

# MEDENUS

Gas Pressure Regulation



## Gas Filter DF50

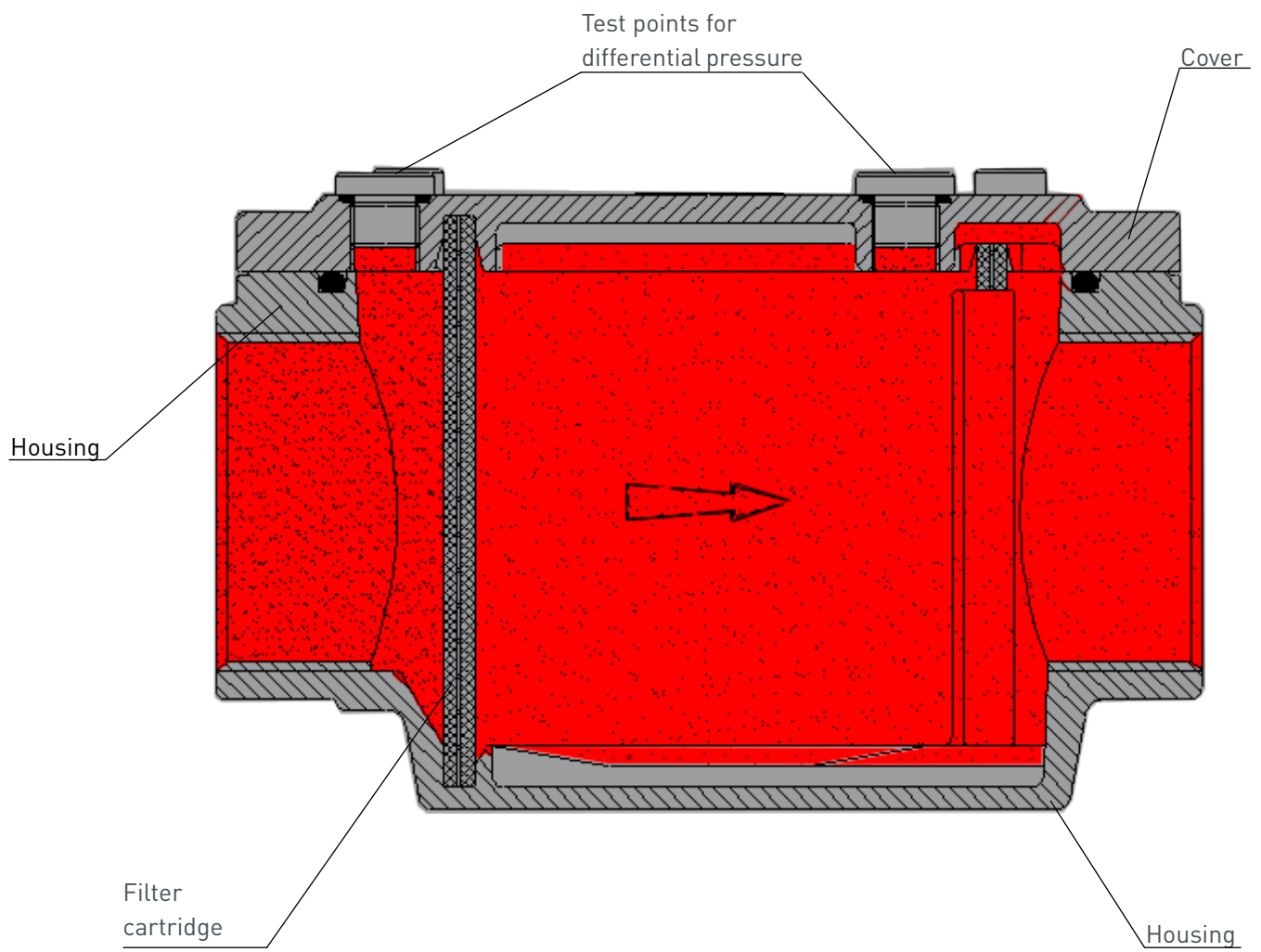


Operating and Maintenance Instructions

EN



## Design of the cellular gas filter DF50





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# 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 DF50**

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 DF50**

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 requirement of safe operation is compliance with all safety instructions and guidelines specified in these instructions. 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 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
SBV	Safety relief valve

## 2 Application, Characteristics

### 2.1 Application

Type DF50 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.

