

Operating instructions



Heating pump assembly

PrimoTherm®

Type:180-1 DN25 without mixer

Type: 180-1 DN25 WMZ

Type:180-2 DN25 with 3-way mixer

Type: 180-2 DN25 Vario with adjustable mixer

Type: 180-2 DN25 3WM Vario RTA for increased return temperature

Type: 180-3 DN25 RTA 60 constant, increased return temperature

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Lindenstraße 20

74363 Güglingen

Telephone +49 7135 102-0

Service +49 7135 102-211

Telefax +49 7135 102-147

info@afriso.com

www.afriso.com

1 About these operating instructions

These operating instructions describe the heating pump assemblies PrimoTherm® "180-1 DN25" / "180-2 DN25" / "180-3 DN25" (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.

Information on safety

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.



DANGER

DANGER indicates a hazardous situation, which, if not avoided, will result in death or serious injury.



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.



This symbol alerts to hazardous electrical voltage. If this symbol is used in a safety message, there is a hazard of electric shock.

2.2 Intended use

This product may only be used to circulate the following liquids in heating systems as per EN 12828.

- Heating circuit water as per VDI 2035
- Water/glycol mixtures with a maximum of 20 % (180-3 RTA) or 50 % of 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
- Adequate electrical protection, in particular upstream residual current device (RCD) when used in a heating system.
- 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:

- Use with drinking water
- Use with adherent, corrosive or flammable fluids
- Operation in systems with temperatures exceeding 95 °C (for example, solar systems)

- Hazardous area
 - If the product is operated in hazardous areas, sparks may cause deflagrations, fires or explosions
- Operation without upstream residual current device (RCD) and without earthing of the heating system

Version RTA

- Operation as standard heating pump assembly without increased return temperature

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.

Only skilled, qualified persons with relevant education and experience to enable him or her to perceive risks and to avoid hazards which electricity can create are authorised to mount, commission, maintain and decommission this product.

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

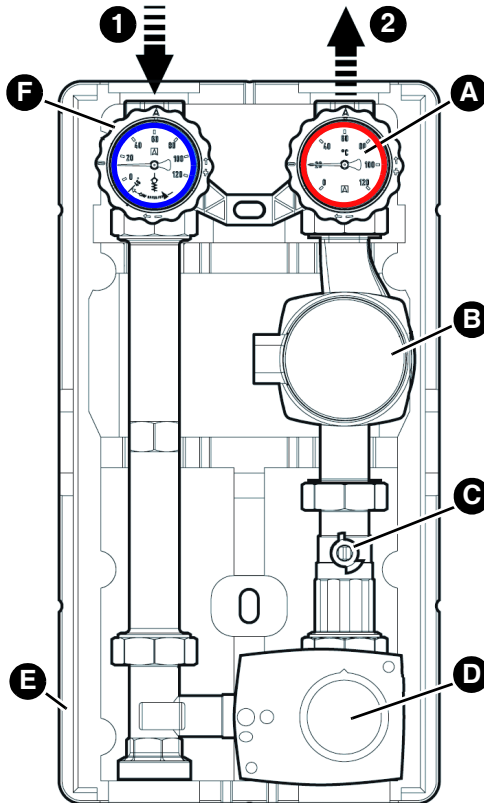
- Verify compliance with the specified ambient conditions during transport or storage of the product.
- Use the original packaging when transporting the product.
- Store the product in a clean and dry environment.
- Verify that the product is protected against shocks and impact during transport and storage.

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 pump assembly which allows for the installation of standard pumps (with G1½ connection and a length of 180 mm). The flow can be connected at the left or the right side. Optional temperature probes can be mounted to all ball valves.

