presente si certifica che i prodotti citati in questa panoramica sono stati sottoposti a una prova di esame UE del tipo (tipo di produzione) e che i requisiti di sicurezza essenziali: • Regolamento UE sugli apparecchi a gas (UE) 2016/426 • Direttiva UE sulle attrezzature a pressione 2014/68/UE • Direttiva sulla bassa tensione 2014/35/UE sono soddisfatti nella versione valida. Tutti i componenti approvati secondo la direttiva sulle apparecchiature a pressione sono parti di apparecchiature con funzione di sicurezza. In caso di modifica dell'apparecchio non ammessa, questa dichiarazione perde di validità. L'oggetto della dichiarazione di cui sopra descritta è conforme alla pertinente normativa di armonizzazione dell'Unione. La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
Prüfgrundlage der EU-Baumusterprüfung (Baumuster) Specified requirements of the EU-Type Examination (production type) Base d'essai de l'examen UE de type (type de fabrication) Criteri di prova dell'omologazione esame UE del tipo (tipo di produzione)		EN 1854 EN 13611 ISO 23550	
Gültigkeitsdauer / Bescheinigung Term of validity / attestation Validité / certificat Durata della validità / Attestazione		2033-10-11 CE0036	2028-02-27 CE-0123CT1089
Notifizierte Stelle Notified Body Organisme notifié Organismo notificato		2014/68/EU TÜV SÜD Industrie Service GmbH Westendstraße 199 D-80686 München Germany Notified Body number: 0036	(EU) 2016/426 TÜV SÜD Product Service GmbH Zertifizierstellen Ridlerstraße 65 D-80339 München, Germany Notified Body number: 0123
Überwachung des QS-Systems Monitoring of the QA system Contrôle du système d'assurance qualité Monitoraggio del sistema QS		Gewähltes Konformitätsverfahren Modul B+D Conformity process adopted: Module B+D Procédure de conformité sélectionnée : module B+D Procedura di conformità selezionata: modulo B+D	
B.Sc., MBA Simon P. Dungs, Geschäftsführer / Chief Operating Officer / Directeur / Amministratore Urbach, 2023-10-26			

Declaration of Conformity

Product	GW...A5, GW...A5/1	Gas and air pressure switch
Manufacturer	Karl Dungs GmbH & Co. KG · Karl-Dungs-Platz 1 · D-73660 Urbach/Germany	
Certifies herewith that the products named in this overview were subjected to a Type Examination (production type) and meet the essential safety requirements: • Gas Appliances (Enforcement) and Miscellaneous Amendment Regulations, UKSI 2018:389 (as amended by UKSI 2019:696) • The Pressure Equipment Safety Regulations, UKSI 2016:1105 (as amended by UKSI 2019: 969) • The Electrical Equipment (Safety) Regulations 2016, UKSI 2016: 1101 as amended All of the components certified according to the Pressure Equipment (Safety) Regulations 2016 are equipment parts with safety function. In the event of an alteration of the equipment not approved by us this declaration loses its validity. The object of the declaration described above conforms with the relevant legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.		
Specified requirements of the Type Examination (production type)	EN 1854 EN 13611	
Term of validity	2032-08-09	2032-08-11
Approved Bodies	2016 No. 1105 TUV SUD BABT Unlimited Octagon House, Concorde Way, Segensworth North, Fareham, Hampshire, PO15 5RL, United Kingdom Approved Body Number: 0168	2018 No. 389 TUV SUD BABT Unlimited Octagon House, Concorde Way, Segensworth North, Fareham, Hampshire, PO15 5RL, United Kingdom Approved Body Number: 0168
Monitoring of the QA system	Conformity process adopted: Module B+D	
B.Sc., MBA Simon P. Dungs, Chief Operating Officer Urbach, 2022-08-22		

Betriebs- und Montagean-
leitung

Gas- und Luftdruckwächter
GW...A5
GW...A5/1

Operation and assembly
instructions

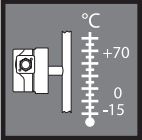
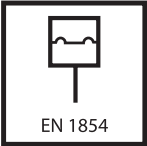
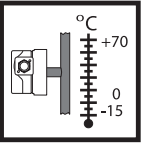
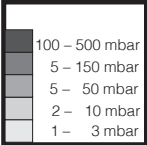
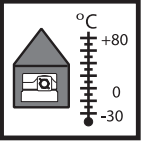
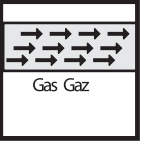
Gas and air pressure switch
GW...A5
GW...A5/1

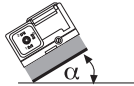
Notice d'emploi et de
montage

Pressostat pour le gaz et l'air
GW...A5
GW...A5/1

Istruzioni di esercizio e di
montaggio

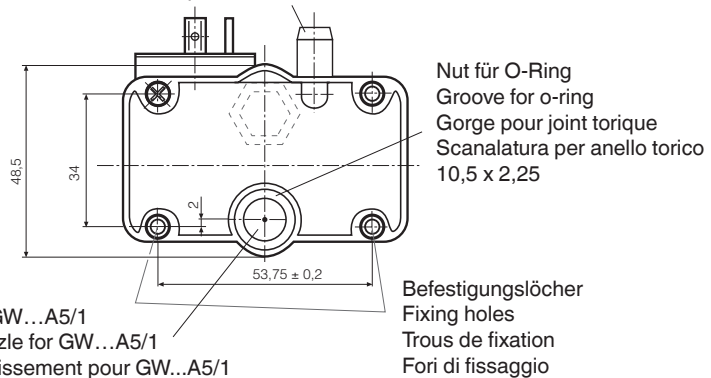
Pressostato Gas e aria
GW...A5
GW...A5/1

	Max. Betriebsdruck / Max. operating pressure/ Pression de service maxi. Max. pressione di esercizio GW 3/10/50/150 A5 $p_{max} = 500 \text{ mbar (50 kPa)}$ GW 500 A5 $p_{max} = 1000 \text{ mbar (100 kPa)}$		Umgebungstemperatur Ambient temperature Température ambiante Temperatura ambiente -15 °C ... +70 °C
	Druckwächter/ Pressure Switch/ Pressostat/ Pressostato Typ/Type/Type/Tipo GW...A5 nach / acc. / selon / secondo EN 1854		Mediumstemperatur Medium temperature Température du fluide Temperatura fluido -15 °C ... +70 °C
	Einstellbereiche Setting ranges Plages de réglage Campi di taratura		Lagertemperatur Storage temperature Température de stockage Temperatura stoccaggio -30 °C ... +80 °C
	$\sim(\text{AC}) \text{ eff., min./mini } 24 \text{ V,}$ $\sim(\text{AC}) \text{ max./maxi. } 250 \text{ V}$ $=(\text{DC}) \text{ min./mini. } 24 \text{ V,}$ $=(\text{DC}) \text{ max./maxi. } 48 \text{ V}$		Familie 1 + 2 + 3 Family 1 + 2 + 3 Famille 1 + 2 + 3 Famiglia 1 + 2 + 3
	Nennstrom/nominal current/courant nominal/corrente nominale GW 3 A5: $\sim(\text{AC}) 6 \text{ A}$ GW 10...500 A5: $\sim(\text{AC}) 10 \text{ A}$ Schaltstrom/current on contact/courant de commutation/corrente di intervento GW 3 A5: $\sim(\text{AC}) 4 \text{ A cos } \varphi 1$ $\sim(\text{AC}) 2 \text{ A cos } \varphi 0,6$ GW 10...500 A5: $\sim(\text{AC}) \text{ max./maxi. } 6 \text{ A cos } \varphi 1$ $\sim(\text{AC}) \text{ max./maxi. } 3 \text{ A cos } \varphi 0,6$ GW 3...500 A5: $\sim(\text{AC}) \text{ eff., min./mini } 20 \text{ mA}$ $=(\text{DC}) \text{ min./mini. } 20 \text{ mA}$ $=(\text{DC}) \text{ max./maxi. } 1 \text{ A}$		Schutzart Degree of protection Protection Protezione IP 54 nach / acc. / selon / secondo IEC 529 (EN 60529)

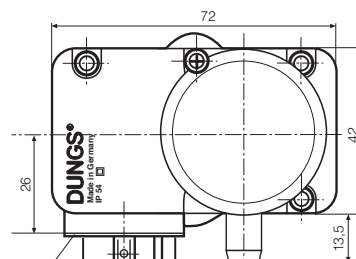
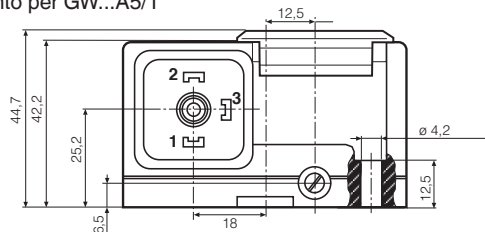
Einbaulage / Installation position / Position de montage / Posizione de montaggio	
	Standardeinbaulage; bei Abweichung Schaltpunktänderung beachten. Standard installation position; in case of deviation, take the switch point change into account. Position de montage standard; en case de divergence, veiller à la modification du point de commutation. Posizione standard; per altre posizioni di montaggio osservare il cambiamento del punto di intervento. GW 3...50 A5 max. $\pm 0,6 \text{ mbar}$ GW 150 A5 max. $\pm 1 \text{ mbar}$ GW 500 A5 max. $\pm 3 \text{ mbar}$
	Bei waagerechtem Einbau schaltet der Druckwächter bei einem höheren Druck. In the horizontal installation position the switching pressure is increased. Monté horizontalement, le pressostat commute à une pression d'environ. Con montaggio orizzontale il pressostato scatta ad una pressione superiore.
	Bei Einbau waagerecht über Kopf schaltet der Druckwächter bei einem niedrigeren Druck. When the pressure switch is mounted horizontally overhead, its switching pressure decreases. Monté horizontalement à l'envers, le pressostat commute à une pression moins élevée. Con montaggio orizzontale capovolto il pressostato scatta ad una pressione inferiore.
	Bei Einbau in einer Zwischeneinbaulage schaltet der Druckwächter bei einem vom eingestellten Sollwert maximal höheren bzw. niedrigeren Druck. When the pressure switch is mounted in an intermediate position, its switching pressure deviates from the setpoint. Monté dans une position intermédiaire, le pressostat commute à une pression divergeant d'un par rapport à la valeur de consigne réglée. Con il montaggio in una posizione intermedia il pressostato scatta ad una pressione diversa da quella nominale.

Einbaumaße / Dimensions
Cotes d'encombrement /
Dimensioni [mm]
GW...A5

Meßstutzen ø 9
 Measuring nozzle 9 mm dia.
 Prise de mesure ø 9
 Presa per misuratore ø 9



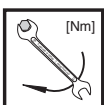
Druckanschluß optional mit Dämpfungsdüse bei GW...A5/1
 Pressure connection, optionally with damping nozzle for GW...A5/1
 Raccord de pression en option avec buse d'amortissement pour GW...A5/1
 Presa pressione opzione con ugello di smorzamento per GW...A5/1



Dichtung
 Seal
 Joint d'étanchéité
 Guarnizione

Schutzhaube für Steckanschluß
 Safety cover for plug-type connection
 Capot de protection pour connecteur
 Calotta di protezione per collegamento a spina

Steckanschluß für Leitungsdose nach DIN EN 175 301-803
 Plug-in socket for cable socket as per DIN EN 175 301-803
 Fiche pour boîtier de raccordement selon DIN EN 175 301-803
 Attacco a spina per presa a norme DIN EN 175 301-803



max. Drehmomente / Systemzubehör
max. torque / System accessories
max. couple / Accessoires du système
max. coppie / Accessorio di sistema

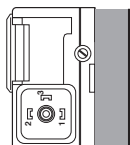
M 3	M 4	ø 3	ø 3,5	ø 5
1,2 Nm	2,5 Nm	1,2 Nm	1,2 Nm	2,0 Nm



Geeignetes Werkzeug einsetzen!
Please use proper tools!
Utiliser des outils adaptés!
Impiegare gli attrezzi adeguati!



Gerät darf nicht als Hebel be-
nutzt werden
Do not use unit as lever.
Ne pas utiliser le pressostat
comme un levier.
L'apparecchio non deve essere
usato come leva.



Anbaumöglichkeiten
Attachment possibilities
Possibilités de montage
Possibilità di montaggio

GW...A5 ⇒ ⇒ { MB-VEF ... B01
 DMV-VEF
 DMV-D(LE) ... /11
 DMV-SE
 MB-D ...
 MB-Z ...
 FRI ... /10

Druckanschluß

O-Ring-Flanschanschluß an der Unterseite des Druckwächters.

Befestigung

2 Schrauben M4 x 20, selbstfurchend.

Pressure tap

O-ring-flange connection to under-side of the pressure switch.

Attachment

2 M4 x 20 bolts, self-tapping.

Raccordement

Bride avec joint torique par la partie basse du pressostat.

Fixation

2 vis M4 x 20 autotaraudeuses.

Attacco pressione

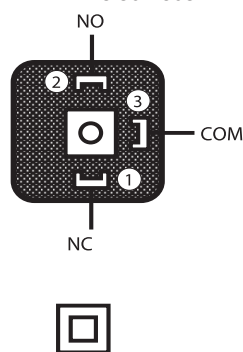
Attacco a flangia con O-Ring sulla parte inferiore del pressostato.

Fissaggio

2 viti M4 x 20 autofilettanti.

Elektrischer Anschluß
Electrical connection
Raccordement électrique
Allacciamento elettrico
EN 60730

DIN EN 175 301-803



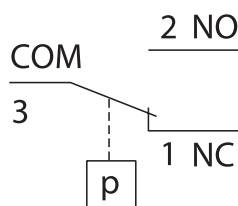
Zur Erhöhung der Schaltleistung wird bei DC-Anwendungen < 20 mA und 24 V der Einsatz eines RC-Gliedes empfohlen. EN 60730

To increase the switching capacity, we recommend that you use a RC device for current values < 20 mA and 24 V d.c. applications.

Pour augmenter la puissance de rupture, l'utilisation d'un circuit RC est préconisée pour les applications à courant continu < 20 mA et 24 V.

Per aumentare la potenza d'inserimento con applicazioni DC < 20 mA e 24 V, consigliamo l'impiego di un elemento RC.

Schaltfunktion
Switching function
Schéma électrique
Funzione di commutazione
pressostato
GW...A5



Bei steigendem Druck:
 1 NC öffnet, 2 NO schließt.
 Bei fallendem Druck:
 1 NC schließt, 2 NO öffnet.

While pressure is increasing:
 1 NC opens, 2 NO closes.
 While pressure is decreasing:
 1 NC closes, 2 NO opens.

Pression montante:
 1 NC ouvre, 2 NO ferme.
Pression descendante:
 1 NC ferme, 2 NO ouvre

Con pressione in salita:
 1 NC apre, 2 NO chiude.
Con pressione in discesa:
 1 NC chiude, 2 NO apre

Zubehör Accessories Accessoires Accessorio	Bestell-Nr. Order No. No. de commande Nr. ordine	für Gerät / Typ for equipment / type pour appareil / type per apparecchio / Tipo	Nennweiten Nominal diameters Diamètres nominaux Diametri nominali
Montage-Set Assembly set Kit de montage Set dimontaggio 2 x M4 x 20 1 x O-Ring / Joint torique	223 280		
Adapter p _{Br} Adapter p _{Br} Adaptateur p _{Br} Adattatore p _{Br}	273 777	MB-D ... MB-Z ... DMV- ...	Rp 3/8 – Rp 2 Rp 3/8 – Rp 2 Rp 3/8 – Rp 2
Adapter-Set für GW ... A5 mit Anschluß G 1/4 Apapter-set for GW ... A5 fitted with G 1/4 port Kit de montage GW ... A5 avec raccord taraudé G 1/4 Set adattatore per GW ... A5 con attacco G 1/4	222 982	DMV - ... MB - ... 415-420	Rp 3/8 – Rp 2 Rp 3/8 – Rp 2
Adapter auf Gewindeflansch (G 1/8) Adapter on threaded flange (G 1/8) Adaptateur sur bride fileté (G 1/8) Adattatore per flangia filettata (G 1/8)	221 630	MB -... 405-412 DMV -... SV -... 505-520	Rp 3/8 – Rp 1 1/4 Rp 3/8 – Rp 2
Leitungsdose 3-pol. + E grau GDMW Line socket 3-pin + E grey GDMW Prise 3 pôles + terre grise GDMW Presa di rete a 3 poli e terra, grigia GDMW	210 318		

Einstellung des Gasdruckwächters

Haube mit geeignetem Werkzeug demontieren, Schraubendreher No. 3 bzw. PZ 2, Bild 1.
Haube abnehmen.

Setting the gas pressure switch

Dismount the hood using a suitable tool, e.g. screwdriver no. 3 or PZ 2, Fig. 1. Remove hood.

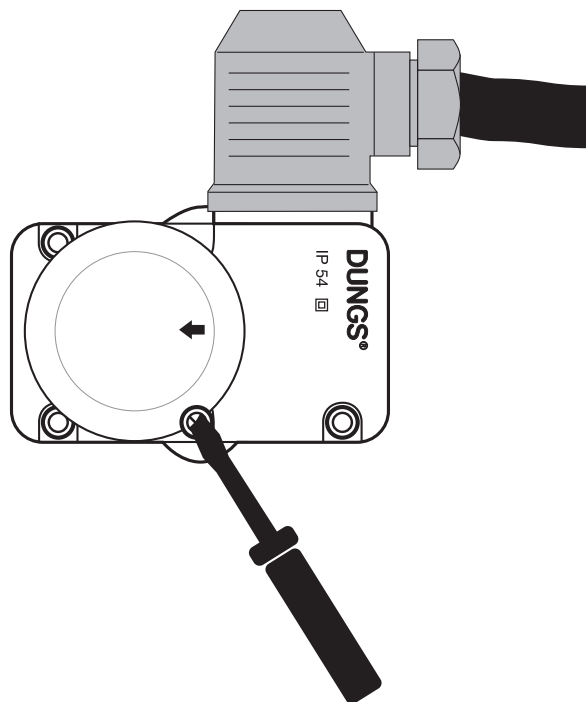
Réglage du pressostat

Elever les vis du capot en utilisant un tournevis N°3 respectivement PZ 2, Figure 1.
Enlever le capot.

Regolazione del pressostato gas

Smontare la calotta con un attrezzo adeguato, ossia cacciavite nr. 3 rispettiv PZ 2, figura 1. Togliere la calotta

1



Druckwächter am Einstellrad mit Skala auf vorgeschriebenen Druck-sollwert einstellen, Bild 2.

! Anleitung des Brennerherstellers beachten!

Druckwächter schaltet bei fallendem Druck: Einstellung ↓.
Haube wieder montieren!

Set the pressure switch at the setting wheel to the specified pressure setpoint using the scale, Fig. 2.

! Observe the burner manufacturer's recommendations!

Pressure switch switches as pressure reduces: Setting ↓.
Remount hood!

Régler le pressostat avec son bouton sur la valeur désirée, Figure 2.

! Respecter les recommandations du constructeur du brûleur!

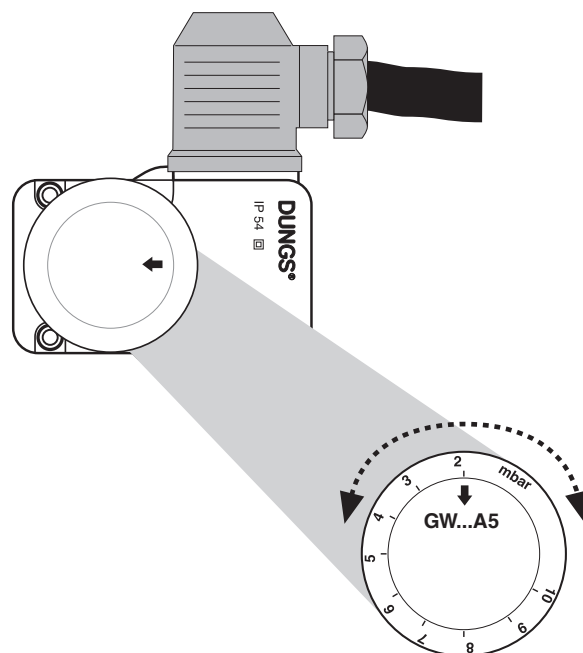
Le pressostat commute par pression descendante: Réglage ↓.
Remonter le capot!

Tarare il pressostato, come in figura 2, sul valore di pressione nominale prescritto, agendo sulla rotella della scala graduata.

! Prestare attenzione alle istruzioni indicate dal fabbricante del bruciatore!

Il pressostato scatta con pressione in discesa: Regolazione ↓.
Rimontare la calotta.

2





Arbeiten am Druckwächter dürfen nur von Fachpersonal durchgeführt werden.

Work on the pressure switch may only be performed by specialist staff.

Seul du personnel spécialisé peut effectuer des travaux sur le pressostat.

Qualsiasi operazione effettuata sul pressostato deve essere fatta da parte di personale competente.

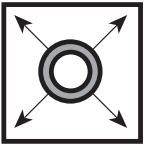


Kondensat darf nicht in das Gerät gelangen. Bei Minustemperaturen, durch Vereisung Fehlfunktion/Ausfall möglich.

Do not allow condensate to flow into the equipment. In case of sub-zero temperatures, malfunction or equipment failure may be possible due to icing.

Eviter l'entrée de condensats dans le pressostat, une prise en glace par température négative nuirait à son fonctionnement.

Nell' apparecchio non deve infiltrarsi alcuna condensa. Alle temperature negative sarebbero possibili disfunzioni dovute a formazione di ghiaccio.



Rohrleitungsdichtheitsprüfung: Kugelhahn vor dem Druckwächterschließen.

Pipeline leakage test: close ball valve upstream of the pressure switch.

Contrôle de l'étanchéité de la conduite: fermer le robinet à boisseau sphérique avant le pressostat.

Per la prova di tenuta delle tubature: chiudere il rubinetto a sfera davanti al corpo pressostato.

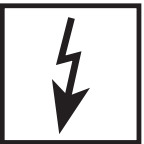


Nach Abschluß von Arbeiten am Druckwächter: Dichtheitskontrolle und Funktionskontrolle durchführen.

On completion of work on the pressure switch, perform a leakage and function test.

Une fois les travaux sur le pressostat terminés, procéder toujours à un contrôle d'étanchéité et de fonctionnement.

Al termine dei lavori effettuati su un pressostato: predisporre un controllo sia della tenuta che del funzionamento.



Niemals Arbeiten durchführen, wenn Gasdruck oder Spannung anliegt. Offenes Feuer vermeiden. Örtliche Vorschriften beachten.