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

### 2.2 Characteristics

- Easily replaceable filter
- High separation efficiency thanks to optimized flow guidance (30 µm standard, 5 µm optional)

### 2.3 Types of models (options)

- Black epoxy resin coating
- 5 µm separation efficiency
- Biogas & coke oven gas version
- 3.1 certificate
- Flange sets for screw-in threads Rp1", Rp 1,5", Rp 2"

## 3 Avoidance of Foreseeable Misuse

- The DF50 cellular gas filters must not be used for filtering liquids.
- The DF50 cellular gas filters must not be used in temperature ranges below -40 °C or above 70 °C
- The DF50 cellular gas filters must not be used for pressure ranges higher than the pressure "PS" indicated on the nameplate.
- The DF50 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 DF50 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 Code of Practice 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.

### 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 operator must implement them in the form of operating instructions for operation of 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 to that, the operator must train the personnel at regular intervals and inform them about the dangers.
- 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 proper functioning 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.

**Note**

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.

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 packaging and protection from the connection flange surfaces.

Install the device without tensioning the pipeline (see DVGW info gas no. 19).

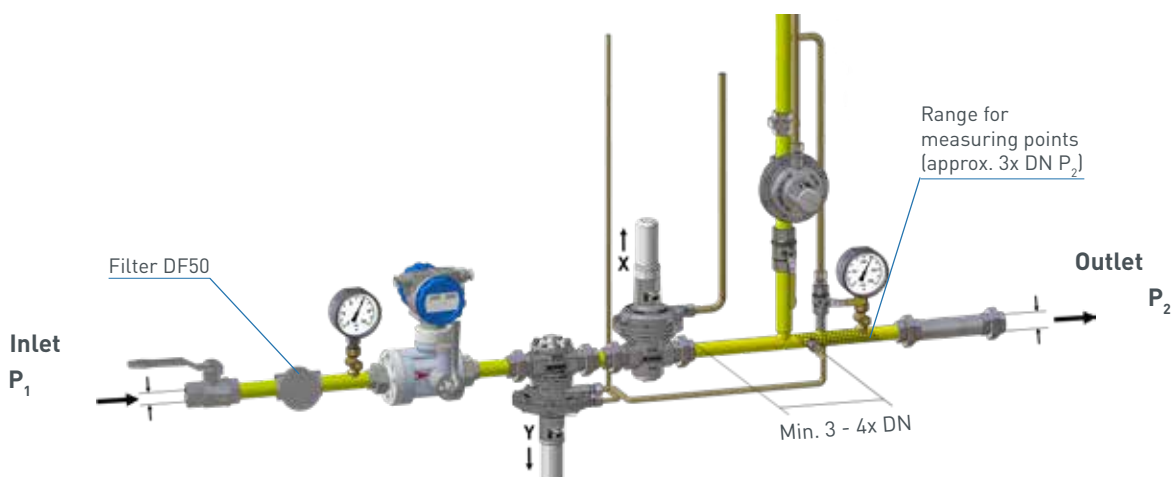
Make sure to observe the direction of flow, i.e., the arrow on the housing must point in the direction of flow.

**Note**

In installation positions other than horizontal, MEDENUS Gas-Druckregeltechnik GmbH must be consulted.