4.1 Overview



1. Return

2. Flow

A. Ball valve, can be shut off, with thermometer blue and gravity brake

B. Circulation pump (various manufacturers)

C. Ball valve

D. 3-way mixer with actuator

E. Heat insulation

F. Ball valve, can be shut off, with thermometer red

Fig. 1: PrimoTherm@ 180-2 DN25 components

4.2 Overview with installation section for heat meter (thermal energy meter TEM)

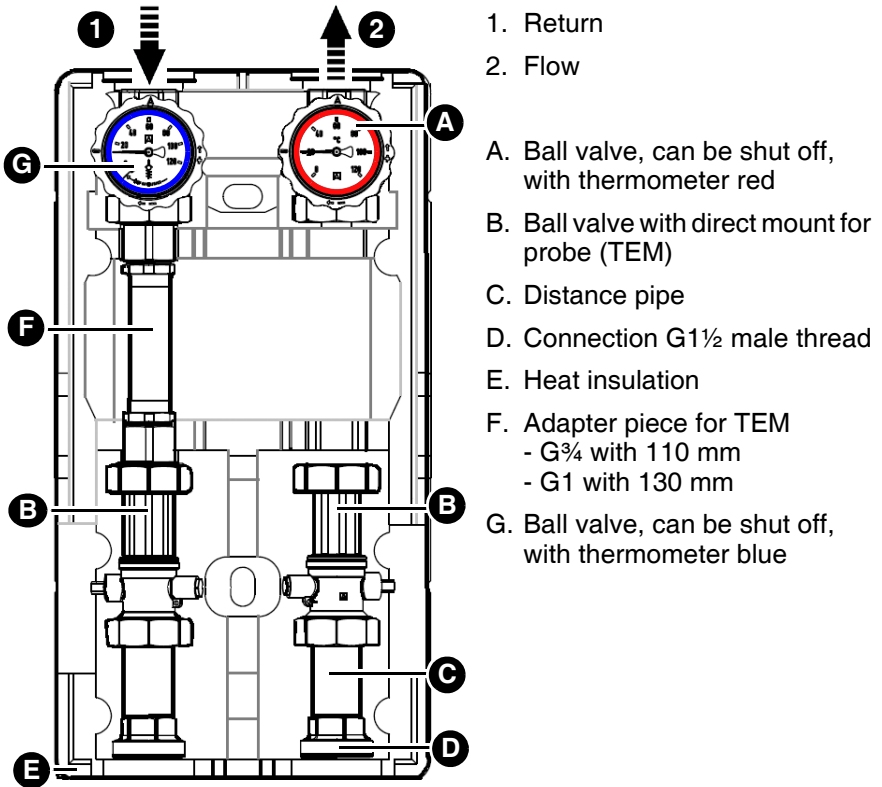
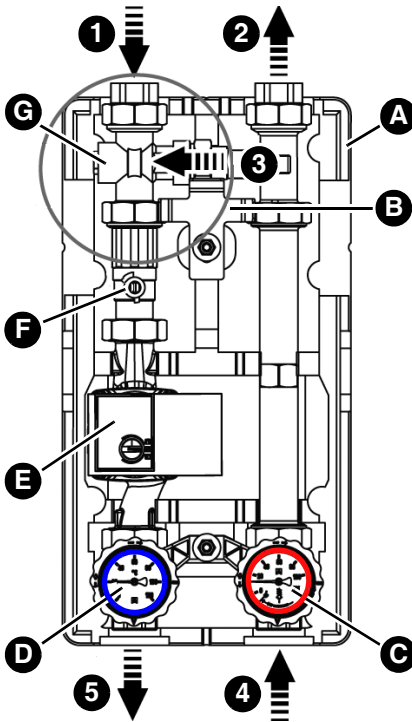


Fig. 2: PrimoTherm@ 180-1 DN25 with TEM

4.3 Overview with RTA

The product can be installed vertically or horizontally. To select the installation position, the thermometers and the pump head are rotated to the desired position.



1. Return storage
 2. Flow storage
 3. Bypass
 4. Flow boiler
 5. Return boiler
-
- A. Heat insulation
 - B. Bracket
 - C. Ball valve, can be shut off, with thermometer red and gravity brake
 - D. Ball valve, can be shut off, with thermometer blue
 - E. Circulation pump (various manufacturers)
 - F. Ball valve
 - G. Condensation protection valve

Fig. 3: PrimoTherm@ 180-3 DN25 RTA 60 increased return temperature

Product description

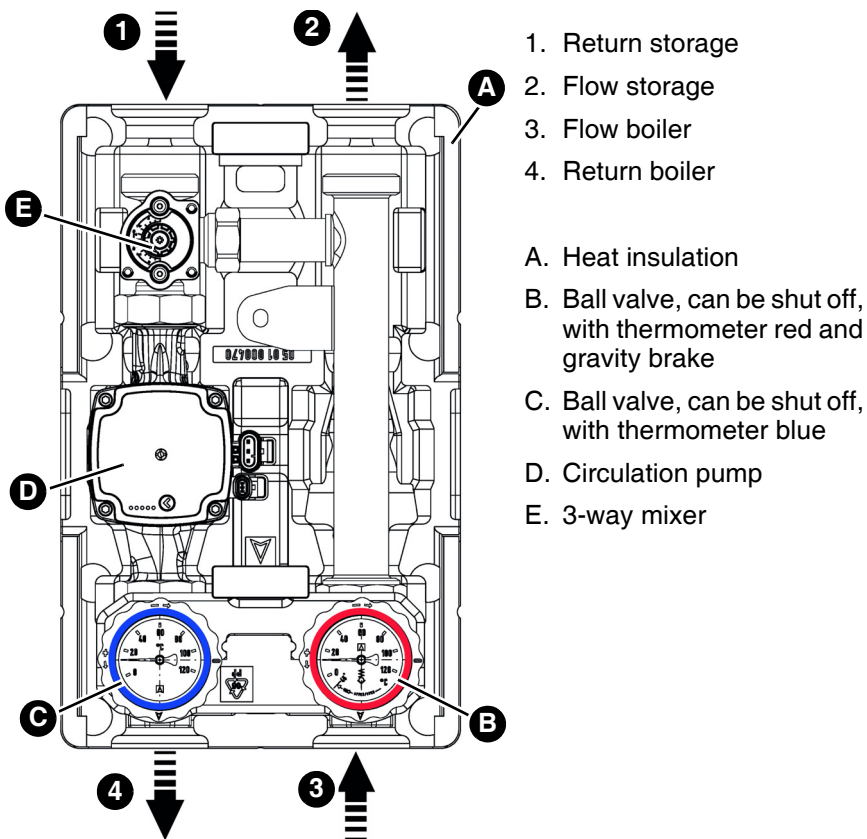


Fig. 4: PrimoTherm K 180-2 DN25 GP 3WM Vario RTA; for increased return temperature with 3-way mixer

