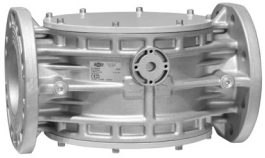
FILTRO PER GAS / GAS FILTER / FILTRE POUR GAZ / FILTRO PARA GAS



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 (200 - 600 kPa)**			
Attacchi flangiati Flanged connections Raccords à brides Conexiones embridadas	**DN 65 - DN 80 - DN 100 - DN 125 - DN 150 - DN 200 - DN 250 - DN 300**			
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.
- clogging indicator differential pressure gauge installation set-up;
- clogging indicator differential 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;
- Have first-aid training.

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 (200 or 600 kPa) - see product label
• Mechanical strength	: Group 2 (according to EN 13611)
• Flanged connections that can be coupled to PN 16 flanges	: (DN 65 - DN 80 - DN 100 - DN 125 - DN 150 - DN 200 - DN 250 - DN 300) ISO 7005 / EN 1092-1
• ANSI 150 flanged connections	: on request
• Filter element*	: Filtering 10-20-50 µm (see product label)
• In compliance with	: (EU) Regulation 2016/426 (Appliances burning gaseous fuels) PED Directive 2014/68/EU

* DN 125 - DN 150 - DN 200 - DN 250 - DN 300 only 10 µm

3.0 - COMMISSIONING THE DEVICE

3.1 - OPERATIONS PRIOR TO INSTALLATION

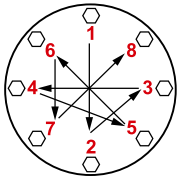
- It is necessary to close the gas upstream of the device prior to installation;
- Make sure that the line pressure **DOES NOT EXCEED** the maximum pressure declared on the product label;
- Protective caps (if any) must be removed prior to installation;
- Device pipes and insides must be clear of any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

- 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);

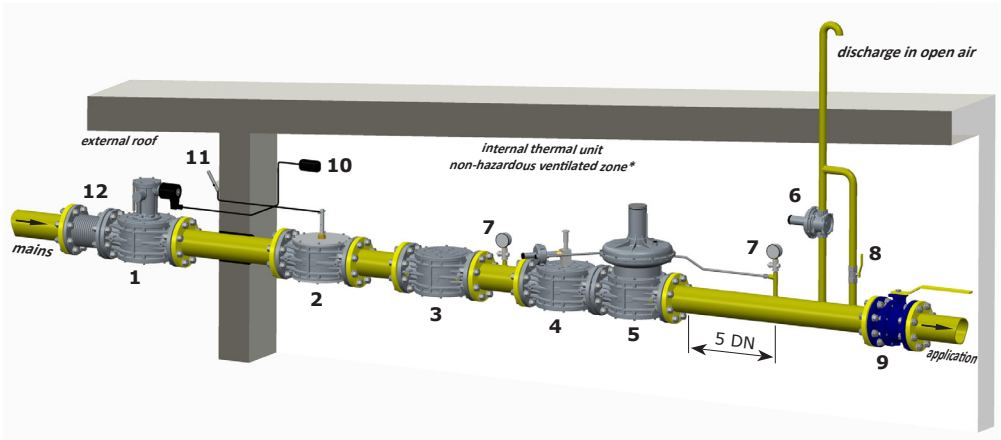


Diameter	DN 65	DN 80	DN 100	DN 125	DN 150	> DN 150
Max. torque (N.m)	50	50	80	160	160	160

- Tighten each nut and bolt again clockwise at least once, until the maximum torque has been achieved uniformly;
- 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 resting 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
2. SM Jerk ON/OFF valve
3. **FM gas filter**
4. OPSO series MVB/1 MAX shut-off valve
5. RG/2MC pressure regulator
6. MVS/1 relief valve
7. Pressure gauge and relative button
8. Vent valve
9. Ball valve
10. Gas detector
11. SM remote jerk ON/OFF valve lever control
12. Expansion joint/anti-vibration mount



4.0 - FIRST START-UP

- Before start-up, make sure that all 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;

The final user or installer is responsible for defining 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);
- 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 below is reached. Use a calibrated torque wrench to do this.
- Check the body/cover seal.

Screw	M5		M6		M8		M10		M12	
	Galvanised	Stainless Steel	Galvanised	Stainless Steel	Galvanised	Stainless Steel	Galvanised	Stainless Steel	Galvanised	Stainless Steel
Max. torque (N.m)	6	4.5	10	7.5	25	18.5	49.5	37	84.5	63.5

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:

MADAS® s.r.l.
Via Moratello, 5/6/7
37045 - Legnago
(VR) Italy
Mod.: **FM DN 200**
CE-51AR1070 - EN 126
P.max=PS= 6 bar (600 kPa)
Filtering: 10 micron
TS: -40...+70°C
CE 0051
CE 0497
Year: 2024 Lot: U2412 7634/00001

- 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
- CE 0051 = Compliance with (EU) Regulation 2016/426 followed by Notified Body No.
- CE 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 = 1210 [Nm^3/h] Methane
P_i = 1.2 [bar]

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

KEY

Q_n : Usage flow rate [Nm^3/h]
Q_d : Flow rate at the diagram conditions [m^3/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

- *Conversion to the flow rate at the diagram conditions:*

$$Q_d\ [Nm^3/h] = \left(\frac{Q_n\ [Nm^3/h]}{P_i + 1\ [bar]} \right) = \left(\frac{1210\ [Nm^3/h]}{1.2 + 1\ [bar]} \right) = 550\ [m^3/h]$$

- *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 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300
244 m^3/h	370 m^3/h	578 m^3/h	903 m^3/h	1300 m^3/h	2312 m^3/h	3613 m^3/h	5203 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:*

$$\Delta P_r\ [mbar] = \Delta P_d\ [mbar] \times (P_i + 1)\ [bar] = 6.5\ [mbar] \times (1.2 + 1)\ [bar] = 14.3\ [mbar]$$

- 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).

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 (as in figure 5 and 6) or as accessory to be mounted later.

