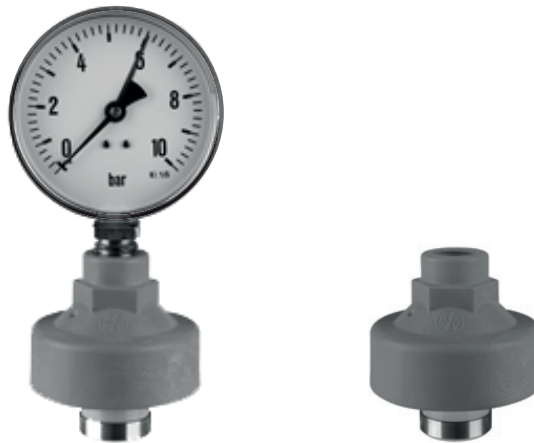


# Diaphragm pressure gauge guard

Original operating manual

Series  
MDM 902



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We reserve the right to make technical changes.

Read carefully before use.  
Save for future use.



## Table of contents

<b>1 About this document</b>	3
1.1 Target groups	3
1.2 Other applicable documents	3
1.3 Warnings and symbols	3
<b>2 General safety instructions</b>	4
2.1 Intended use	4
2.2 General safety instructions	4
2.2.1 Obligations of the operating company	4
2.2.2 Obligations of personnel	4
2.3 Hazardous media	4
<b>3 Layout and Function</b>	5
3.1 Type plate	5
3.2 Description	5
3.3 Layout	5
<b>4 Transport, Storage and Disposal</b>	6
4.1 Unpacking and inspection on delivery	6
4.2 Transportation	6
4.3 Storage	6
4.4 Disposal	6
<b>5 Installation and connection</b>	7
5.1 Preparing for installation	7
5.1.1 Check operating conditions	7
5.1.2 Check the installed condition of the fitting	7
5.2 Planning pipelines	7
5.3 Installing the fitting	7
5.3.1 Fill the fitting	7
5.3.2 Installing and filling the pressure gauge	7
5.4 Installing fitting in pipe	8
5.4.2 Connection with solvent welding/butt-weld spigot ends	8
5.4.3 Connection with internal thread fixed	8
5.5 Performing the hydrostatic test	8
<b>6 Operation</b>	9
6.1 Commissioning	9
<b>7 Maintenance</b>	10
7.1 Servicing	10
7.2 Maintenance	10
7.2.1 Removing fitting	10
7.2.2 Changing the separation diaphragm	10
7.2.3 Replacement parts and return	10
<b>8 Troubleshooting</b>	11
<b>9 Appendix</b>	12
9.1 Technical specifications	12

9.2 Dimensions	12
9.3 Transmitter fluid	12
9.4 Tightening torques	12
9.5 Sectional drawing	12

## List of figures

Fig. 1 Type plate (example)	5
Fig. 2 Layout	5
Fig. 3 Sectional drawing	12

## List of tables

Tab. 1 Other application documents, purpose and where found	3
Tab. 2 Warnings and symbols	3
Tab. 3 Troubleshooting	11
Tab. 4 Transmitter fluid	12
Tab. 5 Tightening torques	12

# 1 About this document

This manual

- is part of the fitting
- applies to all series referred to
- describes safe and proper operation during all operating phases

## 1.1 Target groups




### Operating company

- Responsibilities:
  - Always keep this manual accessible where the device is used on the system.
  - Ensure that employees read and observe this document, particularly the safety instructions and warnings, and the documents which also apply.
  - Observe any additional country-specific rules and regulations that relate to the system.

### Qualified personnel, fitter








- Mechanics qualification:
  - Qualified employees with additional training for fitting the respective pipework.
- Electrical qualification:
  - Qualified electrician
- Transport qualification:
  - Qualified transport specialist
- Responsibility:
  - Read, observe and follow this manual and the other applicable documents, especially all safety instructions and warnings.