4.4 Dimensions and connections

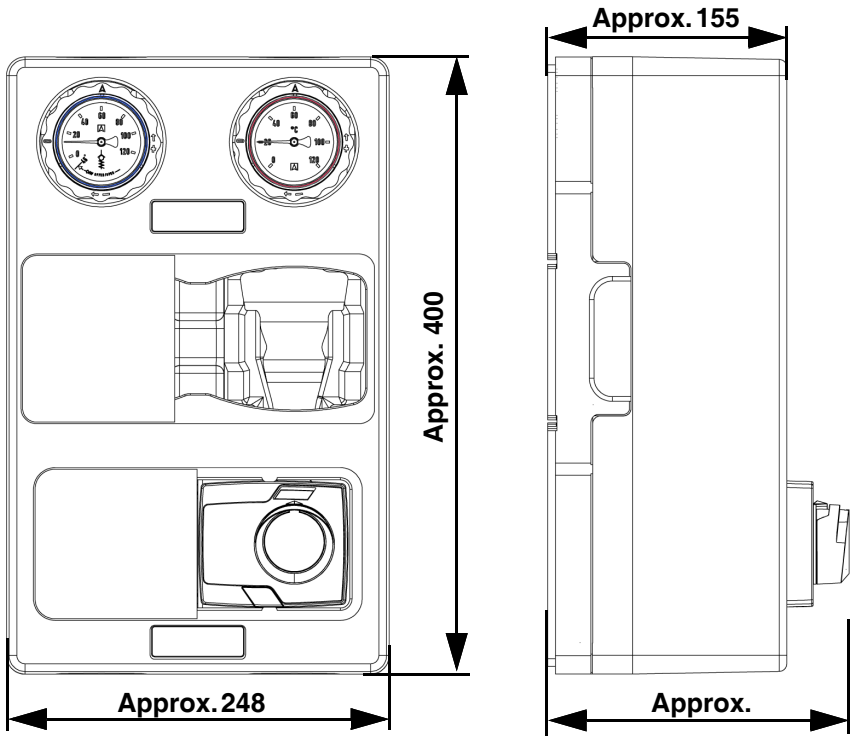


Fig. 5: *PrimoTherm@ K 180-2 DN25 short version*

Product description

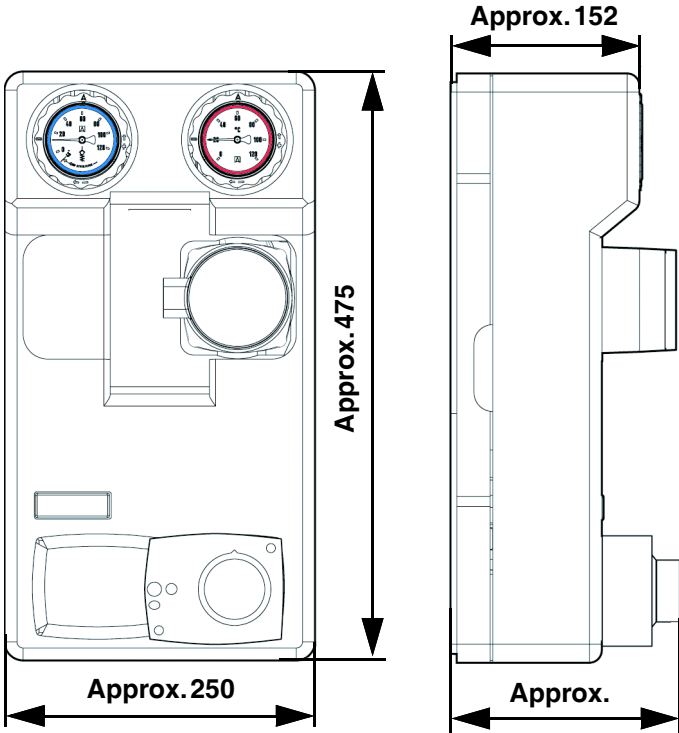


Fig. 6: PrimoTherm@ 180-2 DN25 standard version

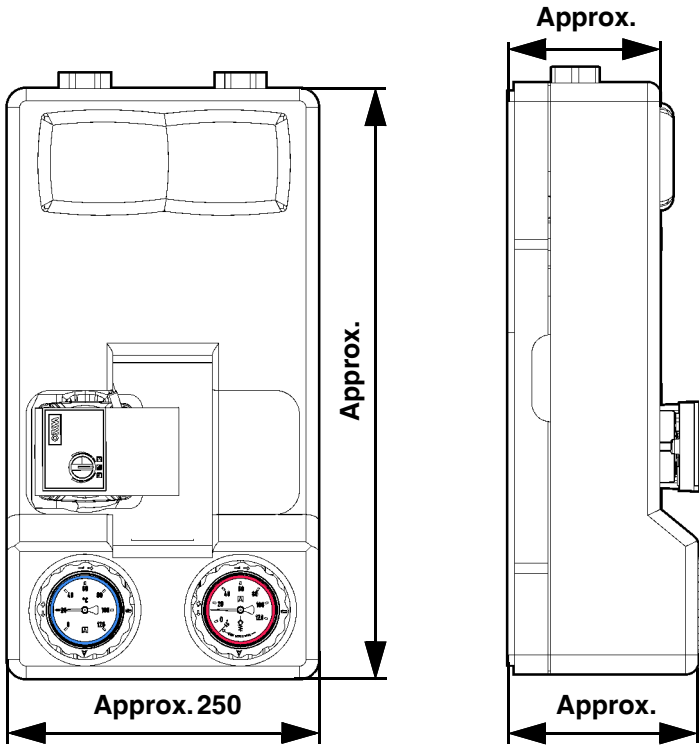


Fig. 7: PrimoTherm® 180-3 DN25 RTA 60 increased return temperature

Product description

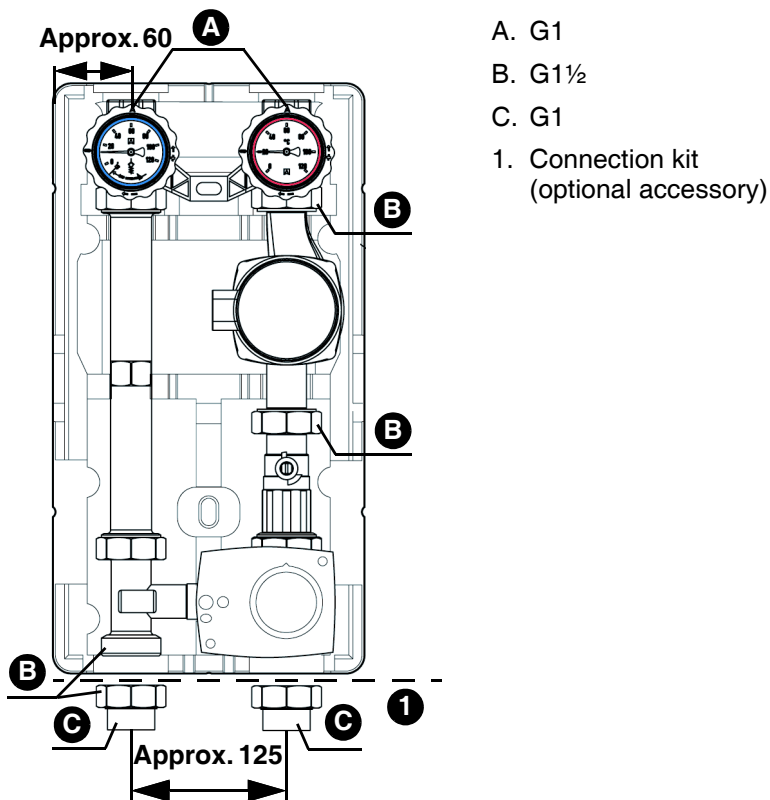


Fig. 8: PrimoTherm® 180-2 DN25 standard version with optional connection kit