Generally it is supplied mounted on filters as the picture and stated fig. 5, 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 in fig. 6 (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 cover picture and fig. 5 and 6).
If the filter do not have this premounting connections you must do a connection as show in fig. 7 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 (see related instruction sheet) before the plant start up reset the red arrow.
Check the ΔP with new filter and with flow in the plant.
Replace the cartridge when the differential pressure is doubled comparing the original value obtained with new filter.

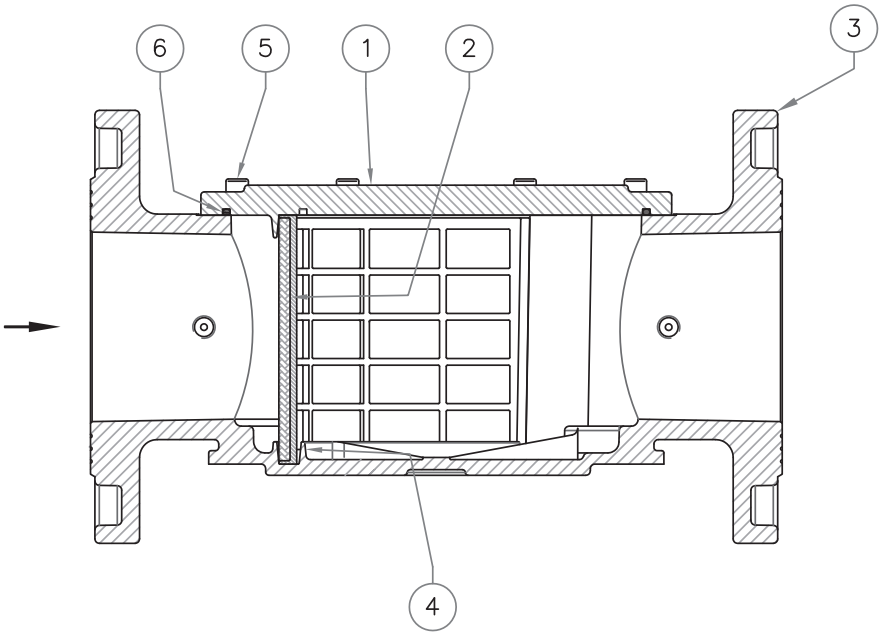
10.3 - TECHNICAL DATA

- Gauge P. max: 20 bar (2000 kPa)
- Standard maximum ΔP: 150 mbar (15 kPa) - different ΔP on request
- Environment temperature: -40 ÷ +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
DN 65 - DN 80



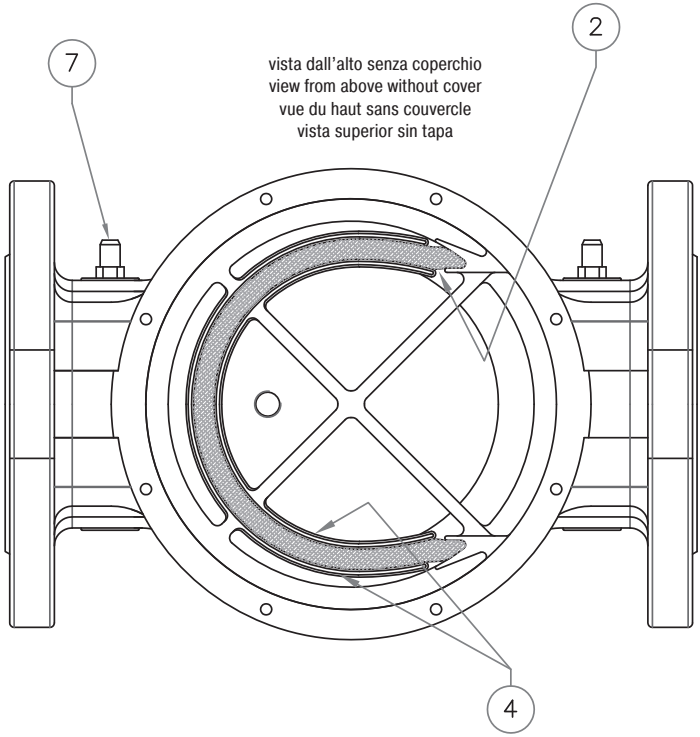
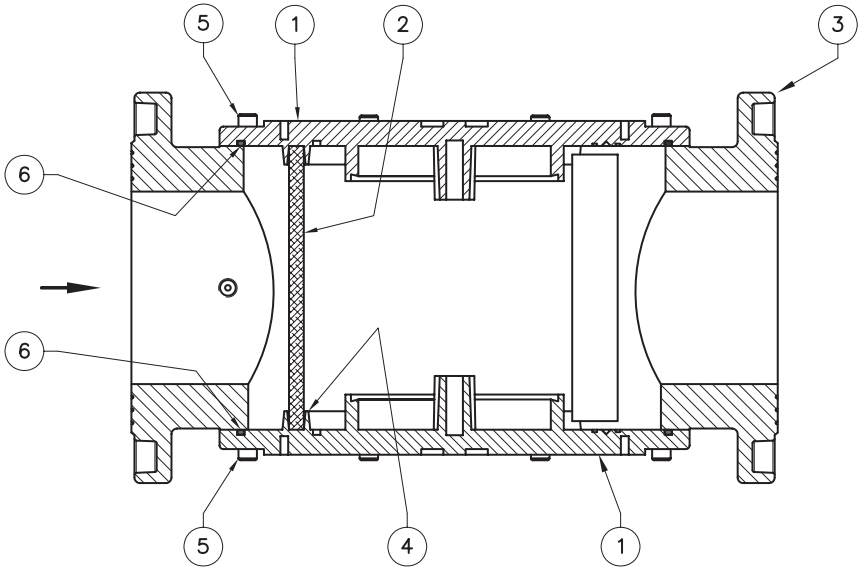


