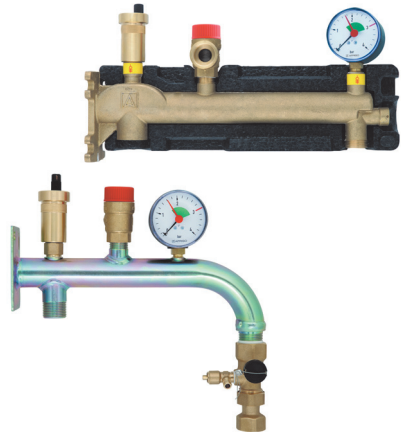


Operating instructions



Connection assembly for expansion vessel

GAK

Type: GAK steel with quick-action coupling
GAK steel with anti-tamper cap valve
GAK brass with heat insulation and anti-tamper cap valve

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1 About these operating instructions

These operating instructions describe the connection assembly for expansion vessel "GAK" (also referred to as "product" in these operating instructions). These operating instructions are part of the product.

- You may only use the product if you have fully read and understood these operating instructions.
- Verify that these operating instructions are always accessible for any type of work performed on or with the product.
- Pass these operating instructions as well as all other product-related documents on to all owners of the product.
- If you feel that these operating instructions contain errors, inconsistencies, ambiguities or other issues, contact the manufacturer prior to using the product.

These operating instructions are protected by copyright and may only be used as provided for by the corresponding copyright legislation. We reserve the right to modifications.

The manufacturer shall not be liable in any form whatsoever for direct or consequential damage resulting from failure to observe these operating instructions or from failure to comply with directives, regulations and standards and any other statutory requirements applicable at the installation site of the product.

2 Information on safety

2.1 Safety messages and hazard categories

These operating instructions contain safety messages to alert you to potential hazards and risks. In addition to the instructions provided in these operating instructions, you must comply with all directives, standards and safety regulations applicable at the installation site of the product. Verify that you are familiar with all directives, standards and safety regulations and ensure compliance with them prior to using the product.

Safety messages in these operating instructions are highlighted with warning symbols and warning words. Depending on the severity of a hazard, the safety messages are classified according to different hazard categories.



WARNING

WARNING indicates a potentially hazardous situation, which, if not avoided, can result in serious injury or equipment damage.

NOTICE

NOTICE indicates a hazardous situation, which, if not avoided, can result in equipment damage.

In addition, the following symbols are used in these operating instructions:



This is the general safety alert symbol. It alerts to injury hazards or equipment damage. Comply with all safety instructions in conjunction with this symbol to help avoid possible death, injury or equipment damage.

2.2 Intended use

This product may only be used:

- In sealed heating systems as per EN 12828
- For heat generators with a heating capacity of up to 50 kW

The **diaphragm safety valve** may only be used to blow off the following fluids from sealed heating systems (as per EN 12828) for the purpose of providing protection against excess pressure:

- Water
- Water/glycol mixtures with a maximum admixture of 50 %

The **pressure gauge** may only be used to indicate the system pressure of the heating system.

The **quick air vent** may only be used to automatically de-aerate the heating system.

Any use other than the application explicitly permitted in these operating instructions is not permitted and causes hazards.

2.3 Predictable incorrect application

The product must never be used in the following cases and for the following purposes:

- Operation when the discharge opening is shut off
- Media which attack the materials used
- Media that have an adverse effect on the proper operation of the product
- Nominal pressures other than those indicated on the product
- Temperatures in excess of or below the permissible temperature of the medium

2.4 Qualification of personnel

Only appropriately trained persons who are familiar with and understand the contents of these operating instructions and all other pertinent product documentation are authorized to work on and with this product.

These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product.

All persons working on and with the product must be fully familiar with all directives, standards and safety regulations that must be observed for performing such work.

2.5 Personal protective equipment

Always wear the required personal protective equipment. When performing work on and with the product, take into account that hazards may be present at the installation site which do not directly result from the product itself.

2.6 Modifications to the product

Only perform work on and with the product which is explicitly described in these operating instructions. Do not make any modifications to the product which are not described in these operating instructions.

3 Transport and storage

The product may be damaged as a result of improper transport or storage.

NOTICE

INCORRECT HANDLING

- Verify compliance with the specified ambient conditions during transport or storage of the product.
- Use the original packaging when transporting the product.
- Store the product in a clean and dry environment.
- Verify that the product is protected against shocks and impact during transport and storage.

