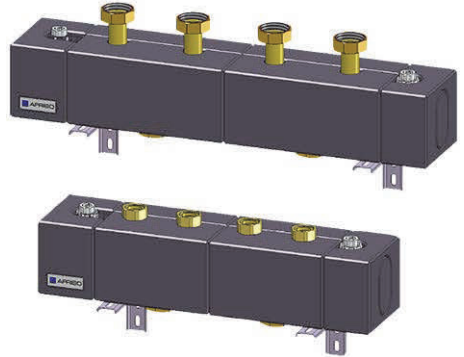


# Operating instructions



## Zone manifold HSM

## HSM

Type: 90, 125



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## 1 About these operating instructions

These operating instructions describe the zone manifolds HSM 90 and HSM 125 (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 to distribute the following liquids in heating systems as per EN 12828.

- Heating circuit water as per VDI 2035
- Water/glycol mixtures with a maximum of 50 % of glycol (ethylene glycol)

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

Verify that the product is suitable for the application planned by you prior to using the product. In doing so, take into account at least the following:

- All directives, standards and safety regulations applicable at the installation site of the product
- All conditions and data specified for the product
- The conditions of the planned application

In addition, perform a risk assessment in view of the planned application, according to an approved risk assessment method, and implement the appropriate safety measures, based on the results of the risk assessment. Take into account the consequences of installing or integrating the product into a system or a plant.

When using the product, perform all work and all other activities in conjunction with the product in compliance with the conditions specified in the operating instructions and on the nameplate, as well as with all directives, standards and safety regulations applicable at the installation site of the product.

## 2.3 Predictable incorrect application

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

- Distribution of drinking water
- Use with adherent, corrosive or flammable fluids
- Operation in systems with temperatures exceeding 90 °C (for example, solar systems)

## 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.

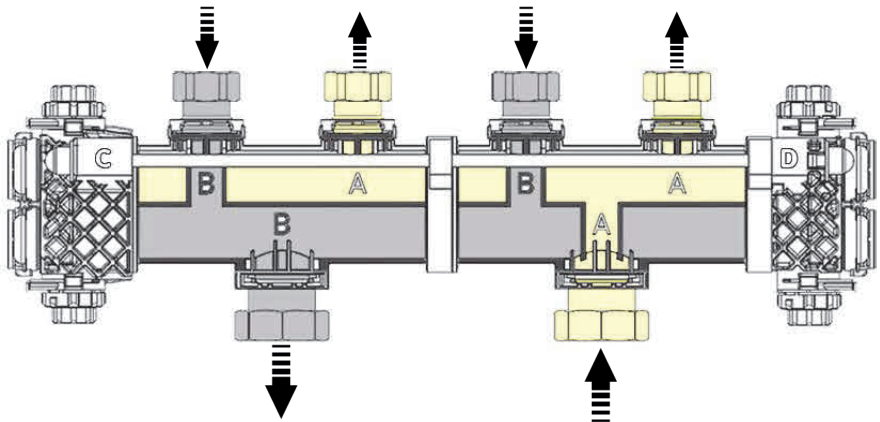
**Failure to follow these instructions can result in equipment damage.**

## 4 Product description

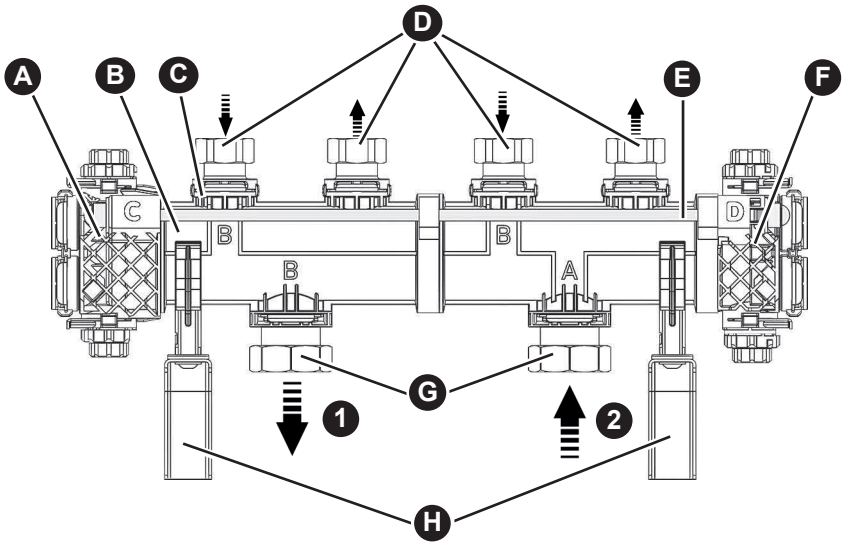
The product is a pre-assembled, tightness-tested and heat-insulated heating circuit manifold which distributes the medium to up to five circuits.

The product lets you reconnect the system and venting components in a flexible way, so that the heating circuit and the heat generator can be connected either horizontally or vertically.

The flow is factory-arranged at the right-hand side.