fig. 2
DN 100


5
1
2
3
6
6
5
4
1

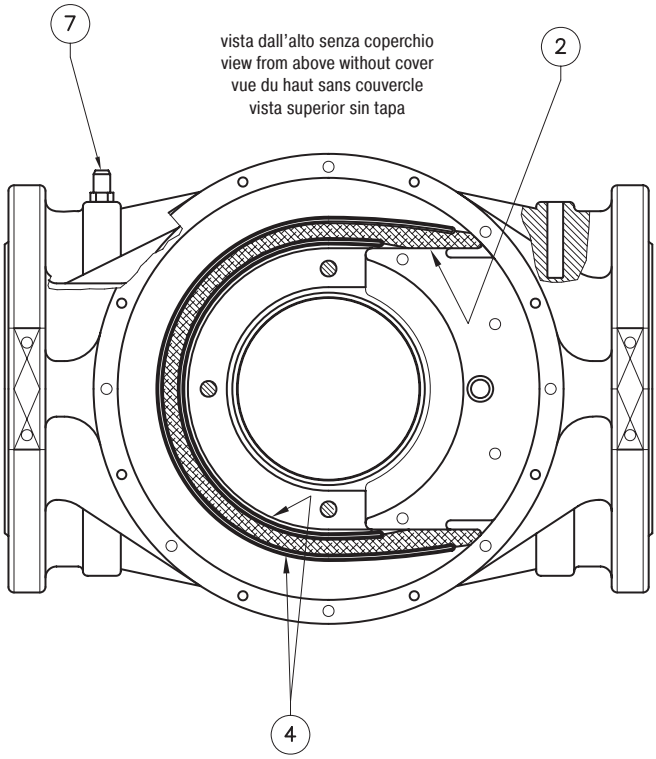
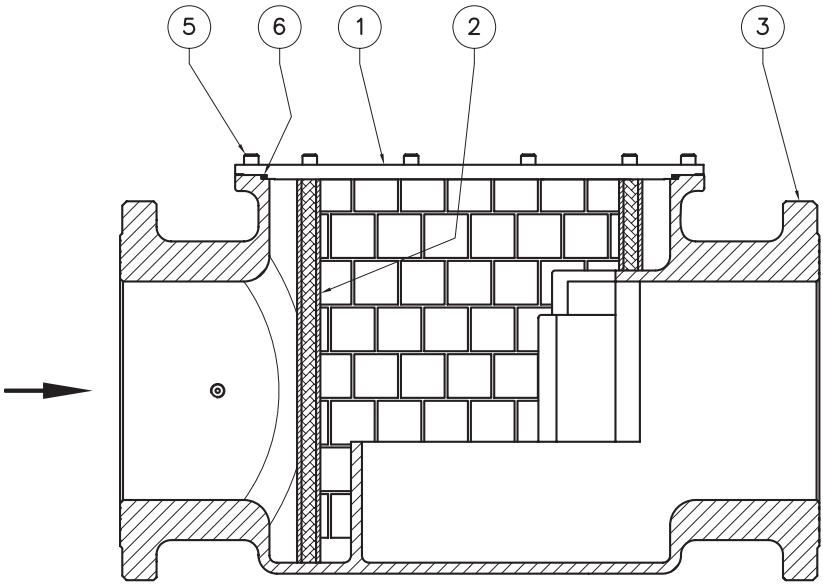
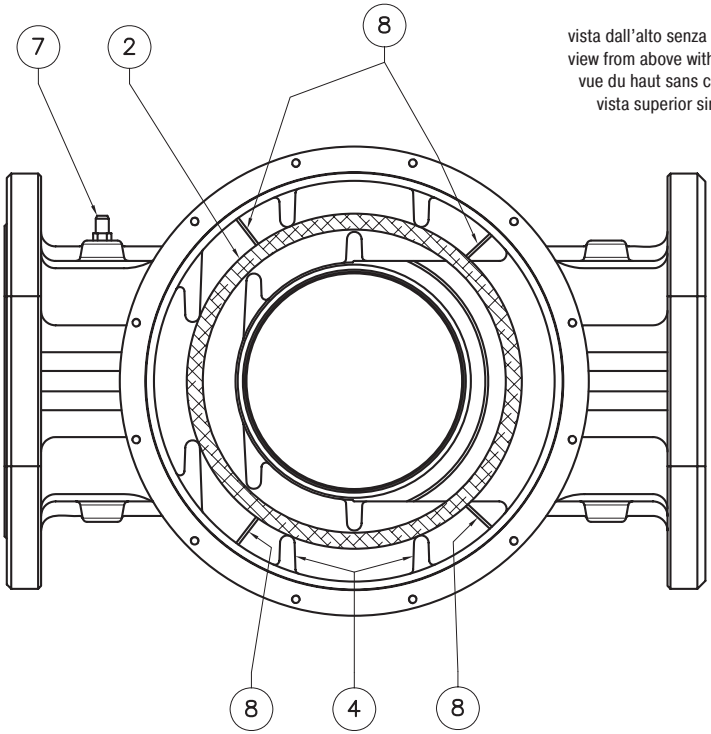

7
vista dall'alto senza coperchio
view from above without cover
vue du haut sans couvercle
vista superior sin tapa
2
4

fig. 3
DN 125 - DN 150 - DN 200 - DN 250 - DN 300





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

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fig. 1, 2 e 3

1 - Coperchio / Fondello
2 - Organo filtrante
3 - Corpo
4 - Guide di sistemazione
5 - Viti di fissaggio
6 - O-Ring di tenuta
7 - Presa di pressione
8 - Alette speciali

EN

fig. 1, 2 and 3

1 - Cover / Bottom
2 - Filter element
3 - Body
4 - Positioning guides
5 - Fastening screws
6 - O-ring
7 - Pressure test nipple
8 - Special fins

FR

fig. 1, 2 et 3

1 - Couvercle/Fond
2 - Organe filtrant
3 - Corps
4 - Guides d'ajustement
5 - Vis de fixation
6 - Joint torique d'étanchéité
7 - Prise de pression
8 - Ailettes spéciales

ES

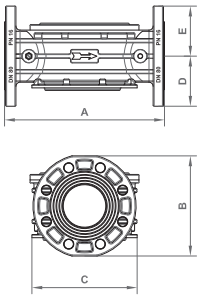
fig. 1, 2 y 3

1 - Tapa / Tapa inferior
2 - Cartucho filtrante
3 - Cuerpo
4 - Guías de ajuste
5 - Tornillos de fijación
6 - Junta tórica de estanqueidad
7 - Toma de presión
8 - Aletas especiales