Never perform work if gas pressure or power is applied. No naked flame. Observe local regulations.

Ne jamais effectuer des travaux sous pression et sous tension. Eviter toute flamme ouverte. Observer les réglementations.

In nessun caso si debbono effettuare lavori in presenza di pressione gas o di tensione elettrica. Evitare i fuochi aperti e osservare le prescrizioni pubbliche.



Bei Nichtbeachtung der Hinweise sind Personen- oder Sachfolgeschäden denkbar.

If these instructions are not heeded, the result may be personal injury or damage to property.

En cas de non-respect de ces instructions, des dommages corporels ou matériels sont possible.

La non osservanza di quanto suddetto può implicare danni a persone o cose.



Silikonöle und flüchtige Silikonbestandteile (Siloxane) in der Umgebung vermeiden. Fehlfunktion / Ausfall möglich.

Avoid silicone oils and volatile silicones (siloxanes) in the environment. Malfunction/failure possible.

Eviter les huiles de silicone et les éléments de silicone volatils (siloxanes) dans l'environnement. Dysfonctionnement / panne possibles.

Evitare oli silconici e componenti silconici volatili (silossani) nell'ambiente. Possibile disfunzione / guasto.



Alle Einstellungen und Einstellwerte nur in Übereinstimmung mit der Betriebsanleitung des Kessel-/Brennerherstellers ausführen.

Any adjustment and application-specific adjustment values must be made in accordance with the appliance-/boiler manufacturers instructions.

Effectuer tous les réglages et réaliser les valeurs de réglage uniquement selon le mode d'emploi du fabricant de chaudières et de brûleurs.

Realizzare tutte le impostazioni e i valori impostati solo in conformità alle istruzioni per l'uso del costruttore della caldaia/ del bruciatore.



Die Druckgeräterichtlinie (PED) und die Richtlinie über die Gesamtenergieeffizienz von Gebäuden (EPBD) fordern eine regelmäßige Überprüfung der Wärmeerzeuger zur langfristigen Sicherstellung von hohen Nutzungsgraden und somit geringster Umweltbelastung.

Es besteht die Notwendigkeit sicherheitsrelevante Komponenten nach Erreichen ihrer Nutzungsdauer auszutauschen:

The Pressure Equipment Directive (PED) and the Energy Performance of Buildings Directive (EPBD) require a periodic inspection of heat generators in order to ensure a high degree of efficiency over a long term and, consequently, the least environmental pollution.

It is necessary to replace safety-relevant components after they have reached the end of their useful life:

La directive équipements sous pression (PED) et la directive sur la performance énergétique des bâtiments (EPBD) exigent une vérification régulière des générateurs de chaleur afin de garantir à long terme des taux d'utilisation élevés et par conséquent une charge environnementale minimum.

Il est nécessaire de remplacer les composants relatifs à la sécurité lorsqu'ils ont atteint la fin de leur vie utile :

La direttiva per apparecchi a pressione (PED) e la direttiva per l'efficienza dell'energia totale per edifici (EPBD), esigono il controllo regolare dei generatori di calore per la garanzia a lungo termine di un alto grado di rendimento e quindi di basso inquinamento ambientale.

Ciò rende necessaria la sostituzione di componenti rilevanti dal punto di vista della sicurezza alla scadenza della loro durata di utilizzazione:

Sicherheitsrelevante Komponente Safety-relevant component Composant relatif à la sécurité Componenti rilevanti per la sicurezza	Konstruktionsbedingte Lebensdauer Design-related service life Durée de vie prévue Durata di vita di progetto		Norm Standard Norme Norma	Dauerhafte Lagertemperatur Permanent storage temperature Température de stockage permanent Temperatura di stoccaggio permanente
	Zyklenzahl Operating cycles Cycle d'opération Numero di cicli di funzionamento	Jahre Years Années Anni		
Ventilprüfsysteme / Valve testing systems / Systèmes de contrôle de vanne / Sistemi di controllo valvole	250 000	10	EN 1643	0...45 °C 32...113 °F
Gas / Gas / Gaz / Gas Druckwächter / Pressure switch / Manostat / Pressostato	50 000	10	EN 1854	
Luft / Air / Air / Aria Druckwächter / Pressure switch / Manostat / Pressostato	250 000	10	EN 1854	
Gas mangelschalter / Low gas pressure switch / Pressostat gaz basse pression / Pressostato gas di minima pressione	N/A	10	EN 1854	
Feuerungsmanager / Automatic burner control / Dispositif de gestion de chauffage / Gestione bruciatore	250 000	10	EN 298 EN 230	
UV-Flammenfühler ¹ UV flame sensor ¹ Capteur de flammes UV ¹ Sensore fiamma UV ¹	N/A	10 000 h ³	---	
Gasdruckregelgeräte ¹ Gas pressure regulators ¹ Dispositifs de réglage de pression du gaz ¹ Regolatori della pressione del gas ¹	N/A	15	EN 88-1 EN 88-2	
Gasventil mit Ventilprüfsystem ² Gas valve with valve testing system ² Vanne de gaz avec système de contrôle de vanne ² Valvola del gas con sistema di controllo valvola ²	nach erkanntem Fehler after error detection après détection d'erreur dopo segnalazione di errore		EN 1643	
Gasventil ohne Ventilprüfsystem ² Gas valve without valve testing system ² Vanne de gaz sans système de contrôle de vanne ² Valvola del gas senza sistema di controllo valvola ²	DN ≤ 25 200 000 25 < DN ≤ 80 100 000 80 < DN ≤ 150 50 000	10	EN 161	
Gas-Luft-Verbundsysteme / Gas-air ratio control system / Systèmes combinés gaz/air / Sistemi di miscelazione gas-aria	N/A	10	EN 88-1 EN 12067-2	
¹ Nachlassende Betriebseigenschaften wegen Alterung / Performance decrease due to ageing / Réduction de performance due au vieillissement / Riduzione delle prestazioni dovuta all'invecchiamento ² Gasfamilien II, III / Gas families II, III / Familles de gaz II, III / per i gas delle famiglie II, III ³ Betriebsstunden / Operating hours / Heures de service / Ore di esercizio N/A nicht anwendbar / not applicable / non applicable / non applicabile				
Lagerzeiten / Storage times / Périodes de stockage / Tempi di stoccaggio				
Lagerzeiten ≤ 1 Jahr verkürzen nicht die konstruktionsbedingte Lebensdauer. Storage time ≤ 1 year does not reduce the design-related service life. Les périodes de stockage ≤ 1 an ne réduisent pas la durée de vie liée à la conception. I tempi di stoccaggio ≤ 1 anno non riducono la durata di vita di progetto.				
DUNGS empfiehlt eine maximale Lagerzeit von 3 Jahren. DUNGS recommends a maximum storage time of 3 years. DUNGS recommande une durée de stockage maximale de 3 ans. DUNGS raccomanda un tempo massimo di stoccaggio di 3 anni.				

Änderungen, die dem technischen Fortschritt dienen, vorbehalten. / We reserve the right to make modifications in the course of technical development. /
Sous réserve de toute modification constituant un progrès technique. / Ci riserviamo qualsiasi modifica tecnica e costruttiva.

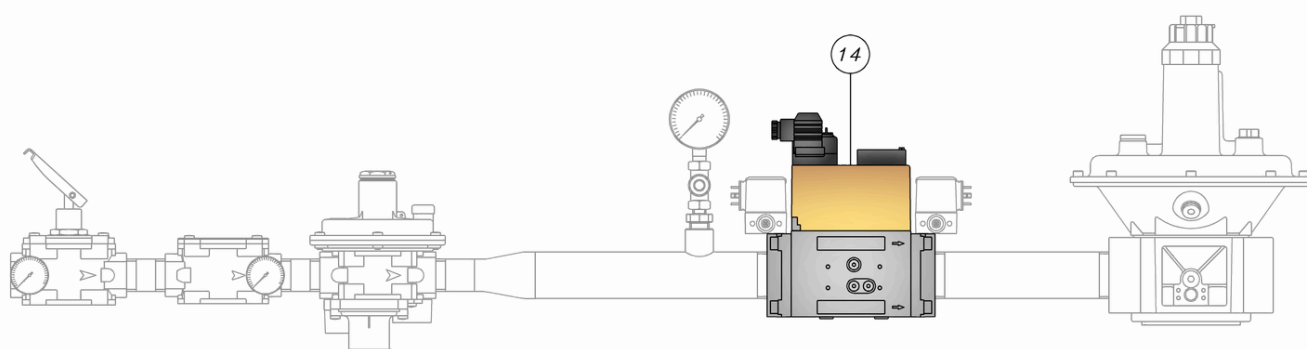
Hausadresse
Head Offices and Factory
Usine et Services Administratifs
Amministrazione e Stabilimento

Karl Dungs GmbH & Co. KG
Karl-Dungs-Platz 1
D-73660 Urbach, Germany
Telefon +49 7181-804-0
Telefax +49 7181-804-166

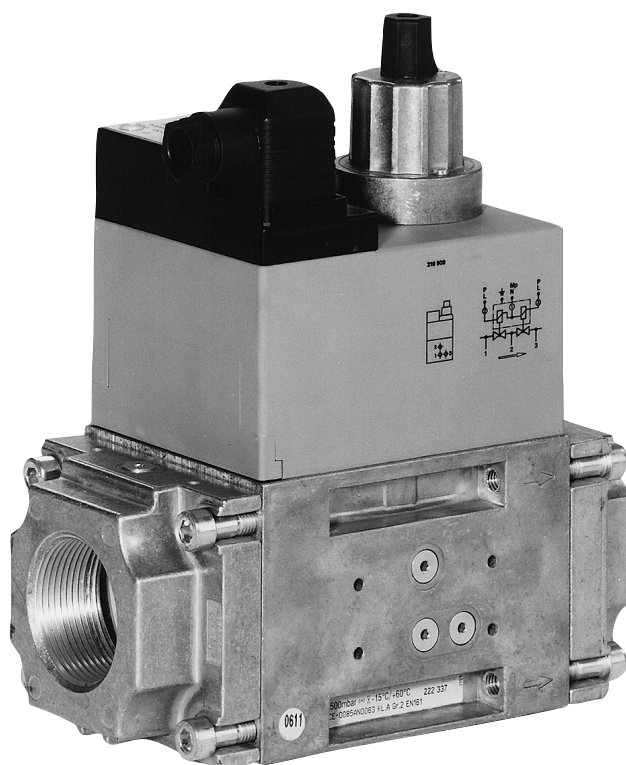
Briefadresse
Postal address
Adresse postale
Indirizzare la corrispondenza a

Karl Dungs GmbH & Co. KG
Postfach 12 29
D-73602 Schorndorf
e-mail info@dungs.com
Internet www.dungs.com

Item 14 - Válvula de bloqueio de segurança



Konformitäts- erklärung	Declaration of conformity	Déclaration de conformité	Dichiarazione di conformità
Gebrauchs- anleitung	Instructions	Notice d'utilisation	Istruzioni di esercizio e di montaggio
DMV-D.../11, DMV-DLE.../11			
Doppelmagnet- ventil	Double solenoid valve	Electrovanne double	Valvole doppie
Nennweiten Nominal diameters Diamètres nominaux Diametri nominali		Rp ½ - Rp 2	



DMV-D.../11, DMV-DLE.../11
222 345



EU-Konformitäts- erklärung

EU Declaration of conformity

Déclaration de conformité UE

Dichiarazione di conformità UE

Produkt / Product Produit / Prodotto	DMV-D.../11 DMV-DLE.../11	Doppelmagnetventil Double solenoid valve Electrovanne double Valvole doppie	
Hersteller / Manufacturer Fabricant / Produttore	Karl Dungs GmbH & Co. KG · Karl-Dungs-Platz 1 · D-73660 Urbach/Germany		
bescheinigt hiermit, dass die in dieser Übersicht genannten Produkte einer EU-Baumusterprüfung (Baumuster) unterzogen wurden und die wesentlichen Sicherheitsanforderungen der: • EU-Gasgeräteverordnung (EU) 2016/426 • EU-Druckgeräterichtlinie 2014/68/EU • EMV-Richtlinie 2014/30/EU • Niederspannungsrichtlinie 2014/35/EU in der gültigen Fassung erfüllen. Alle nach Druckgeräterichtlinie zugelassenen Komponenten sind Ausrüstungsteile mit Sicherheitsfunktion. Bei einer von uns nicht freigegebenen Änderung des Gerätes verliert diese Erklärung ihre Gültigkeit. Der oben beschriebene Gegenstand der Erklärung entspricht den einschlägigen Harmonisierungsrechtsvorschriften der Union. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.	certifies herewith that the products named in this overview were subjected to an EU-Type Examination (production type) and meet the essential safety requirements: • EU-Gas Appliances Regulation (EU) 2016/426 • EU-Pressure Equipment Directive "2014/68/EU" • EMC Directive "2014/30/EU" • Low-Voltage Directive "2014/35/EU" as amended. All of the components certified according to the Pressure Equipment Directive are equipment parts with safety function. In the event of an alteration of the equipment not approved by us this declaration loses its validity. The object of the declaration described above conforms with the relevant Union harmonisation legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.	certifie par la présente que le produit mentionné dans cette vue d'ensemble a été soumis à un examen UE de type (type de fabrication) et qu'il est conforme aux exigences en matières de sécurité des dernières versions en vigueur de : • Règlement européen sur les appareils brûlant des combustibles gazeux (UE) 2016/426 • Directive européenne relative aux appareils sous pression 2014/68/UE • Directive CEM 2014/30/UE • Directive basse tension 2014/35/UE Tous les composants homologués conformément à la directive sur les dispositifs sous pression sont des éléments d'équipement à fonction de sécurité. Ce communiqué n'est plus valable si nous effectuons une modification libre de l'appareil. L'objet décrit ci-dessus de la présente déclaration correspond aux prescriptions légales applicables en matière d'harmonisation de l'Union. Le fabricant porte l'entière responsabilité pour l'établissement de la présente déclaration de conformité.	Con la presente si certifica che i prodotti citati in questa panoramica sono stati sottoposti a una prova di esame UE del tipo (tipo di produzione) e che i requisiti di sicurezza essenziali: • Regolamento UE sugli apparecchi a gas (UE) 2016/426 • Direttiva UE sulle attrezzature a pressione 2014/68/UE • Direttiva EMC 2014/30/UE • Direttiva sulla bassa tensione 2014/35/UE sono soddisfatti nella versione valida. Tutti i componenti approvati secondo la direttiva sulle apparecchiature a pressione sono parti di apparecchiature con funzione di sicurezza. In caso di modifica dell'apparecchio non ammessa, questa dichiarazione perde di validità. L'oggetto della dichiarazione di cui sopra descritta è conforme alla pertinente normativa di armonizzazione dell'Unione. La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
Prüfgrundlage der EU-Baumusterprüfung (Baumuster) Specified requirements of the EU-Type Examination (production type) Base d'essai de l'examen UE de type (type de fabrication) Criteri di prova dell'omologazione esame UE del tipo (tipo di produzione)		EN 126 ISO 23551-8	
Gültigkeitsdauer / Bescheinigung Term of validity / attestation Validité / certificat Durata della validità / Attestazione		2028-09-17 CE-0036	2028-02-27 CE-0123CT1214
Notifizierte Stelle Notified Body Organisme notifié Organismo notificato		2014/68/EU TÜV SÜD Industrie Service GmbH Westendstraße 199 D-80686 München Germany Notified Body number: 0036	(EU) 2016/426 TÜV SÜD Product Service GmbH Zertifizierstellen Ridlerstraße 65 D-80339 München, Germany Notified Body number: 0123
Überwachung des QS-Systems Monitoring of the QA system Contrôle du système d'assurance qualité Monitoraggio del sistema QS		Gewähltes Konformitätsverfahren Modul B+D Conformity process adopted: Module B+D Procédure de conformité sélectionnée : module B+D Procedura di conformità selezionata: modulo B+D	
B.Sc., MBA Simon P. Dungs, Geschäftsführer / Chief Operating Officer / Directeur / Amministratore Urbach, 2022-08-09			

Declaration of Conformity

Product	DMV-D.../11 DMV-DLE.../11	Double solenoid valve
Manufacturer	Karl Dungs GmbH & Co. KG · Karl-Dungs-Platz 1 · D-73660 Urbach/Germany	
Certifies herewith that the products named in this overview were subjected to a Type Examination (production type) and meet the essential safety requirements: Gas Appliances (Enforcement) and Miscellaneous Amendment Regulations, UKSI 2018:389 (as amended by UKSI 2019:696) The Pressure Equipment Safety Regulations, UKSI 2016:1105 (as amended by UKSI 2019: 969) The Electrical Equipment (Safety) Regulations 2016, UKSI 2016: 1101 as amended The Electromagnetic Compatibility Regulations 2016, UKSI 2016: 1091 as amended All of the components certified according to the Pressure Equipment (Safety) Regulations 2016 are equipment parts with safety function. In the event of an alteration of the equipment not approved by us this declaration loses its validity. The object of the declaration described above conforms with the relevant legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.		
Specified requirements of the Type Examination (production type)	EN 126 EN 161 EN 13611	
Term of validity	2032-07-27	2032-07-27
Approved Bodies	2016 No. 1105 TUV SUD BABT Unlimited Octagon House, Concorde Way, Segensworth North, Fareham, Hampshire, PO15 5RL, United Kingdom Approved Body Number: 0168	2018 No. 389 TUV SUD BABT Unlimited Octagon House, Concorde Way, Segensworth North, Fareham, Hampshire, PO15 5RL, United Kingdom Approved Body Number: 0168
Monitoring of the QA system	Conformity process adopted: Module B+D	
B.Sc., MBA Simon P. Dungs, Chief Operating Officer Urbach, 2022-08-09		



Betriebs- und Montageanleitung

Doppelmagnetventil
Typ DMV-D.../11
Typ DMV-DLE.../11
 Nennweiten
 Rp 1/2 - Rp 2

Operation and assembly instructions

Double solenoid valve
Type DMV-D.../11
Type DMV-DLE.../11
 Nominal widths
 Rp 1/2 - Rp 2

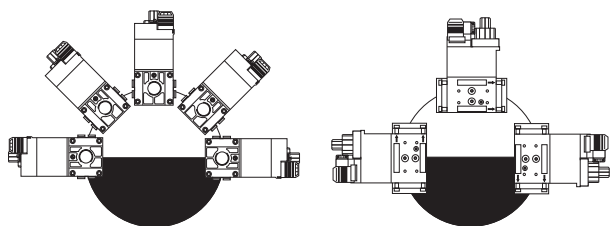
Notice d'emploi et de montage

Electrovanne double
Type DMV-D.../11
Type DMV-DLE.../11
 Diamètres nominaux
 Rp 1/2 - Rp 2

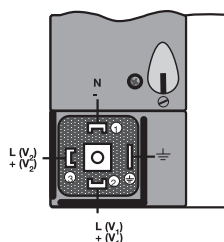
Istruzioni di esercizio e di montaggio

Valvole doppie
Tipo DMV-D.../11
Tipo DMV-DLE.../11
 Diametri nominali
 Rp 1/2 - Rp 2

Einbaulage Installation position Position de montage Posizione di montaggio

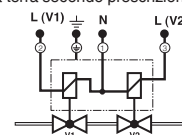


Elektrischer Anschluß Electrical connection Raccordement électrique Allacciamento elettrico IEC 730-1 (VDE 0631 T1)

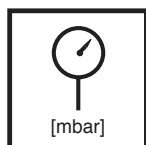
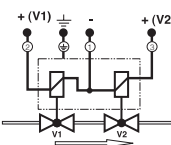


Erndung nach örtlichen Vorschriften
 Grounding acc. local regulations
 Mise à terre selon normes locales
 Messa a terra secondo prescrizioni locali

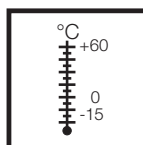
AC



DC



Max. Betriebsdruck
 Max. operating pressure
 Pression de service maxi.
 Max. pressione di esercizio
 $p_{max.} = 500 \text{ mbar (50 kPa)}$



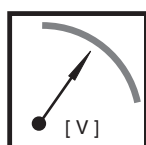
Umgebungstemperatur
 Ambient temperature
 Température ambiante
 Temperatura ambiente
 -15 °C ... +60 °C



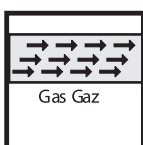
V1+V2 Klasse A, Gruppe 2
 V1+V2 Class A, Group 2
 V1+V2 Class. A, Groupe 2
 V1+V2 Classe A, Gruppo 2
 nach / acc. / selon / a norma
 EN 161



Schutzart
 Degree of protection
 Protection
 Protezione
 IP 54 nach / acc. / selon / a norma
 IEC 529 (DIN EN 60 529)



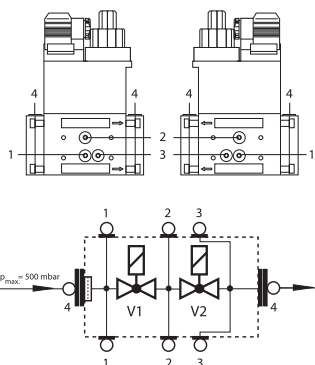
$U_n \sim (\text{AC}) 230 \text{ V}$ oder/or/ou/o
 $\sim (\text{AC}) 110 \text{ V} - 120 \text{ V}$,
 $= (\text{DC}) 24 \text{ V} - 28 \text{ V}$
 Einschaltdauer/Switch-on duration/
 Durée de mise sous tension/ Durata
 inserzione 100 %



Familie / Family 1 + 2 + 3
 Famille / Famiglia 1 + 2 + 3
 Buntmetallfrei, geeignet für Gase bis max. 0,1 vol. % H₂S,
 trocken. / It does not contain any non-ferrous metals, suit-
 able for gases of up to max. 0,1 vol. % H₂S, dry. / Enallages
 non-cuivreux, convient aux gaz jusqu'à max. 0,1 % envol./
 Esso è esente da metalli non ferrosi ed è adatto per gas
 fino ad un volume max. % di 0,1 H₂S d'H₂S sec.

DMV 507-520/11 Druckabgriffe / Pressure taps Prises de pression / Manopola a pressione

1, 2, 3, 4
 Verschlußschraube
 Sealing plug
 Bouchon fileté
 Vite di chiusura
 G 1/8 DIN ISO 228

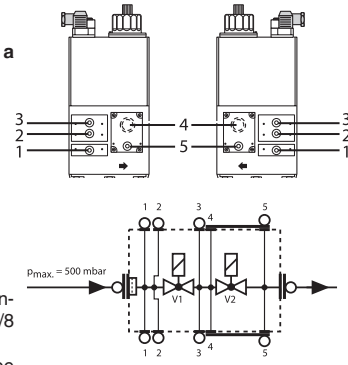


Die Verschlußschrauben 1, 2, 3, 4 können
 auch durch einen Meßstutzen G 1/8 DIN
 ISO 228 ersetzt werden.
 Screw plugs 1, 2, 3, 4 may also be re-
 placed by a measuring socket G 1/8
 DIN ISO 228.