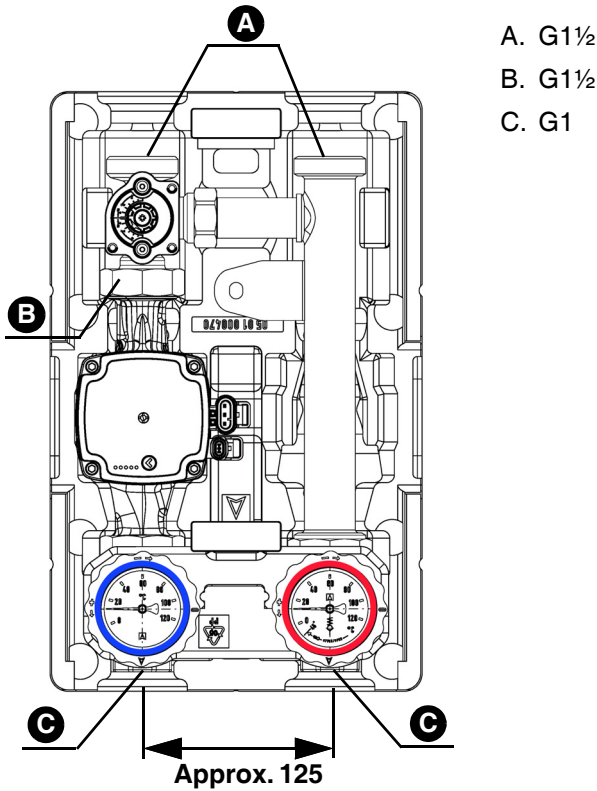


Fig. 9: PrimoTherm® K 180-2 DN25 3WM Vario RTA; for increased return temperature with 3-way mixer

4.5 Function

Version 180-2

⇒ If version 180-2 is used, ensure that the mixer motor can be controlled by the boiler controller or by another controller.

1. Verify that the boiler used features a motor controller.

Version RTA

Version RTA is used for storage tank charging of solid fuel boilers.