Tabella 1 - Table 1 - Tableau 1 - Tabla 1

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

DN	Attacchi flangiati Flanged connections Fixations bridees Conexiones embridadas	P. max		fori holes trous orificios	A	B (D+E)	C	D	E
		bar	kPa						
65	PN 16 - ANSI 150	2 - 6	200 - 600	4	290	180	211	90	90
80	PN 16	2 - 6	200 - 600	8	310	194	211	97	97
80	ANSI 150	2 - 6	200 - 600	4	290	180	211	90	90
100	PN 16 - ANSI 150	2 - 6	200 - 600	8	350	210	260	105	105
125	PN 16 - ANSI 150	2 - 6	200 - 600	8	480	305	328	126	179
150	PN 16 - ANSI 150	2 - 6	200 - 600	8	480	309	328	130	179
200	PN 16	2 - 6	200 - 600	12	600	382	450	165	217
200	ANSI 150	2 - 6	200 - 600	8	600	382	450	165	217
250	PN 16 - ANSI 150	2 - 6	200 - 600	12	673	457	510	198	259
300	PN 16 - ANSI 150	2 - 6	200 - 600	12	737	504	557	220	284

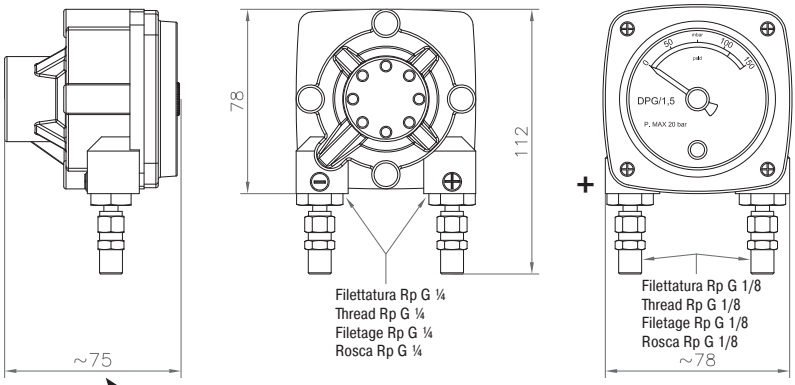


Le dimensioni sono indicative, non vincolanti - The dimensions are provided as a guideline, they are not binding
Les dimensions sont indicatives, non contraignantes - Las dimensiones son indicativas, no vinculantes

Manometro differenziale indicatore di intasamento
Differential pressure gauge clogging indicator
Manometre differentiel indicateur d'obstruction
Manómetro diferencial indicador de obstrucción

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

fig. 4



Nelle versioni con sensore di prossimità questa quota misura 90 mm
In the proximity sensor version this measure is 90 mm
Dans les versions avec capteur de proximité, cette valeur mesure 90 mm.
En las versiones con sensor de proximidad esta altura es de 90 mm

fig. 5
Configurazione Standard
Standard configuration
Configuration Standard
Configuración Estándar

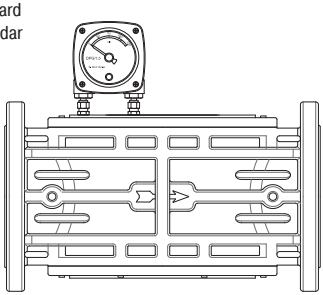


fig. 6
Configurazione "R" reverse
Reverse "R" configuration
Configuration Reverse "R"
Versión Reverse "R"

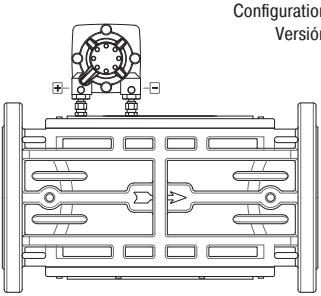


fig. 7
Installazione su filtro senza predisposizione
Filter installation without premounting
Installation du filtre sans prédisposition
Instalación del filtro sin preparación.

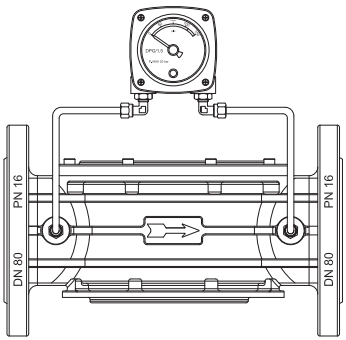


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Diagramma esempio - Example diagram - Diagramme exemple - Diagrama de ejemplo