Les bouchons filetés 1, 2, 3, 4 peuvent
 aussi être remplacés par une prise de
 pression G 1/8 DIN ISO 228. Le viti di
 chiusura 1, 2, 3, 4 possono essere an-
 che sostituite da una pressione G 1/8
 DIN ISO 228.

DMV 525/11 Druckabgriffe / Pressure taps Prises de pression / Manopola a pressione

1, 2, 3, 5
 Verschlußschraube
 Sealing plug
 Bouchon fileté
 Vite di chiusura
 G 1/8 DIN ISO 228

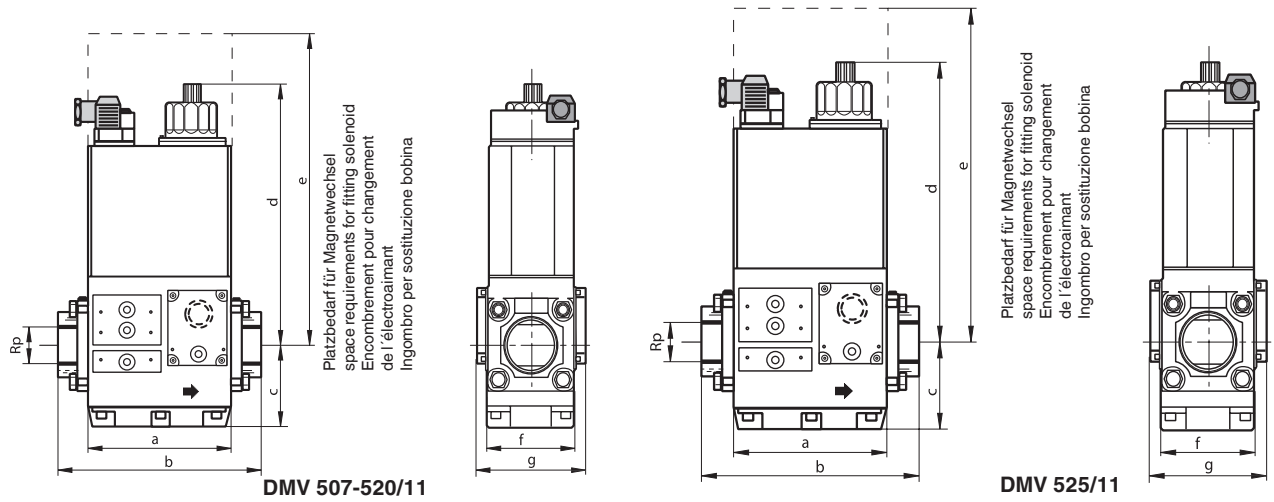


Die Verschlußschrauben 1, 2, 3, 5 kön-
 nen auch durch einen Meßstutzen G 1/8
 DIN ISO 228 ersetzt werden.
 Screw plugs 1, 2, 3 and 5 may also be
 replaced by a measuring socket G 1/8
 DIN ISO 228.

Les bouchons filetés 1, 2, 3, 5 peuvent
 aussi être remplacés par une prise de
 pression G 1/8 DIN ISO 228.
 Le viti di chiusura 1, 2, 3, 5 possono es-
 sere anche sostituite da una pressione
 G 1/8 DIN ISO 228.

4
 Verdeckte Verbindungsbohrung für Sys-
 temzubehör. / Concealed connecting bore
 for system accessories. / Orifice masqué
 pour connexion d'accessoires. / Foro
 coperto per collegamento accessori.

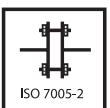
Einbaumaße/Dimensions/Cotes d'encombrement/Dimensioni [mm]



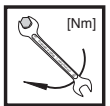
Typ Type Type Tipo	Rp	P _{max.} [VA]	I _{max.} ~(AC) 240 V	Öffnungszeit Opening time Durée d'ouverture Tempo aperutra	Einbaumaße/Dimensions/ Cotes d'encombrement/Dimensioni [mm]							Gewicht Weight Poids Peso [kg]
					a	b	c	d	e	f	g	
DMV-D 507/11	Rp 3/4	45	0,20	< 1 s	93	141	35	134	232	73	---	2,1
DMV-D 512/11	Rp 1 1/4	65	0,28	< 1 s	124	174	45	150	254	99	--	4,6
DMV-D 520/11	Rp 2	90	0,37	< 1 s	124	201	45	190	333	99	--	5,6
DMV-D 525/11	Rp 2	110	0,46	< 1 s	162	243	88	255	400	103	123	12,1
DMV-DLE 507/11	Rp 3/4	45	0,20	20 s	93	141	35	160	232	73	--	2,2
DMV-DLE 512/11	Rp 1 1/4	65	0,28	20 s	124	174	45	179	254	99	--	4,7
DMV-DLE 520/11	Rp 2	90	0,37	20 s	124	201	45	218	323	99	--	5,7
DMV-DLE 525/11	Rp 2	110	0,46	20 s	162	243	88	275	400	103	123	12,3



Doppelmagnetventil durch geeigneten Schmutzfänger vor Verunreinigungen schützen, Sieb ist eingebaut.
Protect double solenoid valve from fouling using suitable dirt traps. Sieve is installed.
Il faut protéger les électrovannes par un filtre approprié, mais un tamis est déjà monté à l'entrée de la vanne.
Proteggere l'elettrovalvola doppia con adeguati filtri da sporco, una reticella è già montata.



Stiftschraube / Setscrew Goujon / Vite per acciaio	max. Drehmomente (Flanschverbindung) / max. torque (Flange connection) couple maxl. (Raccordement à brides) / max. coppie (Collegamento a flangia)	
M 12 x 55 (DN 25)	10 Nm ... 40 Nm	Anforderungen der eingesetzten Dichtung beachten! Refer to the technical data of the used seal ring! Respecter les exigences du joint mis en place ! Prestare attenzione ai requisiti della guarnizione utilizzata!
M 16 x 65 (DN 40/50/65/80/100) M 16 x 75 (DN 125)	40 Nm ... 90 Nm	
M 20 x 80 (DN 150) M 20 x 90 (DN 200)	90 Nm ... 170 Nm	

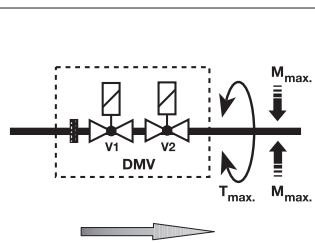


max. Drehmomente/Systemzubehör max. torque/System accessories max. couple/Accessoires du système max. coppie/Accessorio di sistema	M3	M4	M5	M6	M8	G1/8	G1/4	G1/2	G3/4
	1,2 Nm	2,5 Nm	5 Nm	7 Nm	15 Nm	5 Nm	7 Nm	10 Nm	15 Nm



Geeignetes Werkzeug einsetzen!
Please use proper tools!
Utiliser des outils adaptés!
Impiegare gli attrezzi adeguati!

Schrauben kreuzweise anziehen!
Tighten screws crosswise!
Serrer les vis en croisant!
Stringere le viti incrociate!

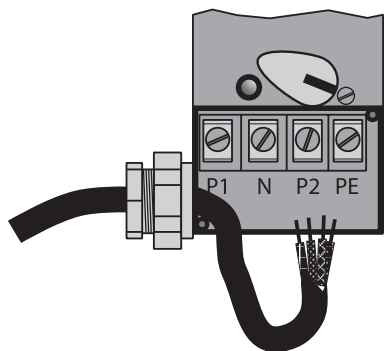


Gerät darf nicht als Hebel benutzt werden!
Do not use unit as lever!
Ne pas utiliser la vanne comme un levier!
L'apparecchio non deve essere usato come leva!

Rp	1/2	3/4	1 1/4	2	
M _{max.}	105	225	475	1100	[Nm] t ≤ 10 s
T _{max.}	50	85	160	250	[Nm] t ≤ 10 s

Option
Elektrischer Anschluß

Anschluß über PG 11 an Schraubklemmen.

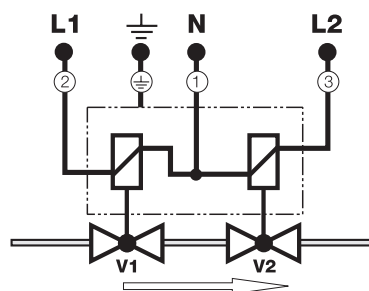


Option
Electrical connection

Connection via PG11 to screw terminals.

Option
Raccordement électrique

Sur bornes à vis par entrée de câble PG11.



Opzione
Allacciamento elettrico

Allacciamento a morsetti tramite passacavo PG11.

Gewindeflanschführung
DMV - D(LE) 507/11 (DN 20) -
DMV - D(LE) 525/11 (DN 50)
Ein- und Ausbau

1. Schraube A und B lösen - **nicht** ausschrauben.
Bild 1 und 2
2. Schraube C und D ausschrauben.
Bild 1 und 2
3. Doppelmagnetventil zwischen den Gewindeflanschen herausziehen.
Bild 3 und 4
4. Nach Einbau Dichtheits- und Funktionskontrolle.

Threaded flange version
DMV - D(LE) 507/11 (DN 20) -
DMV - D(LE) 525/11 (DN 50)
Mounting and dismounting

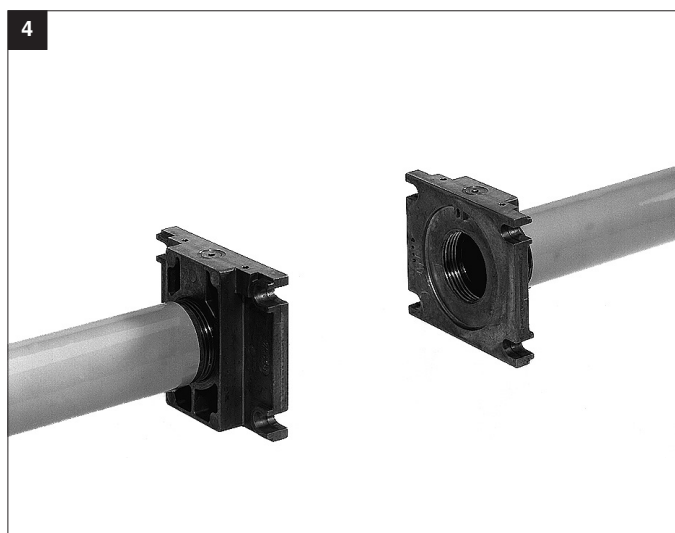
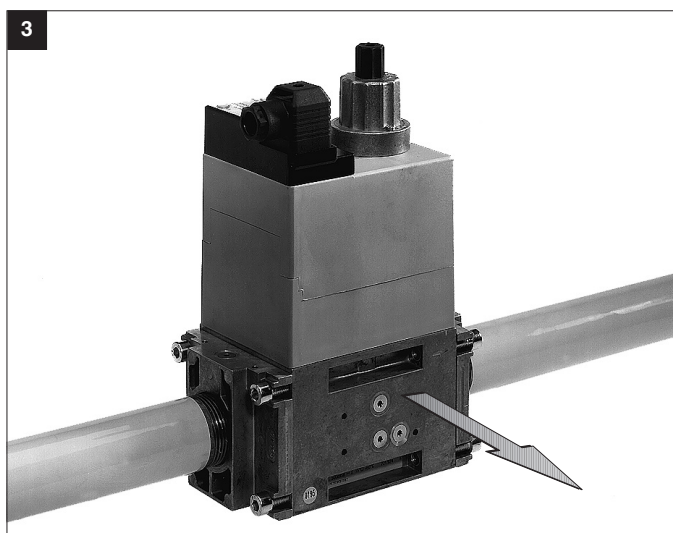
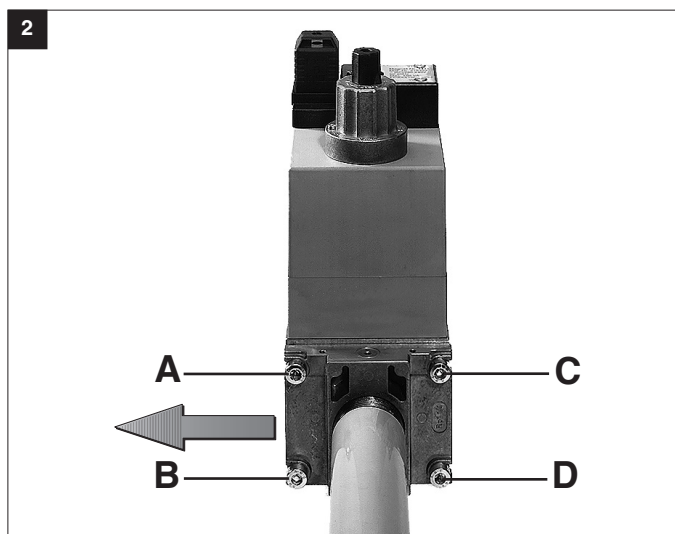
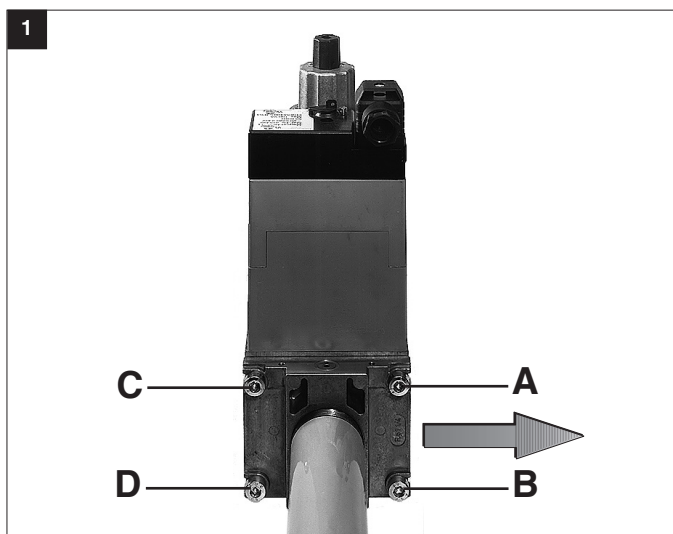
1. Loosen screws A and B **do not** remove.
Figs 1 and 2
2. Remove screws C and D.
Figs 1 and 2
3. Remove double solenoid valve between the threaded flanges.
Figs 3 and 4
4. After mounting, perform leakage and functional tests.

Version à bride filetée
DMV - D(LE) 507/11 (DN 20) -
DMV - D(LE) 525/11 (DN 50)
Pose et dépose

1. Deserrer les vis A et B **sans** les dévisser totalement.
Figures 1 et 2
2. Dévisser les vis C et D
Figures 1 et 2
3. Extraire l'électrovanne double entre les brides filetées.
Figures 3 et 4
4. Après pose, procéder à un contrôle de l'étanchéité.

Esecuzione con flangia filettata
DMV - D(LE) 507/11 (DN 20) -
DMV - D(LE) 525/11 (DN 50)
Montaggio e Smontaggio

1. Allentare le viti A e B **non** svitare.
Figure 1 e 2
2. Svitare le viti C e D
Figure 1 e 2
3. Tirare fuori la valvola elettromagnetica doppia fra le flange filettate. Figure 3 e 4
4. Dopo il montaggio, effettuare il controllo di tenuta e di funzionamento.



Plombierung

Plombierungsöse 2 in der Verschlussklappe Ø 1,5 mm.
Plombierungsöse 3 in der Kreuzschraube Ø 1,5 mm.

Nach Einstellung des gewünschten Drucksollwertes.

1. Schutzklappe 1 schließen.
2. Draht durch 2 und 3 ziehen, Bild 2.
3. Plombe um Drahtenden drücken, Drahtschleife kurz halten.

Plombage

Oeillet de plombage 2 Ø 1,5 mm dans le capuchon.
Oeillet de plombage 3 Ø 1,5 mm dans la vis à tête percée.

Après le réglage.

1. Remettre le capuchon 1.
2. Passer le fil de plombage dans les trous 2 et 3 Fig 2.
3. Plomber en laissant une petite boucle.

Lead seal

Lead seal eye 2 in 1.5 mm dia. sealing valve.
Lead seal eye 3 in 1.5 mm capstand headed screw.

After setting the requested pressure setpoint:

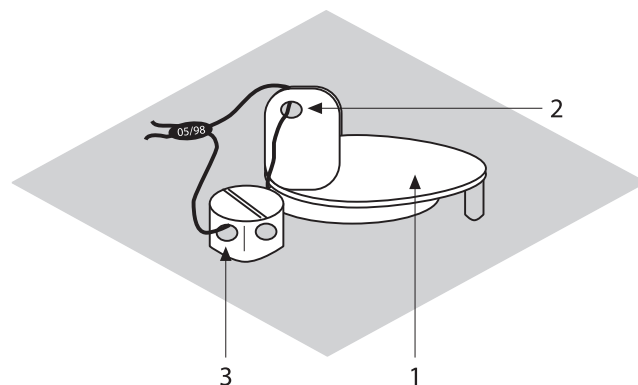
1. Close protective valve 1.
2. Route wire through 2 and 3, Fig. 2.
3. Press lead around wire ends, keep wire loop short.

Piombatura

Occhiello per piombatura nel coperchietto Ø 1,5 mm.
Occhiello per piombatura nella vite a testa tonda forata Ø 1,5 mm.

Dopo la regolazione del valore di pressione nominale desiderato:

1. chiudere il coperchietto
2. tirare il filo attraverso i punti 2 e 3 (Fig.2)
3. piombare le estremità del filo lasciando corto l'anello passante.



DMV - D 507/11 - 525/11
DMV-DLE 507/11 - 525/11
Hauptmengeneinstellung nur an V1 möglich!

Hauptmengeneinstellung erfolgt am geöffneten Ventil.
Einstellung am Ventil V1 im Betrieb durchführen, Einstellwerte ständig kontrollieren.
Kleinsten Einstellvolumenstrom:

$$\dot{V}_{\min. / \min.} > 0.1 \times \dot{V}_{\max. / \max.}$$

DMV - D 507/11 - 525/11
DMV-DLE 507/11 - 525/11
Main flow setting only possible at V1!

Set main volume on open valve.
Set valve V1 during operation. Check setting values continuously.
Smallest setting volume flow:

$$\dot{V}_{\min. / \min.} > 0.1 \times \dot{V}_{\max. / \max.}$$

DMV - D 507/11 - 525/11
DMV-DLE 507/11 - 525/11
Réglage du débit principal possible uniquement sur V1!

Le réglage du débit principal doit être réalisé vanne ouverte.
Le réglage se fait sur V1, installation en marche. Il est souhaitable de contrôler le débit pendant le réglage.
Débit principal mini.:

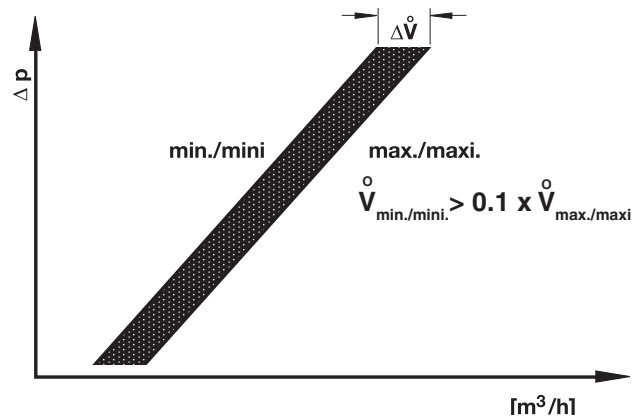
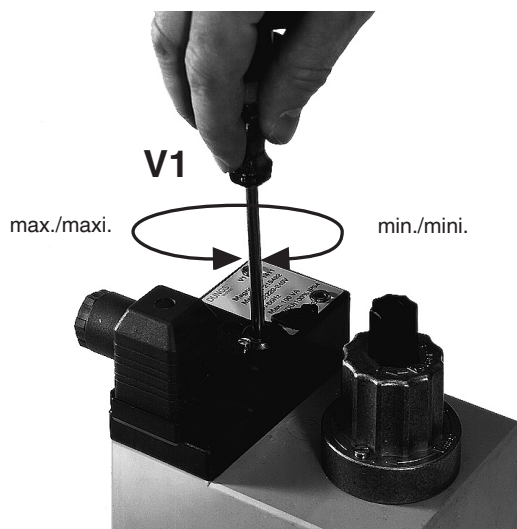
$$\dot{V}_{\min. / \min.} > 0.1 \times \dot{V}_{\max. / \max.}$$

DMV - D 507/11 - 525/11
DMV-DLE 507/11 - 525/11
Regolazione portata principale possibile solo su V1!

La regolazione della portata principale avviene a valvola aperta.
La regolazione su valvola 1 è da effettuare in fase di esercizio e da controllare costantemente i valori tarati. Portata volumetrica con regolazione al minimo:

$$\dot{V}_{\min. / \min.} > 0.1 \times \dot{V}_{\max. / \max.}$$

Eine Umdrehung entspricht ca. 0,5mm Hub
1 rotation corresponds to approx. 0.5 mm stroke
Un tour correspond à environ 0,5 mm de course
Un giro corrisponde a una corsa di ca. 0,5 mm.



DMV-DLE
SchnellhubEinstellung $\dot{V}$ start

Werkseinstellung DMV-DLE:
Schnellhub nicht eingestellt

1. Einstellkappe E von der Hydraulik abschrauben.
2. Einstellkappe drehen und als Werkzeug benutzen.
3. Linksdrehen = Vergrößerung des Schnellhubes (+).

DMV-DLE
Rapid stroke adjustment $\dot{V}$ start

Factory setting DMV-DLE:
Rapid stroke not adjusted

1. Unscrew the adjustment cap E from the hydraulic brake.
2. Turn the adjustment cap and use as a tool.
3. Turn a-clockwise = increase rapid stroke (+).