## 4.1 Overview



1. Return

2. Flow

A. End assembly C (see “Overview end assemblies” on page 8)

B. Segment

C. Clip  
- one clip per connection

D. Connections heating circuit

E. Threaded rod

F. End assembly right-hand end D (see “Overview end assemblies” on page 8)

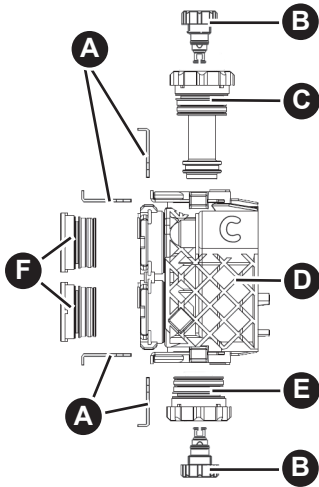
G. Connections heat generator

H. Mounting bracket with wall bracket

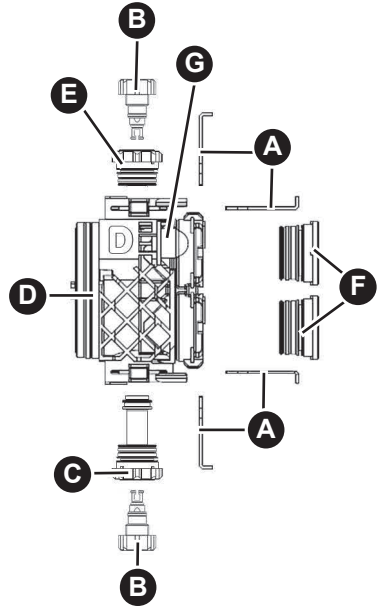
Figure 1: HSM 90

## 4.2 Overview end assemblies

End assembly C (left)



End assembly D (right)



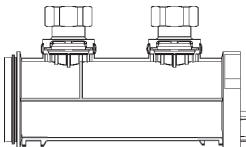
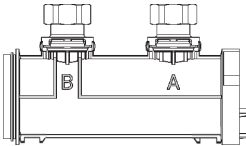
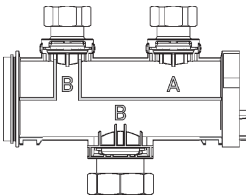
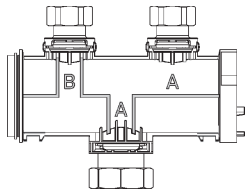
- A. Clip
- B. Manual vent screw
- C. Valve body grey

- D. End assembly
- E. Valve body black
- F. Blind plug
- G. Nut

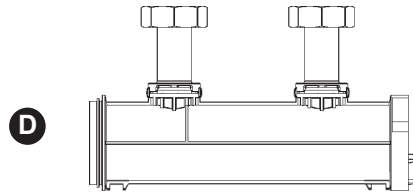
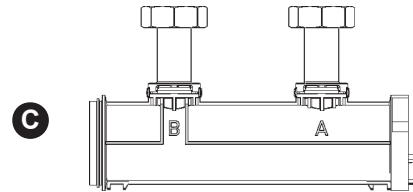
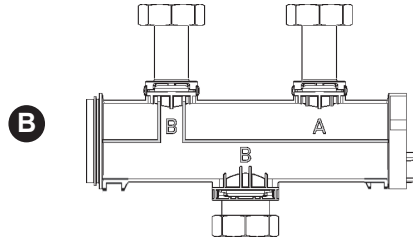
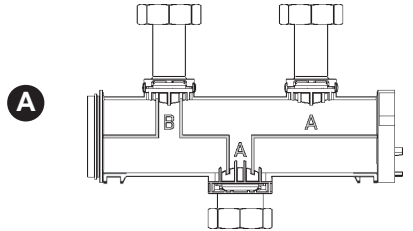
Figure 2: Overview end assemblies

## 4.2.1 Overview segments

### HSM 90



### HSM 125



- A. Flow segment
- B. Return segment
- C. Extension segment
- D. Buffer tank segment

Figure 3: HSM segments

## 4.3 Dimensions

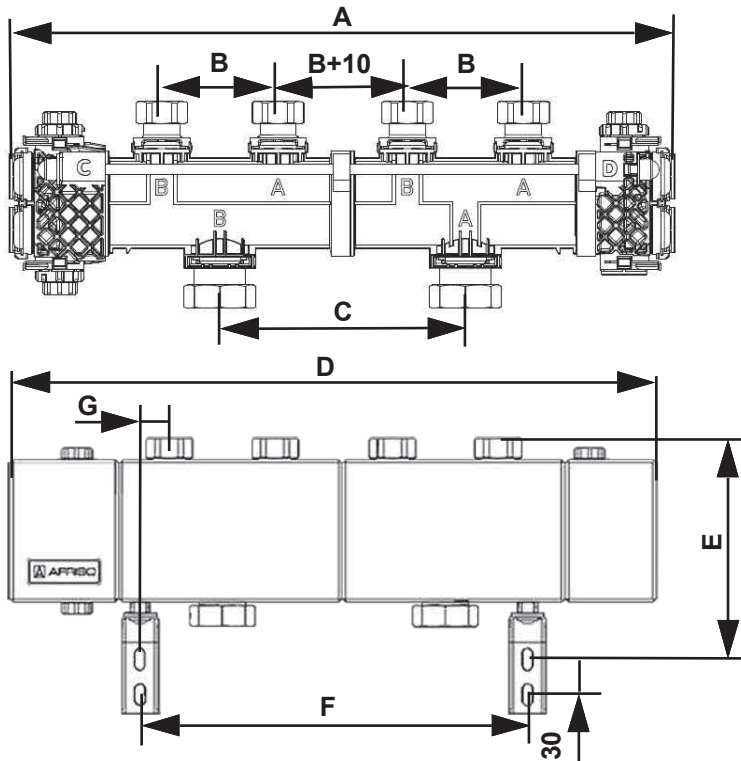


Figure 4: Dimensions in mm

Heating circuits	HSM 90				HSM 125			
	2	3	4	5	2	3	4	5
A	516	706	896	1086	656	916	1175	1435
B	90				125			
C	190				260			
D	551	741	931	1121	691	951	1211	1471
E	184				213			
F	Maximum 330				Maximum 470			
G	25				43			

