

100

# Gas Pressure Regulation



# Cellular Gas Filter DF 100

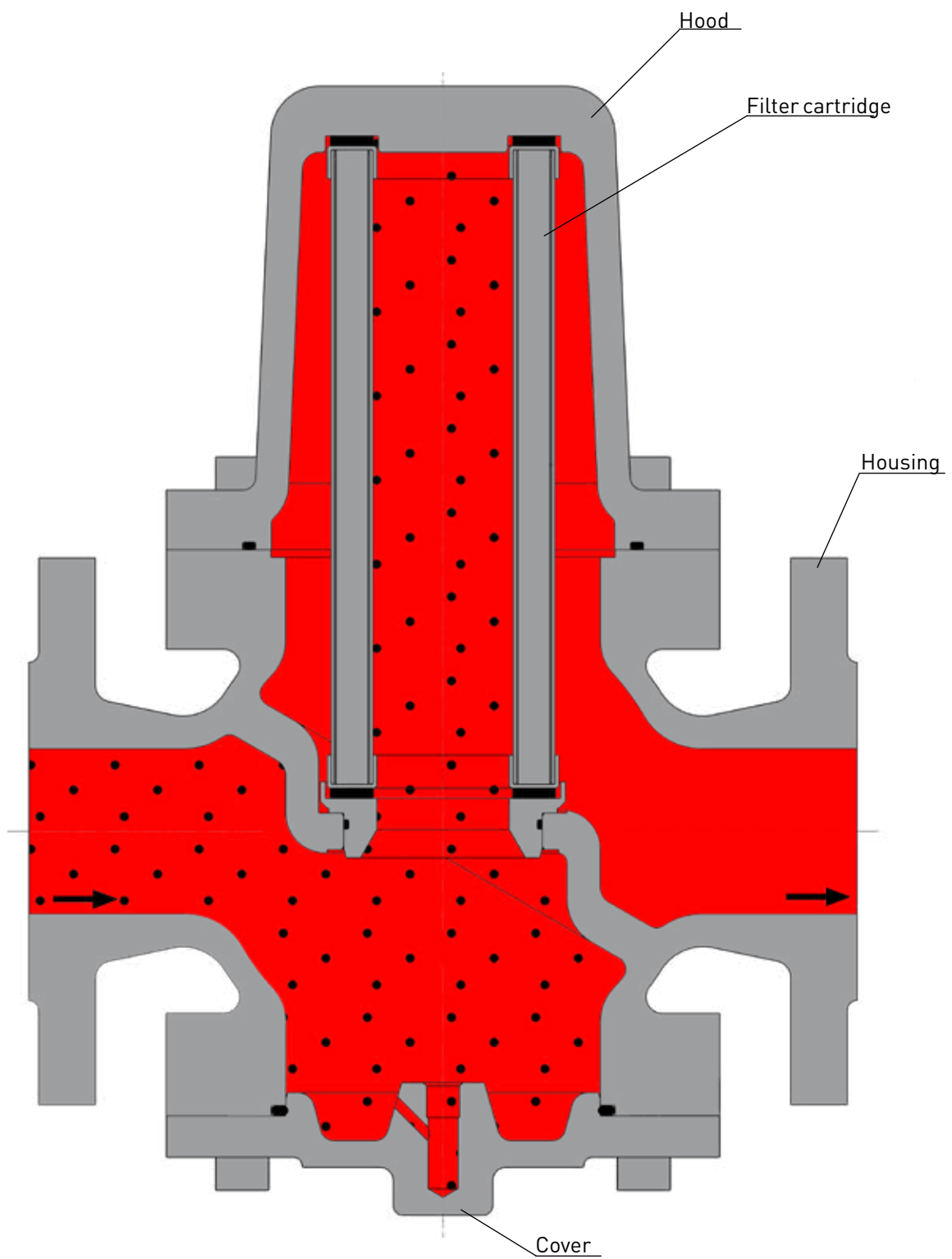


## Operating and Maintenance Instructions

EN



## Design of the cellular gas filter DF 100



# Table of Contents

<b>1 General Information</b>	<b>6</b>
1.1 Warranty and Liability	6
1.2 Symbols, Notes	7
1.3 Terms, Abbreviations	7
<b>2 Application, Characteristics</b>	<b>8</b>
2.1 Application	8
2.2 Characteristics	8
2.3 Types of Models (Options)	8
<b>3 Avoidance of Foreseeable Misuse</b>	<b>8</b>
<b>4 Safety Instructions</b>	<b>9</b>
4.1 Hazards of Handling the Device	9
4.2 Personnel Requirements	9
4.3 Country-Specific Requirements	9
4.4 Handover of the Operating and Maintenance Instructions	9
4.5 Safety in Operation	10
4.6 What To Do in Case of Danger	10
<b>5 Responsibility of the Operator</b>	<b>10</b>
<b>6 Transport, Storage and Packaging</b>	<b>11</b>
6.1 Transport	11
6.2 Storage	11
6.3 Packaging	11
<b>7 Mounting and Commissioning</b>	<b>12</b>
7.1 Safety Instructions and Preparation	12
7.2 Mounting	12
7.3 Leakage Test (Test for External Leakage)	13
7.4 Initial Commissioning / Recommissioning	13
7.5 Decommissioning	13
<b>8 Maintenance</b>	<b>14</b>
8.1 Maintenance Plan	14
8.2 Maintenance Procedure	14
8.3 Table of Screw Tightening Torques $M_A$	15
8.4 Lubricants Table	16
<b>9 Troubleshooting</b>	<b>16</b>
<b>10 Replacement and Disposal</b>	<b>16</b>
<b>11 Spare Parts</b>	<b>17</b>
11.1 Spare Parts Drawing DF 100	17
11.2 Parts for Maintenance Work	17
O-rings	17
O-rings for low temperatures (-40°C)	17
Filter cartridge	17
<b>Notes</b>	<b>18</b>

<b>12 Accessories / Options</b>	<b>19</b>
12.1 Differential pressure gauge	19
<b>Declaration of Conformity</b>	<b>26</b>
<b>Notes</b>	<b>27</b>

# 1 General Information

The personnel entrusted with installation, operation or maintenance of the cellular gas filter must have completely read and understood beforehand the following documents:

- **Product information of the cellular gas filter DF 100**

The product information contains technical data, dimensions and a description of the design and the mode of operation.

- **Operating and maintenance instructions of the cellular gas filter DF 100**

This document allows safe and efficient handling of the device and contains information on assembly, commissioning, maintenance, troubleshooting, and repair according to regulations.