Version 180-2 DN25 3WM Vario RTA

Version 180-2 DN25 3WM Vario RTA with 3-way mixer and actuator is used with solid fuel boilers which have a controller for increasing the return temperature. The opening temperature is set at this controller.

Version 180-3 RTA

Version 180-3 RTA automatically controls the return temperature of the system water to the heat generator to the value adjusted in the valve. The thermostatic mixing valve mixes the temperature of the return to the heat generator to the permanently adjusted minimum temperature (60 °C). Above this temperature, system water is fed into the hot water storage tank.

4.6 Approvals, conformities, certifications

Refer to the operating instructions of the actuator. See operating instructions of the manufacturer of the circulation pump for versions with circulation pump.

4.7 Technical specifications

4.7.1 PrimoTherm® 180-1 and 180-2

Parameter	Value	
General specifications		
	PrimoTherm®	PrimoTherm® K
Dimensions with heat insulation (W x H x D)	250 x 475 x 152 mm	250 x 400 x 196 mm
Weight 180-2 DN25 without circulation pump	Approx. 5.5 kg	Approx. 3.0 kg
Material of fittings	Brass, steel, plastic	
Material of seals	EPDM, PTFE	
Material heat insulation	Polypropylene EPP	
System pressure	Max. 10 bar Verify that the maximum pressure of the circulation pump used does not exceed the maximum pressure of the product.	
Axis distance	125 mm	
System connections		
From heat generator	G1½ male thread	
To consumer	G1 female thread	
Maximum temperature medium	95 °C (maximum malfunction temperature up to 2 hours: 120 °C)	
Medium	Heating circuit water or heating circuit water with a maximum of 50 % of glycol	
Flow coefficient Kvs (m³/h)		
180-1	5.8	6.2
180-2	4.8	5.3

4.7.2 PrimoTherm® RTA

Parameter	Value	
	PrimoTherm® K 180-2 DN25 3WM Vario RTA	PrimoTherm® 180-3 DN25 RTA 60
General specifications		
Dimensions with heat insulation (W x H x D)	250 x 400 x 196 mm	250 x 475 x 153 mm
Weight	Approx. 6.2 kg	Approx. 8 kg
Material of fittings	Brass, galvanised steel	Brass
Material heat insulation	Polypropylene EPP	
System pressure	Max. 10 bar Verify that the maximum pressure of the circulation pump used does not exceed the maximum pressure of the product.	
Axis distance	125 mm	
System capacity	Max. 50 kW	Max. 32 kW
System flow rate	Max. 2150 l/h	Max. 1400 l/h
System connections		
From heat generator	G1½ male thread	
To consumer	G1 female thread	
Maximum temperature medium	95 °C	
Medium	Heating circuit water with a max. of 50 % of glycol	Heating circuit water with a max. of 20 % of glycol
Pressure loss		
A-AB	Kvs = 4.8 m³/h	Kvs = 2.94 m³/h
B-AB		Kvs = 2.12 m³/h

5 Mounting

Unless otherwise specified, all information on mounting relates to the installation type "**flow right**". Conversion is described in chapter "Mounting the actuator".

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.

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

5.2 Installing the circulation pump

If you use a product version without pre-assembled circulation pump, you must install a suitable circulation pump with a length of 180 mm yourself.

⇒ Verify that you use the seals enclosed with the product.

1. Observe the specifications of the pump manufacturer.
2. Mount the circulation pump.
 - Connection thread G1½, tightening torque 60 Nm.

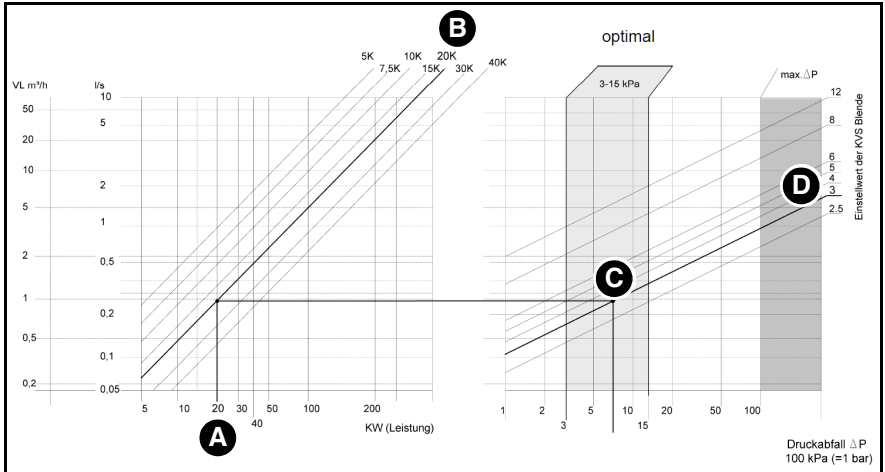
5.3 Installing a heat meter

Use a standard heat meter with G¾ (110 mm) or G1 (130 mm) connections.