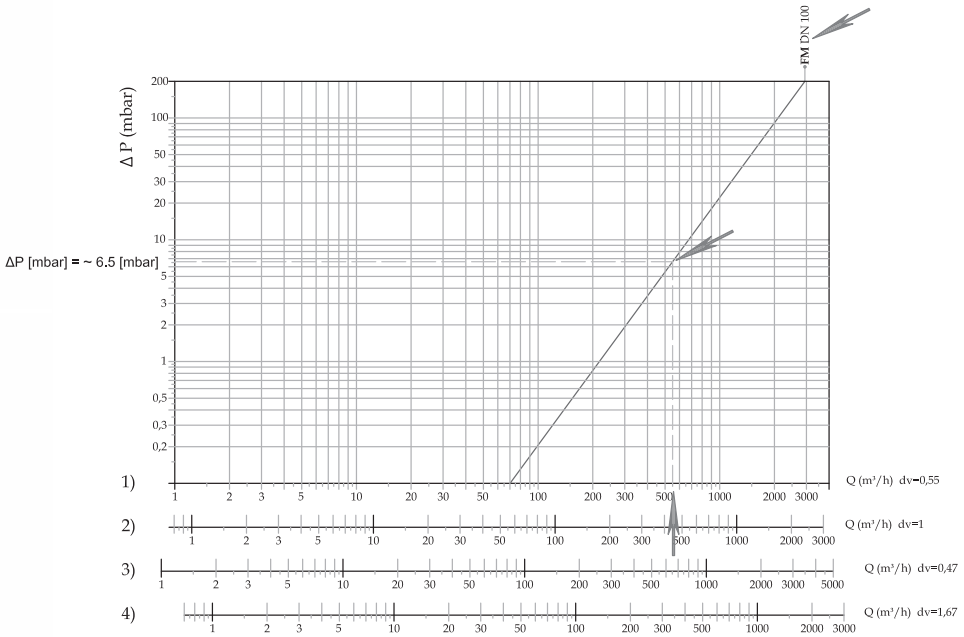
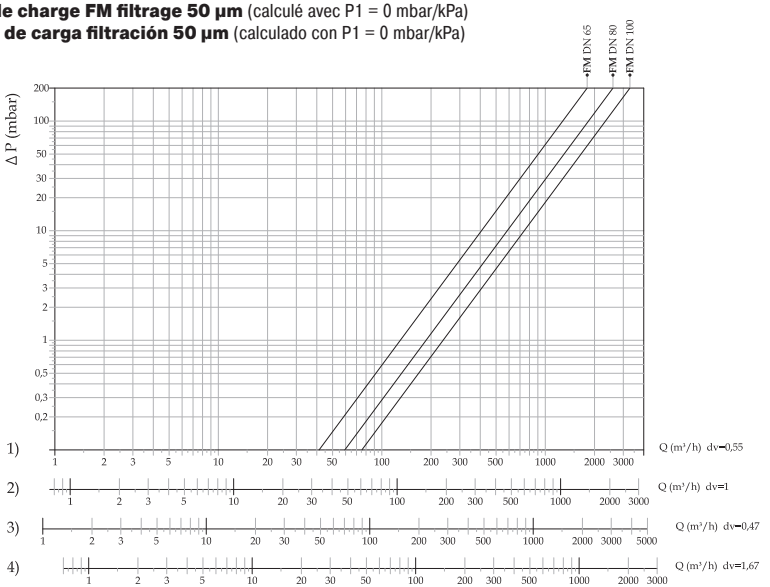


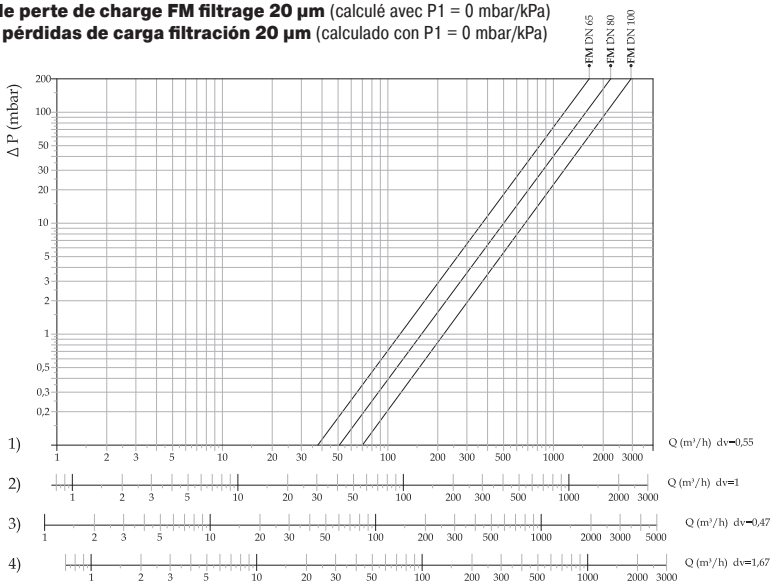
Diagramma perdite di carico FM filtraggio 50 µm (calcolato con P1 = 0 mbar/kPa)
FM pressure drop diagram filtering 50 µm (calculated with P1 = 0 mbar/kPa)
Diagramme de perte de charge FM filtrage 50 µm (calculé avec P1 = 0 mbar/kPa)
Diagrama de pérdidas de carga filtración 50 µm (calculado con P1 = 0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



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

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

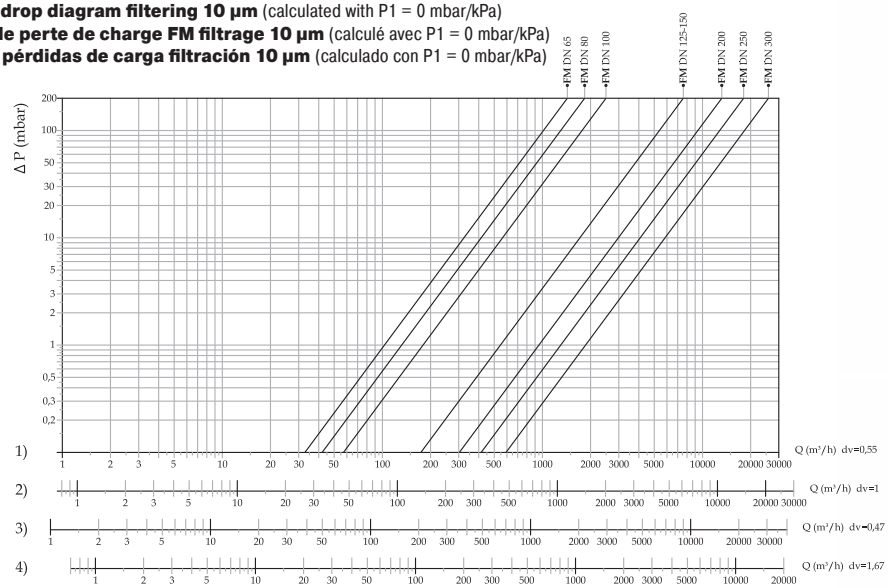
Diagramma perdite di carico FM filtraggio 20 µm (calcolato con P1 = 0 mbar/kPa)
FM pressure drop diagram filtering 20 µm (calculated with P1 = 0 mbar/kPa)
Diagramme de perte de charge FM filtrage 20 µm (calculé avec P1 = 0 mbar/kPa)
Diagrama de pérdidas de carga filtración 20 µm (calculado con P1 = 0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



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

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

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



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

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

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

IT

ATTACCHI FLANGIATI ANSI 150 / ANSI 150 FLANGED CONNECTIONS
RACCORDS À BRIDES ANSI 150 / CONEXIONES EMBRIDADAS ANSI 150

richiedere fattibilità / request feasibility / demander la faisabilité / consulte la disponibilidad