Failure to follow these instructions can result in equipment damage.

4 Product description

The product for connection of the diaphragm expansion vessel consists of a carrier with:

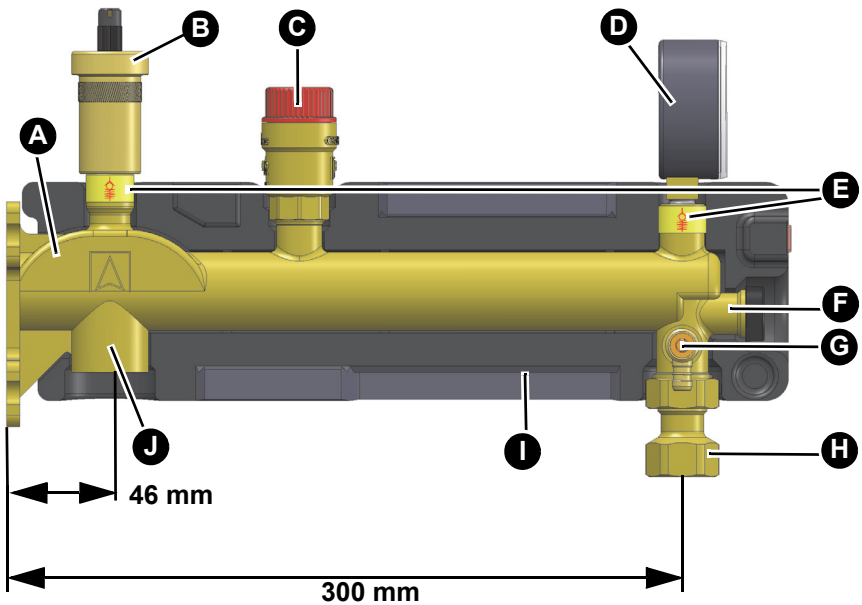
- Diaphragm safety valve
- Quick air vent
- Pressure gauge

There are three product versions:

- GAK steel with quick-action coupling
- GAK steel with anti-tamper cap valve
- GAK brass with heat insulation and anti-tamper cap valve

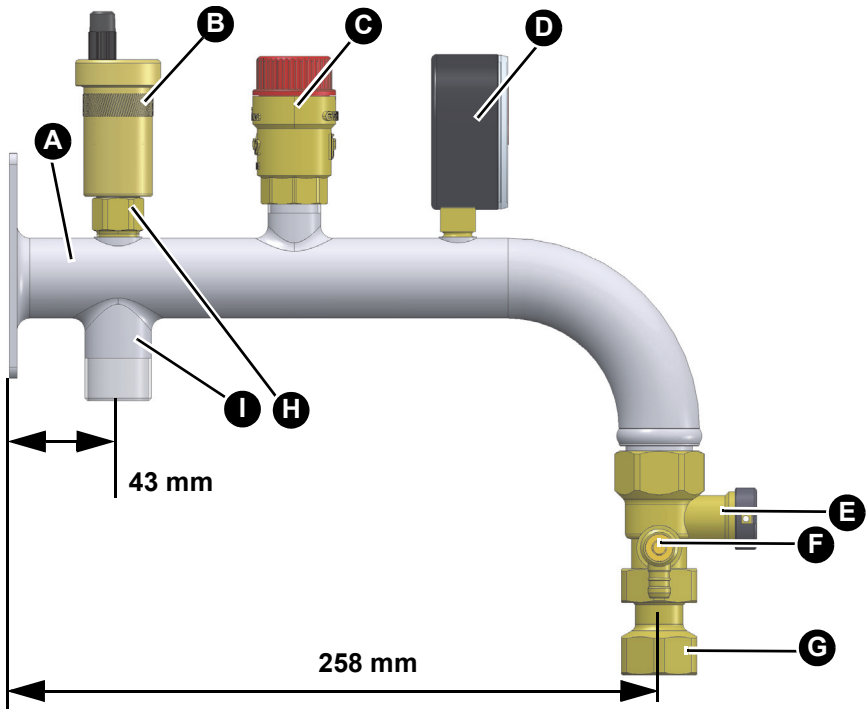
4.1 Overview and dimensions

Product (brass) with heat insulation and anti-tamper cap valve



- | | |
|------------------------------|--|
| A. Carrier | F. Anti-tamper cap valve |
| B. Quick air vent (Aquastop) | G. Drain valve |
| C. Diaphragm safety valve | H. Connection diaphragm expansion vessel |
| D. Pressure gauge | I. Insulation piece (heat insulation) |
| E. Integrated mounting valve | J. Connection to heat generator |