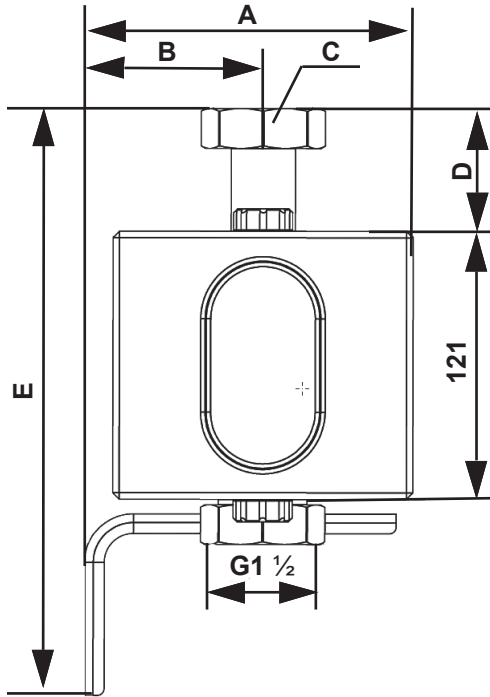


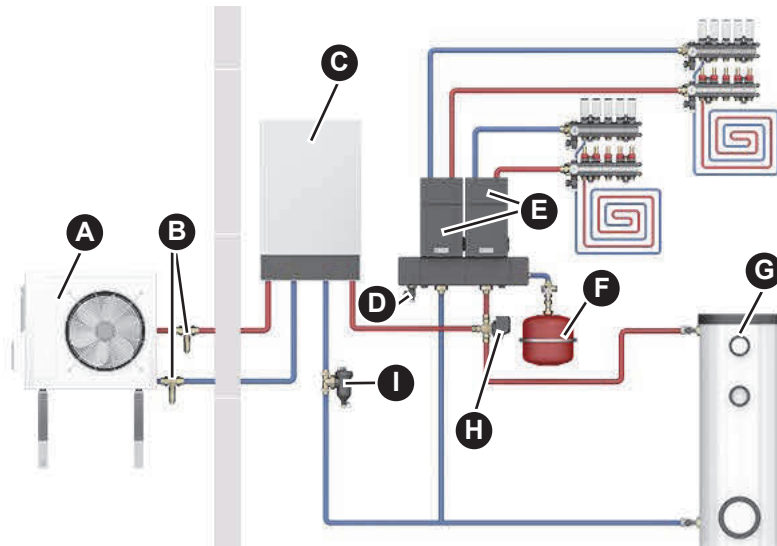
Figure 5: Lateral view, dimensions in mm

	HSM 90	HSM 125
<b>A</b>	147.5	
<b>B</b>	80 to 130	
<b>C</b>	G1	G1 ½
<b>D</b>	15	44.3
<b>E</b>	233	270

## 4.4 Function

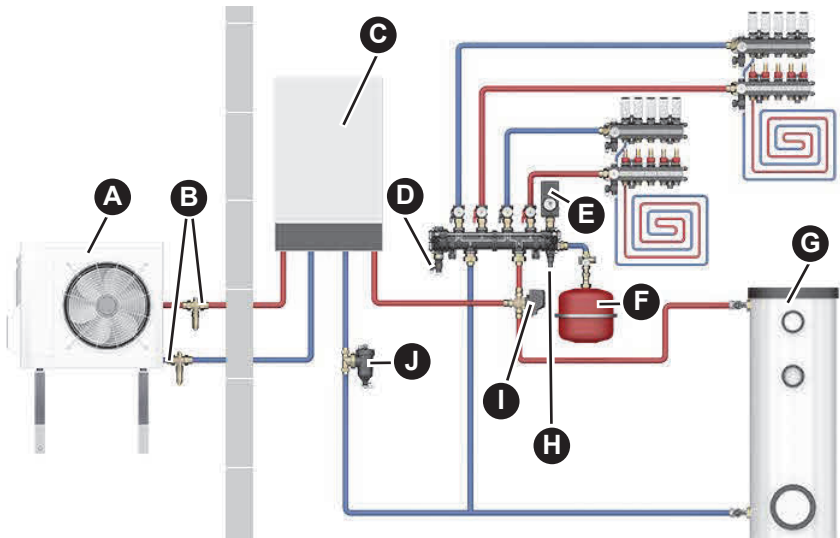
The product is used for the central distribution of heating or cooling media to several separately controllable heating or cooling circuits (zones) in a heating system.

## 4.5 Application examples



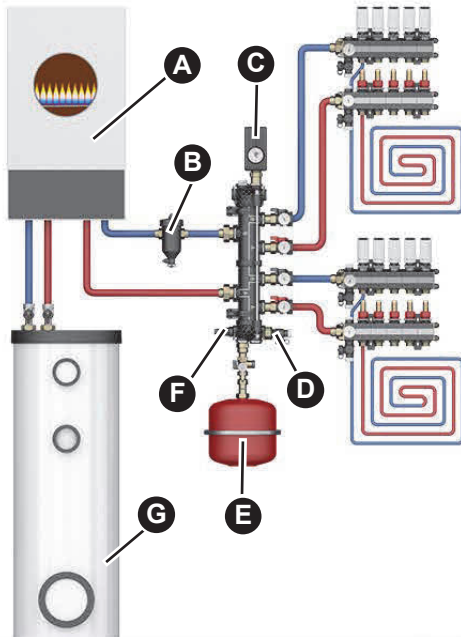
- |                                       |  |
|---------------------------------------|--|
| A. Heat pump outdoor unit             | F. Anti-tamper cap valve with diaphragm expansion vessel |
| B. Frost protection valve AAV         | G. Hot water tank  |
| C. Heat pump indoor unit              | H. Zone valve  |
| D. Boiler filling and drain valve KFE | I. Magnetite sludge separator                            |
| E. Pump assemblies                    |  |