It is an integral part of the scope of delivery of the device, must be kept in close proximity of the device and must be readily accessible to personnel at any time.

The basic prerequisite for safe working is compliance with all safety instructions and instructions for action given in this manual. Accordingly, the information and instructions must be observed when working on the device or on the gas line. In addition, the local occupational safety regulations and general safety regulations for the application range of the device shall apply.

The figures in these instructions are provided for basic understanding and may differ from the actual design.

The contents of these instructions are protected by copyright. They may be used as part of operating the device. Any other use and/or reproduction is not permitted without prior authorization by MEDENUS Gas-Druckregeltechnik GmbH.

## 1.1 Warranty and Liability

Claims under warranty or liability for personal injury and material damage are generally void, **if one or several of the following conditions are not observed:**

- Work on the device during the warranty period may only be performed in consultation with the manufacturer
- Designated use of the device in accordance with the established conditions of use
- Proper installation, commissioning, operation and maintenance of the device
- Operation of the device with properly installed and functioning safety devices only
- Operating and maintenance instructions of the device or of the system
- Compliance with the maintenance instructions
- Properly performed repairs
- Supply lines without defects
- The use of original MEDENUS® spare parts and lubricants listed in these instructions or
- Force majeure

**It is generally prohibited**

- To perform constructive modifications on the device
- To keep using the device despite the detection of a defect

## 1.2 Symbols, Notes

The instructions contain safety instructions marked with symbols to indicate possible consequences in case of non-observance:

This combination of symbol and signal word indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, damage to the device, the breakdown of the system, and material or environmental damage.



**ATTENTION**

This combination of symbol and signal word indicates an imminent hazardous situation which, if not avoided, will result in death or serious injury.



**DANGER**

This signal word highlights useful tips, recommendations, and information for efficient and trouble-free operation.

**Note**

## 1.3 Terms, Abbreviations

Terms and abbreviations are explained below:

DN	Nominal width
$M_T$	Screw tightening torque
MOP	Maximum operating pressure in a system

## 2 Application, Characteristics

### 2.1 Application

Type DF 100 cellular gas filters are intended to separate gas impurities such as dust, rust, and other solids in gas-carrying lines at a defined point. They are mainly used in gas systems and in front of such devices whose function is impaired by contamination.

Can be used as an equipment component on gas consumption facilities as defined in Regulation (EU) 2016/426.

These filters can be used for gases according to DVGW work sheet G 260/G 262 and for neutral non-aggressive gases. (other gases on request)

### 2.2 Characteristics

- Open-air model as standard
- Easily replaceable filter cartridge with hydrophobic filter medium
- High separation efficiency thanks to optimized flow guidance

### 2.3 Types of Models (Options)

- Oxygen model
- with differential pressure gauge

## 3 Avoidance of Foreseeable Misuse

- The DF100 cellular gas filters must not be used for filtering liquids.
- The DF100 cellular gas filters must not be used in temperature ranges below -40 °C or above 70 °C
- The DF100 cellular gas filters must not be used for pressure ranges higher than the pressure "PS" indicated on the nameplate.
  - The DF100 cellular gas filters may only be used for the gases specified under item 2.1 Application in these operating instructions.  
Other gases, such as oxygen or hydrogen, must be explicitly stated on the nameplate.  
Please consult the manufacturer before use.
- The DF100 cellular gas filters must not be used in high-temperature areas (HTB) without an upstream HTB fuse.

## 4 Safety Instructions

National accident prevention regulations and the system operator's safety regulations are not superseded by these operating and maintenance instructions and must be taken into consideration with priority (in Germany, see, among others, DVGW work sheets G 600, G 459/II, G 491 and G 495).

When performing work on the device, the current general and specific safety regulations must be observed.

The application limits of the device with respect to the medium, operating pressure and operating temperature can be found on the nameplate affixed to the device or on the acceptance test certificate.

Using the device under different operating conditions must be agreed upon in consultation with MEDENUS Gas-Druckregeltechnik GmbH.

The mechanical components of the device do not have any potential ignition sources of their own nor any hot surfaces and are thus not covered by the scope of 2014/34/EU (ATEX). The electronic accessories used comply with the ATEX requirements.

### 4.1 Hazards of Handling the Device

MEDENUS® devices conform with current standards and directives, the recognized technical rules, and the recognized safety rules.

However, improper use can result in hazards to the user or to third parties. This can also result in damage to the device or to the system.

This is why the device may only be used:

- in accordance with its designated use
- in perfect condition
- while observing the notes given in these operating and maintenance instructions, and inspection and maintenance regulations, which apply to the functioning and safety of the overall system.

Malfunctions or faults must be eliminated immediately.

### 4.2 Personnel Requirements

The device may only be mounted by qualified personnel.

Only authorized personnel with the required qualification is allowed to perform settings or repairs on the device.

### 4.3 Country-Specific Requirements

The rules and regulations applicable at the place of use must be observed and complied with. They apply to:

- gas lines, installation of the gas system
- gas supply
- work on the gas system
- accident prevention

### 4.4 Handover of the Operating and Maintenance Instructions

The supplier of the system shall hand over these operating and maintenance instructions to the operator of the system no later than during commissioning and training of the operating personnel with the reminder to carefully store these instructions.

## 4.5 Safety in Operation

The device may only be used when all protective devices on the device or in the system are fully functional.

At least once a year, the device must be inspected for externally visible damage and for proper functioning by a representative of the manufacturer or by a qualified person.

A more frequent inspection may become necessary, depending on the system conditions.

## 4.6 What To Do in Case of Danger

Information on what is to be done in case of danger and in case of accidents can be found in the respective operator's or specialist companies' work instructions.

## 5 Responsibility of the Operator

**Operator** An operator is a person who operates the device himself/herself for commercial or economic purposes or leaves it to a third party for use/application and is legally responsible for the safety of the user, the personnel or third parties during operation.

**Operator duties** The device is used in the commercial sector. The operator of the device is therefore subject to the legal obligations for occupational safety. In addition to the safety instructions contained in these instructions, the established maintenance intervals must be observed, taking into account the respective national standard (alarm and hazard prevention plan).