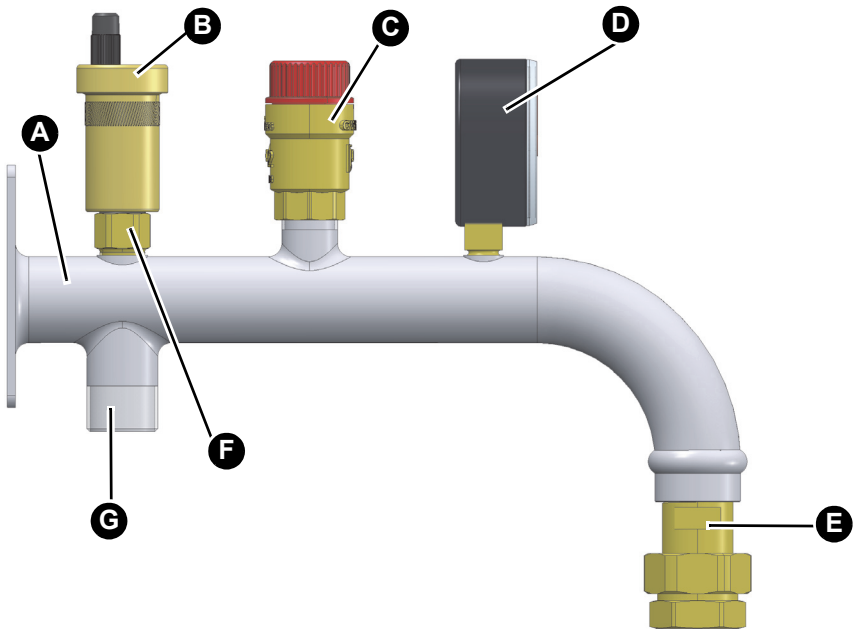
Product (steel) with anti-tamper cap valve



- A. Carrier
- B. Quick air vent (Aquastop)
- C. Diaphragm safety valve
- D. Pressure gauge
- E. Anti-tamper cap valve

- F. Drain valve
- G. Connection diaphragm expansion vessel
- H. Integrated mounting valve
- I. Connection to heat generator

Product (steel) with quick-action coupling



- | | |
|------------------------------|--|
| A. Carrier | E. Quick-action coupling (connection diaphragm expansion vessel) |
| B. Quick air vent (Aquastop) | F. Mounting valve |
| C. Diaphragm safety valve | G. Connection to heat generator |
| D. Pressure gauge | |

4.2 Function

If the maximum permissible pressure in the heating system is exceeded, the diaphragm safety valve discharges liquid. The pressure gauge displays the system pressure in the heating system. The quick air vent automatically vents the heating system.

The product with anti-tamper cap valve is suitable for testing and replacing the diaphragm expansion vessel without having to drain the system.

4.3 Approvals, conformities, certifications

Refer to the operating instructions of the diaphragm safety valve.

4.4 Technical data

Parameter	GAK steel	GAK brass
General specifications		
Temperature of the medium	Max. 120 °C	
System pressure	3 bar	
Carrier		
Material	Steel	Brass
Connection to heat generator	G¾ male	G¾ female
Connection to expansion vessel		G¾ female
Quick-action coupling		
Connection to expansion vessel	G¾ female	
Anti-tamper cap valve		
Connection to expansion vessel	G¾ female	
Pressure gauge		
Input	G¼	G¾/8
Range	0 ... 4 bar	
Green area	1 ... 3 bar	
Diameter	63 mm	
Quick air vent		
Input	G¾/8	
Nominal pressure	12 bar	
Diaphragm safety valve		
Output	G¾ female	
Max. heating capacity	50 kW	
Nominal pressure	3 bar	

5 Mounting

Only mount the product after having completed all pipe assembly work, all welding work and all soldering work.