## 1.2 Other applicable documents

To download: <b>Resistance lists</b> Resistance of materials used to chemicals  <a href="http://www.asv-stuebbe.de/pdf_resistance/300051.pdf">www.asv-stuebbe.de/pdf_resistance/300051.pdf</a>	
 To download: <b>Data sheet</b> Technical specifications, conditions of operation  <a href="http://www.asv-stuebbe.de/pdf_datasheets/301281.pdf">www.asv-stuebbe.de/pdf_datasheets/301281.pdf</a>	
To download: <b>CE declaration of conformity</b> Conformity with standards  <a href="http://www.asv-stuebbe.de/pdf_DOC/300168.pdf">www.asv-stuebbe.de/pdf_DOC/300168.pdf</a>	


Tab. 1 Other application documents, purpose and where found

## 1.3 Warnings and symbols

Symbol	Meaning
	<ul style="list-style-type: none"> <li>• Immediate acute risk</li> <li>• Death, serious bodily harm</li> </ul>
	<ul style="list-style-type: none"> <li>• Potentially acute risk</li> <li>• Death, serious bodily harm</li> </ul>
	<ul style="list-style-type: none"> <li>• Potentially hazardous situation</li> <li>• Minor injury</li> </ul>
	<ul style="list-style-type: none"> <li>• Potentially hazardous situation</li> <li>• Material damage</li> </ul>
	Safety warning sign ► Take note of all information highlighted by the safety warning sign and follow the instructions to avoid injury or death.
	Instruction
1., 2., ...	Multiple-step instructions
✓	Precondition
→	Cross reference
	Information, notes

Tab. 2 Warnings and symbols

## 2 General safety instructions


 The manufacturer accepts no liability for damages caused by disregarding any of the documentation.

### 2.1 Intended use

The fitting is used for transmitting media pressure to a pressure gauge.

- Use the fitting exclusively transmitting media pressure.
- Use the fitting exclusively with a pressure gauge fitted.
- Use the fitting exclusively for technically pure media free of solids (→ Resistance list).
- Adhere to the operating limits (→ Data sheet).
- Use the fitting exclusively in the following direction of installation:
  - The bottom section mounted on the pressurized pipe
  - The pressure gauge mounted on the upper part

### 2.2 General safety instructions

 Read and observe the following regulations before carrying out any work.

#### 2.2.1 Obligations of the operating company

##### Safety-conscious operation

- Only operate the fitting if it is in perfect technical condition and only use it as intended, staying aware of safety and risks, and in adherence to the instructions in this manual.
- Ensure that the following safety aspects are observed and monitored:
  - Intended use
  - Statutory or other safety and accident-prevention regulations
  - Safety regulations governing the handling of hazardous substances
  - Applicable standards and guidelines in the country where the pump is operated
- Make personal protective equipment available.

#### Qualified personnel

- Make sure all personnel tasked with work on the fitting have read and understood this manual and all other applicable documents, especially the safety, maintenance and repair information, before they start any work.
- Organize responsibilities, areas of competence and the supervision of personnel.
- The following work should be carried out by specialist technicians only:
  - Installation, repair and maintenance work
  - Work on the electrical system
- Make sure that trainee personnel only work on the fitting under supervision of specialist technicians.

#### 2.2.2 Obligations of personnel

- Observe the instructions on the fitting and keep them legible, e.g. type plate, identification marking for fluid connections.
- Only carry out work on the fitting if the following requirements are met:
  - System is empty
  - System has been flushed
  - System is depressurized
  - System has cooled down
  - System is secured against being switched back on again
- Do not make any modifications to the device.

### 2.3 Hazardous media

- When handling hazardous media (e.g. hot, flammable, explosive, toxic, hazardous to health or the environment), observe the safety regulations for the handling of hazardous substances.
- Use personal protective equipment when carrying out any work on the fitting.
- Collect leaking pumped liquid and residues in a safe manner and dispose of in accordance with environmental regulations.