In particular, the following applies:

- The operator is obliged to perform work on MEDENUS® devices during the warranty period only after consultation with the manufacturer. Otherwise the claims under warranty will become void.
- The operator must obtain information on the current occupational safety regulations and determine additional hazards resulting from the special work conditions at the place of use of the device in a risk assessment. The owner must implement the results in the form of operating instructions for the device.
- During the entire time of use of the device, the operator must check whether the operating instructions issued by him/her conform to the current state of the regulations and, if necessary, adapt them.
- The operator must clearly regulate and define the responsibilities for installation, operation, troubleshooting, maintenance and cleaning.
- The operator must ensure that all persons handling the device have read and understood these instructions. In addition, the owner must train the personnel at regular intervals and inform them about the hazards.
- The operator must make available to the personnel the required protective equipment and oblige them to wear the required protective equipment.
- Moreover, the operator is responsible for the device always being in technically perfect condition.

Therefore, the following applies:

- The operator must make sure that the maintenance intervals described in these instructions are observed.
- The operator must have all safety devices checked regularly for functionality and completeness.

## 6 Transport, Storage and Packaging

### 6.1 Transport

#### Note

The device is delivered with flange protection caps. They must be removed prior to installation. Make sure that the device is transported horizontally using suitable lifting gear. The device must be handled carefully and secured against impacts and knocks. In case of transport damage, we will require the following information from the nameplate affixed to the device:

- Device type
- Device model
- Year of construction/fabrication number

### 6.2 Storage

**Equipment and spare parts must be stored under the following conditions:**

- Do not store outdoors.
- Store in a dry and dust-free location.
- Store on a flat surface.
- Do not expose to aggressive media.
- Do not expose to ozone or ionizing radiation.
- Do not store adjacent to direct heat sources.
- Avoid mechanical vibrations.
- Storage temperature: 0 to 25 °C.
- Relative air humidity: < 55 %.

**Spare parts:**

- Components susceptible to corrosion must be provided with a suitable preservative.
- Do not store O-rings and seals for more than 5 years even if stored properly.
- Spare parts must be stored in their original packaging until use.

**Storage period for devices:**

- Storage of the device for up to one year:  
Store the cellular gas filter in its original packaging and its original condition as delivered. All protective caps of the device must remain mounted.
- Storage of the device for more than 1 year (e.g. as a spare device):  
Store the device in its original packaging and its original condition as delivered and check it for damage once a year. Check the housing surface for dirt, damage and corrosion. If necessary, clean all external parts. After 5 years, all O-rings and seals must be replaced.

### 6.3 Packaging

- The individual packaged items have been packaged in view of the transport conditions to be expected.
- The symbols on the packaging must be observed during transport and storage.
- Only environmentally friendly materials have been used for packaging.
- The packaging is designed for protecting the individual components from transport damage, corrosion and other damage until mounting. This is why the packaging must not be destroyed and only removed just prior to mounting.

## 7 Mounting and Commissioning

### 7.1 Safety Instructions and Preparation

Prior to starting work on pressurized components:

- Close all connections to the gas line.
- Depressurize all pressurized components. Also discharge residual energies.
- Defective components charged with pressure in operation must be replaced immediately by an appropriate expert.

**DANGER**



Prior to starting work, ensure sufficient clearance for mounting.

Before installing the device, check whether the performance data (nameplate) and the scope of delivery coincide with the order or the system data, i.e., make sure that the provided devices are suitable for their intended purpose. In particular, the inlet pressure of the system must be lower than the maximum allowable pressure of the device.

**Note**

Direct contact of gas valves and fittings, i.e., the control system, with hardening masonry, concrete walls or floors is not permitted. Provide suitable supports, working materials and protective equipment.

Take into account the minimum clearances for maintenance as stated in the product information.

Before installing the device in the pipeline, check whether a shut-off device that interrupts the gas flow supply to the device has been mounted upstream and downstream of the device to be installed.

**Note**

Prior to commissioning, make sure that all installation work has been carried out and completed in accordance with the data and information given in these instructions and that no unauthorized persons stay in the danger zone.

**DANGER**



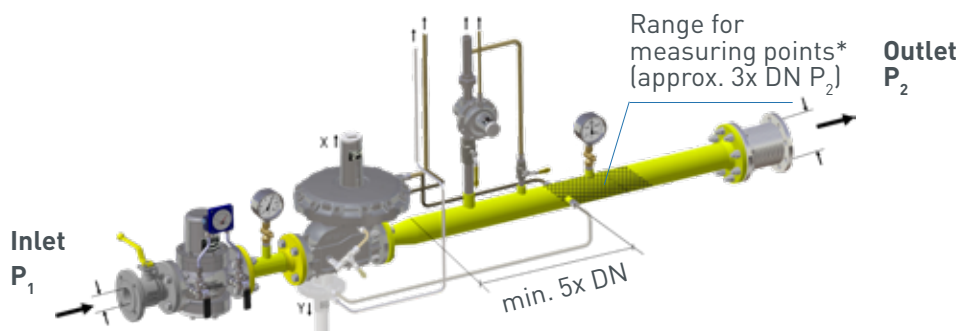
### 7.2 Mounting

- Remove the packaging, flange protection caps and shipping braces.
- Check the device for wear and damage.
- Make sure that the device is installed free of stress (see DVGW info gas no. 19).  
Make sure to observe the direction of flow i.e., the arrow on the housing must point in the direction of flow.

**Note**  
**Note**

#### Tightening torques $M_A^{*1)}$

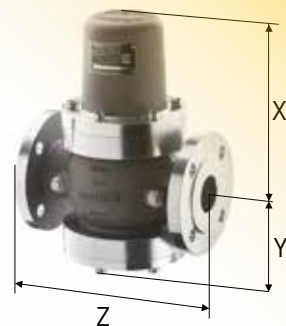
Gas pressure regulators		Flange tightening torques	
Screw size	Screw tightening torque $M_A$	Screw size	Screw tightening torque $M_A$
M6	8 Nm	M12	60 Nm
M8	18 Nm	M16	120 Nm
M10	36 Nm	M20	190 Nm
M12	62 Nm		



\*1) For the assembly of the flange connections, the maximum torques specified by the flange and gasket manufacturers must be observed. The values indicated here should be considered as approximate values.

## Connection

Abmessung / dimension (mm)		Nennweite /nominal size (DN)						Anschluss Differenzdruck / Connection differential pressure
DF100		25	50	80	100	150	200	RP 1/4"
	X	102	225	317	404	817	954	
	Y	80	116	138	188	195	225	
	Z	160	250	280	350	380	420	



### 7.3 Leakage Test (Test for External Leakage)

The devices are subjected to a strength and leakage test ex works at MEDENUS Gas-Druckregeltechnik GmbH.