1. Observe the manufacturer's specifications for the heat meter.
2. Mount the heat meter.

5.4 Determining the Kvs flow coefficient value

The adjustment value for the flow efficient Kvs for the scale is determined on the basis of the power of the heating circuit (KW) and the temperature spread between flow and return (K corresponds to °C); refer to the following table.

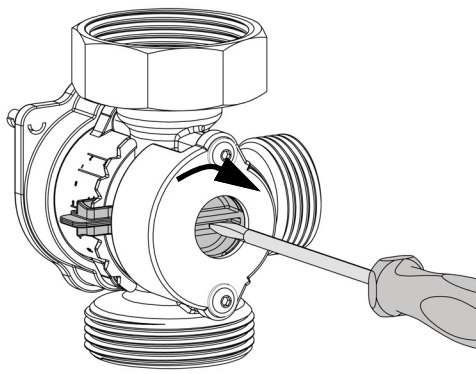


Example:

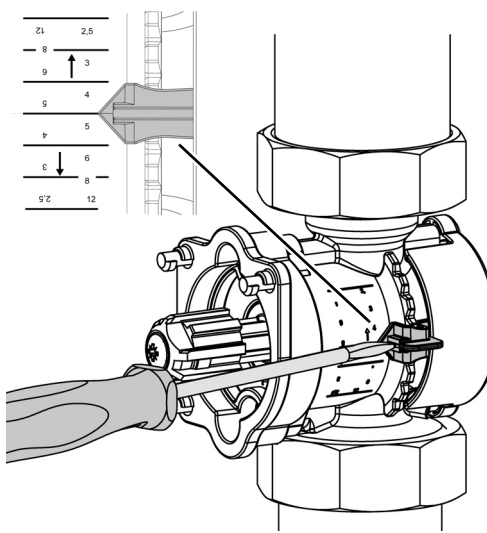
- A. Capacity: 20 KW
- B. Temperature spread: 20 K -> 20 °C
- C. Point of intersection in the centre of the optimum range 3-15 kPa
- D. Read adjustment value: 3 (in m³/h at a differential pressure of 1 bar)

Mounting

5.5 Adjusting the Kvs flow coefficient



1. Adjust the flow coefficient Kvs with a screwdriver.
2. Verify correct direction of flow.
 - The numbers must be readable the correct way round.



- Alternative, if the mixer has already been installed:
1. Adjust the flow coefficient Kvs via the scale.

5.6 Mounting the product

NOTICE

MECHANICAL LOADS AND STRESS

- Verify that the product is not subjected to mechanical loads and stress when connecting the product.
- If necessary, install a corrugated pipe compensator to compensate for mechanical stress or tension.

Failure to follow these instructions can result in equipment damage.

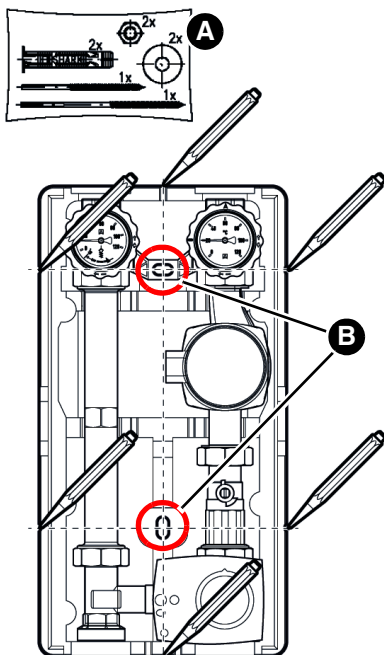
5.6.1 Mounting the product to a boiler manifold KSV

1. Remove the upper heat insulation.
2. Screw the pump assembly to the boiler manifold KVS.
3. Screw the pipes of the heating circuit to the top connections of the product (no mechanical stress).
4. Refit the heat insulation.

Mounting

5.6.2 Wall mounting

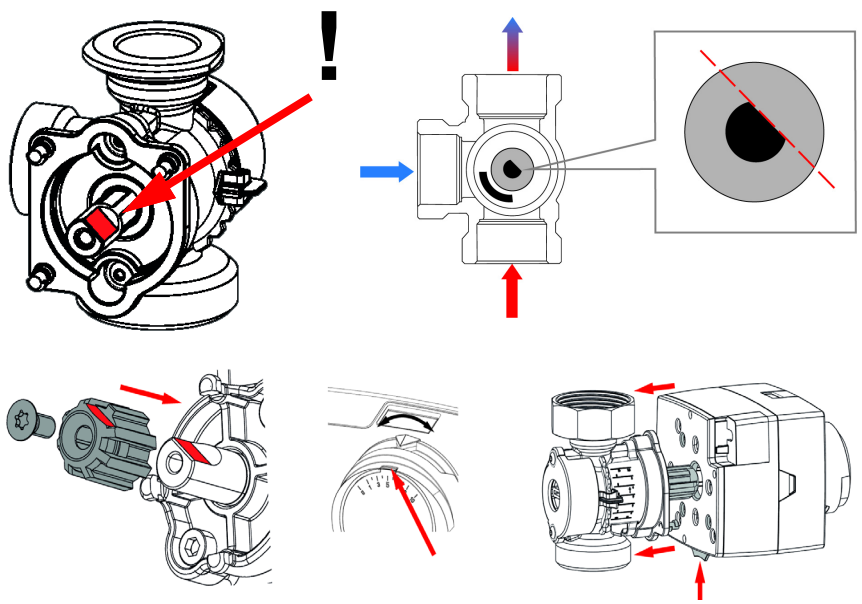
⇒ Verify that the enclosed dowels are suitable for the intended wall.