Figure 6: Example of heating system with pump assemblies



- |                                       |  |
|---------------------------------------|--|
| A. Heat pump outdoor unit             | F. Anti-tamper cap valve with diaphragm expansion vessel |
| B. Frost protection valve AAV         | G. Hot water tank  |
| C. Heat pump indoor unit              | H. Bypass valve  |
| D. Boiler filling and drain valve KFE | I. Zone valve  |
| E. KSG mini                           | J. Magnetite sludge separator                            |

Figure 7: Example of heating system with separate hot water tank



- |                                       |  |
|---------------------------------------|--|
| A. Heat generators                    | E. Anti-tamper cap valve with diaphragm expansion vessel |
| B. Sludge separator                   | F. Bypass valve  |
| C. KSG mini                           | G. Hot water tank  |
| D. Boiler filling and drain valve KFE | H. Zone valve  |

Figure 8: Example with one direct and one mixed heating circuit

## 4.6 Scope of delivery

The scope of delivery includes:

- Manifold for 2 to 5 heating circuits with heat insulation
- Seals
- Mounting bracket with wall bracket (one wall bracket per segment)
- Mounting accessories (dowels, screws)
- Operating instructions
- Blind plug

## 4.7 Technical specifications

Parameter	Value	
<b>General specifications</b>	<b>HSM 90</b>	<b>HSM 125</b>
Axis distance	90 mm	125 mm
Distance from wall to centre of pipe	80 ... 130 mm	
Material	Plastic	
Material of seals	EPDM	
Material heat insulation	EPP	
Operating temperature and pressure	Maximum 60 °C at 6 bar Maximum 90 °C at 3 bar	
Connections to heat generator	G1 ½ with union nut	
Connection to heating circuit	G1 with union nut	G1 ½ with union nut
Number of segments	Maximum 5	
Medium	Heating circuit water or Water/glycol mixtures with a maximum of 50 % of glycol	
Flow rate	Maximum 3.5 m³/h	
Power	Maximum 80 kW (at $\Delta T = 20^\circ \text{C}$ )	

## 4.8 Diagram

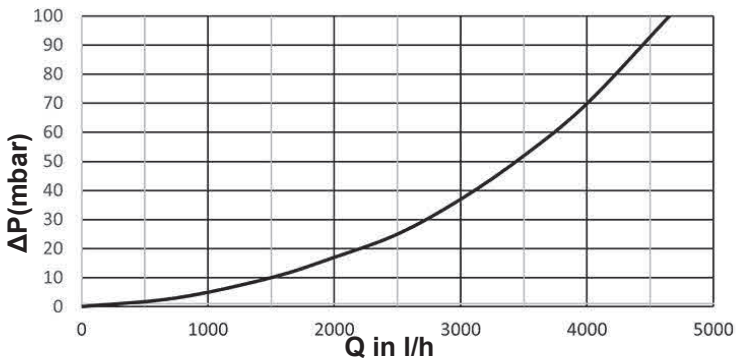


Figure 9: Pressure loss curve for 2 to 5 heating circuits

## 5 Mounting



### WARNING

#### HOT MEDIA

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

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

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

### NOTICE

#### INCORRECT HANDLING

Dirty or damaged O rings and seals can cause leaks of the product.

- Verify that the O rings and seals are clean, free from damage and in the correct position during mounting.

**Failure to follow these instructions can result in equipment damage.**

- ⇒ Verify that the medium in the system and the application area of the product are compatible.
- ⇒ Verify that a bypass valve is installed if the product is installed in a heat pump system.

If you install the product vertically, the venting components must be modified, see “Mounting the product vertically” on page 20.

### 5.1 Preparing mounting

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

- ⇒ Flush the lines of the system before installing the product.

## 5.2 Mounting the product

### NOTICE

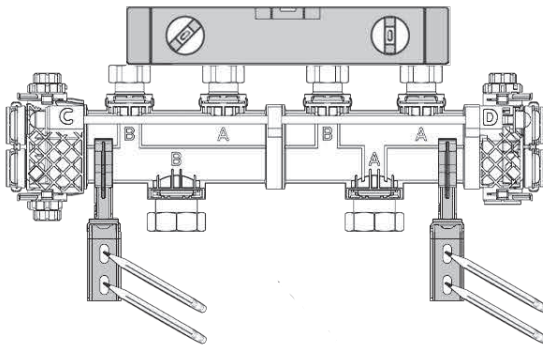
#### MECHANICAL LOADS AND STRESS

- Verify that the product is not subjected to mechanical loads and stress when connecting the product.
- Verify that one wall bracket is used per segment.

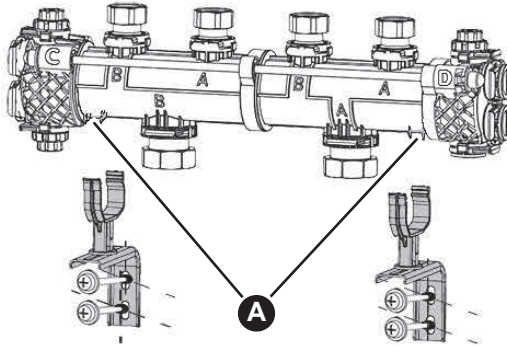
**Failure to follow these instructions can result in equipment damage.**

All information on mounting relates to the installation type "flow right-hand side".