The leakage test in the fully assembled system must be performed prior to commissioning and following maintenance work.

For the external leakage test in the fully assembled system, the following applies

#### For Germany:

According to the DVGW work sheet G 491, the fully assembled system must be subjected to a leakage test with air or an inert gas at the installation site, using 1.1 times the maximum operating pressure of the system (MOP).

An exception is the room between the actuator of the gas pressure regulator installed in the system and the first shut-off valve on the outlet side. This room must be checked using a test pressure corresponding to the maximum possible setpoint of the gas pressure regulator. In this test, all detachable connections must be checked using a foaming agent.

#### For other countries:

The relevant national and international standards shall apply.

#### Procedure

- Close the ball valve upstream of the valves and fittings.
- Close the downstream shut-off devices (ball valves, solenoid or pneumatic valve).
- Depressurize the system.
- Connect the testing device to measuring points upstream and downstream of the filter.
- Always increase the test pressure slowly and steadily.

#### While doing so, you must ensure:

Pressure in outlet chamber  $\leq$  pressure in inlet chamber

Pressure build-up always from the inlet side (inlet chamber)

Pressure reduction always from the outlet side (outlet chamber)

**Note**

### 7.4 Initial Commissioning / Recommissioning

For commissioning, please refer to the relevant manufacturer's documentation of the gas pressure regulator installed in the system and the work instructions of the system operator.

### 7.5 Decommissioning

For decommissioning, please refer to the relevant manufacturer's documentation of the gas pressure regulator installed in the system and the work instructions of the system operator.

## 8 Maintenance

### 8.1 Maintenance Plan

The following sections describe the maintenance work required for optimal and trouble-free operation of the device. If increased wear is detected during regular inspections, the required maintenance intervals must be shortened in accordance with the actual wear.

For any questions on maintenance work and intervals, please contact the manufacturer.

The intervals for monitoring and maintenance work are strongly dependent on the operating situation and the condition of the gas. This is why no fixed intervals can be given. For Germany, it is recommended that the maintenance periods as specified in the DVGW work sheet G 495 are observed initially.

For each system, this must be followed by determining the maintenance interval independently on a medium-term basis.

During maintenance work, the components must be cleaned and subjected to a thorough visual inspection. This is also necessary if irregularities in the operating behavior have been detected during operation or during functional tests.

The check must cover in particular the filter insert and the seals.

Damaged parts and O-rings dismantled during dismantling must be replaced with new ones.

The item numbers mentioned in chapter 6.2 (Maintenance Procedure) correspond to those listed in the spare parts drawings and spare parts lists.

It is recommended to stock the parts listed in chapter 9.5 on page 18 for maintenance work.

Interval	Maintenance work	Personnel
When necessary	Replacing the filter cartridge	Qualified person
	Replacing the O-ring between the cover and the housing	
	Replacing the O-ring for sealing the filter cartridge	
	Replacing the O-ring for sealing the valve seat	
	Replacing the O-ring between the hood / spacer and the housing	
	Replacing the O-ring between the hood and the spacer	
	Replacing the sealing ring of the connection of the differential pressure device	

### 8.2 Maintenance Procedure

If components have been removed, make sure they are mounted correctly, reinstall all fastening elements and observe the screw tightening torques.

Prior to recommissioning, observe the following:

- Make sure that all maintenance work has been carried out and completed in accordance with the data and information given in these instructions.
- Make sure that no unauthorized persons stay in the danger zone.
- Make sure that all covers and safety devices have been installed and are working properly.

**ATTENTION**



**DANGER**



For recommissioning, please refer to the relevant manufacturer's documentation of the gas pressure regulator installed in the system, the work instructions of the system operator, and the other safety regulations of the system in which the filter has been installed.

## 8.2 Maintenance Procedure

### Note

As a functional test, a pressure loss measurement for the flow resistance can be carried out. Limit value for a contaminated filter cartridge:  $\Delta p_{\max} = 0.8$  to 1 bar

- Close fittings upstream and downstream of the filter. Depressurize the filter.
- Dismount the hood. To do so, unscrew the Allen screws on the hood. Exception for DN 25: Unscrew the hood.
- Remove the O-ring (item 8) inside the housing or hood. Clean the O-ring groove and insert a new greased O-ring into the groove.
- Pull out the filter cartridge towards the top and check whether it is dirty. If necessary, the filter cartridge must be replaced. The filter cartridges must be replaced after 2 years.
- For DN 150 / DN 200: Dismount the spacer. To do so, unscrew the Allen screws (item 55) at the spacer. Remove the O-ring (item 8) from the housing or from the spacer.

### Note

To lower the dismounting dimension for the nominal widths of DN 150 and DN 200, the filter cartridge and the spacer should be removed together.

- Clean the O-ring grooves and insert new, greased O-rings into the grooves.
- Dismount the cover. To do so, unscrew the Allen screws (item 52) from the cover. It may be necessary to clean the cover.
- Remove the O-ring (item 4) from the housing. Clean the O-ring groove and insert a new greased O-ring into the groove.
- Remount the cover. To do so, screw down the Allen screws (item 52) at the cover crosswise, using a torque wrench. (see Table 6.3)
- Place the cleaned or new filter cartridge in the valve seat. The filter cartridges DN 25 and DN 100 comprise a centering ring at one end guaranteeing the correct fit of the cartridge in the valve seat. During installation, the centering ring is located at the bottom inside the filter.
- For DN 150 / DN 200: Mount the spacer. To do so, screw down the Allen screws (item 55) at the spacer crosswise, using a torque wrench. (see Table 6.3)

### Note

To lower the mounting dimension for the nominal widths of DN 150 and DN 200, the filter cartridge and the spacer should be inserted together.

- Place the hood and tighten the Allen screws (item 50) crosswise, using a torque wrench. Exception for DN 25: Screw in the hood (item 50) and tighten it, using a torque wrench. (see table 6.3) When screwing in, exert a slight pressure on the hood. The filter cartridge is oversized and, due to the leak tightness to be achieved, it must be slightly compressed.
- The maintenance parts in the differential pressure measuring instrument are only replaced when necessary.
- Open the valves and fittings upstream and downstream of the filter and check for leak tightness (using a foaming agent).

### Note

To guarantee smooth operation, we recommend always keeping a maintenance set in reserve.