1. Flush the lines of the system before installing the product.

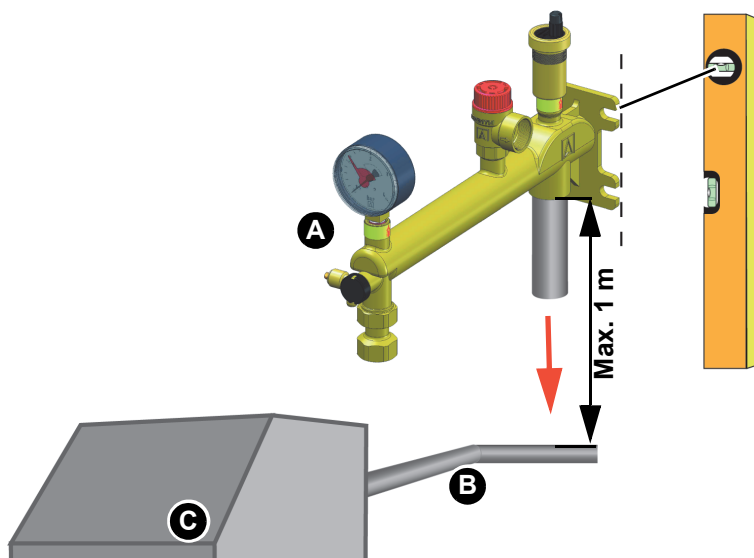
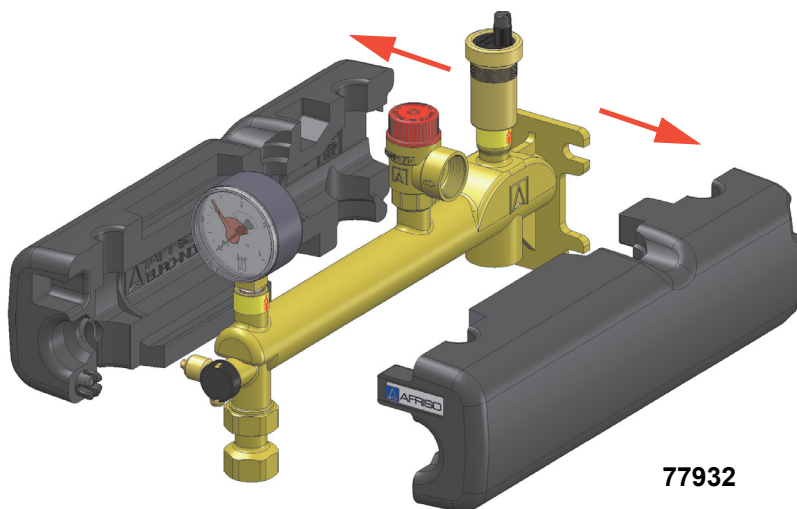
If you install the product in an existing system, observe the information in chapter "Retrofitting the product".

Observe the operating instructions of the diaphragm safety valve when mounting the product.

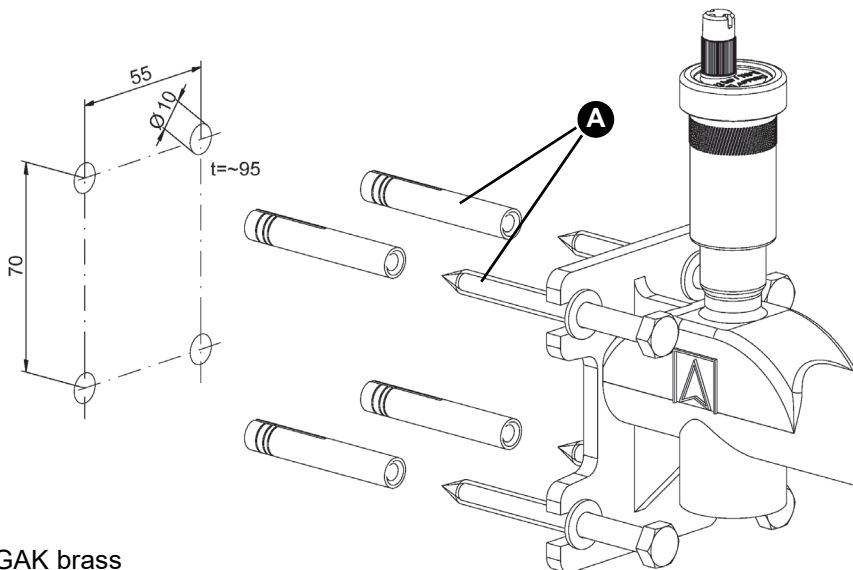
5.1 Preparing mounting

- ⇒ Verify that the nominal pressure of the product corresponds to the specification value of the system.
 - ⇒ Verify that the liquid in the system and the application area of the product are compatible.
 - ⇒ Verify that the product cannot be shut off.
 - Do not install shut-off valves, filters or similar equipment.
 - ⇒ Verify that the product is mounted in such a way that no external forces can act on the components after it has been installed.
 - ⇒ Verify that the enclosed dowels are suitable for the intended wall.
1. Verify that the wall can carry the product.