### 3 Layout and Function

#### 3.1 Type plate


1	Type	<b>MDM 902</b>	 <b>Stübbe</b> Partner for Solutions	6
2	ID.No.	<b>212970</b>		
3	Top	<b>G 1/4"</b>		
4	Bottom	<b>DN20 - G 1/4"</b>		
5	PN	<b>10</b> FA17-28992		
			Materials	
			PVC-U	
			PTFE	

Fig. 1 Type plate (example)

- 1 Fitting type
- 2 ID number
- 3 Internal thread diameter, upper part
- 4 Nominal diameter / internal thread diameter, bottom section
- 5 Nominal pressure
- 6 Materials

Fitting types

- MDM 902

#### 3.2 Description

The fitting is a diaphragm pressure gauge guard. The fitting is mounted with the bottom section facing the pressurized pipe carrying the medium. The pressure gauge is mounted on the upper part. The separation diaphragm transmits the media pressure to the pressure gauge via a transmitter fluid.

Separation diaphragm:

- EPDM diaphragm, PTFE coated on the medium side

Mounting position:

- any
- Pressure gauge preferably upright

On request the pressure gauge can be pre-assembled. The version of the pressure gauges is described on the data sheet (→ Data sheet).

#### 3.3 Layout

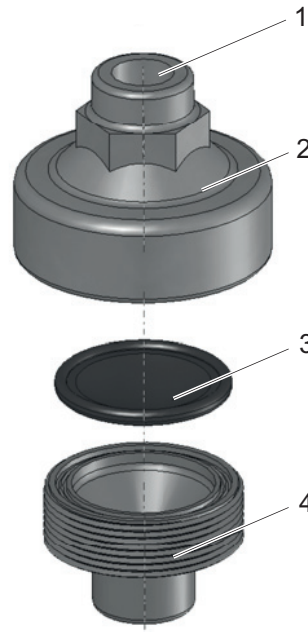


Fig. 2 Layout

- 1 Pressure gauge connection
- 2 Upper part
- 3 Separation diaphragm
- 4 bottom section

## 4 Transport, Storage and Disposal

### 4.1 Unpacking and inspection on delivery

1. Unpack the fitting when received and inspect it for transport damage.
2. Report any transport damage to the manufacturer immediately.
3. Ensure that the information on the type plate agrees with the order/design data.
4. For immediate installation, dispose of packaging material according to local regulations.
  - For later installation, leave the fitting in the original packaging.

### 4.2 Transportation

1. As far as possible, transport the fitting (incl. pressure gauge) in the original packaging.
2. Lift fitting manually for transport. For weight specifications (→ Data sheet).

### 4.3 Storage

---

#### NOTE

---

#### Material damage due to inappropriate storage!

- ▶ Store the fitting properly.
- 
1. Make sure the storage room meets the following conditions:
    - Dry
    - Frost-free
    - Vibration-free
    - Not in direct sunlight
    - Storage temperature +10 °C to +60 °C
  2. As far as possible, store the fitting in the original packaging.

### 4.4 Disposal

- ⓘ Plastic parts can be contaminated by poisonous or radioactive media to such an extent that cleaning will not be sufficient.

---

#### **WARNING**

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#### Risk of poisoning and environmental damage from medium.

- ▶ Use personal protective equipment when carrying out any work on the fitting.
  - ▶ Before disposing of the fitting:
    - Collect escaping medium and dispose separately according to local regulations.
    - Neutralize residues of medium in the fitting.
  - ▶ Remove plastic parts and dispose of them in accordance with local regulations.
- 
- ▶ Dispose of fitting in accordance with local regulations.

## 5 Installation and connection

### 5.1 Preparing for installation

#### 5.1.1 Check operating conditions

1. Ensure the design of the fitting is consistent with the purpose intended:
  - Materials used (→ Type plate).
  - Medium(→ Order and design data).
2. Ensure the required operating conditions are met:
  - Resistance of the materials of the body, separation diaphragm and seals to the medium (→ Resistance list).
  - Media temperature (→ Data sheet).
  - Operating pressure (→ Data sheet).
3. Consult with the manufacturer regarding any other use of the device.