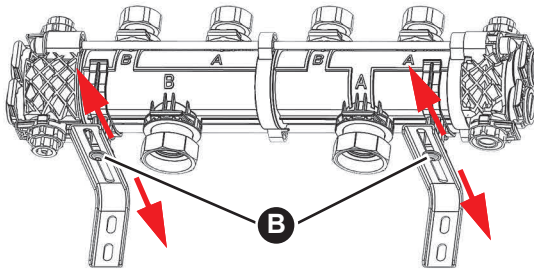
⇒ Verify that the enclosed dowels are suitable for the intended wall.



1. Remove the heat insulation.
2. Hold the product to the wall and align it with a level.
3. Mark the position for the drilling holes of the mounting bracket at the wall.
4. Drill holes ( $\varnothing$  8 mm) at the positions of the marks.



5. Mount the bracket using the enclosed dowels and screws.
6. Place the product into the wall brackets at the designated positions (A).
  - The product must snap into the wall brackets.



## Adjusting the distance from the wall

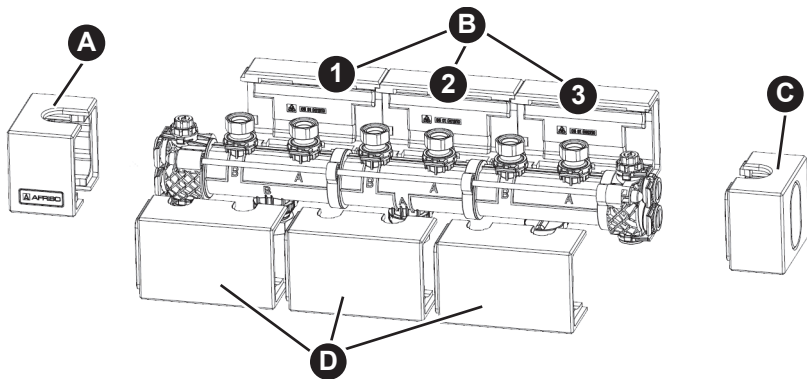
7. Hold the product firmly and loosen the screws of the wall brackets (B).
8. Adjust the distance of the product from the wall.
9. Tighten the screws (B).
10. Attach the heat insulation at the rear, see "Mounting the heat insulation" on page 19.

## 5.2.1 Mounting the heat insulation

When adjusting the distance to the wall, make sure to take the heat insulation at the rear into account.

If the minimum distance from the centre of the pipe to the wall is set to < 90 mm, there must be a distance of 30 cm to the wall at the left for attaching the rear heat insulation.

Then slide the rear cover sideways behind the product one after the other. Starting with B3, B2 and B1.



A. Left cover

C. Right cover

B. Rear cover

D. Front cover

1. First, mount the rear cover (B).

2. Mount the front cover (D).

3. Fasten the left covers at the left (A) and at the right (C).

Reverse the sequence of steps for removing the heat insulation.

## 5.3 Mounting the product vertically

### NOTICE

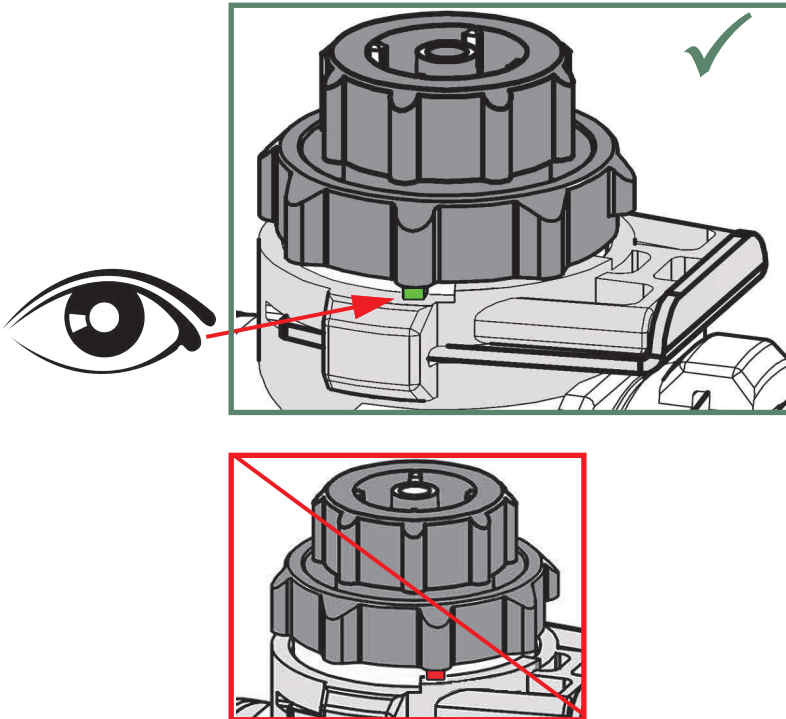
#### INCORRECT HANDLING

- Verify that venting is adjusted to the installation position of the product.

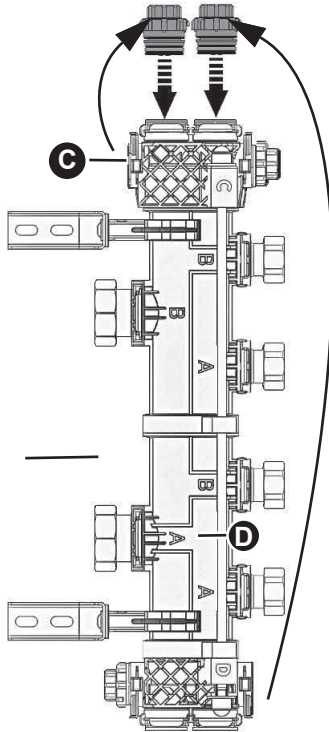
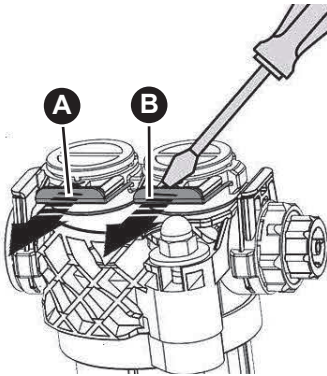
**Failure to follow these instructions can result in equipment damage.**

If you install the product in a vertical position, the venting elements at the end assemblies must be modified.