Aggiungere la lettera "**A**" dopo le cifre indicanti gli attacchi	Add the letter "**A**" after figures denoting the connection	Ajouter la lettre "**A**" après les chiffres indiquant les connexions	Añadir la letra "**A**" a continuación de las cifras que indican los diámetros de conexión	Es. / E.g. / Ex. / Ej. FF09**A** B50

EN

BIOGAS *

richiedere fattibilità / request feasibility / demander la faisabilité / consulte la disponibilidad

Versioni idonee al BIOGAS: A-F-H-I-J-Q	BIOGAS versions: BIOGAS: A-F-H-I-J-Q	Versions BIOGAS: BIOGAS: A-F-H-I-J-Q	Versiones BIOGAS: A-F-H-I-J-Q	Es. / E.g. / Ex. / Ej. FF09 A50

CATAFORESI / CATAPHORESIS / CATAPHORÈSE / CATAFORESIS

Aggiungere la lettera "**K**" dopo le cifre indicanti gli attacchi	Add the letter "**K**" after figures denoting the connection	Ajouter la lettre "**K**" après les chiffres indiquant les connexions	Añadir la letra "**K**" a continuación de las cifras que indican los diámetros de conexión	Es. / E.g. / Ex. / Ej. FF09**K** B50

FR

TAPPO PER SCARICO CONDENSA / CONDENSATION DRAIN CAP
BOUCHON POUR ÉVACUATION CONDENSATION / TAPÓN PARA LA DESCARGA DE CONDENSACIÓN

Aggiungere la lettera "**T**" dopo il modello	Add the letter "**T**" after model	Ajouter la lettre "**T**" après le modèle	Añadir la letra "**T**" a continuación del modelo	Es. / E.g. / Ex. / Ej. FF**T**09 B50

RUBINETTO PER SCARICO CONDENSA / CONDENSATION DRAIN VALVE
ROBINET POUR ÉVACUATION CONDENSATION / GRIFO PARA LA DESCARGA DE CONDENSACIÓN

Aggiungere la lettera "**R**" dopo il modello	Add the letter "**R**" after model	Ajouter la lettre "**R**" après le modèle	Añadir la letra "**R**" a continuación del modelo	Es. / E.g. / Ex. / Ej. FF**R**09 B50

ES

MANOMETRO DIFFERENZIALE INDICATORE DI INTASAMENTO / DIFFERENTIAL PRESSURE GAUGE CLOGGING INDICATOR
MANOMETRE DIFFERENTIEL INDICATEUR D'OBSTRUCTION / MANÓMETRO DIFERENCIAL INDICADOR DE OBSTRUCCIÓN

Aggiungere le lettere "**MD**" o "**MDR**" o "**MDS**" o "**MDSR**" dopo il modello (vedere pag. 40).	Add the letters "**MD**" or "**MDR**" or "**MDS**" or "**MDSR**" after model (see pag. 40).	Ajouter les lettres "**MD**" ou "**MDR**" ou "**MDS**" ou "**MDSR**" après le modèle (voir pag. 40).	Añadir las letras "**MD**" o "**MDR**" o "**MDS**" o "**MDSR**" a continuación del modelo (véase pag. 40).	Es. / E.g. / Ex. / Ej. FF**MD**09 D50

* Versioni senza manometro differenziale indicatore di intasamento / Versions without differential pressure gauge clogging indicator
Versions sans manometre differentiel indicateur d'obstruction / Versiones sin manómetro diferencial indicador de obstrucción

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. FF**PM**09 D50

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. FF09**AK** B50

NOTA: É consigliato chiedere SEMPRE la fattibilità. / **NOTE**: We suggest to ask ALWAYS for the feasibility.
NOTE: Il est recommandé de TOUJOURS demander la faisabilité. / **NOTA**: 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

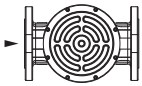
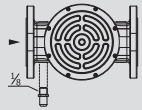
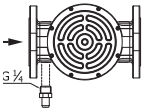
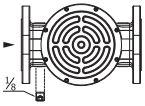
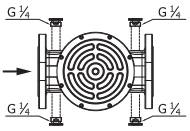
IT

EN

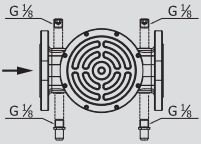
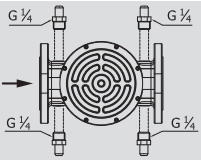
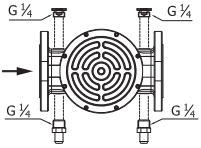
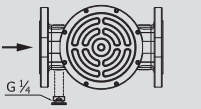
FR

ES

Configurazioni disponibili prese/attacchi / Available outlet/connection configurations
Configurations disponibles prises/raccords / Configuraciones disponibles tomas/conexiones

Tipo Type Type Tipo	Modelli Models Modèles Modelos	Attacchi / Connections / Raccords / Conexiones		
		FM DN 65 - DN 80	**FM** DN 100 - DN 125 - DN 150	**FM** DN 200 - DN 250 - DN 300
A		✓	✓	✗
B		✓	✗	✗
C		✓	✓	✗
D		✓	✗	✗
F		✓	✗	✗
H		✓	✗	✗
I		✓	✓	✗

Configurazioni disponibili prese/attacchi / Available outlet/connection configurations
Configurations disponibles prises/raccords / Configuraciones disponibles tomas/conexiones

Tipo Type Type Tipo	Modelli Models Modèles Modelos	Attacchi / Connections / Raccords / Conexiones		
		FM DN 65 - DN 80	**FM** DN 100 - DN 125 - DN 150	**FM** DN 200 - DN 250 - DN 300
J		✓	✓	✓
L		✓	✗	✗
M		✓	✓	✓
N		✓	✓	✗
O		✓	✓	✗
Q		✓	✓	✗