#### 5.1.2 Check the installed condition of the fitting

- ▶ Check the installed condition of the fitting and depending on the situation proceed as follows:
  - Fitting not filled with the transmitter fluid, pressure gauge not fitted: Install fitting (→ 5.3 Installing the fitting, Page 7 ).
  - OR –
  - Fitting filled with the transmitter fluid, pressure gauge fitted: Installing fitting in pipe (→ 5.4 Installing fitting in pipe, Page 8 ).

### 5.2 Planning pipelines

#### WARNING


#### Risk of poisoning and environmental damage from medium.

Leaks due to impermissible pipework forces.

- ▶ Ensure that the fitting is not subject to any pulling or thrusting forces or bending moments.

1. Plan pipes safely:
  - No pulling or thrusting forces
  - No bending moments
  - Adjust for changes in length due to temperature changes (compensators, expansion shanks)
  - Optional flow direction
  - Optional installation position and direction
2. Dimensions (→ Data sheet).

### 5.3 Installing the fitting

-  Before installation in the pipeline, the fitting must be filled and the pressure gauge must be filled and mounted. Follow the section drawing for assembly (→ 9.5 Sectional drawing, Page 12). Use the recommended transmitter fluid (→ 9.3 Transmitter fluid, Page 12).

#### 5.3.1 Fill the fitting

1. Fill the upper part (2) with transmitter fluid (4), excluding any air bubbles.
2. Insert the gasket (5) into the upper part (2).  
The fitting must be filled and prepared for assembly to the pressure gauge.

#### 5.3.2 Installing and filling the pressure gauge

- ✓ The fitting must be filled
- ✓ The compressed air supply must be available

#### NOTE

#### Damage to the separation diaphragm due to lack of transmitter fluid!

- ▶ Before commissioning, make sure that the fitting is sufficiently filled with transmitter fluid.

#### NOTE

#### Damage to the separation diaphragm due to compressed air!

- ▶ Apply compressed air to the fitting only for very short periods of time. When doing so, do not exceed the permissible pressure of the pressure gauge that is used.

1. Screw the pressure gauge (1) clockwise into the upper part (2) (→ 9.4 Tightening torques, Page 12).
2. Rotate the fitting until the pressure gauge (1) is facing vertically downwards.
3. Connect the compressed air supply to the bottom section (6).
4. Switch on the compressed air supply and apply compressed air to the fitting for short periods of time.  
The transmitter fluid is pushed into the pressure gauge.
5. Switch off the compressed air supply and carefully detach it from the fitting.
6. Rotate the fitting until the pressure gauge (1) is in the upright position.
7. Unscrew the pressure gauge (1) from the upper part (2).

8. Check the fill level in the upper part (2) and depending on the situation proceed as follows:
  - If the fill level is sufficient: continue with process step 9.
    - OR –
  - If the fill level is too low: Top up the transmitter fluid (4) in the upper part (2). Repeat process steps 1 to 8 until there is sufficient transmitter fluid in the pressure gauge.
9. Check the thread seal, and depending on the type of thread proceed as follows:
  - Imperial thread: Ensure that the gasket (3) seals the pressure gauge.
    - OR –
  - Pipe thread and NPT thread: Wrap a maximum of 4 turns of sealing tape around the thread of the pressure gauge (1).
10. Screw the pressure gauge (1) clockwise into the upper part (2) ([→ 9.4 Tightening torques, Page 12](#)).
11. Ensure the pressure gauge (1) is zeroed.  
The fitting is now ready for mounting on the pipeline.

## 5.4 Installing fitting in pipe

- ✓ The pressure gauge must be mounted on the fitting.
- ✓ The fitting must be filled with the transmitter fluid.
- ✓ The pressure gauge must be filled with the transmitter fluid.