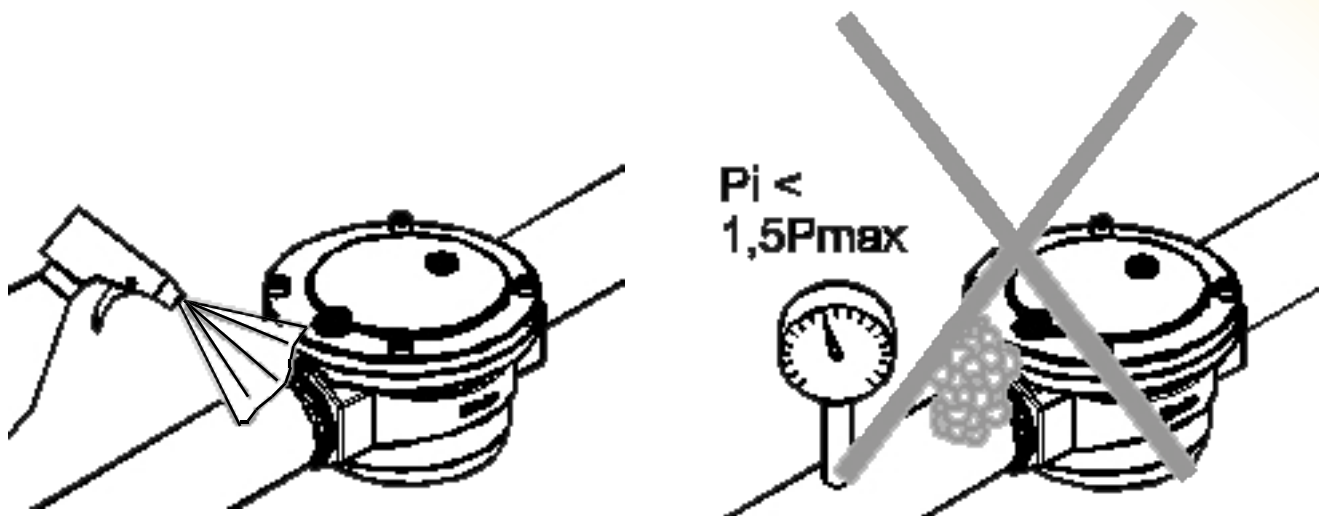
The tightening torques of the flange connections are listed in the table on page 14 (8.3 Table of Screw Tightening Torques).

**Note**



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

After installation, a leakage test must be performed (max. test pressure 1.5 P<sub>max</sub>).



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

### 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 DVGW Code of Practice G 495 be observed initially.

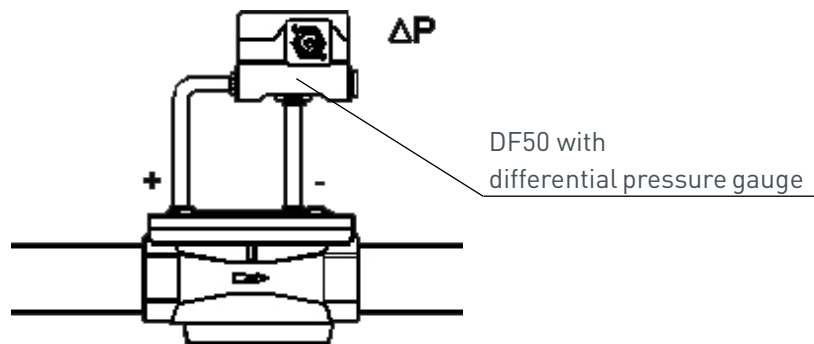
For each system, this must be followed by determining the maintenance interval independently on a medium-term basis.

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.