IT EN FR ES

IT

EN

FR

ES

P. max 2 bar (200 kPa)			
Attacchi flangiati / Flanged connections / Raccords à brides / Conexiones embridadas			
Attacchi Connections Raccords Conexiones	Filtraggio 50 micron 50 micron Filtering Filtrage 50 micron Filtración 50 micron	Filtraggio 20 micron 20 micron Filtering Filtrage 20 micron Filtración 20 micron	Filtraggio 10 micron 10 micron Filtering Filtrage 10 micron Filtración 10 micron
	Codice / Code / Code / Código	Codice / Code / Code / Código	Codice / Code / Code / Código
DN 65	FF08 B50	FF08 B20	FF08 B10
DN 80	FF09 B50	FF09 B20	FF09 B10
DN 100	FF10 C50	FF10 C20	FF10 C10
DN 125	-	-	FF11 C10
DN 150	-	-	FF12 C10
DN 200	-	-	FF13 M10
DN 250	-	-	FF14 M10
DN 300	-	-	FF15 M10

NOTA: Codici riferiti alla configurazione standard MADAS. Sostituire la lettera sottolineata “B”, “C” o “M” dei codici indicati in tabella con la lettera corrispondente alla versione voluta (vedere pag. 35, 36 e 37).

NOTE: Codes referred to the standard MADAS configuration. Replace the underlined letter “B”, “C” or “M” of the codes indicated in the table with the letter for the required version (see pages 35, 36 and 37).

REMARQUE : Codes se référant à la configuration standard MADAS. Remplacer la lettre soulignée « B », « C » ou « M » des codes indiqué dans le tableau avec la lettre correspondante à la version souhaitée (voir les pages 35, 36 et 37).

NOTA: Códigos referidos a la configuración estándar MADAS. Sustituya la letra subrayada “B”, “C” o “M” de los códigos indicados en la tabla con la letra correspondiente a la versión deseada (véase las pág. 35, 36 y 37).

P. max 6 bar (600 kPa)			
Attacchi flangiati / Flanged connections / Raccords à brides / Conexiones embridadas			
Attacchi Connections Raccords Conexiones	Filtraggio 50 micron 50 micron Filtering Filtrage 50 micron Filtración 50 micron	Filtraggio 20 micron 20 micron Filtering Filtrage 20 micron Filtración 20 micron	Filtraggio 10 micron 10 micron Filtering Filtrage 10 micron Filtración 10 micron
	Codice / Code / Code / Código	Codice / Code / Code / Código	Codice / Code / Code / Código
DN 65	FF080000 B50	FF080000 B20	FF080000 B10
DN 80	FF090000 B50	FF090000 B20	FF090000 B10
DN 100	FF100000 C50	FF100000 C20	FF100000 C10
DN 125	-	-	FF110000 C10
DN 150	-	-	FF120000 C10
DN 200	-	-	FF130000 M10
DN 250	-	-	FF140000 M10
DN 300	-	-	FF150000 M10

NOTA: Codici riferiti alla configurazione standard MADAS. Sostituire la lettera sottolineata “B”, “C” o “M” dei codici indicati in tabella con la lettera corrispondente alla versione voluta (vedere pag. 35, 36 e 37).

NOTE: Codes referred to the standard MADAS configuration. Replace the underlined letter “B”, “C” or “M” of the codes indicated in the table with the letter for the required version (see pages 35, 36 and 37).

REMARQUE : Codes se référant à la configuration standard MADAS. Remplacer la lettre soulignée « B », « C » ou « M » des codes indiqué dans le tableau avec la lettre correspondante à la version souhaitée (voir les pages 35, 36 et 37).

NOTA: Códigos referidos a la configuración estándar MADAS. Sustituya la letra subrayada “B”, “C” o “M” de los códigos indicados en la tabla con la letra correspondiente a la versión deseada (véase las pág. 35, 36 y 37).

FM (DN 65 ÷ DN 300)
CON INDICATORE DI INTASAMENTO - WITH CLOGGING INDICATOR
AVECL INDICATEUR D'OBSTRUCTION - CON INDICADOR DE OBSTRUCCIÓN
(ΔP max 150 mbar / 15 kPa)

IT

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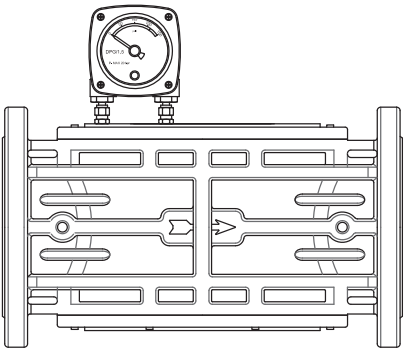
ES

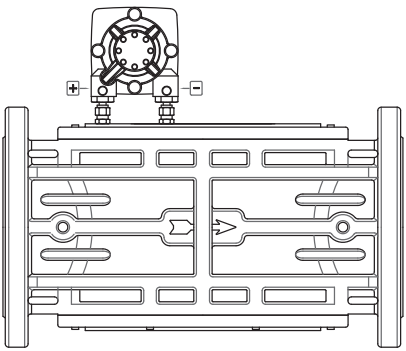
standard

- FFMD...
- FFMDS...



reverse

- FFMDR...
- FFMDSR...



IT

MD = Manometro con quadrante lato destro corpo filtro
MDR = Manometro con quadrante lato sinistro corpo filtro
MDS = Manometro con quadrante lato destro corpo filtro + microswitch
MDSR = Manometro con quadrante lato sinistro corpo filtro + microswitch

EN

MD = Pressure gauge with face on filter body right side
MDR= Pressure gauge with face on filter body left side
MDS = Pressure gauge with face on filter body right side + microswitch
MDSR = Pressure gauge with face on filter body left side + microswitch

FR

MD = Manomètre avec cadran côté droit corps filtre
MDR = Manomètre avec cadran côté gauche corps filtre
MDS = Manomètre avec cadran côté droit corps filtre + micro-interrupteur
MDS = Manomètre avec cadran côté gauche corps filtre + micro-interrupteur

ES

MD = Manómetro con cuadrante lado derecho del cuerpo del filtro
MDR = Manómetro con cuadrante lado izquierdo del cuerpo del filtro
MDS = Manómetro con cuadrante lado derecho del cuerpo del filtro + microinterruptor
MDSR = Manómetro con cuadrante lado izquierdo del cuerpo del filtro + microinterruptor