### **WARNING**

**Risk of poisoning and environmental damage from medium.**

Leak due to faulty installation.


- ▶ Installation work on the pipes should only be performed by technicians who have been specially trained for the pipework in question.

### **NOTE**

**Material damage due to contamination of the fitting!**

- ▶ Make sure no contamination reaches the fitting.
- ▶ Flush the pipe with a neutral medium.

#### 5.4.2 Connection with solvent welding/butt-weld spigot ends


 Use suitable solvent welding/fusion socket ends.

1. Prepare pipe ends according to connection type.
2. Align the fitting together with the pressure gauge, preferably upwards.
3. Adhesively apply or weld fitting with solvent welding/fusion socket ends.

#### 5.4.3 Connection with internal thread fixed

1. Prepare pipe ends according to connection type.
2. Check the thread seal on the bottom section of the fitting, and depending on the type of thread proceed as follows:
  - Imperial thread: Mount a gasket on the threaded connector.
    - OR –
  - Pipe thread and NPT thread: Wrap a maximum of 4 turns of sealing tape around the thread of the threaded connector.
3. Align the fitting together with the pressure gauge, preferably upwards.
4. Screw the fitting on to the threaded connector ([→ 9.4 Tightening torques, Page 12](#)).

## 5.5 Performing the hydrostatic test

 Pressure test using neutral medium, e.g. water.

1. Pressurize the fitting, ensuring
  - Test pressure < permissible system pressure
  - Test pressure < 1.5 PN
  - Test pressure < PN + 5 bar
2. Check the fitting for leaks.



## 6 Operation

### 6.1 Commissioning

- ✓ The fitting must be correctly mounted and filled with transmitter fluid.
- ✓ The fitting must be correctly mounted in the pipeline.

---

 **WARNING**

**Risk of injury and poisoning due to medium spraying out.**

- ▶ Use personal protective equipment when carrying out any work on the fitting.

---

**NOTE**

**Damage to the separation diaphragm due to lack of transmitter fluid!**

- ▶ Before commissioning, make sure that the fitting is sufficiently filled with transmitter fluid.
- ▶ After the first loads from pressure and operating temperature, check that the fitting is not leaking.

## 7 Maintenance

### WARNING

**Risk of injury and poisoning due to hazardous media liquids!**

- ▶ Use personal protective equipment when carrying out any work on the fitting.

### 7.1 Servicing

1. Visual and function check (every three months):
  - Normal operating conditions unchanged
  - No leaks
  - No unusual operating noises or vibrations
2. Clean fitting with a moist cloth if necessary.

### 7.2 Maintenance

### WARNING

**Risk of injury and poisoning due to hazardous or hot media.**


- ▶ Use personal protective equipment when carrying out any work on the fitting.
- ▶ Safely collect the media and dispose of it in accordance with environmental regulations.
- ▶ If the separation diaphragm is defective, collect the transmitter fluid with the admixture of medium, and dispose of it.

#### 7.2.1 Removing fitting

1. Ensure that:
  - System is empty
  - System has been flushed
  - System is depressurized
  - System has cooled down
  - System is secured against being switched back on again
2. Remove fitting from the pipe.
3. Decontaminate fitting if required.
  - Dead space in the fitting may still contain medium.

#### 7.2.2 Changing the separation diaphragm

- ✓ The fitting must be removed from the pipeline

 When changing the separation diaphragm, refer to the sectional drawing (→ 9.5 Sectional drawing, Page 12).

ASV Stübbe recommends a contact adhesive (such as Pat-tex Kraftkleber) to bond the bottom section to the upper part.