1. Verify that the wall can carry the product.
2. Remove the upper heat insulation.
3. Hold the product to the wall and align it with a level.
4. Draw six marks.
5. Interconnect the opposing marks.
6. Drill holes ($\text{Ø } 10 \text{ mm}$) at the position of the two centre marks (B).
7. Mount the product using the enclosed dowels and screws (A).
 - long hanger bolt at the top
 - short hanger bolt at the bottom

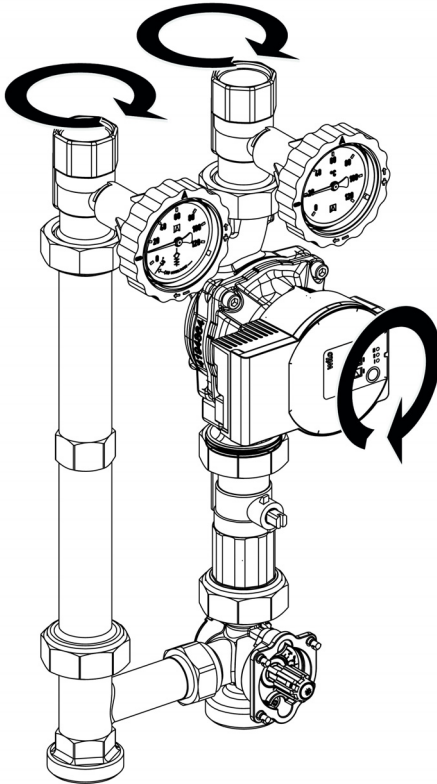
Fig. 10: Mounting the product to a wall

5.7 Mounting the actuator



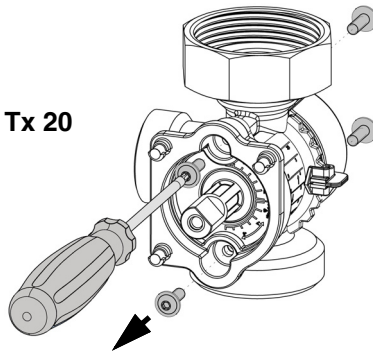
5.8 Interchanging flow/return

The flow is at the right side when the product is shipped.

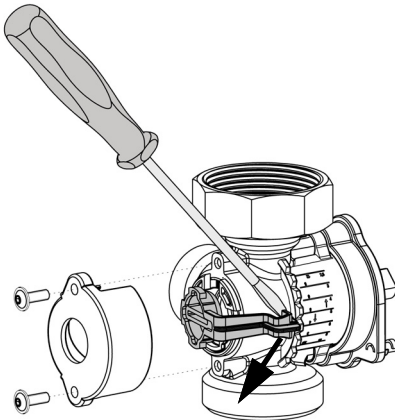


1. Uninstall the actuator.
2. Interchange left and right lines.
3. Turn the pump head.

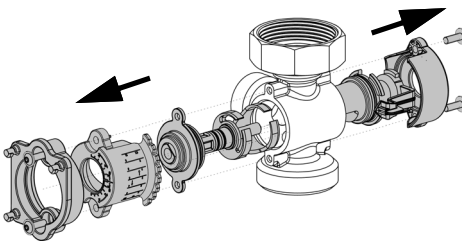
5.8.1 Converting the mixer/bypass



4. Remove the screws.



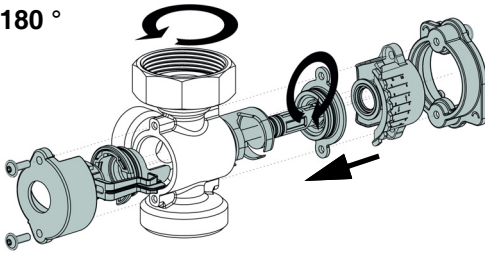
5. Push the pointer of the scale out of the raster using a screwdriver.



6. Remove the plastic components.

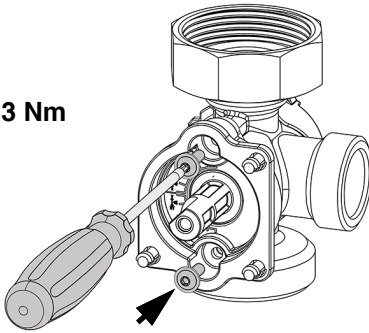
Mounting

180 °



- 7. Turn the mixer by 180°.
- 8. Mount the plastic components back to the mixer.