DMV-DLE
Réglage course rapide $\dot{V}$ start

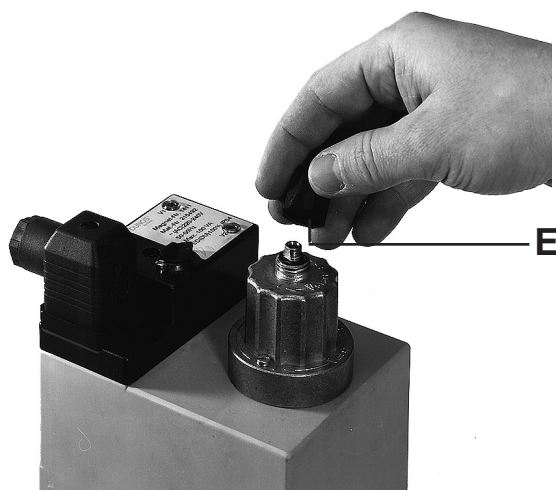
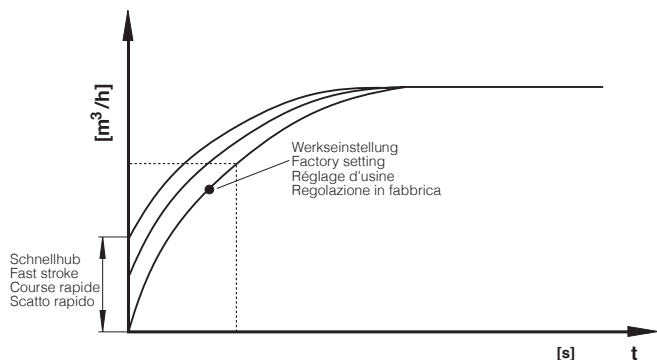
Réglage en usine DMV-DLE:
Course rapide non réglée

1. Dévisser le capuchon de réglage E du frein hydraulique
2. Tourner le capuchon de réglage et l'utiliser comme outil.
3. Rotation à gauche = augmentation de la course rapide (+).

DMV-DLE
Regolazione scatto rapido $\dot{V}$ start

Regolazione in fabbrica del DMV-DLE: Scatto rapido non regolato

1. Svitare dall'idraulico la farfalla E.
2. Fare ruotare la valvola a farfalla utilizzandola come attrezzo.
3. Rotazione antioraria = aumento dello scatto rapido (+).



Austausch Hydraulik oder Einstellteller

1. Anlage ausschalten.
2. Sicherungslack über der Senkkopfschraube A entfernen.
3. Senkkopfschraube A aus-schrauben.
4. Zylinderkopfschraube B aus-schrauben.
5. Einstellteller C bzw. Hydraulik D abheben.
6. Verschlußstopfen E entfernen.
7. Einstellteller C bzw. Hydraulik D austauschen.
8. Senk- und Zylinderkopf-schraube wieder eindrehen. Senkkopfschraube nur so festziehen, daß Hydraulik noch gedreht werden kann.
9. Senkkopfschraube A mit Sicherungslack überziehen.
10. **Dichtheitsprüfung über Druckabgriff:**
Verschlußschraube 2:
DMV 507-520/11.
Verschlußschraube 3:
DMV 525/11.
 $p_{max} = 500 \text{ mbar}$.
11. Funktionskontrolle durchführen.
12. Anlage einschalten

Replacing hydraulic brake unit or adjustment plate

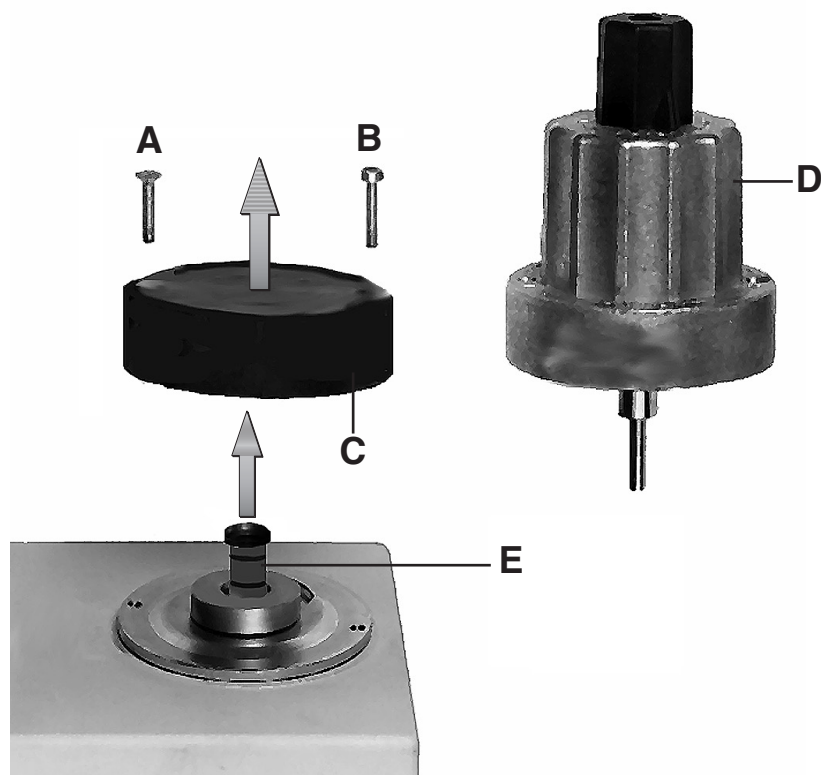
1. Switch off firing system.
2. Remove locking varnish from countersunk screw A.
3. Unscrew countersunk screw A.
4. Unscrew socket headscrew B.
5. Raise adjustment plate C or hydraulic brake D.
6. Remove sealing plug E
7. Exchange adjustment plate C or hydraulic brake D
8. Screw in countersunk and socket head screw. Only tighten socket head screw so that hydraulic brake can just be turned.
9. Coat countersunk screw A with locking varnish.
10. **Leakage test:**
Pressure tap at sealing plug 2: DMV 507-520/11
Pressure tap at sealing plug 3: DMV 525/11
 $p_{max} = 500 \text{ mbar}$.
11. Perform functional test.
12. Switch on firing system.

Remplacement du frein hydraulique ou du disque de réglage

1. Mettre l'installation hors tension.
2. Eliminer le vernis de blocage au-dessus de la vis à tête fraisée A.
3. Dévisser la vis à tête fraisée A.
4. Dévisser la vis à tête cylindrique B.
5. Soulever le disque de réglage C ou le frein hydraulique D.
6. Eliminer le bouchon E.
7. Remplacer le disque de réglage C ou le frein hydraulique D.
8. Revisser les vis à tête fraisée et à tête cylindrique. Serrer la vis à tête fraisée.
9. Enduire la vis à tête fraisée A de vernis de blocage.
10. **Contrôle d'étanchéité:**
via la prise de pression bouchon fileté 2:
DMV 507-520/11.
via la prise de pression bouchon fileté 3:
DMV 525/11.
 $p_{max} = 500 \text{ mbar}$.
11. Procéder à un contrôle de fonctionnement.
12. Mettre l'installation sous tension.

Sostituzione dell'idraulico o del piattello di regolazione

1. Disinserire l'impianto
2. Rimuovere la lacca di sigillo sopra la vite a testa svasata A.
3. Svitare la vite a testa svasata A.
4. Svitare la vite a testa cilindrica B.
5. Sollevare il piattello C o l'idraulico D.
6. Rimuovere la tappino di chiusura E.
7. Sostituire il piattello C o l'idraulico D.
8. Riavvitare la vite a testa cilindrica e stringere la vite a testa svasata soltanto fino a che l'idraulico possa ancora essere fatto ruotare.
9. Sigillare con la lacca la vite a testa svasata A.
10. **Prova di tenuta:**
attraverso il tappo a su presa di pressione 2:
DMV 507-520/11.
attraverso il tappo a su presa di pressione 3:
DMV 525/11.
 $p_{max} = 500 \text{ mbar}$.
11. Effettuare la prova di funzionamento.
12. Reinserire l'impianto.



Magnetwechsel

Ausführungen mit
Einstellteller DMV-D 5.../11
oder Hydraulik DMV-DLE 5.../11

1. Hydraulik bzw. Einstellteller entfernen, wie auf Seite 6 : "Austausch Hydraulik oder Einstellteller", Punkt 1 - 5, beschrieben.

2. Magnet auswechseln.
Magnet-Nr. und Spannung unbedingt beachten!

3. Hydraulik bzw. Einstellteller wieder montieren, wie auf Seite 6 "Austausch Hydraulik oder Einstellteller", Punkt 7 - 11, beschrieben.

Replacing the solenoid

Versions with adjusting plate
DMV-D 5.../11 or
hydraulic brake DMV-DLE 5.../11

1. Remove hydraulic brake or adjusting plate as described on page 6: "Replacing the hydraulic brake or adjusting disk", steps 1 -5.

2. Replace solenoid
Important: Make sure that the solenoid no. and voltage are correct!

3. Remount hydraulic brake or adjusting plate as described on page 6: "Replacing the hydraulic brake or adjusting plate", steps 7 -11.

Remplacement de la bobine

Pour les modèles DMV-D 5.../11 avec disque de réglage ou DMV-DLE 5.../11 avec frein hydraulique

1. Enlever le disque de réglage ou le frein hydraulique comme page 6: "Remplacement du frein hydraulique ou disque de réglage" repère 1 à 5.

2. Remplacer la bobine
Attention au N° de la bobine et à la tension!

3. Enlever le disque de réglage ou le frein hydraulique comme page 6: "Remplacement du frein hydraulique ou disque de réglage" repères 7 à 11.

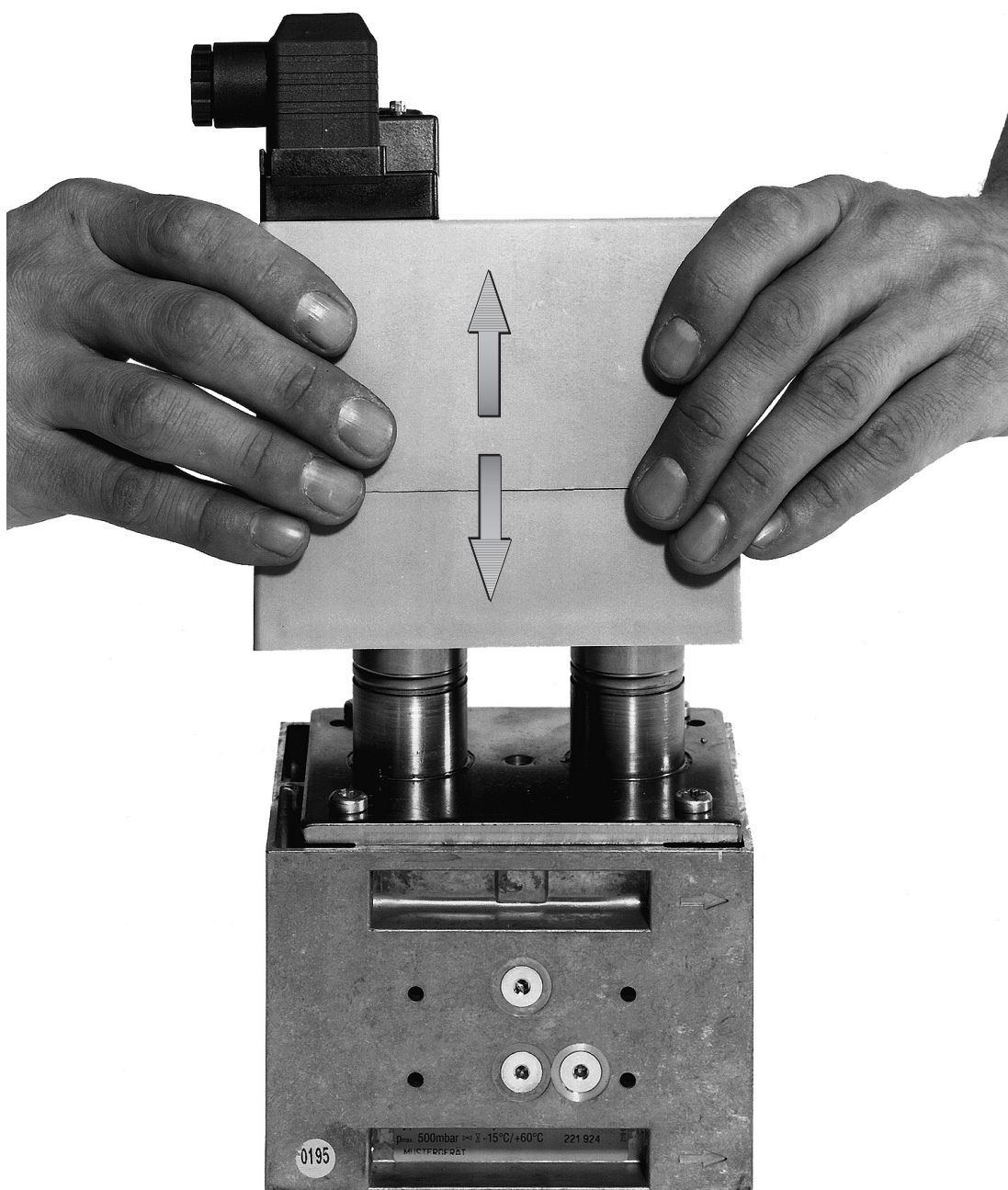
Sostituzione bobina

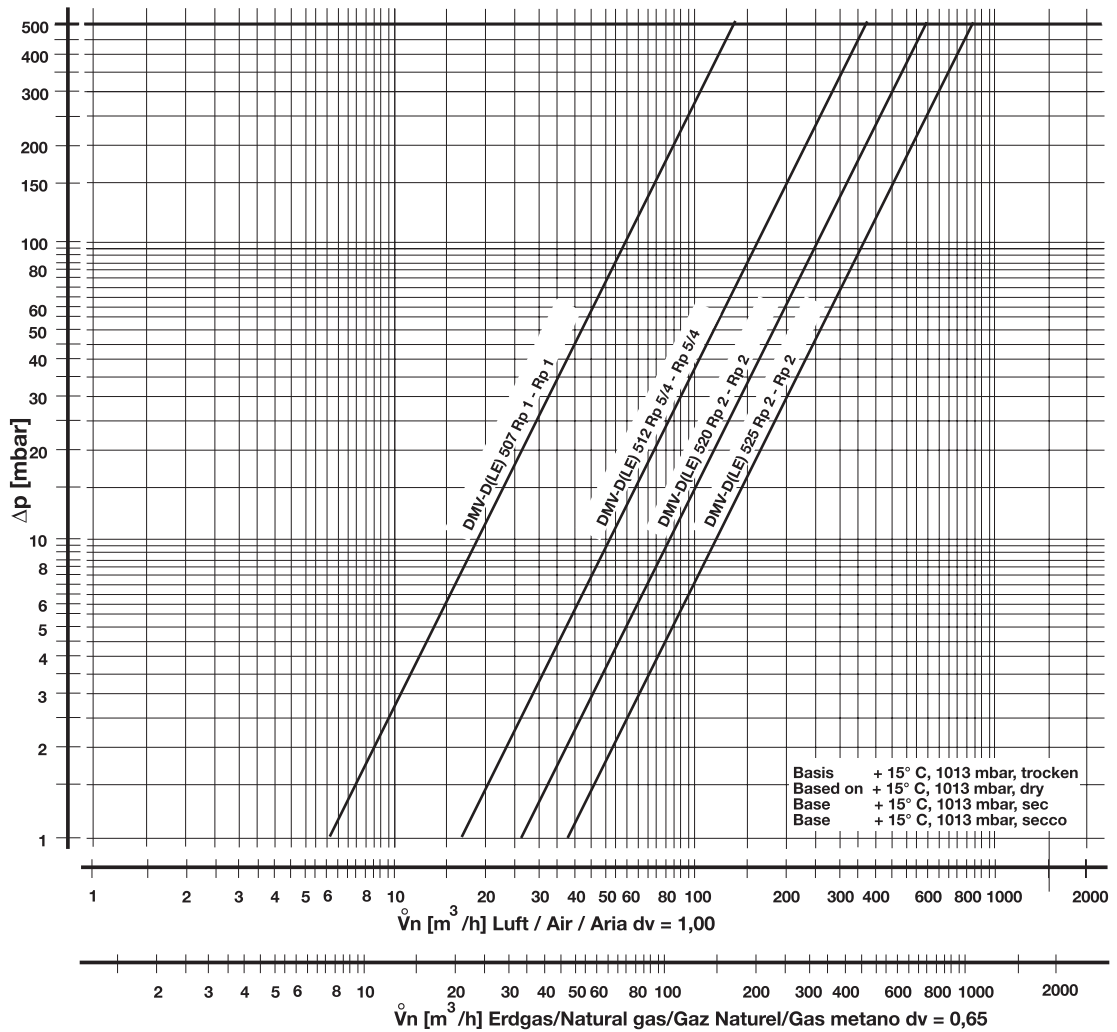
Esecuzioni con piatto di regolazione DMV-D 5.../11 oppure con freno idraulico DMV-DLE 5.../11

1. Togliere rispettivamente il freno idraulico il piatto di regolazione come descritto a pag. 6: "sostituzione del freno idraulico o del piatto di regolazione" - punto 1-5.

2. Sostituire la bobina.
Prestare assoluta attenzione al numero della bobina e alla tensione!

3. Rimontare di nuovo rispettivamente il freno idraulico e il piatto di regolazione come descritto a pag. 6 "sostituzione del freno idraulico o del piatto di regolazione" - punto 7-11.





Durchflußverluste in [m³/h] Luft bei Einbau des Feinfilter- Einsatzes	Flow losses in [m³/h] air for in- stalling microfilter	Perte en débit d'air [m³/h] due au montage d'un filtre à média filtrant fin	Perdite di portata in [m³/h] d'aria con il filtrino fine montato
Δp [mbar]	DMV 507/11 [m³/h]	DMV 512/11 [m³/h]	DMV 520/11 [m³/h]
2	1,20	9,0	17,5
5	1,70	11,0	21,5
10	1,80	13,2	27,0
20	1,90	16,0	34,5
40	2,30	18,4	45,0
70	2,50	22,5	56,0

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

f =

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

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

Gasart Type of gas Type de gaz Tipo di gas	Dichte Spec. Wgt. poids spécifique Peso specifico [kg/m³]	d_v	f
Erdgas/Nat. Gas/ Gaz naturel/Gas metano	0.81	0.65	1.24
Stadtgas/City gas/ Gaz de ville/Gas città	0.58	0.47	1.46
Flüssiggas/LPG/ Gaz liquide/Gas liquido	2.08	1.67	0.77
Luft/Air/ Air/Aria	1.24	1.00	1.00

Ersatzteile / Zubehör Spare parts / Accessories Pièces de rechange / access. Parti di ricambio / Accessori	Bestell-Nummer Ordering No. No. de commande Codice articolo
Verschlußschraube, flach mit O-Ring Locking screw Bouchon fileté Tappo a vite G 1/8	5 Stück/Set 5 Pieces/Set 5 Pièces/Set 5 Pezzi/Set 230 432
Schmutzfänger, Sieb Dirt trap, sieve Collecteur d'impuretés, tamis Filtro antipolvere, reticella DMV 525/11	247 547
Set Zündgasflansch G1/2 G 1/2 start gas flange set Kit bride taraudée G 1/2 pour vanne d'allumage Set per flangia gas di accensione G 1/2	219 007
Adapter-Set für GW A2 mit Anschluß G 1/4 Adapter set for GW A2 fitted with G 1/4 port Kit de montage GW A2 avec raccord taraudé G 1/4 Set adattatore per GW A2 con attacco G 1/4 DMV 507/11 - DMV 525/11	222 982
Hydraulikbremse Hydraulic brake Frein hydraulique Freno idraulico DMV 507/11 - DMV 525/11	auf Anfrage on request sur demande su richiesta
Einsteckscheibe Insert washer Disque à emboîtement Dischetto da inserire DMV 507/11 - DMV 520/11 DMV 525/11	231 563 231 564
Leitungsdose, Schwarz Line socket, black Prise, noire Spina, nera GDMW, 3 pol. + E	210 319
Anschlußflansch Connection flange Bride de raccordement Flangia di collegamento DMV 507 Rp 1/2 DMV 507 Rp 3/4 DMV 507 Rp 1 DMV 512-520 Rp 1 DMV 512-520 Rp 1 1/4 DMV 512-520 Rp 1 1/2 DMV 512-520 Rp 2 DMV 525 Rp 2	222 341 222 342 222 001 222 343 222 344 221 884 221 926 215 384
O-Ring, EN geprüft O-ring, EN tested Joint torique, testé EN O-Ring, collaudato a norme EN DMV 507/11 57 x 3,0 DMV 512-520/11 75 x 3,5 DMV 525/11	230 443 230 444 231 574

Ersatzteile / Zubehör Spare parts / Accessories Pièces de rechange / access. Parti di ricambio / Accessori	Bestell-Nummer Ordering No. No. de commande Codice articolo
Zylinderschraube DIN 912, 8.8 Socket head screw acc.DIN 912, 8.8 Vis à tête cylindrique DIN 912, 8.8 Vite cilindrica DIN 912, 8.8 DMV 507/11 M6 x 30 DMV 512-520/11 M8 x 40	4 Stück/Set 4 Pieces/Set 4 Pièces/Set 4 Pezzi/Set 231 588 231 589
Meßstutzen mit Dichtring Set of setscrews Goujon Serie di viti per acciaio G 1/8	5 Stück/Set 5 Pieces/Set 5 Pièces/Set 5 Pezzi/Set 230 397
Ersatzmagnet Remplacement solenoid Aimant de rechange Bobina di ricambio DIN 43 650 DMV 507/11 1111 DMV 512/11 1211 DMV 520/11 1212 DMV 525/11 1411	auf Anfrage on request sur demande su richiesta
Verschlußstopfen V2 V2 sealing plug Bouchon V2 Tappino di chiusura V2 DMV 507/11 -DMV 520/11 DMV 525/11	231 591 231 610
Teller für Magnetbefestigung Disk for attaching solenoid Disque pour la fixation de la bobine Piatto per fissaggio bobina DMV 507/11 - DMV 520/11 DMV 525/11	231 592 231 612
Set Feinfilter, Sieb, Haltering Set Micro filter, sieve, supporting ring Kit Filtre fin, tamis, bague d'appui Set Filtro fine, reticella, l'anellino DMV 507/11 DMV 512/11 - DMV 520/11 DMV 525/11	230 440 230 441 247 547

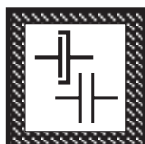


Arbeiten am Doppelmagnetventil dürfen nur von Fachpersonal durchgeführt werden.

Work on the double solenoid valve may only be performed by specialist staff.

Seul du personnel spécialisé peut effectuer des travaux sur l'électrovanne double.

Qualsiasi operazione effettuata sulle valvole doppie deve essere fatta solamente da parte di personale competente.

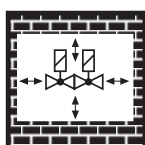


Flanschflächen schützen. Schrauben kreuzweise anziehen.