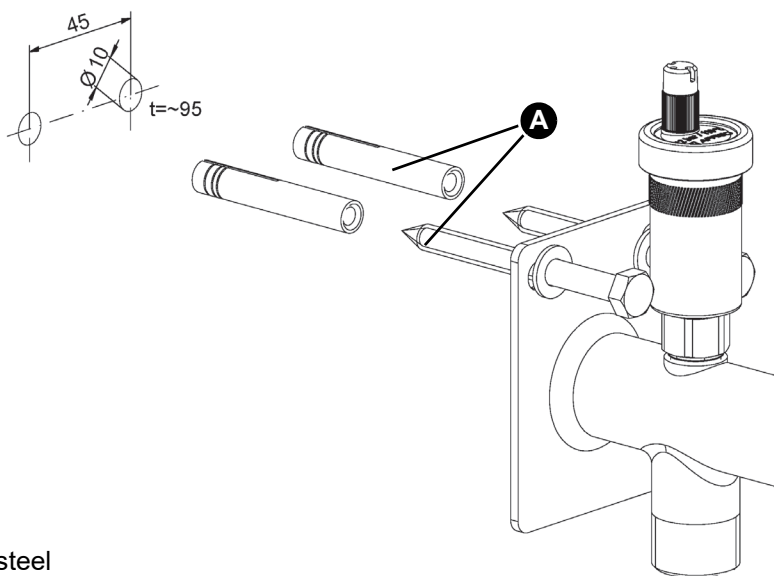
5.2 Mounting the product



- A. Mount the product above the level of the heat generator
- B. Flow line
- C. Heat generator

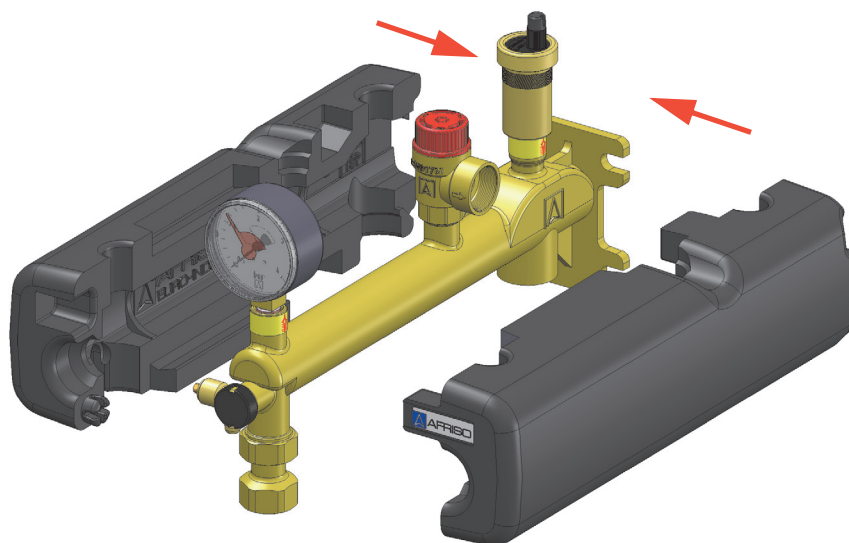
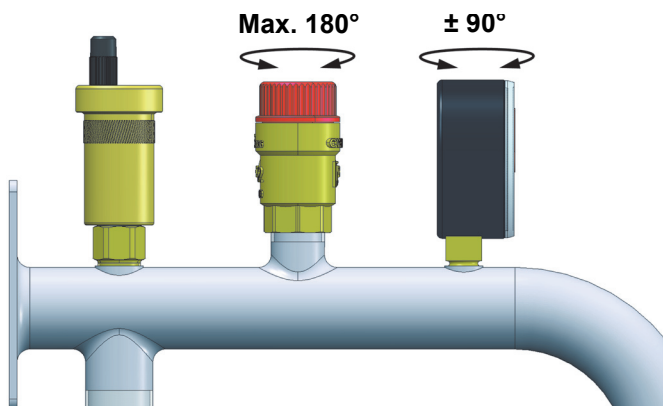