## 8.3 Table of Screw Tightening Torques $M_A$

Item no.	DF100 / 025	DF100 / 050	DF100 / 080 DF100 / 100	DF100 / 150	DF100 / 200
50				M12 / 62 Nm	M10 / 36 Nm
52	M8 / 18 Nm	M10 / 36 Nm	M10 / 36 Nm	M12 / 62 Nm	M12 / 62 Nm
55		M10 / 36 Nm	M8 / 18 Nm	M12 / 62 Nm	M10 / 36 Nm

The screw positions are shown on page 17.

## 8.4 Lubricants Table

Components (apply a thin layer)	Lubricants	Article no.
All O-rings	Syntheso Proba 270	Syntheso Proba 270
All fastening and locking screws	Anti Seize AS 450	AS-450

## Oxygen model

For oxygen models, a suitable grease which is approved for the use with oxygen must be used.

**ATTENTION**



## 9 Troubleshooting

Description of the error	Possible cause	Elimination	Personnel
Differential pressure across the filter too high	Filter cartridge dirty	Replace filter cartridge	Qualified person
Dust in the system	Filter cartridge defective	Replace filter cartridge	
	O-ring damaged	Replace O-ring	
Leakage towards the outside	O-ring damaged	Replace O-ring	
Faulty differential pressure display	Pressure gauge or reed contact is defective	Replace pressure gauge* or reed contact	

## 10 Replacement and Disposal

After the device has reached the end of its useful life, it must be dismantled and disposed of in an environmentally friendly manner.

During dismantling, components that may present a risk of injury by contamination, depending on the medium, are removed. The components must be properly decontaminated depending on the processed medium. Diffusible components (filter cartridge, O-ring etc.) may have to be taken to a special disposal unit, depending on the medium used.

**ATTENTION**



If no return or disposal agreement has been signed, disassembled components should be recycled:

- Metals should be scrapped
- The remaining components should be disposed of after sorting according to material.
- 

Alternatively, scrapping by MEDENUS can be agreed with the service. The return is at your own expense, the disposal by MEDENUS is free of charge.

**For technical information, please contact our customer service:**

MEDENUS Gas-Druckregeltechnik GmbH  
Im Langen Feld 3  
D-57462 Olpe

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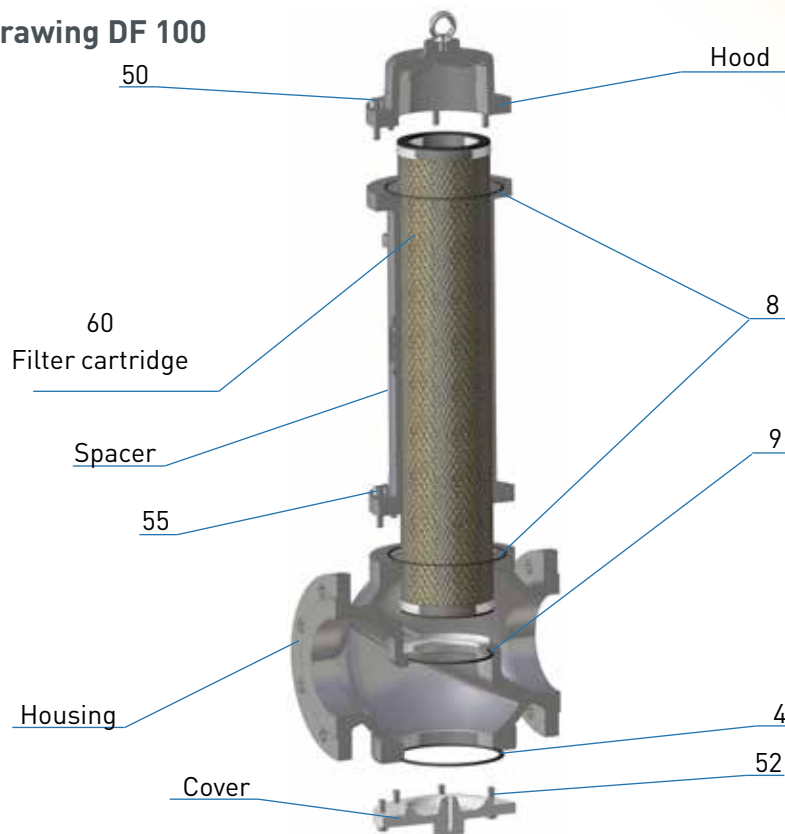
E-mail [service@medenus.de](mailto:service@medenus.de)  
Internet [www.medenus.de](http://www.medenus.de)

In addition, we are always interested in information, suggestions and experience resulting from the application and which can be valuable for improving our products.

**Note**

## 11 Spare Parts

### 11.1 Spare Parts Drawing DF 100



DF 100 DN 150  
shown

### 11.2 Parts for Maintenance Work

#### O-rings

Item no.	Name	Quantity pcs.	DF100 / 025	DF100 / 050	DF100 / 080	DF100 / 100	DF100 / 150	DF100 / 200
4	O-ring	1		O-036	O-036	O-044	O-045	O-045
		2	O-014					
8	O-ring	1	O-016	O-021	O-023	O-027		
		2					O-030	O-041
9	O-ring	1	O-051					
<b>O-ring set order number:</b>			<b>OS-041</b>	<b>OS-042</b>	<b>OS-043</b>	<b>OS-044</b>	<b>OS-045</b>	<b>OS-046</b>

#### Low temperature O-rings (-40°C)

Item no.	Name	Quantity pcs.	DF100 / 025	DF100 / 050	DF100 / 080	DF100 / 100	DF100 / 150	DF100 / 200
4	O-ring	1		O-036-T	O-036-T	O-044-T	O-045-T	O-045-T
		2	O-014-T					
8	O-ring	1	O-016-T	O-021-T	O-023-T	O-027-T		
		2					O-030-T	O-041-T
9	O-ring	1	O-051-T					
<b>O-ring set order number:</b>			<b>OS-141</b>	<b>OS-142</b>	<b>OS-143</b>	<b>OS-144</b>	<b>OS-145</b>	<b>OS-146</b>

#### Filter cartridge

Item no.	Name	Quantity pcs.	DF100 / 025	DF100 / 050	DF100 / 080	DF100 / 100	DF100 / 150	DF100 / 200
60	Filter cartridge	1	<b>FP-101</b>	<b>FP-102</b>	<b>FP-103</b>	<b>FP-104</b>	<b>FP-105</b>	<b>FP-106</b>

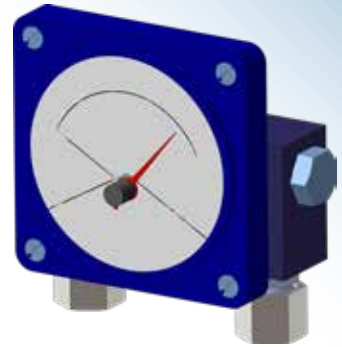
## Notes

## 12 Accessories / Options

### 12.1 Differential pressure gauge

#### 12.1.1 Use

The differential pressure gauge DP 900 has been designed to monitor differential pressures on the cellular gas filter DF100.