Protect flange surfaces. Tighten screws crosswise.

Protéger les surfaces de brides. Serrer les vis en croisant.

Proteggere le superfici della flangia. Stringere le viti in modo incrociato.

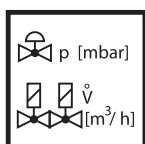


Direkter Kontakt zwischen Doppelmagnetventil und dem aushärtendem Mauerwerk, Betonwänden, Fußböden ist nicht zulässig.

Do not allow any direct contact between the double solenoid valve and hardened masonry, concrete walls or floors.

Eviter tout contact direct entre l'électrovanne double et la maçonnerie, les cloisons en béton et planchers en cours de séchage.

Non è consentito il contatto diretto fra la valvola doppia e murature invecchiate, pareti in calcestruzzo, pavimenti.



Nennleistung bzw. Drucksollwerte grundsätzlich am Gasdruckregelgerät einstellen. Leistungsspezifische Drosselung über das Doppelmagnetventil.

Always adjust nominal output or pressure setpoints on the gas pressure regulator and performance-specific throttling using the DMV.

Régler toujours le débit nominal ou les pressions de consigne sur le régulateur de pression. Limitation au niveau de DMV, en fonction du débit.

Effettuare in linea di massima la regolazione di potenza nominale e valori nominali di pressione sul regolatore di pressione gas. La regolazione specifica di potenza va fatta attraverso la DMV.

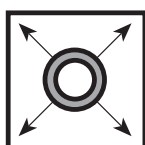


Bei Teilewechsel auf einwandfreie Dichtungen achten.

When changing parts, make sure that seals are in good condition.

En cas de remplacement de pièces, vérifier que les joints ne présentent aucun défaut.

Sostituendo le varie parti controllare sempre tutte le guarnizioni affinché siano perfettamente a tenuta.



Rohrleitungsdichtheitsprüfung: Kugelhahn vor den Armaturen / DMV schließen.

Pipeline leakage test: close ball valve upstream of fittings/DMV.

Contrôle de l'étanchéité de la conduite: fermer le robinet à boisson sphérique avant les électrovannes / DMV.

Per la prova di tenuta delle tubature: chiudere il rubinetto a sfera davanti ai corpi valvola / DMV.



Nach Abschluß von Arbeiten am Doppelmagnetventil: Dichtheitskontrolle und Funktionskontrolle durchführen.

On completion of work on the double solenoid valve, perform a leakage and function test.

Une fois les travaux sur l'électrovanne double terminés, procéder toujours à un contrôle d'étanchéité et de fonctionnement.

Al termine dei lavori effettuati su una valvola elettromagnetica doppia: predisporre un controllo sia della tenuta che del funzionamento.



Niemals Arbeiten durchführen, wenn Gasdruck oder Spannung anliegt. Offenes Feuer vermeiden. Öffentliche Vorschriften beachten.

Never perform work if gas pressure or power is applied. No naked flame. Observe public regulations.

Ne jamais effectuer des travaux lorsque la pression ou la tension sont présentes. Eviter toute flamme ouverte. Observer les réglementations.

In nessun caso si debbono effettuare lavori in presenza di pressione gas o di tensione elettrica. Evitare i fuochi aperti e osservare le prescrizioni pubbliche.



Alle Einstellungen und Einstellwerte nur in Übereinstimmung mit der Betriebsanleitung des Kessel-/Brennerherstellers ausführen.

Any adjustment and application-specific adjustment values must be made in accordance with the appliance-/boiler manufacturers instructions.

Effectuer tous les réglages et réaliser les valeurs de réglage uniquement selon le mode d'emploi du fabricant de chaudières et de brûleurs.

Realizzare tutte le impostazioni e i valori impostati solo in conformità alle istruzioni per l'uso del costruttore della caldaia/ del bruciatore.



Bei Nichtbeachtung der Hinweise sind Personen- oder Sachfolgeschäden denkbar.

If these instructions are not heeded, the result may be personal injury or damage to property.

En cas de non-respect de ces instructions, des dommages corporels ou matériels sont possible.

La non osservanza di quanto suddetto può implicare danni a persone o cose.



Die Druckgeräterichtlinie (PED) und die Richtlinie über die Gesamtenergieeffizienz von Gebäuden (EPBD) fordern eine regelmäßige Überprüfung der Wärmeerzeuger zur langfristigen Sicherstellung von hohen Nutzungsgraden und somit geringster Umweltbelastung.

Es besteht die Notwendigkeit sicherheitsrelevante Komponenten nach Erreichen ihrer Nutzungsdauer auszutauschen:

The Pressure Equipment Directive (PED) and the Energy Performance of Buildings Directive (EPBD) require a periodic inspection of heat generators in order to ensure a high degree of efficiency over a long term and, consequently, the least environmental pollution.

It is necessary to replace safety-relevant components after they have reached the end of their useful life:

La directive équipements sous pression (PED) et la directive sur la performance énergétique des bâtiments (EPBD) exigent une vérification régulière des générateurs de chaleur afin de garantir à long terme des taux d'utilisation élevés et par conséquent une charge environnementale minimum.

Il est nécessaire de remplacer les composants relatifs à la sécurité lorsqu'ils ont atteint la fin de leur vie utile :

La direttiva per apparecchi a pressione (PED) e la direttiva per l'efficienza dell'energia totale per edifici (EPBD), esigono il controllo regolare dei generatori di calore per la garanzia a lungo termine di un alto grado di rendimento e quindi di basso inquinamento ambientale.

Ciò rende necessaria la sostituzione di componenti rilevanti dal punto di vista della sicurezza alla scadenza della loro durata di utilizzazione:

Sicherheitsrelevante Komponente Safety-relevant component Composant relatif à la sécurité Componenti rilevanti per la sicurezza	Konstruktionsbedingte Lebensdauer Design-related service life Durée de vie prévue Durata di vita di progetto		Norm Standard Norme Norma	Dauerhafte Lagertemperatur Permanent storage temperature Température de stockage permanente Temperatura di stoccaggio permanente
	Zyklenzahl Operating cycles Cycle d'opération Numero di cicli di funzionamento	Jahre Years Années Anni		
Ventilprüfsysteme / Valve testing systems / Systèmes de contrôle de vanne / Sistemi di controllo valvole	250 000	10	EN 1643	0...45 °C 32...113 °F
Gas / Gas / Gaz / Gas Druckwächter / Pressure switch / Manostat / Pressostato	50 000	10	EN 1854	
Luft / Air / Air / Aria Druckwächter / Pressure switch / Manostat / Pressostato	250 000	10	EN 1854	
Gas mangelschalter / Low gas pressure switch / Pressostat gaz basse pression / Pressostato gas di minima pressione	N/A	10	EN 1854	
Feuerungsmanager / Automatic burner control / Dispositif de gestion de chauffage / Gestione bruciatore	250 000	10	EN 298 EN 230	
UV-Flammenfühler ¹ UV flame sensor ¹ Capteur de flammes UV ¹ Sensore fiamma UV ¹	N/A	10 000 h ³	---	
Gasdruckregelgeräte ¹ Gas pressure regulators ¹ Dispositifs de réglage de pression du gaz ¹ Regolatori della pressione del gas ¹	N/A	15	EN 88-1 EN 88-2	
Gasventil mit Ventilprüfsystem ² Gas valve with valve testing system ² Vanne de gaz avec système de contrôle de vanne ² Valvola del gas con sistema di controllo valvola ²	nach erkanntem Fehler after error detection après détection d'erreur dopo segnalazione di errore		EN 1643	
Gasventil ohne Ventilprüfsystem ² Gas valve without valve testing system ² Vanne de gaz sans système de contrôle de vanne ² Valvola del gas senza sistema di controllo valvola ²	DN ≤ 25 200 000 25 < DN ≤ 80 100 000 80 < DN ≤ 150 50 000	10	EN 161	
Gas-Luft-Verbandsysteme / Gas-air ratio control system / Systèmes combinés gaz/air / Sistemi di miscelazione gas-aria	N/A	10	EN 88-1 EN 12067-2	

¹ Nachlassende Betriebseigenschaften wegen Alterung / Performance decrease due to ageing /
Réduction de performance due au vieillissement / Riduzione delle prestazioni dovuta all'invecchiamento

² Gasfamilien II, III / Gas families II, III / Familles de gaz II, III / per i gas delle famiglie II, III

³ Betriebsstunden / Operating hours / Heures de service / Ore di esercizio

N/A nicht anwendbar / not applicable / non applicable / non applicabile

Lagerzeiten / Storage times / Périodes de stockage / Tempi di stoccaggio

Lagerzeiten ≤ 1 Jahr verkürzen nicht die konstruktionsbedingte Lebensdauer.

Storage time ≤ 1 year does not reduce the design-related service life.

Les périodes de stockage ≤ 1 an ne réduisent pas la durée de vie liée à la conception.

I tempi di stoccaggio ≤ 1 anno non riducono la durata di vita di progetto.

DUNGS empfiehlt eine maximale Lagerzeit von 3 Jahren.

DUNGS recommends a maximum storage time of 3 years.

DUNGS recommande une durée de stockage maximale de 3 ans.

DUNGS raccomanda un tempo massimo di stoccaggio di 3 anni.

Änderungen, die dem technischen Fortschritt dienen, vorbehalten / We reserve the right to make modifications in the course of technical development.
Sous réserve de tout modification constituant un progrès technique / Ci riserviamo qualsiasi modifica tecnica e costruttiva

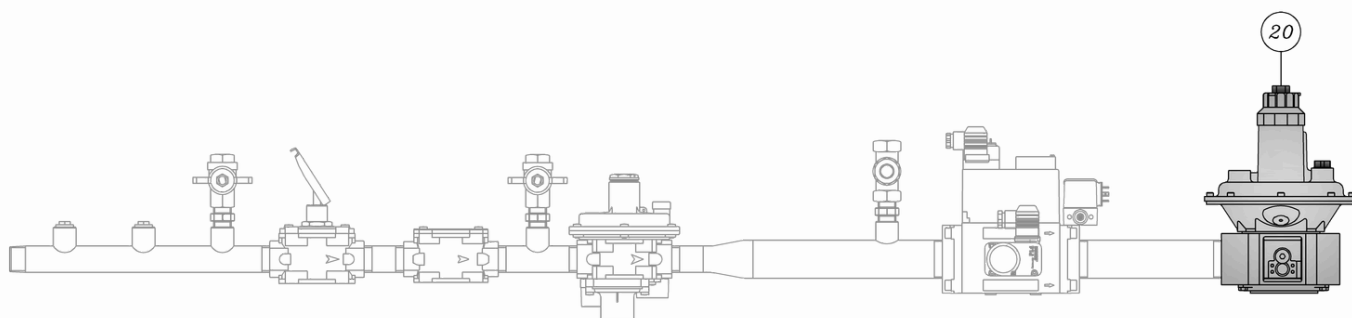
Hausadresse
Head Offices and Factory
Usine et Services Administratifs
Amministrazione e Stabilimento

Karl Dungs GmbH & Co. KG
Karl-Dungs-Platz 1
D-73660 Urbach, Germany
Telefon +49 7181-804-0
Telefax +49 7181-804-166

Briefadresse
Postal address
Adresse postale
Indirizzare la corrispondenza a

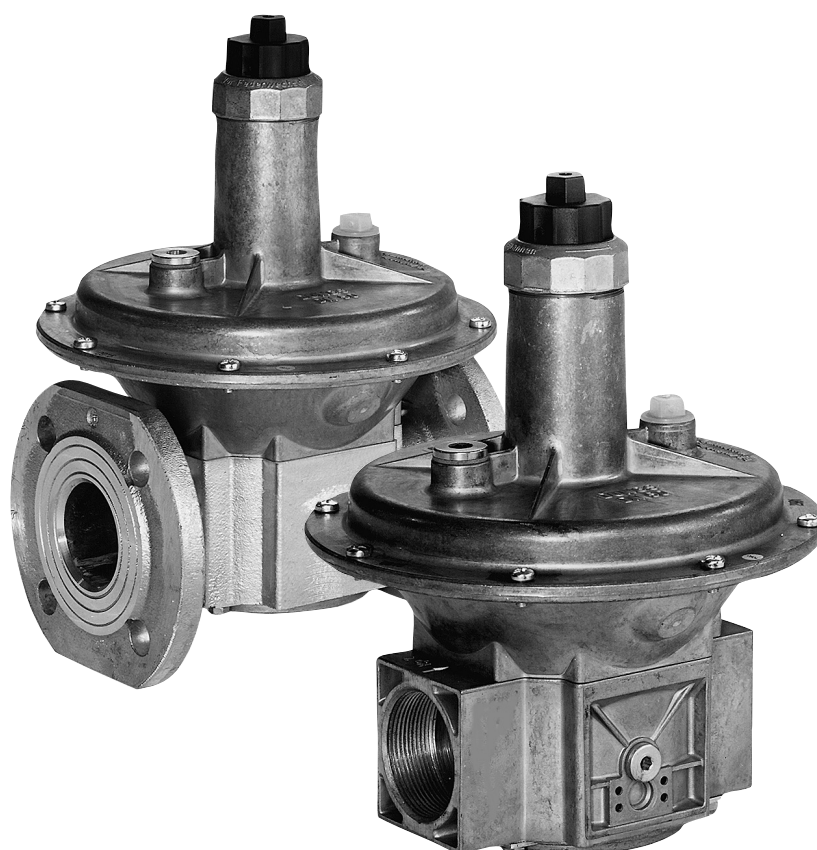
Karl Dungs GmbH & Co. KG
Postfach 12 29
D-73602 Schorndorf
e-mail info@dungs.com
Internet www.dungs.com

Item 20 - Válvula estabilizadora



D**GB****F****I****DUNGS®**
Combustion Controls

Konformitäts- erklärung	Declaration of conformity	Déclaration de conformité	Dichiarazione di conformità
Gebrauchs- anleitung	Instructions	Notice d'utilisation	Istruzioni di esercizio e di montaggio
FRS			
Gas-Druckregel- gerät	Gas pressure regulator	Régulateur de pression de gaz	Regolatore di pressione gas
Nennweiten Nominal diameters Diamètres nominaux Diametri nominali		Rp $\frac{3}{8}$ - Rp 2 $\frac{1}{2}$ DN 40 - DN 150	



FRS
219 598



**EU-Konformitäts-
erklärung**

**EU Declaration of
conformity**

**Déclaration de
conformité UE**

**Dichiarazione di
conformità UE**

Produkt / Product Produit / Prodotto	FRS	Gas-Druckregelgerät Gas pressure regulator Régulateur de pression de gaz Regolatore di pressione gas	
Hersteller / Manufacturer Fabricant / Produttore	Karl Dungs GmbH & Co. KG · Karl-Dungs-Platz 1 · D-73660 Urbach/Germany		
bescheinigt hiermit, dass die in dieser Übersicht genannten Produkte einer EU-Baumusterprüfung (Baumuster) unterzogen wurden und die wesentlichen Sicherheitsanforderungen der: EU-Gasgeräteverordnung (EU) 2016/426 in der gültigen Fassung erfüllen. Bei einer von uns nicht freigegebenen Änderung des Gerätes verliert diese Erklärung ihre Gültigkeit. Der oben beschriebene Gegenstand der Erklärung entspricht den einschlägigen Harmonisierungsvorschriften der Union. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.	certifies herewith that the products named in this overview were subjected to an EU-Type Examination (production type) and meet the essential safety requirements: EU-Gas Appliances Regulation (EU) 2016/426 as amended. In the event of an alteration of the equipment not approved by us this declaration loses its validity. The object of the declaration described above conforms with the relevant Union harmonisation legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.	certifie par la présente que le produit mentionné dans cette vue d'ensemble a été soumis à un examen UE de type (type de fabrication) et qu'il est conforme aux exigences en matières de sécurité des dernières versions en vigueur de : Règlement européen sur les appareils brûlant des combustibles gazeux (UE) 2016/426 Ce communiqué n'est plus valable si nous effectuons une modification libre de l'appareil. L'objet décrit ci-dessus de la présente déclaration correspond aux prescriptions légales applicables en matière d'harmonisation de l'Union. Le fabricant porte l'entière responsabilité pour l'établissement de la présente déclaration de conformité.	Con la presente si certifica che i prodotti citati in questa panoramica sono stati sottoposti a una prova di esame UE del tipo (tipo di produzione) e che i requisiti di sicurezza essenziali: Regolamento UE sugli apparecchi a gas (UE) 2016/426 sono soddisfatti nella versione valida. In caso di modifica dell'apparecchio non ammessa, questa dichiarazione perde di validità. L'oggetto della dichiarazione di cui sopra descritta è conforme alla pertinente normativa di armonizzazione dell'Unione. La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
Prüfgrundlage der EU-Baumusterprüfung (Baumuster) Specified requirements of the EU-Type Examination (production type) Base d'essai de l'examen UE de type (type de fabrication) Criteri di prova dell'omologazione esame UE del tipo (tipo di produzione)		EN 88-1 EN 13611 ISO 23551-2 ISO 23550	
Gültigkeitsdauer / Bescheinigung Term of validity / attestation Validité / certificat Durata della validità / Attestazione		2028-04-15 CE-0123CT1135	
Notifizierte Stelle Notified Body Organisme notifié Organismo notificato		(EU) 2016/426 TÜV SÜD Product Service GmbH Zertifizierstellen Ridlerstraße 65 D-80339 München, Germany Notified Body number: 0123	
Überwachung des QS-Systems Monitoring of the QA system Contrôle du système d'assurance qualité Monitoraggio del sistema QS		Gewähltes Konformitätsverfahren Modul B+D Conformity process adopted: Module B+D Procédure de conformité sélectionnée : module B+D Procedura di conformità selezionata: modulo B+D	
B.Sc., MBA Simon P. Dungs, Geschäftsführer / Chief Operating Officer / Directeur / Amministratore Urbach, 2023-01-05			

Declaration of Conformity

Product	FRS	Gas pressure regulator
Manufacturer	Karl Dungs GmbH & Co. KG · Karl-Dungs-Platz 1 · D-73660 Urbach/Germany	
Certifies herewith that the products named in this overview were subjected to a Type Examination (production type) and meet the essential safety requirements: Gas Appliances (Enforcement) and Miscellaneous Amendment Regulations, UKSI 2018:389 (as amended by UKSI 2019:696) In the event of an alteration of the equipment not approved by us this declaration loses its validity. The object of the declaration described above conforms with the relevant legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.		
Specified requirements of the Type Examination (production type)	EN 88-1 EN 13611	
Term of validity	2032-05-24	
Approved Body	2018 No. 389 TUV SUD BABT Unlimited Octagon House Concorde Way, Segensworth North Fareham, Hampshire, PO15 5RL, United Kingdom Approved Body Number: 0168	
Monitoring of the QA system	Conformity process adopted: Module B+D	
B.Sc., MBA Simon P. Dungs, Chief Operating Officer Urbach, 2022-07-05		



Betriebs- und Montageanleitung

Operation and assembly instructions

Notice d'emploi et de montage

Istruzioni di esercizio e di montaggio

Gas-Druckregelgerät

Gas pressure regulator

Régulateur de pression de gaz

Regolatore di pressione gas

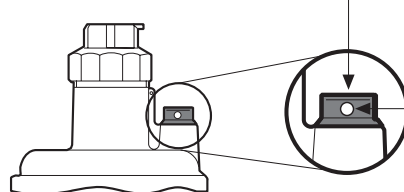
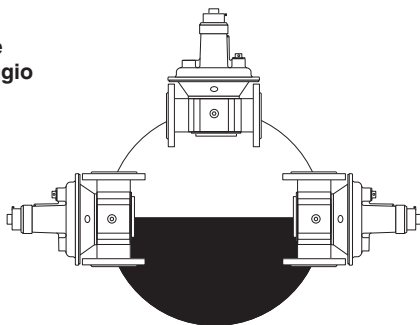
Typ FRS
Nennweiten
Rp 3/8 - Rp 2 1/2
DN 40 - DN 150

Type FRS
Nominal diameters
Rp 3/8 - Rp 2 1/2
DN 40 - DN 150

Type FRS
Diamètres nominaux
Rp 3/8 - Rp 2 1/2
DN 40 - DN 150

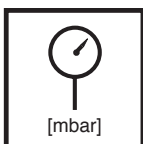
Tipo FRS
Diametri nominali
Rp 3/8 - Rp 2 1/2
DN 40 - DN 150

Einbaulage
Installation position
Position de Montage
Posizione di montaggio

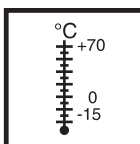


Atmungsstopfen
Vent plug
bouchon percé
tappo di sfiato
Atmungsdüse
Vent nozzle
Raccordement de
mise à l'air libre
ugello di sfiato

Atmungsdüse niemals verschließen!
Never close vent nozzle!
Ne jamais obturer le raccordement de
mise à l'air libre!
non otturare mai l'ugello di sfiato!



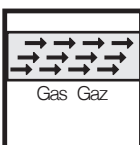
Max. Betriebsdruck
Max. operating pressure
Pression de service maxi.
Max. pressione di esercizio
 $p_{\max.} = 500 \text{ mbar (50 kPa)}$



Umgebungstemperatur
Ambient temperature
Température ambiante
Temperatura ambiente
 $-15^\circ\text{C} \dots +70^\circ\text{C}$



Klasse A, Gruppe 2
Class A, Group 2
Classe A, Groupe 2
Classe A, Gruppo 2
nach / acc. / selon / a norme
EN 88-1



Familie / Family / Famille / Famiglia 1 + 2 + 3
Buntmetallfrei, geeignet für Gase bis max. 0,1 vol. % H_2S
trocken. / It does not contain any non-ferrous metals,
suitable for gases of up to max. 0.1 vol. % H_2S , dry. / En
alliages non-cuivreux, convient aux gaz jusqu'à max. 0,1 %
en vol. d' H_2S sec. / Esso è esente da metalli non ferrosi ed è
adatto per gas fino ad un volume max. % di 0,1 H_2S .