GAK brass



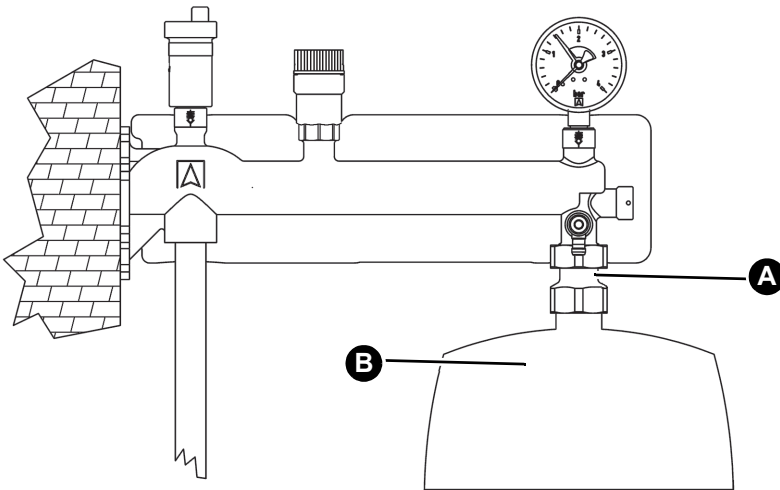
GAK steel

A. Enclosed mounting accessories

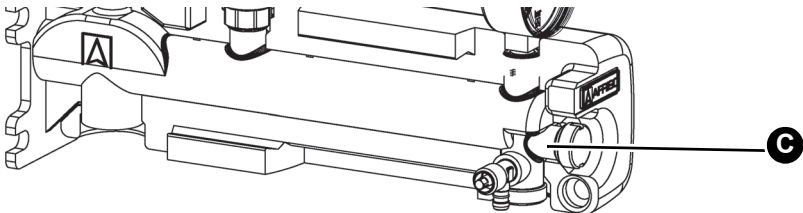


5.2.1 Mounting the diaphragm expansion vessel

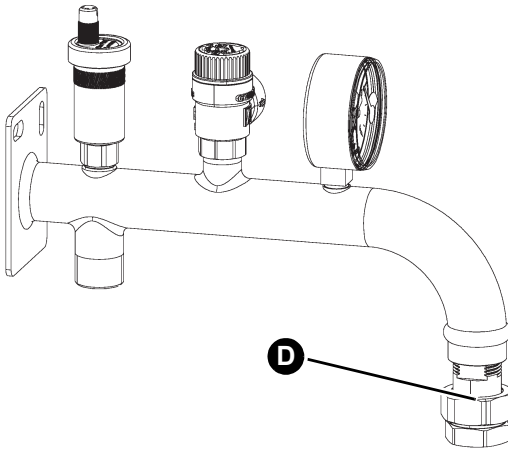
GAK brass and GAK steel with anti-tamper cap valve



- ⇒ Verify that the anti-tamper cap valve is in the position "open" (stop counterclockwise).
- 1. Mount the enclosed screw connection (A) to the diaphragm expansion vessel (B).
- 2. Mount the diaphragm expansion vessel to the product with the G³/₄ screw connection.
- 3. Tighten the union nut.
 - Tightening torque 60 Nm
- 4. Secure the anti-tamper cap valve (C) with the enclosed seal wire and the lead seal against inadvertent closing.
- 5. Place the cap onto the anti-tamper cap valve



GAK steel with quick-action coupling



1. Mount the enclosed screw connection (A) to the diaphragm expansion vessel (B).
2. Mount the diaphragm expansion vessel to the product with the G $\frac{3}{4}$ screw connection.
3. Tighten the union nut (D).
 - Tightening torque 60 Nm

5.3 Retrofitting the product



WARNING

HOT LIQUID

Water in heating systems is under high pressure and can have temperatures of more than 100 °C.

- Verify that the heating water has cooled down before opening the system and mounting the product.
- Verify that the system has been unpressurised and drained before mounting the product.

Failure to follow these instructions can result in death, serious injury or equipment damage.