#### 12.1.2 Application / Function

The appropriate national safety regulations (e.g. EN 837-2 "Selection and installation recommendations for pressure gauges") must be observed when installing, commissioning and operating these devices.

In the HIGH and LOW media chambers, pressures  $p_1$  and  $p_2$  are present, separated by the magnetic piston under pressure. The difference in pressure causes an axial movement (deflection) of the piston supported by the measuring range spring. The deflection resulting from this is taken up by a magnet located on the instrument pointer and appropriately displayed.

This design combines the advantages of complete separation of the measuring system and the indication while eliminating any leakage to the exterior. Due to the constructive design, the volumetric flow from the HIGH to the LOW side of the media chamber is very low and is therefore not an issue.

#### 12.1.3 Technical Data

##### Measuring range:

0 - 2.5 bar      /      0 - 36.30 psi      Type F

##### Double scale:

All devices are provided with a double scale. (see above)

##### Max. operating pressure / overload:

Max. static pressure: 350 bar      (both sides) (without special pressure test)

Max. static pressure: 450 bar      (both sides) (with special pressure test)

Test pressure: 130 bar      (both sides) (with ATC: EN 10204/3.1 or factory certification: EN 10204/2.2 or certificate of compliance 10204/2.1)

##### Pressure connection:

According to the general technical regulations for pressure gauges (e.g. EN 837-2 "Selection and installation recommendations for pressure gauges"). The differential pressure gauges are normally equipped with threaded pipe connections e.g. ERMETO, Swagelok or equivalent. When screwing the devices in, the force required for sealing must not be applied through the case or the cable terminal box. It must be fastened with the help of a tool using the spanner flats provided for this purpose.

Ingress protection      IP 54 (EN 60 529 / IEC 60 529)

Accuracy:      +/- 3 % (of full scale value)

Weight :      without reed contact 650 g  
                 with reed contact 750 g

**Vibration load:**

(Permissible vibration load at the installation site.)

The devices should always be installed in locations free from vibration. If necessary, it is possible to isolate the device from the mounting point by installing a flexible connection line between the measuring point and the device and mounting the device on a suitable bracket. If this is not possible, the following limit values must not be exceeded:

Frequency range < 160 Hz

Acceleration < 0.6 g (6 m/s<sup>2</sup>)

**Materials:**

Wetted parts:	AlCuMgPb rd (anodized) (measuring chamber with pressure connection)
Magnetic piston:	AlCuMgPb rd (anodized) Ms 58, (according to the measuring range) hard ferrite
Gaskets:	VITON
Screw plugs:	Ms 58
Dial and pointer:	Aluminum
Indication case:	Plastic (PPH)
Inspection glass:	Acrylic glass
<b>Reed contact, mating connector</b>	
Max. contact loading capacity	3 VA, 28 V, 0.25 VA
Connection in potentially explosive atmospheres	Zone 1, Zone 2
Technical data of the Ex(i) relay:	<b>Only for connection to certified intrinsically safe circuits.</b>

**Maximum values:**

U <sub>o</sub>	13.5 V
I <sub>o</sub>	23 mA
Performance	P <sub>o</sub> 76 mW
C <sub>i</sub>	negligible
L <sub>i</sub>	negligible
Connector, mating connector, make	Binder
Sensor connectors	Series 713 (screw terminal connection 0.75mm <sup>2</sup> )
Number of poles	4
Cable outlet (mm)	4-6 (handle, black) (other cable sizes upon request)
Protection class	IP 67
Temperature	-40°C ... +85°C

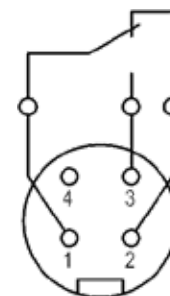


Fig. 1. Reed contact connection



Contact adjustment

## 12.1.4 Requirements for potentially explosive atmospheres / Temperatures

Permissible temperatures

Ambient: -30°C ... +80°C

### Medium:

The permissible medium temperature does not only depend on the instrument design, but also on the ignition temperature of the surrounding explosive atmosphere. Both aspects have to be taken into account.

### ATTENTION!

With gaseous substances, the temperature may increase as a result of compression warming. In these cases it may be necessary to throttle the rate of change of pressure or reduce the permissible medium temperature.

### Cleaning in potentially explosive atmospheres:

- Check whether the cleaning agent is approved for the use in potentially explosive atmospheres!
- Clean the device surface by wiping it carefully with a damp or antistatic cloth.

The devices are maintenance-free. The indicator should be checked once a year. For this, the device must be disconnected from the process and checked with a pressure testing device. Check whether the cleaning agent is approved for the use in potentially explosive atmospheres! Clean the device surface by wiping it carefully with a damp or antistatic cloth. Maintenance work on the devices can be also carried out by the manufacturer. Request a quotation.

### NOTE

Clean the devices with a moist cloth (soap water). (Dry cloths may lead to spark formation). Residual medium in the dismantled pressure gauges can result in a risk to persons, the environment and equipment. Take sufficient precautionary measures.

### Permissible medium temperature:

Temperature class of the maximum permissible ambient temperature of the ignitable medium:

Atmosphere (ignition temperature (in the measurement system)

T6 (> 85°C) + 70°C

T5 (> 100°C) + 85°C

All other temperature classes + 100°C

### Drag pointer:

Maximum drag pointer (see pictures) The drag pointer serves to monitor and control the minimum or maximum occurring differential pressure.

## 12.1.5 Installation

The installation of the differential pressure gauge is made following the installation recommendations for pressure gauges in accordance with EN 837-2 /7.

- The maximum permissible medium/ambient temperature must not be exceeded (-30°C ... +80°C).

Prior to the installation of the device, clean the measuring lines thoroughly.

- Make sure that the measuring instruments are not subjected to vibrations both during mounting and operation.
- Protect the measuring instruments from contamination and high temperature changes.

To avoid foreign matter in the measuring system and the resulting damage to the system, the differential pressure gauge must be mounted above the connector. For media with suspended solids, a microfilter must be provided e.g. AFF 906.