If you install the product vertically, the pump assembly must also be secured to the wall.

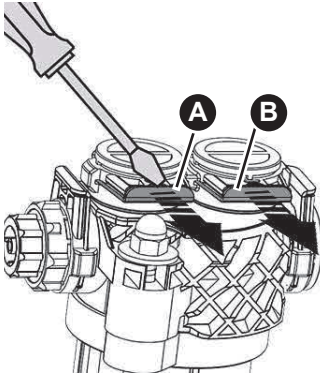


## 5.3.1 Mounting the product vertically (heating circuits on the right, flow at the bottom)

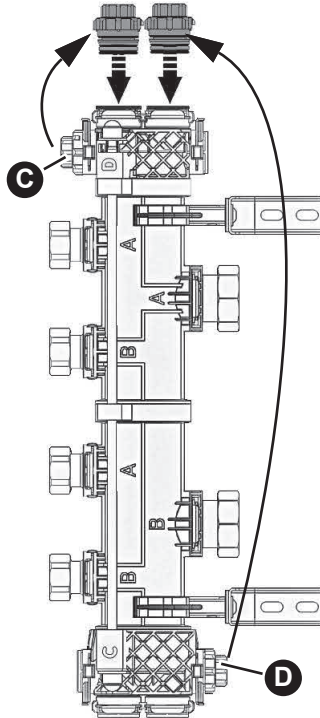


1. Use a screwdriver to remove the clips on the connections (A, B, C, D).
2. Swap the blind plug from connection A with the black valve body from connection C.
3. Swap the blind plug from connection B with the black valve body from connection D.
4. Refit the clips.
5. Mount the product, see "Mounting the product" on page 17.

## 5.3.2 Mounting the product vertically (heating circuits on the left, flow at the top)



1. Use a screwdriver to remove the clips on the connections (A, B, C, D).
2. Swap the blind plug from connection A with the black valve body from connection C.
3. Swap the blind plug from connection B with the black valve body from connection D.
4. Refit the clips.
5. Mount the product, see "Mounting the product" on page 17.



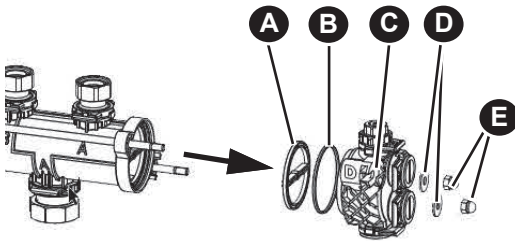
## 5.4 Extending the product by one or more segments (optional)

### NOTICE

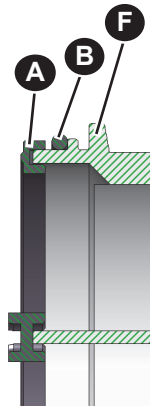
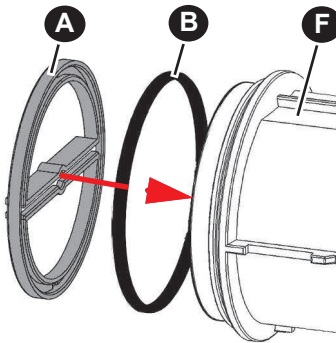
#### MECHANICAL LOADS AND STRESS

- Verify that the nuts are tightened alternately in small increments up to the maximum torque of  $4 \pm 1$  Nm.

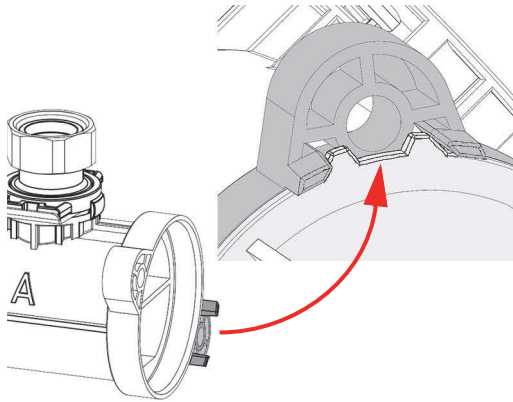
**Failure to follow these instructions can result in equipment damage.**



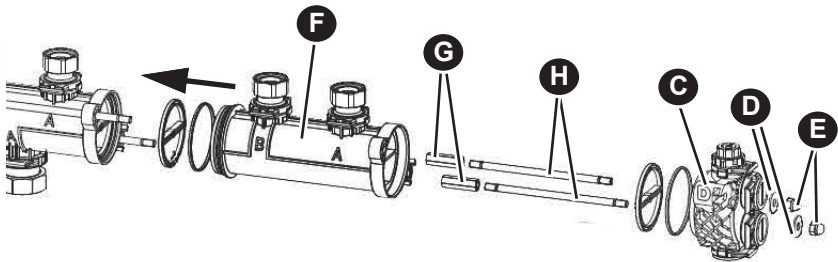
1. Unscrew the nuts (E) on the end assembly (C) marked D.
2. Remove the washers (D).
3. Remove end assembly (C).
4. Remove the O ring (B) and the seal (A).



5. Fit the O ring (B) to the new segment (F).
6. Fit the seal (A) to the new segment (F).  
- Ensure that the seal is positioned correctly.