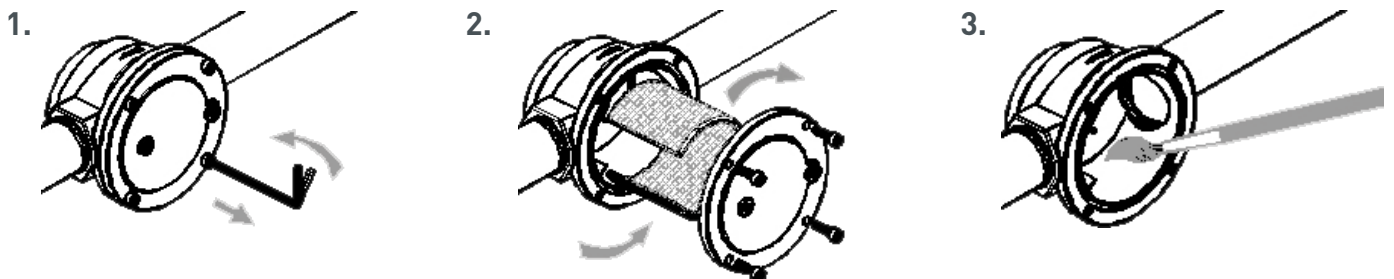
The check must cover in particular the filter insert and the seals.

The threaded plugs can be replaced by measurement ports for the connection of a gas differential pressure gauge to monitor the pressure loss.

If the pressure difference has increased by 100 % compared to the new filter, the filter element must be replaced by a new one.



### 8.2 Maintenance Procedure



1. Loosen the screws
2. Remove cover and filter
3. Clean the filter housing. Insert new filter and screw cover back on.  
[Pay attention to seals and torques!]

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

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.



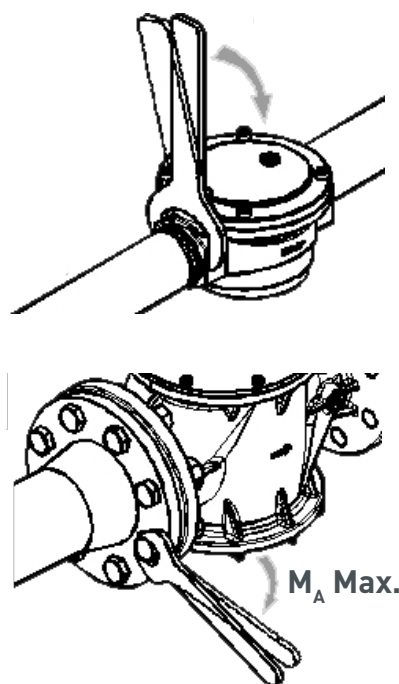
**DANGER**



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.

### 8.3 Table of Screw Tightening Torques $M_A$

DF50	$M_{A \max}$ (Nm)
Rp 1/2	50
Rp 3/4	85
Rp 1	125
Rp 1 1/2	200
Rp 2	250
DN 65	50
DN 80	50
DN 100	80
DN 125	160
DN 150	160
DN 200	
DN 250	
DN 300	



## 9 Troubleshooting

Description of the error	Possible cause	Elimination	Personnel
Differential pressure across the filter too high	Dirty filter	Replace the filter	Qualified person
Dust in the system	Defective filter	Replace the filter	
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 disassembly, components are removed which, depending on the medium, can cause a risk of injury through contamination.

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  
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Fax +49 (0) 2761 / 82788-9

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

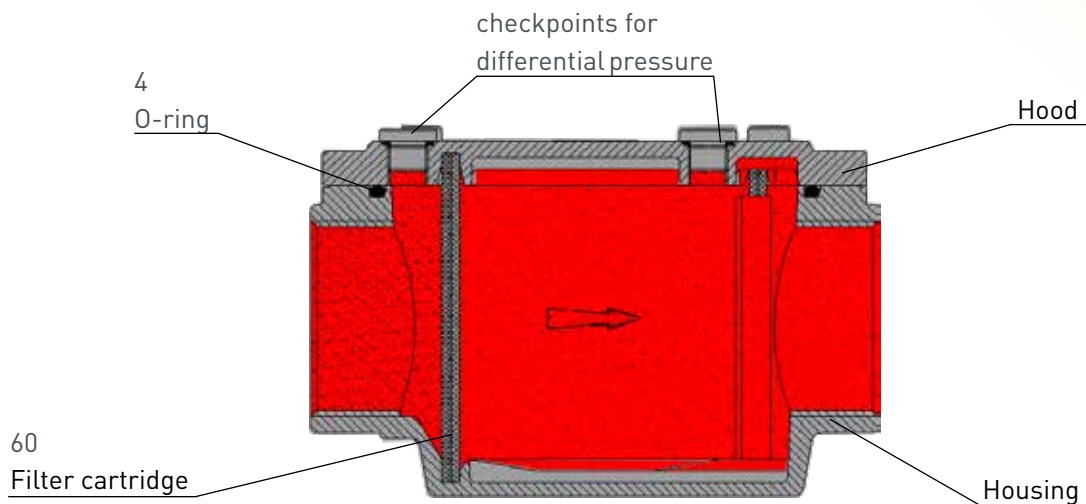
In addition, we are always interested in information and experience resulting from the application and which can be valuable for improving our products.