Eingangsdruckbereich
Inlet pressure range
Zone de pression d'alimentation
Campo pressione di entrata
 $p_1 = 5 - 500 \text{ mbar (0,5 - 50 kPa)}$



Ausgangsdruckbereich
Outlet pressure range
Zone de pression de sortie
Campo pressione di uscita
 $p_2 = 2,5 - 240 \text{ mbar (0,25 - 24 kPa)}$

$(p_2 = p_a)$

Druckabgriffe

- 1 Atmungsstopfen
- 2 Anschluss für externen Impuls
Verschlusschraube G 1/4
ISO 228, beidseitig, optional.
- 3 Verschlusschraube G1/4
ISO 228 im Eingangsbereich,
beidseitig

Pressure taps

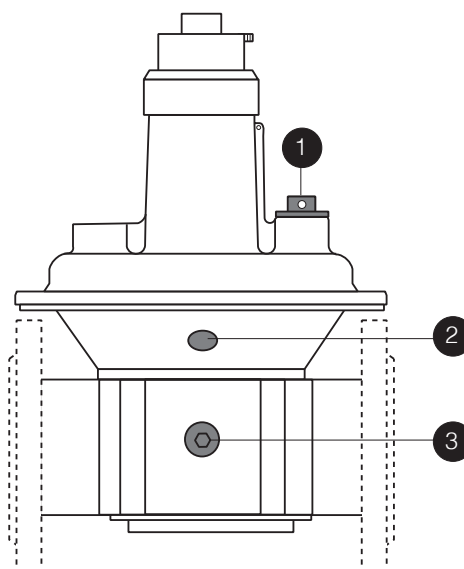
- 1 Vent plug
- 2 Connection for external pulse
G 1/4 screw plug ISO 228, on
both sides, optional.
- 3 G 1/4 screw plug ISO 228, in
inlet pressure range, on both
sides

Prises de pression

- 1 Bouchon de mise à l'atmos-
phère
- 2 Raccordement pour impulsion
externe bouchon fileté G1/4 ISO
228, bilatéral, en option
- 3 Bouchon fileté G1/4 ISO 24,
dans la zone d'entrée, bilatéral

Manopola a pressione

- 1 Tappo di sfiato
- 2 Attacco per impulso esterno
Tappo a vite G 1/4 ISO 228 da
entrambi i lati, opzionale
- 3 Tappo a vite G 1/4 ISO 228 nel
campo di entrata, da entrambi
i lati

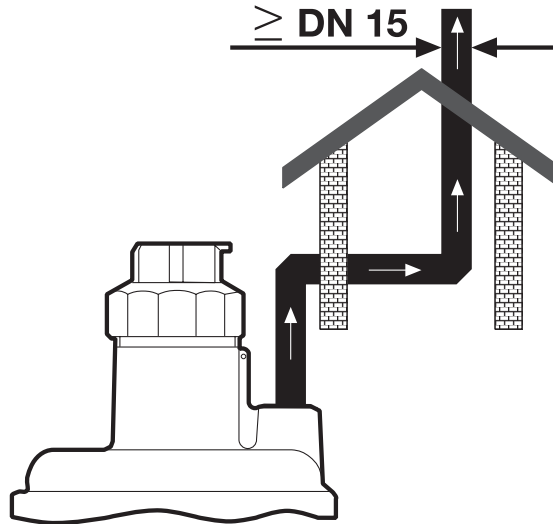


Atmungsleitung,
nur in Sonderfällen notwendig
**Sicherheitsmembrane ein-
gebaut**

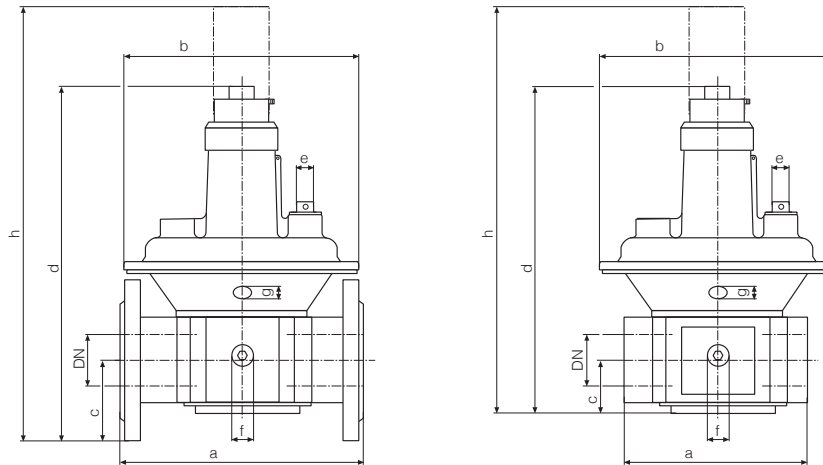
Ventilation pipe,
only necessary in special cases
Safety diaphragm built in.

Conduite de ventilation,
nécessaire uniquement dans des
cas spéciaux.
Membrane de securite installé.

Tubo di scarico,
necessario solo in casi speciali.
**All'interno dello stabilizzatore
é montata una membrana di
sicurezza.**

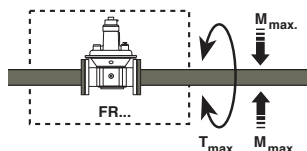


Einbaumaße / Dimensions / Cotes d'encombrement / Dimensioni [mm]



Typ Type Type Tipo	Bestell-Nummer Order Number No. de commande Codice articolo	P _{max.} [mbar]	Rp / DN	a	b	c	d	e	f	g	h	Gewicht Weight Poids Peso [kg]
FRS 503	086 462	500	Rp 3/8	77	115	24	143	G 1/4	G 1/4	G 1/8	225	0,60
FRS 505	070 383	500	Rp 1/2	77	115	24	143	G 1/4	G 1/4	G 1/8	225	0,60
FRS 507	070 391	500	Rp 3/4	100	130	28	165	G 1/4	G 1/4	G 1/8	245	1,00
FRS 510	070 409	500	Rp 1	110	145	33	190	G 1/4	G 1/4	G 1/8	310	1,20
FRS 515	058 446	500	Rp 1 1/2	150	195	40	250	G 1/2	G 1/4	G 1/4	365	2,50
FRS 520	058 628	500	Rp 2	170	250	47	310	G 1/2	G 1/4	G 1/4	450	3,50
FRS 525	083 303	500	Rp 2 1/2	230	285	60	365	G 1/2	G 1/4	G 1/4	550	6,00
FRS 5040	065 144	500	DN 40	200	195	62,5	280	G 1/2	G 1/4	G 1/4	395	3,50
FRS 5050	065 151	500	DN 50	230	250	73	340	G 1/2	G 1/4	G 1/4	480	5,00
FRS 5065	058 792	500	DN 65	290	285	93	405	G 1/2	G 1/4	G 1/4	590	7,50
FRS 5080	079 681	500	DN 80	310	285	90	405	G 1/2	G 1/4	G 1/4	590	10,00
FRS 5100	082 552	500	DN 100	350	350	100	495	G 1/2	G 1/4	G 1/4	760	16,00
FRS 5125	013 250	500	DN 125	400	400	125	635	G 1/2	G 1/4	G 1/4	1000	28,00
FRS 5150	013 268	500	DN 150	480	480	142,5	780	G 1/2	G 1/4	G 1/4	1180	38,00

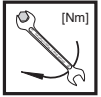
Gerät darf nicht als Hebel be-
nutzt werden.
Do not use unit as lever.
Ne pas utiliser le régulateur
comme un levier.
L'apparecchio non deve essere
usato come leva.



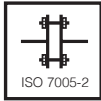
DN Rp	3/8	1/2	3/4	1 1/2	2	2 1/2	40	50	65	80	100	125	150
M _{max.} [Nm] t ≤ 10 s	70	105	225	340	610	1100	1600	2400	5000	6000	7600		
T _{max.} [Nm] t ≤ 10 s	35	50	85	125	200	250	325	400	—	—	—		



Druckregelgerät durch geeigneten Schmutzfänger vor Verunreinigung schützen!
Protect pressure regulator against contamination using suitable dirt traps!
Protéger le régulateur de pression contre les impuretés à l'aide d'un filtre!
Proteggere il regolatore di pressione con mezzi adeguati contro la sporcizia!



max. Drehmomente / Systemzubehör max. torque / System accessories max. couple / Accessoires du système max. coppie / Accessorio di sistema	M 4	M 5	M 6	M 8	G 1/8	G 1/4	G 1/2	G 3/4
	2,5 Nm	5 Nm	7 Nm	15 Nm	5 Nm	7 Nm	10 Nm	15 Nm



Stiftschraube / Setscrew Goujon / Vite per acciaio	max. Drehmomente (Flanschverbindung) / max. torque (Flange connection) couple maxi. (Raccordement à brides) / max. coppie (Collegamento a flangia)
M 12 x 55 (DN 25)	10 Nm ... 40 Nm
M 16 x 65 (DN 40/50/65/80/100) M 16 x 75 (DN 125)	40 Nm ... 90 Nm
M 20 x 80 (DN 150)	90 Nm ... 170 Nm

Anforderungen der eingesetzten Dichtung beachten!
Refer to the technical data of the used seal ring!
Respecter les exigences du joint mis en place !
Prestare attenzione ai requisiti della guarnizione utilizzata!



Geeignetes Werkzeug einsetzen!
Please use proper tools!
Utiliser des outils adaptés!
Impiegare gli attrezzi adeguati!

Schrauben kreuzweise anziehen!
Tighten screws crosswise!
Serrer les vis en croisant!
Stringere le viti incrociate!

Gewindeausführung FRS

Einbau

Vor Einbau Staubschutzkappen entfernen!
Durchflußrichtung beachten: Pfeil am Gehäuse.

1. Gewinde schneiden.
2. Geeignetes Dichtmittel verwenden.
3. Geeignetes Werkzeug verwenden.
4. Nach Einbau Dichtheitskontrolle.

Threaded version FRS

Mounting

Remove dirt protection caps before mounting.
Note flow direction: Arrow on housing

1. Tap thread.
2. Use suitable sealing agent.
3. Use suitable tool.
4. Perform leak tests after mounting.

Version filetée FRS

Pose

Avant la pose, enlever le capuchon de protection contre la poussière!
Tenir compte du sens du débit: flèche sur le boîtier

1. Fileter.
2. Employer un produit d'étanchéité approprié.
3. Utiliser un outillage adapté.
4. Après la pose, effectuer un contrôle d'étanchéité.

Esecuzione filettata FRS

Montaggio

Prima di eseguire il montaggio, togliere le calotte parapolvere!
Fare attenzione alla direzione di flusso: freccia sull'involucro.

1. Tagliare il filetto
2. Utilizzare adeguate guarnizioni.
3. Utilizzare adeguate guarnizioni.
4. Dopo il montaggio effettuare una prova di tenuta.

Flanschausführung FRS

Einbau

Vor Einbau Staubschutzkappen entfernen!
Durchflußrichtung beachten: Pfeil am Gehäuse.

1. Stiftschrauben unten einsetzen.
2. Dichtungen einsetzen.
3. Stiftschrauben oben einsetzen.
4. Stiftschrauben festziehen. Drehmomentetabelle beachten!
Auf korrekten Sitz der Dichtung achten !
5. Nach Einbau Dichtheitskontrolle.

Flange version FRS

Mounting

Remove dirt protection caps before mounting.
Note flow direction: Arrow on housing

1. Insert setscrews.
2. Insert seals.
3. Insert setscrews.
4. Tighten setscrews. Refer to torque table
Ensure correct seating of the seal!
5. Perform leak tests after mounting.

Version à brides FRS

Pose

Avant la pose, enlever le capuchon de protection contre la poussière!

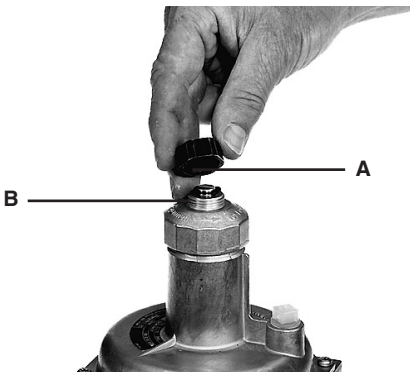
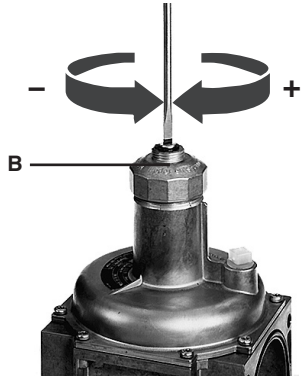
1. Insérer les goujons du bas.
2. Insérer les joints.
3. Insérer les goujons du haut.
4. Serrer les goujons à fond en respectant les couples indiqués dans le tableau.
Veiller à ce que le joint soit bien en place!
5. Après la pose, effectuer un contrôle d'étanchéité.

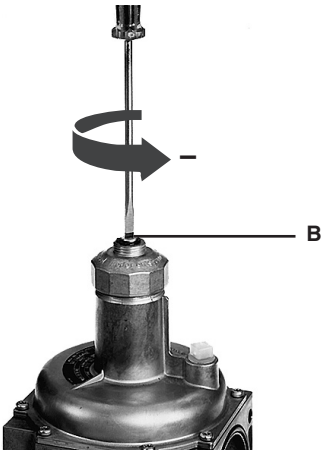
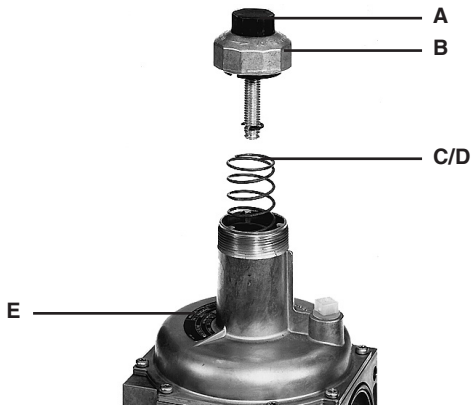
Esecuzione flangiata FRS

Montaggio

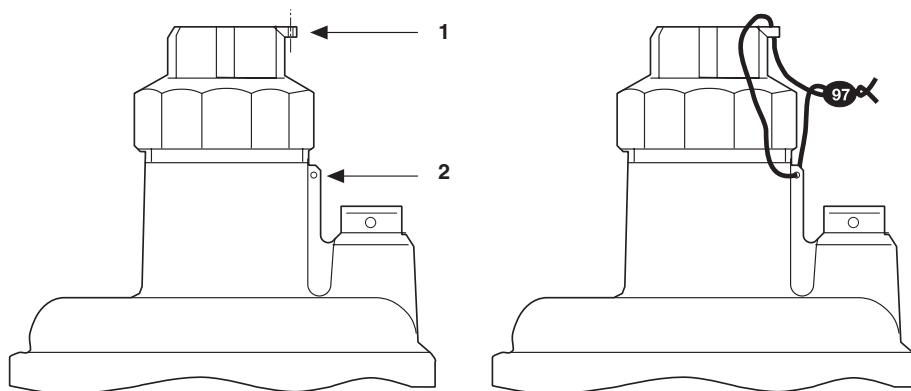
Prima di eseguire il montaggio, togliere le calotte parapolvere!
Fare attenzione alla direzione di flusso: freccia sull'involucro.

1. Inserire le viti.
2. Inserire le guarnizioni.
3. Inserire le viti.
4. Stringere le viti osservando la tabella del momento torcente.
Prestare attenzione al corretto posizionamento della guarnizione!
5. Dopo il montaggio effettuare una prova di tenuta.

Justage des Ausgangsdruckes (Sollwerteinstellung)	Adjustment of outlet pressure (setpoint adjustment)	Réglage de la pression de sortie (réglage de la valeur de consigne)	Taratura fine della pressione di uscita (regolazione valore nominale)
Werkseitig eingebaute Soll- wertfeder: p₂ 10-30 mbar	Factory setting: Standard spring p₂ 10-30 mbar	Réglage d'usine: ressort standard p₂ 10 à 30 mbar	Taratura in fabbrica: molla standard p₂ 10 - 30 mbar
- Schutzkappe A abschrauben. - Justage (+) Verstellspindel B "Rechtsdrehen" = Vergrößerung des Ausgangs- druckes (Sollwertes) oder - Justage (-) Verstellspindel B "Linksdrehen" = Verkleinerung des Ausgangs- druckes (Sollwertes) - Überprüfen des Sollwertes. - Schutzkappe A aufschrauben - Plombierung (Seite 5).	- Unscrew protective cap A. - Adjustment (+) Setting spindle B "Turn clockwise" = Increasing outlet pressure (setpoint) or - Adjustment (-) Setting spindle B "Turn counter-clockwise" = Reducing outlet pressure (setpoint) - Check setpoint - Screw on protective cap A. - Attach lead seal (Page 5).	- Dévisser le capuchon protec- teur A. - Réglage (+) tige de réglage B "tourner vers la droite" = augmentation de la pression de sortie (valeur de consigne) ou bien - Réglage (-) tige de réglage B "tourner vers la gauche" = diminution de la pression de sortie (valeur de consigne) - Vérifier la valeur de consigne - Revisser le capuchon protecteur A - Plombage (page 5).	- svitare la calotta A di prote- zione - Taratura (+) ruotare a destra la vite di rego- lazione B = Aumento della pressione / uscita (valore nominale) oppure - Taratura (-) ruotare verso sinistra il la vite B = diminuzione della pressione/ uscita (valore nominale) - controllare il valore nominale tarato - riavvitare la calotta di protezione A - piombatura (vedere pag. 5)
			

Austausch der Sollwertfeder	Replace setting spring	Remplacement du ressort de réglage.	Cambio della molla
- Schutzkappe A entfernen. Durch Linksdrehen der Verstell- spindel B die Feder entspannen. Bis gegen den Anschlag drehen. - Komplette Verstellereinrichtung B abschrauben und Feder C entneh- men. - Neue Feder D einsetzen. - Komplette Verstellereinrichtung montieren und gewünschten Offset justieren. - Schutzkappe A aufschrauben. Klebeschild E auf das Typen- schild aufkleben. - Plombierung	- Remove protective cap. A. Release spring by turning adjust- ment spindle B counter clockwise. Turn spindle to stop. - Unscrew complete adjustment device B and remove spring C. - Insert new spring D. - Assemble complete adjustment device and adjust desired off- set. - Screw on protective cap A. Stick adhesive label E onto type- plate. - Attach lead seal.	- Enlever le capuchon protecteur A. Détendre le ressort en tour- nant vers la gauche la tige de réglage. - Tourner jusqu'à la butée. - Insérer le nouveau ressort D. - Monter le dispositif de réglage complet et régler l'offset souhai- tée. - Visser le capuchon protecteur A. Coller l'autocollant E sur la plaque de type. - Plombage	- Togliere la calotta A. Ruotando a sinistra B la molla si libera. Ruotare fino contro l'arresto. - Svitare completamente il dis- positivo B e sfilare la molla C - inserire la nuova molla D - montare il dispositivo completo e tarare l'uscita desiderata - riavvitare la calotta A. Incollare l'adesivo E sulla targhetta - Piombatura
 entspannen release détendre scaricare			

Plombierung
Attaching lead seal
Plombage
Piombatura



1. Plombierungsöse in der Verschlusskappe ø 1,5 mm.

1. ø 1.5 mm dia. lead seal eye in sealing cap.

1. Oeillet de plombage dans le capuchon obturateur ø 1,5 mm.

1. Occhiello per piombatura nella calotta di chiusura ø 1,5 mm.

2. Plombierungsöse im Reglergehäuse ø 1,5 mm.

2. ø 1.5 mm dia. lead seal eye in regulator housing.

2. Oeillet de plombage dans le boîtier du régulateur ø 1,5 mm.

2. Occhiello per piombatura sull'involucro del regolatore ø 1,5 mm.

Nach Einstellung des gewünschten Drucksollwertes / Offset:

After setting desired pressure set-point / offset:

Après réglage de la pression de consigne souhaitée / offset:

Dopo la regolazione del valore nominale desiderato / offset:

1. Schutzkappe aufschrauben.
2. Draht durch 1 und 2 ziehen.
3. Plombe um Drahtenden drücken, Drahtschleife kurzhalten.

1. Screw on protective cap.
2. Pull wire through 1 and 2.
3. Press lead seal around wire ends, keep wire loop small

1. Visser le capuchon protecteur
2. Faire passer le fil entre 1 et 2
3. Comprimer le plomb et les extrémités du fil. Maintenir la boucle courte.

1. avvitare la calotta di chiusura
2. Tirare il filo attraverso i punti 1 e 2
3. Piombare le estremità del filo lasciando corto l'anello passante.

**Verschließen interner Impuls,
externer Impuls nur optional**

**Bei Verwendung des externen
Impulses muss der interne
Impuls verschlossen werden.**

Der im Ausgangsbereich des
Druckregelgerätes angeord-
nete Impulsabgriff wird mit einer
geeigneter Silikondichtmasse
verschlossen.

Hierzu wird das Impulsrohr auf ca
2/3 der Länge gefüllt.

Unbedingt die Anleitung des
Dichtmassenherstellers beachten
und für vollständige Aushärtung
sorgen.

**Sealing internal pulses,
external pulse only optional**

**When using the external pulse,
seal the internal pulse.**

Seal the pulse tap located in the
outlet of the pressure regulator using
a suitable silicon compound.

Fill the pulse tube to approx. 2/3 of
the length.

Please follow the instructions of the
sealing compound manufacturer
and make sure that the compound
hardens completely.

**Fermeture impulsion interne,
impulsion interne uniquement
en option**

**Si l'on utilise l'impulsion externe,
il faut impérativement obstruer
l'impulsion interne.**

La prise d'impulsion qui se trouve
dans la zone de sortie du pres-
sostat est scellée à l'aide d'une
masse d'étanchéité adéquate en
silicone. Pour ce faire, on remplit
au 2/3 env. de sa longueur le tube
d'impulsion.

Respecter impérativement les ins-
tructions du fabricant de la masse
d'étanchéité et faire le nécessaire
pour obtenir un durcissement com-
plet.

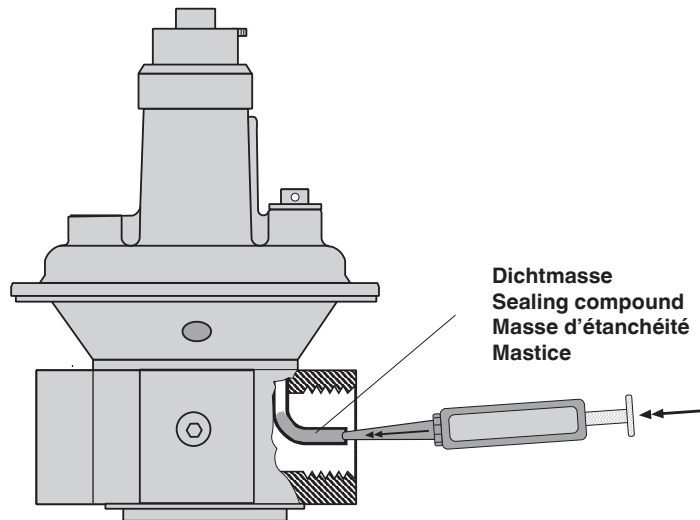
**Chiusura della presa d'impulso
interno; impulso esterno solo
opzionale**

**Se si fa uso dell'impulso ester-
no, si deve chiudere la presa
dell'impulso interno.**

La presa di impulso nel campo di
uscita del regolatore di pressione,
si deve otturare con un mastice di
silicone appropriato.