- ⇒ Verify that the nominal pressure of the product corresponds to the specification value of the system.
- ⇒ Verify that the liquid in the system and the application area of the product are compatible.

When the system has cooled down and unpressurised, you can mount the product.

1. If required, drain a part of the system.
2. Flush the lines of the system.
3. Mount the product as described in chapter "Mounting the product".

Observe the operating instructions of the diaphragm safety valve when mounting the product.

6 Operation

For safety reasons, liquid must escape via the discharge line of the safety valve during heating.

⇒ Verify that the safety valve is not shut off.

1. If the safety valve has responded, check the system.
2. Remove the cause before recommissioning the system.
3. Perform a function test of the safety valve. Refer to the operating instructions of the diaphragm safety valve.

7 Maintenance

Refer to the operating instructions of the diaphragm safety valve.

7.1 Maintenance intervals

When	Activity
Every 6 months	Perform a visual inspection of the quick air vent. Verify tightness of the quick air vent
If necessary	Replace the quick air vent

7.2 Maintenance activities



WARNING

HOT LIQUID

Water in heating systems can have temperatures of more than 100 °C.

- Verify that no liquid can escape in an uncontrolled way during maintenance of the diaphragm expansion vessel.

Failure to follow these instructions can result in death, serious injury or equipment damage.

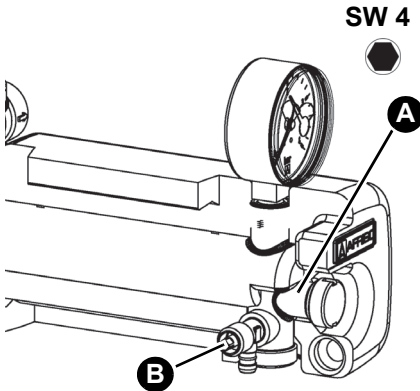
Replace the quick air vent

Due to the integrated mounting valve, the quick air vent can be replaced while the system is under pressure.

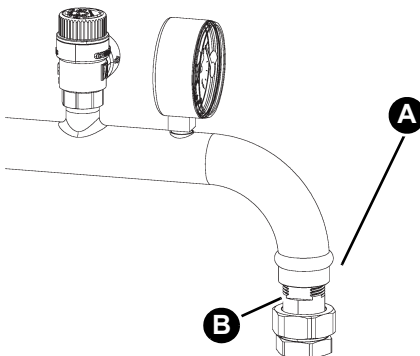
Maintenance of diaphragm expansion vessel with anti-tamper cap valve

In the case of the product with anti-tamper cap valve, the diaphragm expansion vessel does not have to be dismantled during maintenance.

1. Provide a container with a sufficient capacity to collect the liquid discharged from the diaphragm expansion vessel.
2. Open the lead seal.
3. Remove the cap.
4. Close the anti-tamper cap valve with an Allan key ® (A).
5. Open the lateral drain valve (B) and drain the diaphragm expansion vessel.
6. Perform maintenance.
7. Open the anti-tamper cap valve and secure it with seal wire and the lead seal (see "Mounting the diaphragm expansion vessel").



Maintenance of diaphragm expansion vessel with quick-action coupling



1. Unscrew the screw connection.
2. Remove the diaphragm expansion vessel.
3. Drain the diaphragm expansion vessel.
4. Perform maintenance.
5. Screw on the diaphragm expansion vessel.

8 Troubleshooting

Any malfunctions that cannot be removed by means of the measures described in this chapter may only be repaired by the manufacturer.

Problem	Possible reason	Repair
Pointer of pressure gauge below green range	System pressure too low	Fill liquid into the system until the pointer of the pressure gauge is in the green range again
Pointer of the pressure gauge again below green range after filling of the system	Leak in system	Verify tightness of the system
Water escapes at safety valve and pointer of pressure gauge is below green range	Filling pressure in diaphragm expansion vessel too low or diaphragm expansion vessel defective	Check the diaphragm expansion vessel
Other malfunctions	-	Contact the AFRISO service hotline

9 Decommissioning, disposal

Dispose of the product in compliance with all applicable directives, standards and safety regulations.

1. Dismount the product (see chapter "Mounting", reverse sequence of steps).
2. Dispose of the product.

10 Returning the device

Get in touch with us before returning your product (service@afriso.de).

11 Warranty

See our terms and conditions at www.afriso.com or your purchase contract for information on warranty.