7. Fit the new segment (F) on the threaded rods.
  - Ensure that the positioning aid is positioned correctly.



8. Extend the threaded rods (G, H).
9. Fit the O ring and seal to the end assembly (C).
  - Ensure that the seal is positioned correctly.
10. Fit the end assembly (C) onto the threaded rods.
11. Fit the washers (D).
  - Tighten the nuts (E) alternately in small steps.
12. Mount the product, see "Mounting the product" on page 17.

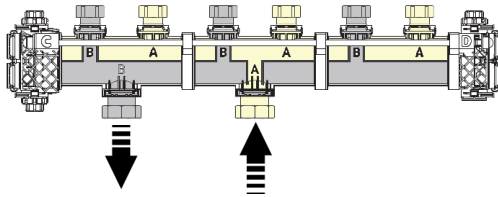
## 5.5 Interchanging flow and return - primary connections

### NOTICE

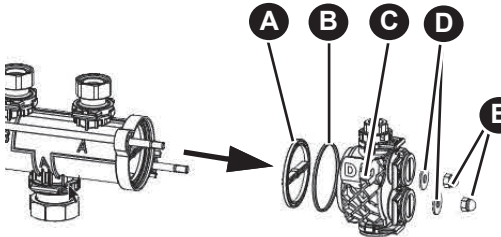
#### MECHANICAL LOADS AND STRESS

- Verify that the O rings and seals are clean, free from damage and in the correct position during mounting.
- Verify that the nuts are tightened alternately in small increments up to the maximum torque of  $4 \pm 1$  Nm.

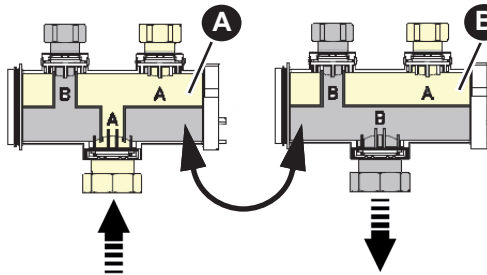
**Failure to follow these instructions can result in equipment damage.**



Delivered condition



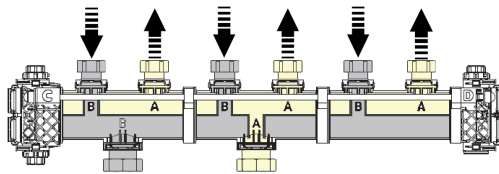
1. Unscrew the nuts (E) on the end assembly (C).
2. Remove the washers (D), end assembly (C), O ring (B) and seal (A).



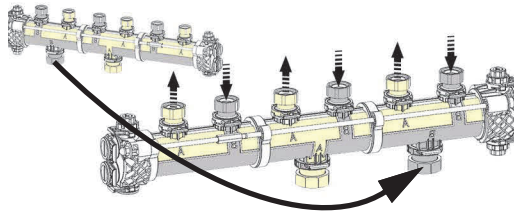
3. Remove the segments with the connections for the flow and return.  
- Pay attention to the O rings and seals.
4. Interchange the flow segment and the return segment.

5. Reassemble the segments with all O-rings and seals.
6. Refit the end assembly onto the threaded rods.
7. Fit the washers.
8. Tighten the nuts alternately in small increments.

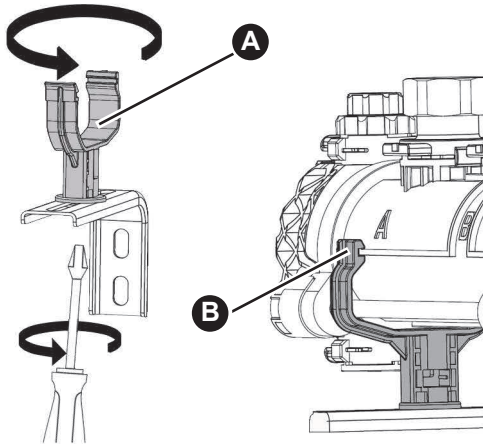
## 5.5.1 Interchanging flow and return - heating circuit connection



Delivered condition

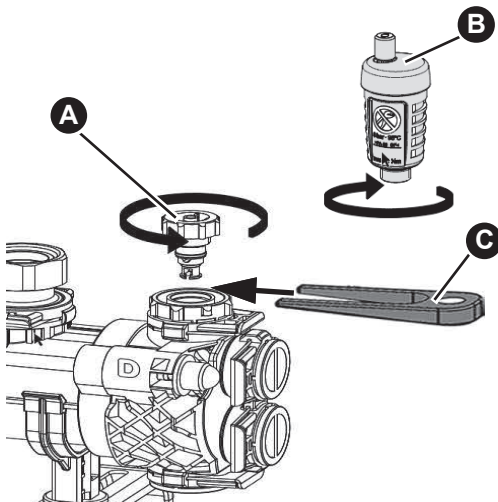


1. Turn the product by 180°.



2. Loosen the screw on the wall bracket at the mounting bracket.
3. Turn the wall bracket (A) by 180°.
4. Retighten the screw.
5. Fit the wall brackets with mounting brackets to the product for further mounting.
  - The product must snap into the wall brackets (B).
6. Mount the product, see "Mounting the product" on page 17.

## 5.6 Mounting the quick air vent

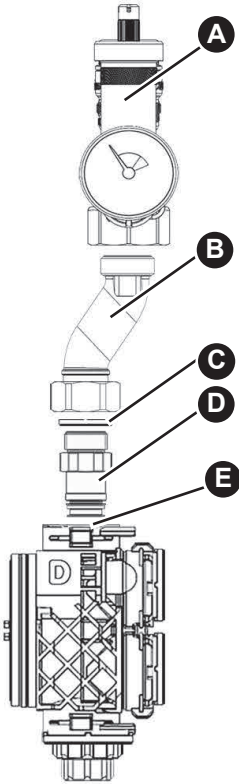


1. Loosen the vent screw (A).
2. Remove the vent screw using the special tool (C).
  - The special tool is included in the quick air vent set.
3. Tighten the quick air vent (B).
  - Observe the operating instructions for the quick air vent.