Riempire allo scopo il tubo di
impulso fino a ca. 2/3 della sua
lunghezza.

Attenersi assolutamente alle istru-
zioni del fabbricante del mastice
e provvedere al totale indurimento
di quest'ultimo.



**Externer Impulsanschluss,
externer Impuls nur optional**

Der externe Impulsanschluss
erfolgt an den Anschlüssen der
Membranschale.

Der Anschluss muss sich gegen
Verformung, Abriss, gasdicht
und dauerhaft sein. Er muss den
mechanischen, thermischen und
chemischen Belastungen stand-
halten.

Der gegenüberliegende An-
schluss kann durch einen Mess-
stutzen verschlossen werden.

Der Messstutzen erlaubt die Mes-
sung des tatsächlich wirkenden
Reglerausgangsdruckes.

Der Anschluß des externen Im-
pulses am Gasgerät erfolgt nach
Maßgabe des Geräteherstellers.

**External pulse connection,
external pulse only optional**

Connect the external pulse line to
the connections on the diaphragm
shell.

Secure the connection against
deforming and break-off. It must
be gas-tight and permanent. It must
withstand mechanical, thermal and
chemical stresses.

You can seal the opposite connec-
tion using a test nipple.

Using the test nipple, you can
measure the actual active regulator
outlet pressure.

Follow the dimension specifications
of the equipment manufacturer
when connecting the external pulse
line to the gas equipment.

**Prise d'impulsion interne, im-
pulsion externe uniquement
en option**

La prise d'impulsion externe s'ef-
fectue aux raccords prévus
sur le corps du régulateur.

La prise doit être résistante aux dé-
formations, à la déchirure, étanche
au gaz et solide. Elle doit résister aux
charges mécaniques, thermiques
et chimiques.

La prise qui se trouve en face peut
être fermée à l'aide d'une prise de
mesure.

La prise de mesure permet de me-
surer la pression de sortie effective
du régulateur.

Prise de l'impulsion externe de
l'appareil à gaz conformément
aux instructions du fabricant de
l'appareil.

**Collegamento dell'impulso
esterno; solo opzionale**

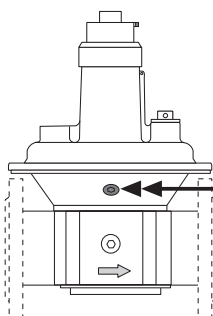
Il collegamento dell'impulso ester-
no si effettua agli attacchi della
coppa della membrana.

L'attacco deve essere sicuro con-
tro deformazione e strappi; deve
essere a tenuta di gas e duraturo.
Deve essere resistente alle solle-
citazioni meccaniche, termiche e
chimiche.

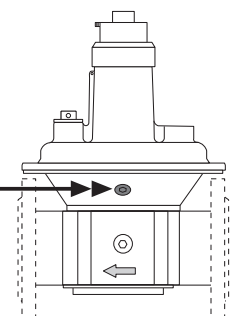
L'attacco sul lato opposto, si può
chiudere mediante un misuratore.

Il misuratore permette la misura-
zione della pressione di uscita del
regolatore veramente efficace.

Per il collegamento dell'impulso
esterno all'apparecchio del gas,
attenersi alle istruzioni del fabbri-
cante dell'apparecchio.



**Externer Impulsanschluß
External pulse connection
Prise d'impulsion externe
Attacco impulso esterno**

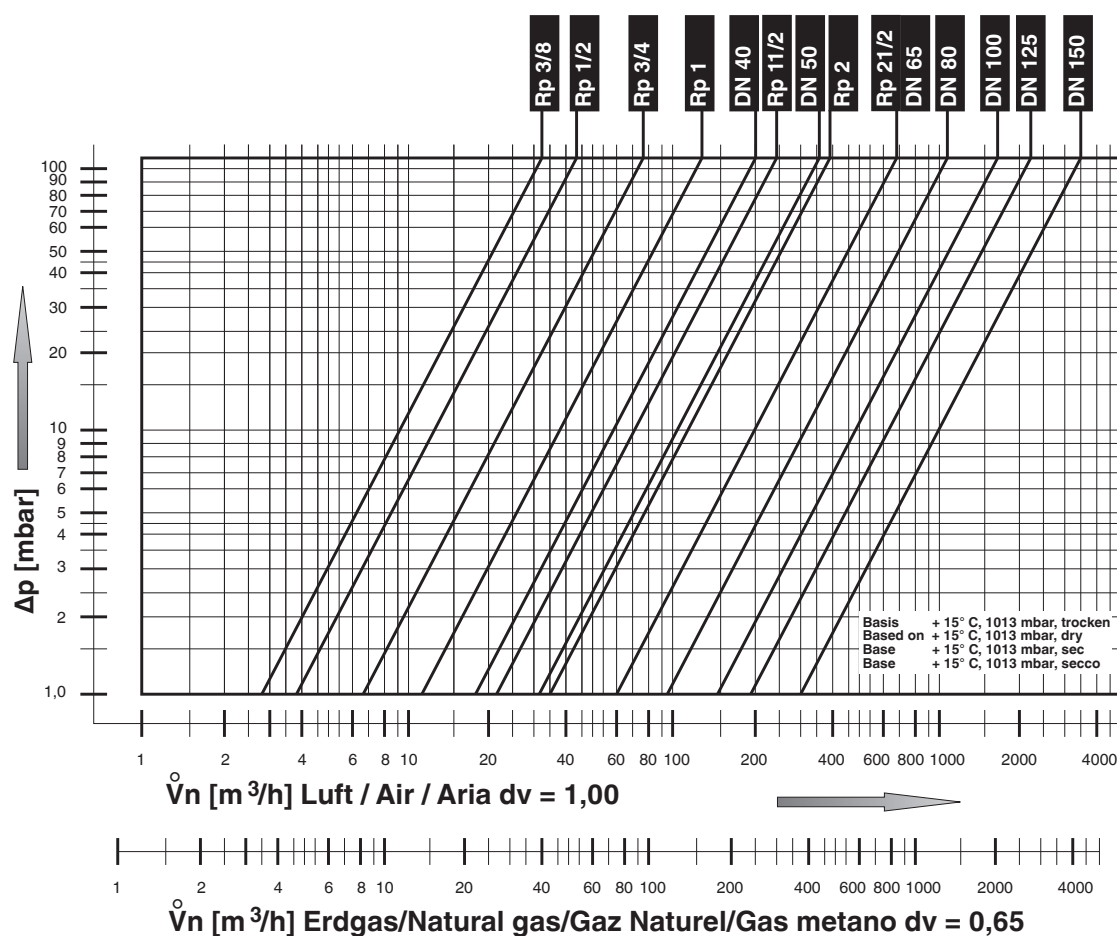


mechanisch offen / für Geräteauswahl FRS Durchflussdiagramm 2 anwenden

mechanically open / use flow diagram 2 for equipment selection FRS

mécaniquement ouvert / pour sélectionner un FRS, utiliser la courbe des débits 2

aprire meccanicamente / per scelta dell'apparecchio FRS utilizzare diagramma portata 2

**Gerätevorauswahl, blockierte Druckregelgeräte**

Mit Hilfe der Volumenstrom - Druckgefälle Kennlinie der Druckregelgeräte im mechanisch offenen Zustand ist eine Vorauswahl der Nennweite möglich.

Das Druckgefälle zwischen Eingangsdruck p_1 und Reglerausgangsdruck p_2 in Verbindung mit dem maximalen Volumenstrom $V_{\max}$ bestimmen die Nennweite des Druckregelgerätes.

Der durch $\Delta p_{\min}$ und $V_{\max}$ beschriebene Betriebspunkt liegt links der zuwählenden Nennweite des Druckregelgerätes.

Der Druckabfall über blockierte Druckregelgeräte wird durch die Kennlinien "mechanisch offen" beschrieben.

Die entgültige Festlegung erfolgt nach Maßgabe des Gasgeräteherstellers.

Equipment preselection, blocked pressure regulators

Using the volume flow pressure reduction characteristic of the pressure regulators in mechanically open state, you can preselect the nominal diameter.

The pressure reduction between inlet pressure p_1 and regulator outlet pressure p_2 in connection with the maximum volume flow $V_{\max}$ determine the nominal diameter of the pressure regulator.

The working point described by $\Delta p_{\min}$ and $V_{\max}$ is on the left of the nominal diameter of the pressure regulator to be selected.

The pressure reduction via blocked pressure regulators is described by the „mechanically open“ characteristics.

Final definition is performed according to dimension specification of the equipment manufacturer.

Choix de l'appareil, régulateurs bloqués

La ligne caractéristique de chute de pression de débit volumétrique du pressostat mécaniquement ouvert permet une présélection du diamètre nominal.

La chute de pression entre la pression d'alimentation p_1 et la pression de sortie du régulateur p_2 en relation avec le débit volumétrique maximum $V_{\max}$, déterminent le diamètre nominal du pressostat. Le point de fonctionnement décrit par $\Delta p_{\min}$ et $V_{\max}$ se trouve à gauche du diamètre nominal à sélectionner du régulateurs.

La chute de pression par l'intermédiaire de régulateurs bloqués est décrite par la ligne caractéristique „mécaniquement ouvert“.

La détermination définitive s'effectue conformément aux instructions du fabricant de l'appareil à gaz.

Preselezione degli apparecchi, regolatori di pressione bloccati

Con l'ausilio della curva caratteristica della differenza di pressione del flusso volumetrico dei regolatori di pressione allo stato di apertura meccanica, è possibile effettuare la preselezione del valore nominale.

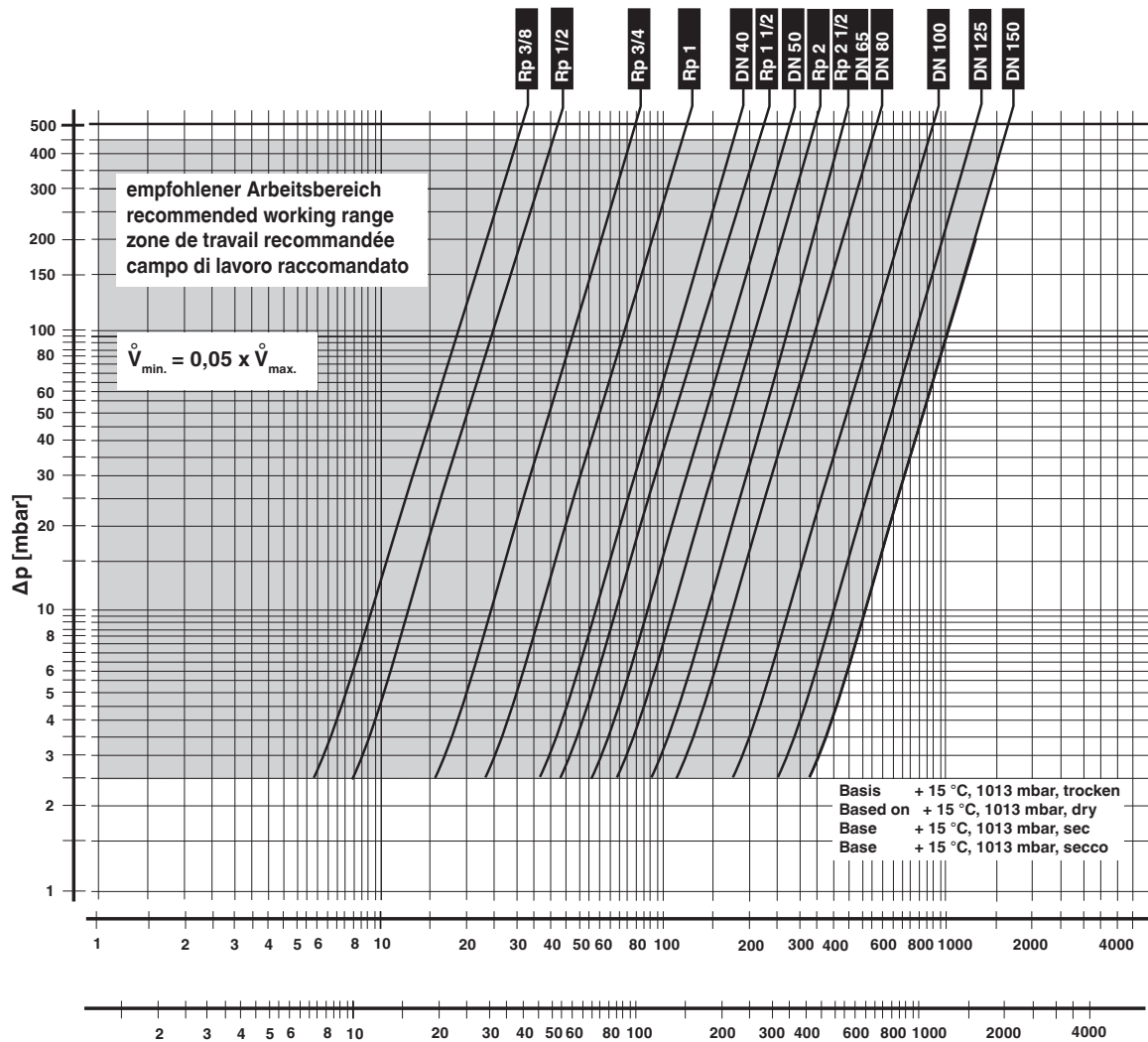
La differenza fra la pressione di entrata p_1 e la pressione di uscita dal regolatore p_2 , in combinazione con il flusso volumetrico massimo $V_{\max}$, determinano il valore nominale del regolatore di pressione.

Il punto di esercizio descritto con $\Delta p_{\min}$ e $V_{\max}$ si trova a sinistra del valore nominale del regolatore di pressione, da selezionare.

La caduta di pressione attraverso regolatori di pressione bloccati, viene descritta tramite la curva caratteristica „apertura meccanica“.

La determinazione definitiva avviene secondo le indicazioni del fabbricante degli apparecchi del gas.

im eingeregelter Zustand
in regulated state
en régulation
già tarato



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

f =

Dichte Luft
Air density
Densité de l'air
Densità dell'aria

spez. Gweicht des verwendeten Gases
Spec. weight of gas used
poids spécifique du gaz utilisé
peso specifico del gas utilizzato

Gasart Type of gas Type de gaz Tipo di gas	Dichte Density Densité Densità [kg/m³]	dv	f
Erdgas/Nat.Gas/ Gaz naturel/Gas metano	0.81	0.65	1.24
Stadtgas/City gas/ Gaz de ville/Gas città	0.58	0.47	1.46
Flüssiggas/LPG/ Gaz liquide/Gas liquido	2.08	1.67	0.77
Luft/Air/ Air/Aria	1.24	1.00	1.00

Ersatzteile / Zubehör Spare parts / Accessories Pièces de rechange / acces. Parti di ricambio / Accessori	Bestell-Nummer Order Number No. de commande Codice articolo
Verschlssschraube mit Dichtring Locking screw and sealing ring Bouchon fileté avec bague d'étanchéite Tappo a vite con guarnizione G 1/8 G 1/4 G 1/2 G 3/4	5 Stück/Set 5 Pieces/Set 5 Pièces/Set 5 Pezzi/Set 230 395 230 396 230 401 230 402
Messstutzen mit Dichtring Test nipple with sealing ring Prise de pression avec joint Misuratore con guarnizione G 1/8 G 1/4	5 Stück/Set 5 Pieces/Set 5 Pièces/Set 5 Pezzi/Set 230 397 230 398
Atmungsstopfen Vent plug Bouchon de mise à l'atmosphère Tappo di sfiato G 1/4 G 1/2	5 Stück/Set 5 Pieces/Set 5 Pièces/Set 5 Pezzi/Set 230 399 230 403
Schutzkappe mit Plombierösen Protective cap with lead seal option Goujon avec joint Calotta di protezione con possibilità di piombatura FRS 503 -510 FRS 515 - 520, 5040 - 5050 FRS 525, 5065 - 5100 FRS 5125, 5150	5 Stück/Set 5 Pieces/Set 5 Pièces/Set 5 Pezzi/Set 230 400 230 404 230 405 230 428
Dichtungen für Flansche Sealing ring for flanges Joints d'étanchéité pour brides Guarnizioni per flange DN 40 DN 50 DN 65 DN 80 DN 100 DN 125 DN 150	2 Stück/Set 2 Pieces/Set 2 Pièces/Set 2 Pezzi/Set 231 600 231 601 231 603 231 604 231 605 231 606 231 783
Stiftschraubensatz Set of setscrews Goujon Serie di viti per acciaio M 16 x 55 (DN 40 - DN 50) M 16 x 65 (DN 65 - DN 100) M 16 x 75 (DN 125) M 20 x 80 (DN 150) M 20 x 90 (DN 150; DMV)	4 Stück/Set 4 Pieces/Set 4 Pièces/Set 4 Pezzi/Set 230 422 230 424 230 430 238 141 230 446
Messwerke Repair Kits Eléments de mesure Apparecchi di misurazione FRS 503 - FRS 5150	auf Anfrage on request à la demande su richiesta

Ersatzteile / Zubehör Spare parts / Accessories Pièces de rechange / acces. Parti di ricambio / Accessori	Bestell-Nummer Order Number No. de commande Codice articolo
Federauswahl FRS / Selection of FRS springs / Sélection des ressorts FRS / Scelta della molla FRS	
Nr.1 2,5 - 9 mbar Nr.2 5 - 13 mbar Nr.3 5 - 20 mbar Nr.4 10 - 30 mbar Nr.5 25 - 55 mbar Nr.6 30 - 70 mbar Nr.7 60 - 110 mbar Nr.8 100 - 150 mbar Nr.9 140 - 200 mbar Nr.9a 140 - 240 mbar	braun/brown/brun/marrone weiß/white/blanc/bianco orange/orange/orange/arancia blau/blue/bleu/blu rot/red/rouge/rosso gelb/yellow/jaune/giallo schwarz/black/noir/nero rosa/pink/rose/rosa grau/grey/gris/grigio grau-rot/grey-red/gris-rouge/grigio-rosso
FRS 503/505 FRS 507	
Nr.1 2,5 - 9 mbar Nr.2 5 - 13 mbar Nr.3 5 - 20 mbar Nr.4 10 - 30 mbar Nr.5 25 - 55 mbar Nr.6 30 - 70 mbar Nr.7 60 - 110 mbar Nr.8 100 - 150 mbar Nr.9 140 - 200 mbar	229 817 229 833 229 818 229 834 229 820 229 835 229 821 229 836 229 822 229 837 229 823 229 838 229 824 229 839 229 825 229 840 229 826 229 841
FRS 510 FRS 515/5040	
Nr.1 2,5 - 9 mbar Nr.2 5 - 13 mbar Nr.3 5 - 20 mbar Nr.4 10 - 30 mbar Nr.5 25 - 55 mbar Nr.6 30 - 70 mbar Nr.7 60 - 110 mbar Nr.8 100 - 150 mbar Nr.9 140 - 200 mbar	229 842 229 851 229 843 229 852 229 844 229 853 229 845 229 854 229 846 229 869 229 847 229 870 229 848 229 871 229 849 229 872 229 850 229 873
FRS 520/5050	
Nr.1 2,5 - 9 mbar Nr.2 5 - 13 mbar Nr.3 5 - 20 mbar Nr.4 10 - 30 mbar Nr.5 25 - 55 mbar Nr.6 30 - 70 mbar Nr.7 60 - 110 mbar Nr.8 100 - 150 mbar Nr.9 140 - 200 mbar	229 874 229 875 229 876 229 877 229 878 229 879 229 880 229 881 229 882
FRS 525/5065/5080	
Nr.1 2,5 - 9 mbar Nr.2 5 - 13 mbar Nr.3 5 - 20 mbar Nr.4 10 - 30 mbar Nr.5 25 - 55 mbar Nr.6 30 - 70 mbar Nr.7 60 - 110 mbar Nr.8 100 - 150 mbar Nr.9 140 - 200 mbar	229 883 229 884 229 885 229 886 229 887 229 888 229 889 229 890 229 891
FRS 5100	
Nr.1 2,5 - 9 mbar Nr.2 5 - 13 mbar Nr.3 5 - 20 mbar Nr.4 10 - 30 mbar Nr.5 25 - 55 mbar Nr.6 30 - 70 mbar Nr.7 60 - 110 mbar Nr.8 100 - 150 mbar Nr.9 140 - 200 mbar Nr.9a 140 - 240 mbar	229 892 229 893 229 894 229 895 229 896 229 897 229 898 229 899 229 900 260 532
FRS 5125 FRS 5150	
Nr.1 2,5 - 9 mbar Nr.2 5 - 13 mbar Nr.3 5 - 20 mbar Nr.4 10 - 30 mbar Nr.5 25 - 55 mbar Nr.6 30 - 70 mbar Nr.7 60 - 110 mbar Nr.8 100 - 150 mbar Nr.9 140 - 200 mbar	229 901 229 909 229 902 229 910 229 903 229 911 229 904 229 912 229 905 229 913 229 906 229 914 229 907 229 915 229 908 229 916 243 416 243 417

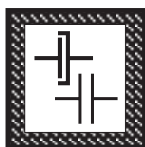


Arbeiten am Gas-Druckregelgerät dürfen nur von Fachpersonal durchgeführt werden.

Work on the gas pressure regulator may only be performed by specialist staff.

Seul du personnel autorisé peut effectuer des travaux sur le régulateur de pression.

Qualsiasi operazione effettuata sul regolatore di pressione gas deve essere fatta da parte di personale competente.

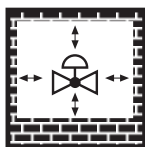


Flanschflächen schützen.
Schrauben kreuzweise anziehen.

Protect flange surfaces.
Tighten screws crosswise

Protéger les surfaces de brides.
Serrer les vis en croisant.

Proteggere le superfici della flangia.
Stringere le viti in modo incrociato.

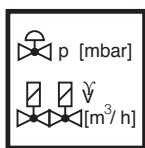


Direkter Kontakt zwischen dem Gas-Druckregelgerät und dem aushärtenden Mauerwerk, Betonwänden, Fußböden ist nicht zulässig.

Do not allow any direct contact between the gas pressure regulator and hardened masonry, concrete walls or floors.

Eviter tout contact direct entre le régulateur de pression et la maçonnerie, les cloisons en béton et planchers en cours de séchage.

Non é consentito il contatto diretto fra il regolatore di pressione gas e murature invecchiate, pareti in calcestruzzo, pavimenti.