1. Unscrew the pressure gauge (1) anti-clockwise from the upper part (2).
2. Carefully drain the upper part (2). Collect the transmitter fluid (4) with the admixture of medium, and dispose of it.
3. Unscrew the upper part (2) anti-clockwise from the bottom section (6).
4. Take the separation diaphragm (5) off the bottom section (6) and dispose of it.
5. Insert a new separation diaphragm (4) into the bottom section. When doing so, make sure that the side of the diaphragm that is coated with PTFE and is slightly convex faces towards the bottom section (4).
6. In the upper part (2), apply contact adhesive to the middle turns of the internal thread. In so doing, apply the contact adhesive as a ring of width approx. 2–3 mm.
7. Screw the upper part (2) to the bottom section (6). (→ 9.4 Tightening torques, Page 12).
8. Install fitting (→ 5.3 Installing the fitting, Page 7).
9. Installing fitting in pipe (→ 5.4 Installing fitting in pipe, Page 8).

#### 7.2.3 Replacement parts and return

1. Have the following information ready to hand when ordering spare parts (→ Type plate).
  - Fitting type
  - ID number
  - Nominal pressure and diameter
  - Body and seal material
2. Please complete and enclose the document of compliance for returns (→ [www.asv-stuebbe.com/service/downloads](http://www.asv-stuebbe.com/service/downloads)).



3. Only use spare parts from ASV Stübbe.

## 8 Troubleshooting

 **WARNING**

**Risk of injury and poisoning due to hazardous or hot media.**

- ▶ Use personal protective equipment when carrying out any work on the fitting.
- ▶ Safely collect the media and dispose of it in accordance with environmental regulations.


Consult with the manufacturer regarding faults which are not identified in the following table, or which cannot be traced to the indicated causes.

Error	Possible cause	Corrective action
Incorrect Measurement value	Air bubbles in the transmitter fluid	▶ Check that the fitting is sufficiently filled with transmitter fluid, top it up if necessary ( <a href="#">→ 5.3 Installing the fitting, Page 7</a> ).
Medium in the transmitter fluid	Defective separation diaphragm	▶ Changing the separation diaphragm ( <a href="#">→ 7.2.2 Changing the separation diaphragm, Page 10</a> ).
Medium is leaking	Defective seal	▶ Check the seal at the connection to the pipeline and replace it if necessary ( <a href="#">→ 5.4 Installing fitting in pipe, Page 8</a> ).


Tab. 3 Troubleshooting

## 9 Appendix


### 9.1 Technical specifications

 Technical data (→ Data sheet).

### 9.2 Dimensions

 Dimensions (→ Data sheet).

### 9.3 Transmitter fluid

 ASV Stübbe recommends the following transmitter fluids

Transmitter fluid
Glycol (ethylene glycol)
Antifreeze (such as Glysantine or Aral Antifreeze)
Demineralized water*

Tab. 4 Transmitter fluid

\*) when used in a potable water area

### 9.4 Tightening torques

Description	Torque
Pressure gauge	hand-tight, maximal 15 Nm
Upper part	30 Nm
bottom section	hand-tight

Tab. 5 Tightening torques

### 9.5 Sectional drawing

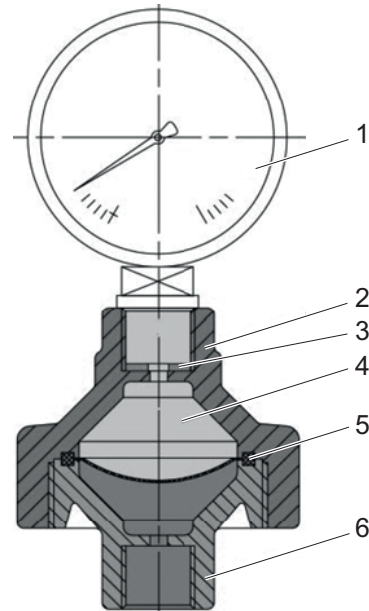


Fig. 3 Sectional drawing

- 1 Pressure gauge
- 2 Upper part
- 3 Gasket
- 4 Transmitter fluid
- 5 Separation diaphragm
- 6 bottom section