(installation upstream of the HIGH connection side)

If the line to the pressure gauge is not rigid enough for a vibration-free installation, the gauge should be mounted to the wall by means of appropriate fastening elements.

### 12.1.6 Installation on the cellular gas filter DF100

Example: Cellular gas filter DF100 DN050 with differential pressure gauge without reed contact

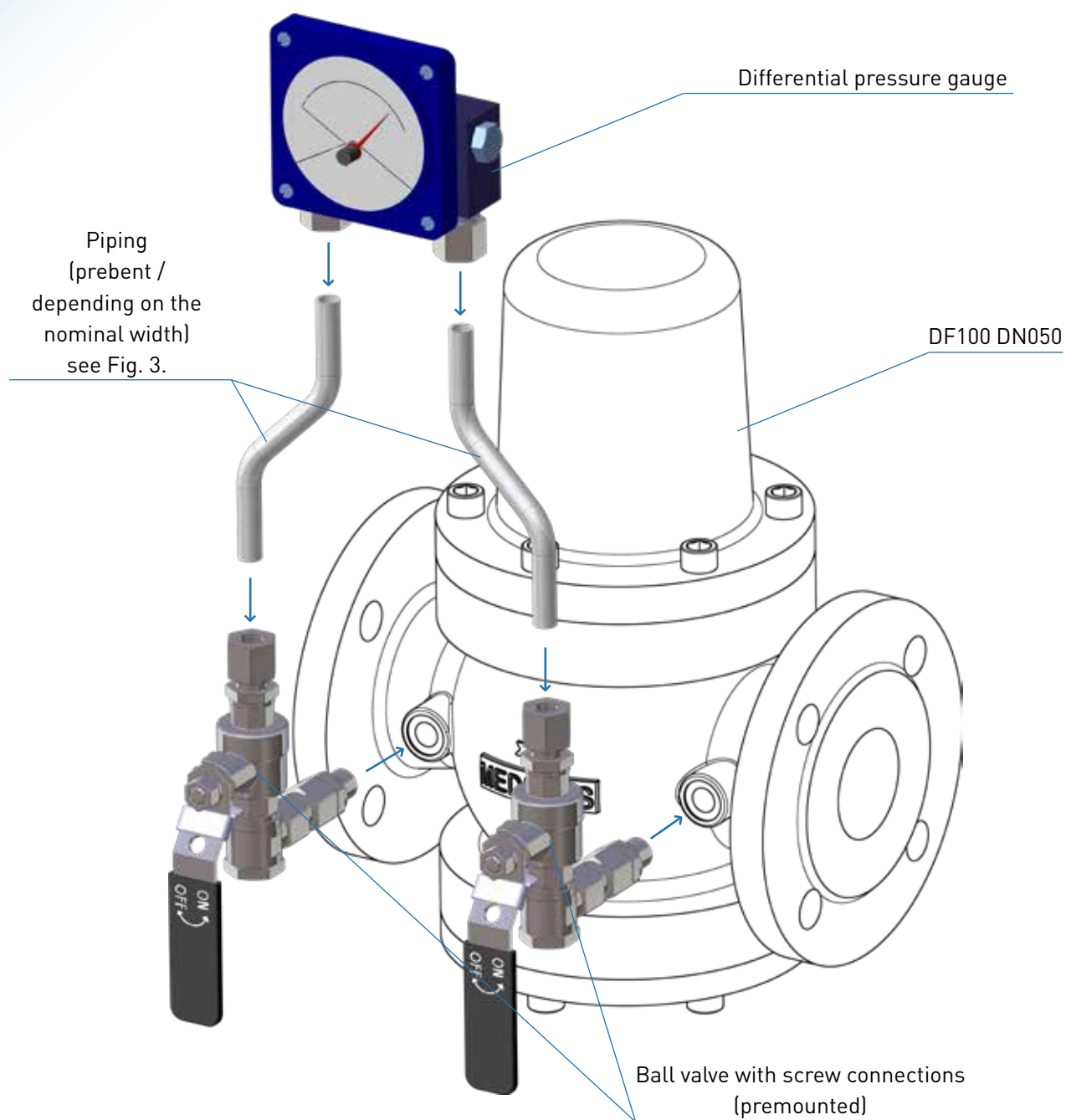


Fig. 2

### 12.1.7 Piping for cellular gas filters DF100 DN025 - DN200

The pipes between the differential pressure gauge and the premounted ball valves are designed individually to the nominal widths of our cellular gas filters.

#### Dimensions:

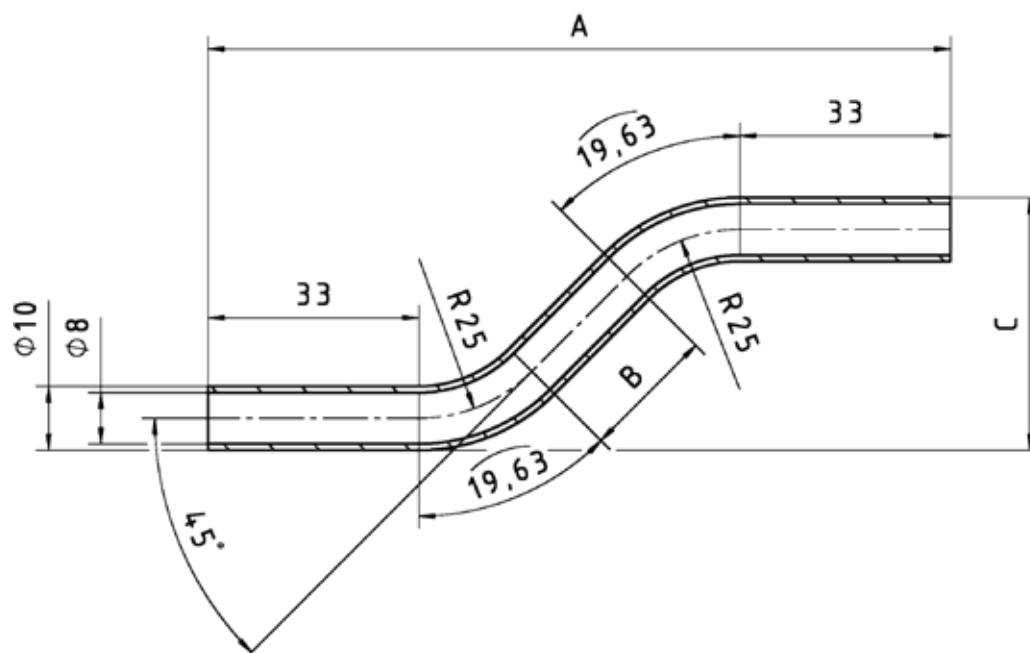


Fig. 3

Cellular Gas Filter	Nominal width	Piping dimensions			
		A (mm)	B (mm)	C (mm)	Length cutting (mm)
DF100	DN025	116	21	39.5	127
	DN050	126	35	49.5	141
	DN080	131	56	64.5	162
	DN100	187	121	110.0	226
	DN150	194	131	117.5	237
	DN200	204	145	127.5	251