Nennleistung bzw. Drucksollwerte grundsätzlich am Gas-Druckregelgerät einstellen. Leistungsspezifische Drosselung über das Magnetventil.

Always adjust nominal output or pressure setpoints on the gas pressure regulator and performance-specific throttling using the solenoid valve.

Régler toujours le débit nominal ou les pressions de consigne sur le régulateur de pression. Limitation au niveau de vanne, en fonction du débit.

Effettuare in linea di massima la regolazione di potenza nominale e valori nominali di pressione sul regolatore di pressione gas. La regolazione specifica di potenza va fatta attraverso la valvola.

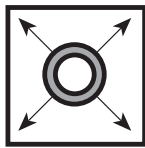


Grundsätzlich nach Teileausbau/-umbau neue Dichtungen verwenden.

Always use new seals after dismantling and mounting parts.

Après un démontage ou une modification, utiliser toujours des joints neufs.

In linea di massima, dopo lo smontaggio e il rimontaggio di alcune parti, utilizzare nuove guarnizioni.



Rohrleitungsdichtheitsprüfung: Kugelhahn vor den Armaturen/Gas-Druckregelgerät schließen.

Pipeline leak test: close ball cock upstream of fittings/FRS.

Contrôle de l'étanchéité de la conduite: fermer le robinet à boisseau sphérique avant les robinetteries / FRS.

Per la prova di tenuta delle tubature: chiudere il rubinetto a sfera davanti ai corpi valvola / FRS.

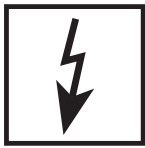


Nach Abschluss von Arbeiten am Gas-Druckregelgerät: Dichtheitskontrolle und Funktionskontrolle durchführen.
 $p_{\text{Prüf}} \leq 500 \text{ mbar}$

On completion of work on the FRS, perform leak and function test.
 $p_{\text{test}} \leq 500 \text{ mbar}$

Une fois les travaux sur le FRS terminés, procéder toujours à un contrôle d'étanchéité et de fonctionnement.
 $p_{\text{test}} \leq 500 \text{ mbar}$

Al termine dei lavori effettuati su un FRS: predisporre un controllo sia della tenuta che del funzionamento.
 $p_{\text{test}} \leq 500 \text{ mbar}$



Niemals Arbeiten durchführen, wenn Gasdruck oder Spannung anliegt. Offenes Feuer vermeiden. Öffentliche Vorschriften beachten.

Never perform work if gas pressure or power is applied. No naked flame. Observe public regulations.

Ne jamais effectuer des travaux lorsque la pression ou la tension sont présentes. Eviter toute flamme ouverte. Observer les réglementations.

In nessun caso si debbono effettuare lavori in presenza di pressione gas o di tensione elettrica. Evitare i fuochi aperti e osservare le prescrizioni pubbliche.

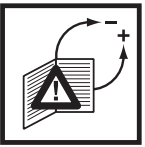


Bei Nichtbeachtung der Hinweise sind Personen- oder Sachfolgeschäden denkbar.

If these instructions are not heeded, the result may be personal injury or damage to property.

En cas de non-respect de ces instructions, des dommages corporels ou matériels sont possibles.

La non osservanza di quanto suddetto può implicare danni a persone o cose.



Alle Einstellungen und Einstellwerte nur in Übereinstimmung mit der Betriebsanleitung des Kessel-/Brennerherstellers ausführen.

Any adjustment and application-specific adjustment values must be made in accordance with the appliance-/boiler manufacturers instructions.

Effectuer tous les réglages et réaliser les valeurs de réglage uniquement selon le mode d'emploi du fabricant de chaudières et de brûleurs.

Realizzare tutte le impostazioni e i valori impostati solo in conformità alle istruzioni per l'uso del costruttore della caldaia/ del bruciatore.



Die Druckgeräterichtlinie (PED) und die Richtlinie über die Gesamtenergieeffizienz von Gebäuden (EPBD) fordern eine regelmässige Überprüfung der Wärmeerzeuger zur langfristigen Sicherstellung von hohen Nutzungsgraden und somit geringster Umweltbelastung. **Es besteht die Notwendigkeit sicherheitsrelevante Komponenten nach Erreichen ihrer Nutzungsdauer auszutauschen:**

The Pressure Equipment Directive (PED) and the Energy Performance of Buildings Directive (EPBD) require a periodic inspection of heat generators in order to ensure a high degree of efficiency over a long term and, consequently, the least environmental pollution.

It is necessary to replace safety-relevant components after they have reached the end of their useful life:

La directive concernant les chauffe-bains à pression (PED) et la directive sur la performance énergétique des bâtiments (EPBD) exigent une vérification régulière des générateurs de chaleur afin de garantir à long terme des taux d'utilisation élevés et par conséquent une charge environnementale minimum. Il est nécessaire de remplacer les composants relatifs à la sécurité lorsqu'ils ont atteint la fin de leur vie utile:

La direttiva per apparecchi a pressione (PED) e la direttiva per l'efficienza dell'energia totale per edifici (EPBD), esigono il controllo regolare degli generatori di calore per la garanzia a lungo termine di un alto grado di rendimento e con ciò di basso inquinamento ambientale. Ciò rende necessaria la sostituzione di componenti rilevanti dal punto di vista della sicurezza alla scadenza della loro durata di utilizzazione:

Sicherheitsrelevante Komponente Safety relevant component Composant relatif à la sécurité Componenti rilevanti dal punto di vista della sicurezza	Konstruktionsbedingte Lebensdauer Designed Lifetime Durée de vie prévue Durata di vita di progetto		Norm Standard Norme Norma	Dauerhafte Lagertemperatur Durable storage temperature Température de stockage permanente Temperatura di stoc- caggio permanente
	Zyklenzahl Operating cycles Cycle d'opération Numero di cicli di funzionamento di progetto	Jahre Years Année Anni		
Ventilprüfsysteme / Valve proving systems Systèmes de contrôle de vannes / Sistemi di controllo valvole	250 000	10	EN 1643	0...45 °C 32...113 °F
Gas/Gaz Druckwächter / Pressure switch / Manostat / Pressostati	50 000	10	EN 1854	
Luft/Air/Aria Druckwächter / Pressure switch / Manostat / Pressostati	250 000	10	EN 1854	
Gas mangelschalter / Low gas pressure switch Pressostat gaz basse pression / Pressostati gas di minima pressione	N/A	10	EN 1854	
Feuerungsmanager / Automatic burner control Dispositif de gestion de chauffage / Gestione bruciatore	250 000	10	EN 298 EN 230	
UV-Flammenfühler ¹ Flame detector (UV probes) ¹ Capteur de flammes UV ¹ Sensore fiamma UV ¹	N/A	10 000 h ³	---	
Gasdruckregelgeräte ¹ / Gas pressure regulators ¹ Dispositifs de réglage de pression du gaz ¹ Regolatori della pressione del gas ¹	N/A	15	EN 88-1 EN 88-2	
Gasventil mit Ventilprüfsystem ² Gas valve with valve testing system ² Vanne de gaz avec système de contrôle de vanne ² Valvola del gas con sistema di controllo valvola ²	nach erkanntem Fehler after error detection après détection d'erreur dopo segnalazione di errore		EN 1643	
Gasventil ohne Ventilprüfsystem ² Gas valve without valve testing system ² Vanne de gaz sans système de contrôle de vanne ² Valvola del gas senza sistema di controllo valvola ²	DN ≤ 25 200 000 25 < DN ≤ 80 100 000 80 < DN ≤ 150 50 000	10	EN 161	
Gas-Luft-Verbundsysteme / Gas-air ratio control system Systèmes combinés gaz/air / Sistemi di miscelazione gas-aria	N/A	10	EN 88-1 EN 12067-2	

¹ Nachlassende Betriebseigenschaften wegen Alterung / Performance decrease due to ageing
Réduction de performance due au vieillissement / Riduzione delle prestazioni dovuta all'invecchiamento

² Gasfamilien II, III / Gas families II, III / Familles de gaz II, III / per i gas delle famiglie II, III

³ Betriebsstunden / Operating hours / Heures de service / Ore di esercizio

N/A nicht anwendbar / not applicable / ne peut pas être utilisé / non può essere usato

Lagerzeiten / Storage times / Périodes de stockage / Tempi di stoccaggio

Lagerzeiten ≤ 1 Jahr verkürzen nicht die konstruktionsbedingte Lebensdauer.

Storage time ≤ 1 year does not reduce the designed lifetime.

Les périodes de stockage ≤ 1 an ne réduisent pas la durée de vie liée à la conception.

I tempi di stoccaggio ≤ 1 anno non riducono la durata di vita legata al design.

DUNGS empfiehlt eine maximale Lagerzeit von 3 Jahren.

DUNGS recommends a maximum storage time of 3 years.

DUNGS recommande une durée de stockage maximale de 3 ans.

DUNGS raccomanda un tempo massimo di stoccaggio di 3 anni.

Änderungen, die dem technischen Fortschritt dienen, vorbehalten / We reserve the right to make modifications in the course of technical development.

Sous réserve de tout modification constituant un progrès technique / Ci riserviamo qualsiasi modifica tecnica e costruttiva

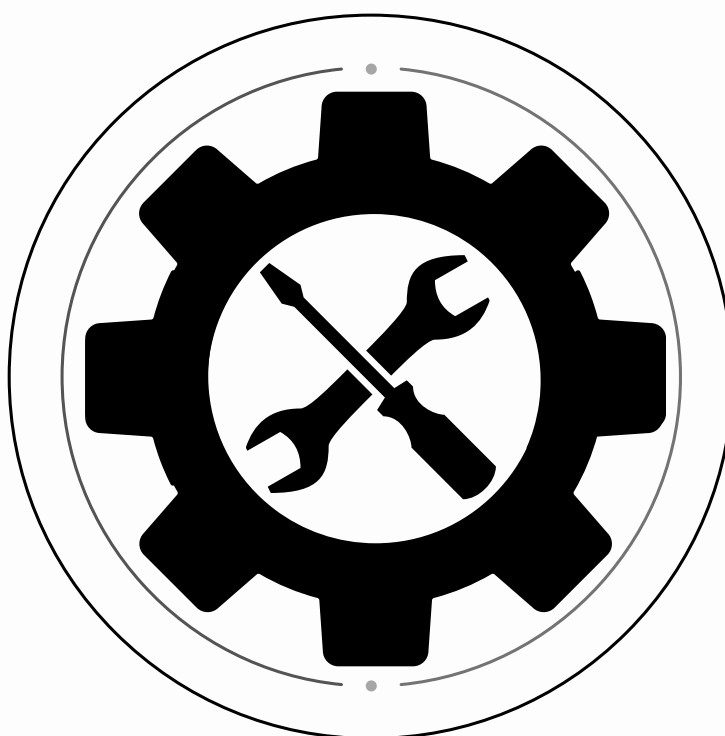
Hausadresse
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Telefax +49 7181-804-166

Briefadresse
Postal address
Adresse postale
Indirizzare la corrispondenza a

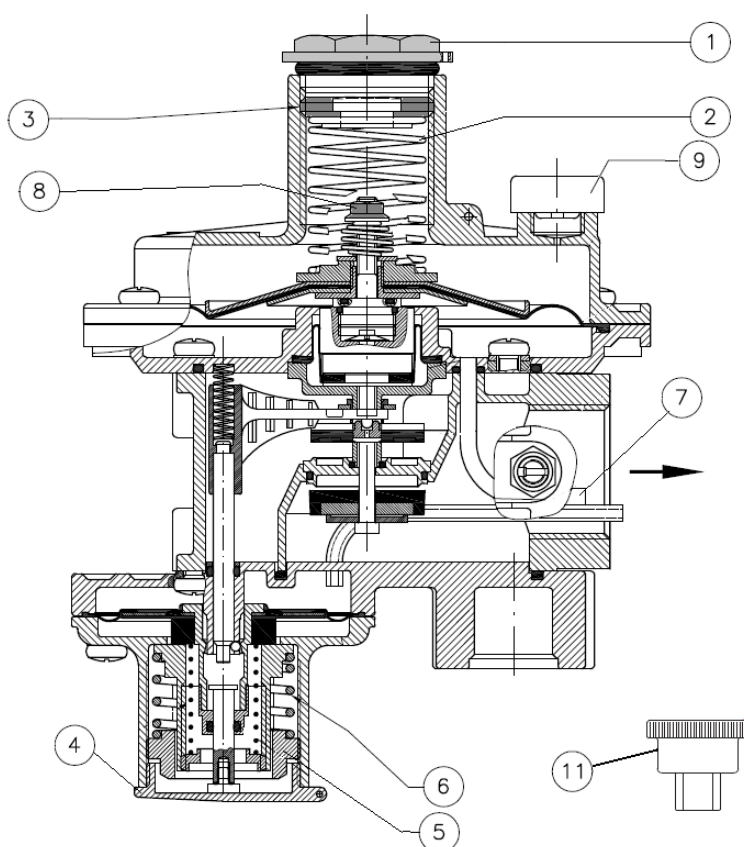
Karl Dungs GmbH & Co. KG
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D-73602 Schorndorf
e-mail info@dungs.com
Internet www.dungs.com

Ajustes na reguladora de pressão



Informativo técnico

Regulagem da pressão a jusante (saída), alívio e sobre pressão da válvula RG 2MBSZ 20 e 25.

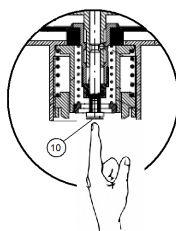


ANTES DO INICIO DOS AJUSTES FAZER AS SEGUINTE VERIFICAÇÕES:

- ✓ A pressão a montante (entrada) deverá ser no máximo 5,0 bar.
- ✓ Todo o procedimento deverá ser realizado com a válvula solenoide desenergizada, ou seja, fechada.
- ✓ A válvula é fornecida com a shut-off desarmada, ou seja, não tem passagem de gás (para armá-la siga o procedimento abaixo).

1) Bloqueio e ajuste da shut-off (sobre pressão)

- a) Abra a válvula de bloqueio a montante, antes da reguladora de pressão, lentamente.
- b) Retire a tampa de proteção da mola (4) e com a chave (11), aperte a porca de ajuste da mola (5) no sentido horário até o final, sem esforçar.
- c) Rearme a shut-off apertando continuamente o botão (10) até perceber um pequeno movimento ascendente; como demonstrado abaixo.



- d) Retire a tampa de proteção da mola (1) e com auxílio da chave (11) e de um manômetro com escala mínima de 1,5 a 2 vezes a pressão de trabalho, aperte a porca (3) até a pressão de desarme da shut-off pretendida. Solte a porca de ajuste da mola (5) no sentido anti-horário até sentir o desarme da shut-off; aperte 1 volta no sentido horário e, neste ponto, a shut-off estará regulada. Rearme a shut-off (item c).

2) Ajuste da pressão a jusante (saída da reguladora)

- a) Através da porca (3), ajuste a pressão desejada. Sentido horário para aumentar e anti-horário para reduzir a pressão.
- b) Recoloque as tampas (1) e (4) e a chave (11).
- c) O ajuste final deverá ser feito após a partida do equipamento em carga mínima.

3) Ajuste do alívio interno (quando existente)

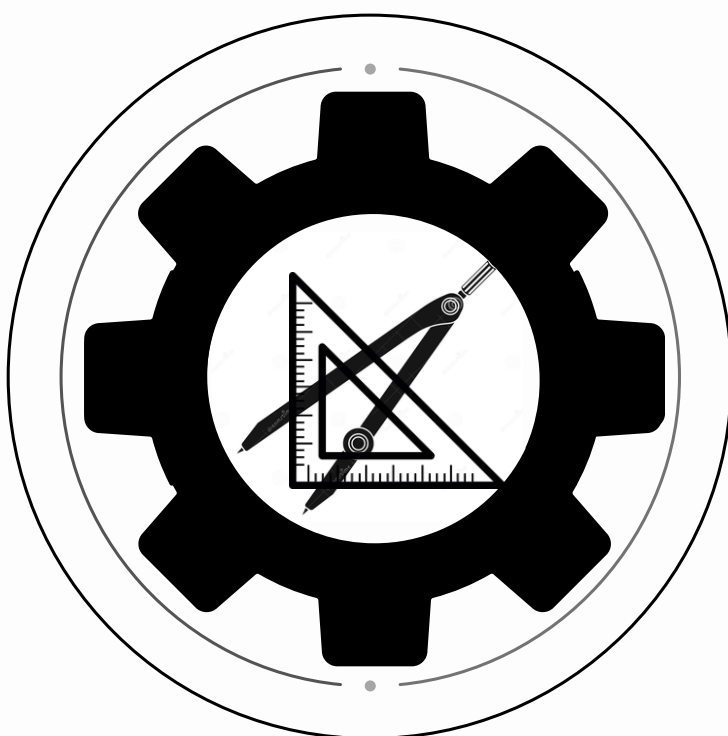
- a) Utilizando uma chave canhão de 8 mm, ajustar a porca (8), sentido horário para aumentar e anti-horário para reduzir a pressão de alívio.

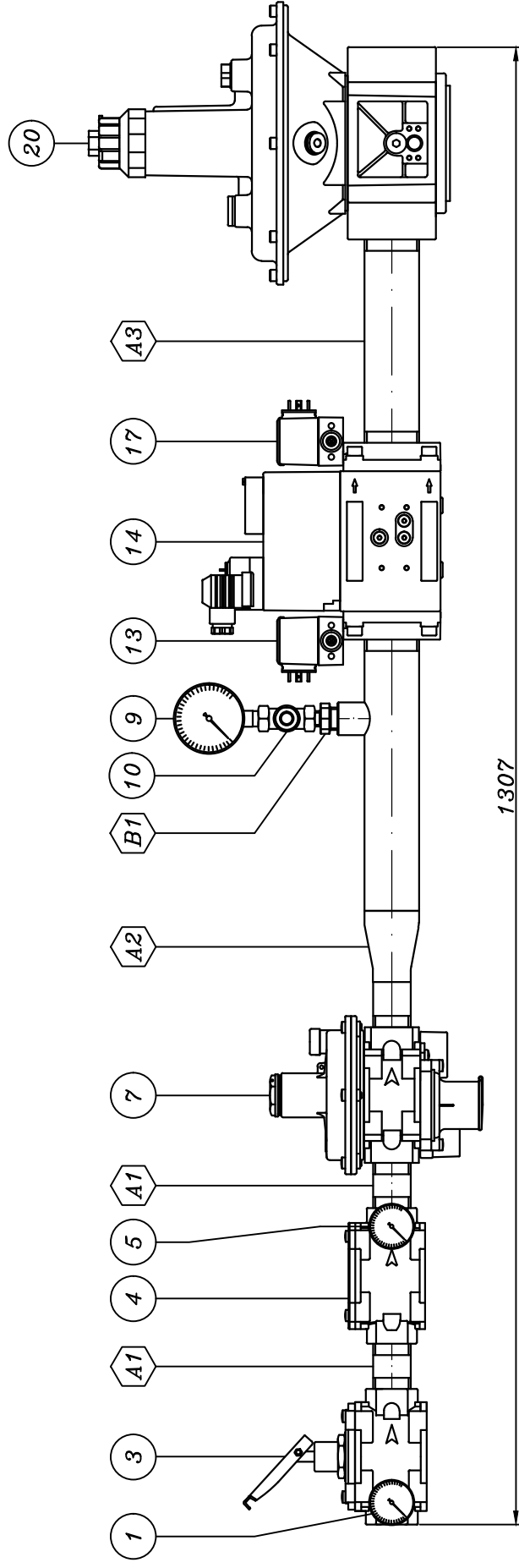


ATENÇÃO

- Verifique o funcionamento do equipamento em operação.
- Verifique se não existe vazamento nas conexões.

Desenho geral do equipamento





POS.	QUANT.	DENOMINACAO	DIMENSÕES	MATERIAL	TAG	PESO
B1	1	NIPLE DE REDUÇÃO GALVANIZADO Ø1/2" x Ø1/4"	R 1/2" x R 1/4"	-	WM0219	-
A3	1	NIPLE USINADO Ø1,12" x 200 MM	R 1,1/2"	-	WM0185	-
A2	1	CARRETEL 25 (R) x 40 (R) - (I)	R 1" x R 1,1/2"	-	3406	-
A1	2	NIPLE USINADO Ø1" MM 60 MM	R 1"	-	WM0002	-
20	1	VALVULA ESTABILIZADORA FRS 515 40R 10-30MBAR	Rp 1,1/2"	-	606	-
17	1	PRESSOSTATO GW 130 AS 5-150 MBAR	-	-	404	-
14	1	VALVULA SOLENOIDE DWA0 512/11 500 MBAR - 24VCC	Rp 1,1/2"	-	202BNS	-
13	1	PRESSOSTATO GW 150 AS 5-150 MBAR	-	-	404	-
10	1	VALVULA DE BLOQUEIO PUSH-BUTTON Ø1/4"	G 1/4"	-	5370	-
9	1	MANÔMETRO Ø1/4" DN63 RETO ESC. 0-250 MBAR	G 1/4"	-	5309	-
7	1	VALVULA REGULADORA RG/ZMBZ 25R MOLA 60-90MBAR	Rp 1"	-	133482	-
5	1	MANÔMETRO Ø7/8" DN 40 AXIAL - ESC 0-4 BAR	G 7/8"	-	5300	-
4	1	FILTRO PARA GAS 6 BAR - FM DN25 AP-20 um	Rp 1"	-	1053	-
3	1	VALVULA DE BLOQUEIO MANUAL - 6 BAR SM 25R-AP	Rp 1"	-	1552	-
1	1	MANÔMETRO Ø7/8" DN 40 AXIAL - ESC 0-4 BAR	G 7/8"	-	5300	-

COPIAS	
CLIENTE	0
PROJETO	0
PAORONIZ.	0
PLANEAJ.	0
C. Q.	0
PRODUCAO	0
EL. INSTR.	0
ASS. TEC.	0
EXPEDICAO	0
COMERCIAL	0
TOTAL	0

NOTAS:

[illegible]

CLIENTE:				CAVALETE															
PROJETO: PADRONIZAÇÃO				TAG-3989B															
EQUIPAMENTO:				TITULO:															
				N° CLIENTE:															
<table><tr><th>DES.</th><th>FOR</th><th>DATA</th></tr><tr><td>BOS</td><td></td><td>18/06/28</td></tr><tr><td>VER.</td><td>MSA</td><td>18/06/28</td></tr><tr><td>APR.</td><td>MSA</td><td>18/06/28</td></tr></table>				DES.	FOR	DATA	BOS		18/06/28	VER.	MSA	18/06/28	APR.	MSA	18/06/28	N° OBRAS:			
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