\*) If the connection lines are equipped with ball valves, the pressure gauge can be replaced during operation.



# 11 Spare Parts

## 11.1 Spare Parts Drawing DF 50



## 11.2 Parts for Maintenance Work

### Spare parts set (consisting of item 4 and item 60)

degree of separation	Quantity pcs.	DF50									
		RP 1/2"	RP 1/2" NPT	RP 3/4"	RP 3/4" NPT	RP 1"	RP 1" NPT	RP 1 1/2"	RP 1 1/2" NPT	RP 2"	RP 2" NPT
30 µm	1	FP-108	FP-110	FP-112	FP-114	FP-118	FP-120	FP-124	FP-126	FP-130	FP-132
5 µm	1	FP-109	FP-111	FP-113	FP-115	FP-119	FP-121	FP-125	FP-127	FP-131	FP-133

degree of separation	Quantity pcs.	DF50							
		DN 065	DN 080	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300
30 µm	1	FP-134	FP-136	FP-138	FP-140	FP-142	FP-144	FP-146	FP-148
5 µm	1	FP-135	FP-137	FP-139	FP-141	FP-143	FP-145	FP-147	FP-149

### Parts for maintenance work on special versions (e.g. biogas)

degree of separation	Quantity pcs.	DF50									
		RP 1/2"	RP 1/2" NPT	RP 3/4"	RP 3/4" NPT	RP 1"	RP 1" NPT	RP 1 1/2"	RP 1 1/2" NPT	RP 2"	RP 2" NPT
30 µm	1	FP-208	FP-210	FP-212	FP-214	FP-218	FP-220	FP-224	FP-226	FP-230	FP-232
5 µm	1	FP-209	FP-211	FP-213	FP-215	FP-219	FP-221	FP-225	FP-227	FP-231	FP-233

degree of separation	Quantity pcs.	DF50							
		DN 065	DN 080	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300
30 µm	1	FP-234	FP-236	FP-238	FP-240	FP-242	FP-244	FP-246	FP-248
5 µm	1	FP-235	FP-237	FP-239	FP-241	FP-243	FP-245	FP-247	FP-249

## Dichiarazione di Conformità

### Declaration of Conformity

Costruttore / <i>Manufacturer</i>	ELETTROMECCANICA DELTA S.p.A.
Indirizzo / <i>Address</i>	Via Trieste, 132 31030 Arcade (TV) ITALY
Prodotto / <i>Product</i>	Filtri per gas Pmax 2bar <i>Gas filters Pmax 2bar</i>
Tipo / <i>Type</i>	FG/FGSxx2 DN32, DN40, DN50, DN65, DN80, DN100, DN125, DN150, DN200, DN250, DN300
Marchio / <i>Mark</i>	ELEKTROGAS

Il prodotto è conforme alle seguenti Direttive Europee e loro successive modifiche:  
*The product is in compliance with the following European Directives and their modifications:*