P. max 2 bar (200 kPa)

Attacchi flangiati / Flanged connections / Raccords à brides / Conexiones embridadas

Attacchi Connections Raccords Conexiones	Filtraggio 50 micron 50 micron Filtering Filtrage 50 micron Filtración 50 micron	Filtraggio 20 micron 20 micron Filtering Filtrage 20 micron Filtración 20 micron	Filtraggio 10 micron 10 micron Filtering Filtrage 10 micron Filtración 10 micron
	Codice / Code / Code / Código	Codice / Code / Code / Código	Codice / Code / Code / Código
FM DN 65	FFMD08 D50	FFMD08 D20	FFMD08 D10
FM DN 80	FFMD09 D50	FFMD09 D20	FFMD09 D10
FM DN 100	FFMD10 M50	FFMD10 M20	FFMD10 M10
FM DN 125	-	-	FFMD11 M10
FM DN 150	-	-	FFMD12 M10
FM DN 200	-	-	FFMD13 M10
FM DN 250	-	-	FFMD14 M10
FM DN 300	-	-	FFMD15 M10

P. max 6 bar (600 kPa)

Attacchi flangiati / Flanged connections / Raccords à brides / Conexiones embridadas

FM DN 65	FFMD080000 D50	FFMD080000 D20	FFMD080000 D10
FM DN 80	FFMD090000 D50	FFMD090000 D20	FFMD090000 D10
FM DN 100	FFMD100000 M50	FFMD100000 M20	FFMD100000 M10
FM DN 125	-	-	FFMD110000 M10
FM DN 150	-	-	FFMD120000 M10
FM DN 200	-	-	FFMD130000 M10
FM DN 250	-	-	FFMD140000 M10
FM DN 300	-	-	FFMD150000 M10

NOTA: Codici riferiti alla configurazione standard MADAS. Sostituire la lettera sottolineata “D” o “M” dei codici indicati in tabella con la lettera corrispondente alla versione voluta (vedere pag. 35, 36 e 37).

NOTE: Codes referred to the standard MADAS configuration. Replace the underlined letter “D” or “M” of the codes indicated in the table with the letter for the required version (see pages 35, 36 and 37).

REMARQUE : Codes se référant à la configuration standard MADAS. Remplacer la lettre soulignée « D » ou « M » des codes indiqué dans le tableau avec la lettre correspondante à la version souhaitée (voir les pages 35, 36 et 37).

NOTA: Códigos referidos a la configuración estándar MADAS. Sustituya la letra subrayada “D” o “M” de los códigos indicados en la tabla con la letra correspondiente a la versión deseada (véase las pág. 35, 36 y 37).

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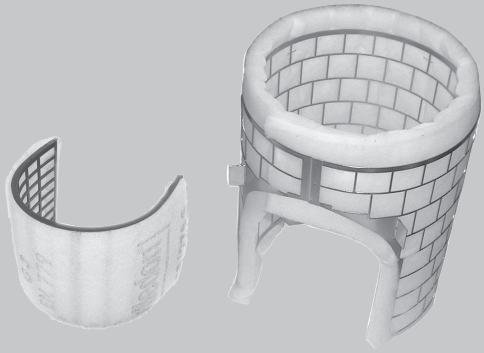
Cartucce filtranti - Filter cartridges - Cartouches filtrantes - Cartuchos filtrantes



Attacchi Connections Raccords Conexiones	**50 µm** Codice / Code / Code / Código	**20 µm** Codice / Code / Code / Código	**10 µm** Codice / Code / Code / Código
FM DN 65 - DN 80	OF+OR/FF09/50	OF+OR/FF09/20	OF+OR/FF09/10
FM **(2 bar / 200 kPa)** DN 100	OF+OR/FF10/50	OF+OR/FF10/20	OF+OR/FF10/10
FM **(6 bar / 600 kPa)** DN 100	OF+OR/FF10-6/50	OF+OR/FF10-6/20	OF+OR/FF10-6/10
FM DN 125 - DN 150	-	-	OF+OR/FF12/10
FM DN 200	-	-	OF+OR/FF13/10
FM DN 250	-	-	OF+OR/FF14/10
FM DN 300	-	-	OF+OR/FF15/10

Manometro differenziale indicatore di intasamento
Differential pressure gauge clogging indicator
Manometre differentiel indicateur d'obstruction
Manómetro diferencial indicador de obstrucción

(ΔP max 150 mbar#)

Codice / Code / Code / Código	Tipo manometro Pressure gauge type Type manomètre Tipo de manómetro
KIT-MD DPG 1.5	Standard
KIT-MDR DPG 1.5	Reverse
KIT-MDS DPG 1.5	Standard + microswitch
KIT-MDSR DPG 1.5	Reverse + microswitch

altri range su richiesta; si prega di contattare il nostro ufficio commerciale
different ranges on request; please contact our sales department
autres plages sur demande ; veuillez contacter notre service commercial
otros rangos bajo pedido; por favor, póngase en contacto con nuestro departamento comercial

IT EN FR ES

IT

Fotografie e disegni contenuti nel presente documento, incluse posizioni di componenti, sono da considerarsi puramente indicativi, non vincolanti e sono inseriti a solo scopo dimostrativo. Ci riserviamo qualsiasi modifica tecnica e costruttiva.

EN

Pictures and drawings in this document, including positions of components, are to be considered purely indicative, they are not binding and are included for demonstration purposes only. We reserve the right to any technical and construction changes.

FR

Les photographies et les dessins figurant dans ce document, y compris les positions des composants, doivent être considérés comme purement indicatifs, ils ne sont pas contraignants et sont inclus uniquement à des fins de démonstration. Nous nous réservons le droit d'effectuer toute modification technique et de fabrication.

ES

Las fotografías y los dibujos de este documento, incluidas las posiciones de los componentes, deben considerarse meramente indicativos, no son vinculantes y se incluyen únicamente con fines de demostración. Nos reservamos el derecho de realizar cualquier cambio técnico y estructural.

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