## 12.1.8 Commissioning

### Connection HIGH, connection LOW

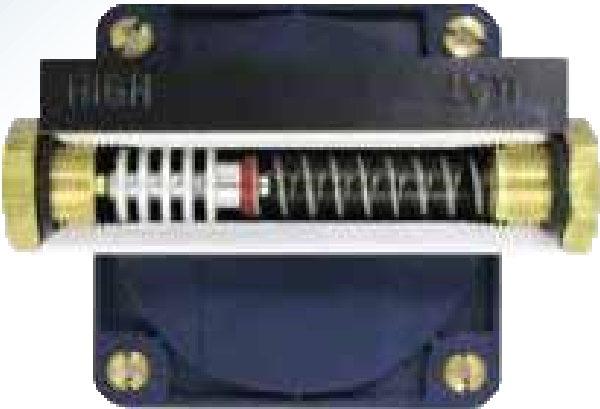


Fig. 4 Operating principle



Fig. 5 Reed contact housing

#### Mounting of the pressure connection:

According to affixed symbols: HIGH (high pressure), LOW (low pressure). During installation, hold the EO screw connections at the connection pieces by means of a screwdriver (mounting without holding the connections may loosen the measurement system and result in leakages).

#### Zero point check:

The zero point is usually checked and set in the depressurized state or when both screw connections are pressurized with the same pressure. (Bypass valve open)

To correct the zero point, loosen the fastening of the measuring system on the front side of the housing. Now the zero point can be readjusted by moving the measuring system to the right or left. Afterwards the measuring system can be fastened again (tightening torque max. 2.5 Nm). During the commissioning process, pressure surges must be avoided in any case. Open the shut-off valves slowly.

#### Setting the reed contact

Up to 2 reed contacts can be mounted. With increasing differential pressure, the switching point of the reed contact(s) is set to 50% of the measuring range. (Condition upon delivery unless otherwise specified on the order).

The differential pressure piston manometer has 2 pressure connections

HIGH = pressure side with the higher pressure (plus side)

LOW = pressure side with the lower pressure (downstream side)  
(minus side)

In normal state, a small gas quantity always flows from the HIGH side to the LOW side via the piston. Test and the setting of the limit value have generally to be carried out when removed from the system and outside a potentially explosive atmosphere (e.g. workshop) using compressed air. The pressure to be set (e.g. 0.7 bar) (for MB = 1.0 bar) is applied to the HIGH side of the DP 900 with the help of a compressor or a compressed-air cylinder, both of them must be provided with a pressure reducer. A precise test gauge (class 1.0) must be provided for the test. Due to the escaping test gas via the piston, the pressure regulator must be re-adjusted. If the preset pressure remains constant, the leakage gas quantity will also be constant.

The LOW side must be open towards the atmosphere so that the test gas can escape and a constant counter-pressure (1 bar abs) is available (air pressure/atmosphere). The reed contact is moved downward by means of an adjusting screw (higher pressure after lower pressure) until the reed contact reacts. The switching point is usually tested with the help of a continuity tester via the reed contact plug for perfect functioning.

(The technical data for the reed contact must be complied with (voltage, amperage, performance). (See Fig. 1.)

### 12.1.9 Options / Accessories

#### Reed contact:

Up to 2 reed contacts can be mounted. Each reed contact can be set to a different switching point. Can be adjusted on site as required. Fastening is by means of two screws integrated in the reed case on the display case with the pertinent female thread.

Fig. 6. DDM with reed contact



Fig. 7. DDM without reed contact



### 12.1.10 Maintenance / Cleaning

The devices are maintenance-free. The indicator should be checked once a year. For this, the device must be disconnected from the process and checked with a pressure testing device. Cleaning in a potentially explosive atmosphere Check whether the cleaning agent is approved for the use in potentially explosive atmospheres! Clean the device surface by wiping it carefully with a damp or antistatic cloth. Maintenance work on the devices can be also carried out by the manufacturer. Request a quotation.

#### NOTE

Clean the devices with a moist cloth (soap water). (Dry cloths may lead to spark formation). Residual medium in the dismantled pressure gauges can result in a risk to persons, the environment and equipment. Take sufficient precautionary measures.

### Repairs

Repairs must exclusively be carried out by the manufacturer or by appropriately qualified personnel.

### Disposal

Dispose of the device components and packaging materials in accordance with the relevant country-specific waste treatment and disposal regulations of the region in which the device is used.

# Declaration of Conformity

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Manufacturer: Medenus Gas-Druckregeltechnik GmbH

Address: Im Langen Feld 3  
D-57462 Olpe

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declares under sole responsibility that the product:

**DF 100** Zellen-Gas-Filter

have been subjected to an EC-type examination and conform to the basic requirements of the directives  
GAR (EU) 2016/426 EC-Gas Appliances Regulation and 2014/68/EU A III B EC-Pressure Equipment  
Directive in the respective current version.

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Marking (PIN) according to Pressure Equipment Directive and Gas Appliances Regulation

**CE-0085CP0531 model DF 100**

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Notified body (EU type examination: Module B)

DVGW CERT GmbH  
Josef Wirmer Straße 1-3  
D-53123 Bonn, Germany  
Notified Body number: 0085

The basis of the EC type examination are the harmonized European standards and / or national  
standards, as well as the European directives and / or regulations:

2014/68/EU A III B EC Pressure Equipment Directive	(15.04.2014)
GAR (EU) 2016/426 A III B EC Gas Appliances Regulation	(09.03.2016)

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Monitoring of the EC quality assurance system (module D)

DVGW CERT GmbH  
Notified Body number: 0085

Registration No. Pressure Equipment Directive **SD-0085BQ0510**

Registration No. Gas Appliances Regulation **SE-0085BQ0510**

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Olpe,  
07.08.2023



Alexander Christiani  
Managing Director

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## Notes



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