▪ 2014/68/UE (ex 97/23/EC)	Direttiva Apparecchiature a Pressione / <i>Pressure Equipment Directive</i>
Organismo notificato / <i>Notified body</i>	CSI S.p.A. viale Lombardia 20, 20021 BOLLATE (MI)
Certificato CE / <i>EC Certificate</i>	PED/0497/1268
(Prodotto di categoria I&II certificato secondo modulo D1 / <i>Product of category I&amp;II certified in accordance with module D1</i> )	

Norme tecniche armonizzate e loro variazioni / *Harmonized standards and their amendments:*

EN 13611:2015	EN 549:1995	EN 437:2009
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Sistema qualità del fabbricante secondo EN ISO 9001  
*Quality system of manufacturer in compliance with EN ISO 9001*

Certificato / <i>Certificate</i>	11989-A
Organismo notificato / <i>Notified body</i>	Kiwa Cermet Italia S.p.A.

Questi dispositivi devono essere installati in accordo con le leggi in vigore.  
*These devices must be installed in compliance with the rules in force.*

Arcade, 25/07/18

  
\_\_\_\_\_  
Diego Franceschini  
Product Quality Manager  
\_\_\_\_\_  
Roberto Granzotto  
Development & Technical Manager

## Dichiarazione di Conformità Declaration of Conformity

Costruttore / Manufacturer	ELETTROMECCANICA DELTA S.p.A.
Indirizzo / Address	Via Trieste, 132 31030 Arcade (TV) ITALY
Prodotto / Product	Filtri per gas Pmax 6bar Gas filters Pmax 6bar
Tipo / Type	FG/FGSxx6 DN32, DN40, DN50, DN65, DN 80, DN100, DN125, DN150, DN200, DN250, DN300
Marchio / Mark	ELEKTROGAS

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*The product is in compliance with the following European Directives and their modifications:*

▪ **2014/68/UE (ex 97/23/EC)** Direttiva Apparecchiature a Pressione / *Pressure Equipment Directive*  
Organismo notificato / Notified body CSI S.p.A. viale Lombardia 20, 20021 BOLLATE (MI)  
Certificato CE / EC Certificate PED/0497/2875-2664  
(Prodotto di categoria I-II-III certificato con modulo B+D / *Product of category I-II-III certified in accordance with module B+D*)

Norme tecniche armonizzate e loro variazioni / *Harmonized standards and their amendments:*

EN 13611:2015      EN 549:1995      EN 437:2009

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Diego Franceschini  
Product Quality Manager

  
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Roberto Granzotto  
Development & Technical Manager

## Dichiarazione di Conformità Declaration of Conformity

Costruttore / Manufacturer	ELETTROMECCANICA DELTA S.p.A.
Indirizzo / Address	Via Trieste, 132 31030 Arcade (TV) ITALY
Prodotto / Product	Filtri per gas - Gas filters Pmax 2bar - 6bar
Tipo / Type	FG/FGSxx2 - FG/FGSxx6 DN15 - DN20 - DN25
Marchio / Mark	ELEKTROGAS

Il prodotto è conforme alle seguenti Direttive Europee e loro successive modifiche:  
*The product is in compliance with the following European Directives and their modifications:*

▪ **2014/68/UE (ex 97/23/EC)** Direttiva Apparecchiature a Pressione / *Pressure Equipment Directive*  
Organismo notificato / Notified body CSI S.p.A. viale Lombardia 20, 20021 BOLLATE (MI)  
Certificato CE / EC Certificate PED/0497/1270  
(Prodotto ai sensi dell'art. 4 comma 3 / *Product in accordance with article 4 paragraph 3*)

Norme tecniche armonizzate e loro variazioni / *Harmonized standards and their amendments:*

EN 13611:2015      EN 549:1995      EN 437:2009

Sistema qualità del fabbricante secondo EN ISO 9001  
*Quality system of manufacturer in compliance with EN ISO 9001*

Certificato / Certificate 11989-A  
Organismo notificato / Notified body Kiwa Cermet Italia S.p.A.

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Roberto Granzotto  
Development & Technical Manager

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## Notes



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