## 5.7 Mounting the boiler group (KSG mini) and HSM TE eccentric unit

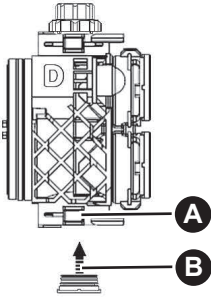
Verify that the KSG mini is always replaced in place of the black valve body in the flow.

- Use the HSM TE eccentric accessory to do so.



1. Remove the clip at connection (E).
2. Unscrew the black valve body at the end assembly.
3. Screw the HSM TE (D) to connection (E).
4. Screw the HSM eccentric unit (B) with flat gas-ket (C) onto the HSM TE (D).
5. Screw the KSG mini (A) to the eccentric unit.
  - Seal the eccentric in unit the thread of the KSG mini.
6. Reattach the clip to the connection (E).

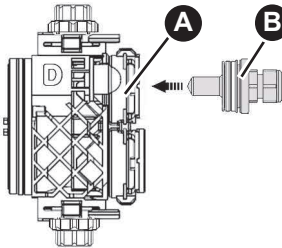
## 5.8 Hydraulic separator



If you replace the grey valve body in end assembly D with the enclosed blind plug (B), you will achieve the function of a hydraulic separator.

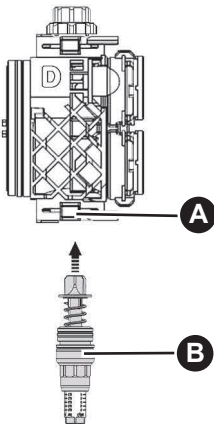
1. Remove the clip at connection (A) at end assembly D.
2. Replace the valve body with the blind plug (B).
3. Refit the clip to connection (A).

## 5.9 Mounting HSM TP (probe sleeve)



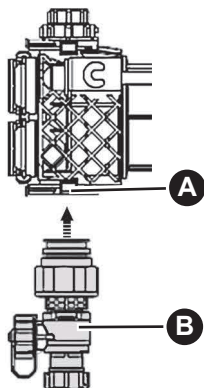
1. Remove the clip at connection (A) at end assembly D.
2. Replace the blind plug with the sensor sleeve (B).
3. Refit the clip to connection (A).

## 5.10 Mounting a bypass valve



1. Remove the clip at connection (A) on end assembly D.
2. Replace the grey valve body with the bypass valve (B).
3. Refit the clip to connection (A).

## 5.11 Mounting a boiler filling and drain valve KFE



1. Remove the clip from connection (A) on end assembly C.
2. Replace the black valve body with the boiler filling and drain valve KFE (B).
3. Refit the clip to connection (A).

## 6 Commissioning

Prerequisite for commissioning is a complete installation of all hydraulic components.

The system must be vented during and after filling.

### 6.1 Flushing, filling and venting the system

Perform a tightness test as per EN 14336.

4. Verify tightness of the components of the system.
  - Adapt the test pressure and the test duration to the corresponding installation and the corresponding operating pressure.
5. Fill the system with heating circuit water as per VDI 2035.
6. During filling, verify that all connections are tight.
7. Vent the system.

## 7 Maintenance

### Maintenance intervals

When	Activity
Every six months	Perform a visual inspection of the heating system and verify tightness

## 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
Noise in the system	Air in the system	Vent the system
	Circulation pump not properly adjusted	Verify correct adjustment of the circulation pump
Other malfunctions	-	Contact the AFRISO service hotline.

## 9 Decommissioning, disposal

Do not dispose of the product together with household waste.

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

## 10 Returning the device

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

## 11 Warranty

See our terms and conditions at [www.afriso.com](http://www.afriso.com) or your purchase contract for information on warranty.

## 12 Spare parts and accessories

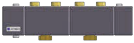
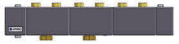


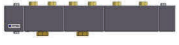
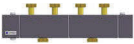

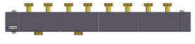
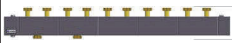

### NOTICE

#### UNSUITABLE PARTS


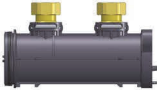
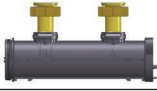
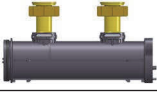





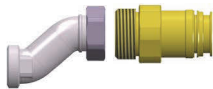
- Only use genuine spare parts and accessories provided by the manufacturer.




**Failure to follow these instructions can result in equipment damage.**

#### Product

Product designation	Part no.	Figure
HSM 90-2	79602	
HSM 90-3	79603	
HSM 90-4	79604	
HSM 90-5	79605	
HSM 90-2B	79606	
HSM 125-2	79622	
HSM 125-3	79623	
HSM 125-4	79624	
HSM 125-5	79625	
HSM 125-2B	79626	

## Spare parts and accessories

Product designation	Part no.	Figure
HSM 90E	79600	
HSM 90B	79601	
HSM 125E	79620	
HSM 125B	79621	
HSM 90 eccentric unit ABT	79640	
HSM 125 eccentric unit ABT	79641	
Quick air vent	80833	
KSG mini 3 bar 2.5 bar	77350 77351	
HSM TE	79644	
HSM TE eccentric unit	79645	

Product designation	Part no.	Figure
HSM TP	79643	
Bypass valve	79642	
HSM FDV (boiler filling and drain valve KFE)	79646	
ABT 22	79599	