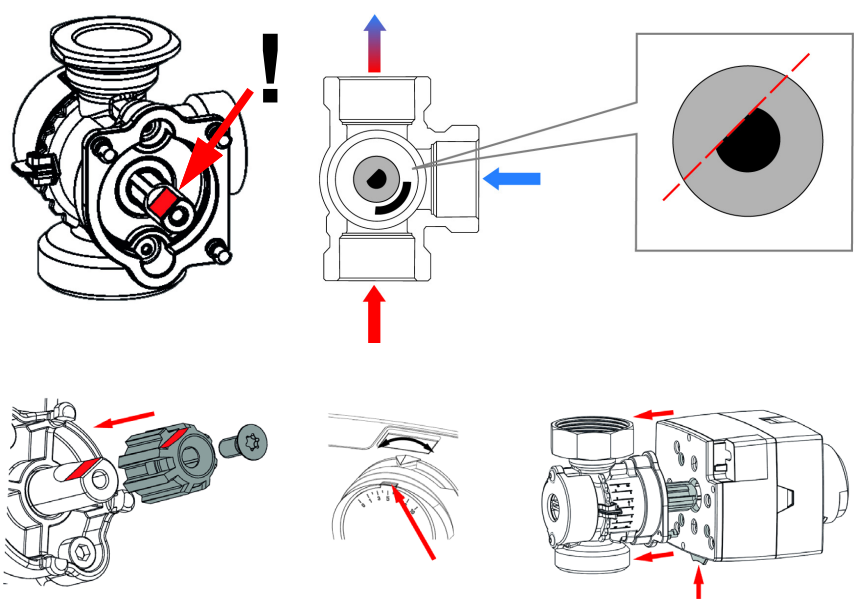
3 Nm



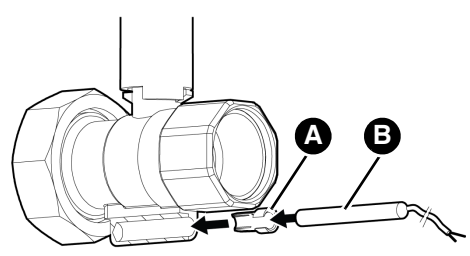
- 9. Install the screws.
- Tightening torque 3 Nm

Mounting

5.8.2 Mounting the actuator (flow at the left)



5.8.3 Mounting the temperature probe (optional)



Depending on the type of the temperature probe (B), it may be necessary to shorten the ferrule (A).

5.9 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 opening the system and 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 is unpressurised, you can mount the product.

1. Drain the system.
2. Flush the lines of the system.
3. Mount the product as described in chapter "Mounting the product to a boiler manifold KSV" or in chapter "Wall mounting".

5.10 Electrical connection



DANGER

ELECTRIC SHOCK

- Verify that the degree of protection against electric shock (protection class, double insulation) is not reduced by the type of electrical installation.

Failure to follow these instructions will result in death or serious injury.



DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

- Disconnect the mains voltage supply before performing the work and ensure that it cannot be switched on.
- Verify that no hazards can be caused by electrically conductive objects or media.

Failure to follow these instructions will result in death or serious injury.



DANGER

ELECTRIC SHOCK

- Verify that the product is operated with an upstream residual current device (RCD).
- Verify that the heating system in which the product is operated is earthed.

Failure to follow these instructions will result in death or serious injury.

NOTICE

ELECTROSTATIC DISCHARGE

- Always earth yourself before touching electronic components.

Failure to follow these instructions can result in equipment damage.







1. Connect the circulation pump and the actuator in accordance with the instructions of the manufacturer.

6 Commissioning

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

1. Perform a tightness test as per EN 14336.
2. For commissioning, set all ball valves to 0° position.
3. 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.
4. Set to ball valves to 45° position for filling of the system.
5. Fill the system with filtered water as per VDI 2035.
6. During filling, verify that all connections are tight.
7. Vent the system.

6.1 Thermometer ball valves

Thermometer ball valves			
	0°	Normal operation: Gravity brake active, ball valve open	
	90°	Maintenance: Ball valve closed	
	45°	Commissioning, filling, venting, draining and flushing: Both ends open (gravity brake not active)	

7 Operation



DANGER

ELECTRIC SHOCK

- If you detect moisture or wetness in the vicinity of the product (for example, on pipes or connections), immediately disconnect the product from the supply voltage.

Failure to follow these instructions will result in death or serious injury.

During operation, the thermometer ball valves and the ball valves must be open (position 0, see chapter "Thermometer ball valves").

8 Maintenance

Maintenance intervals

When	Activity
Monthly	Perform a visual inspection of the heating system and verify tightness.
If required	Replace the circulation pump.

9 Troubleshooting

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

Also observe the corresponding instructions of the manufacturer in the case of malfunctions of the circulation pump or the actuator.

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.
Circulation pump does not run	Pump defective	Replace the circulation pump
Other malfunctions	-	Contact the AFRISO service hotline.

9.1 Replacing the circulation pump



DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

- Disconnect the mains voltage supply before performing the work and ensure that it cannot be switched on.

Failure to follow these instructions will result in death or serious injury.

1. Disconnect the mains voltage.
2. Close all ball valves and drain the affected system part.
 - In the case of versions with ball valve below the circulation pump, it is sufficient to close the two ball valves upstream and downstream of the circulation pump.
3. Replace the circulation pump. Use new seals and tighten the screw connections with 60 Nm.
4. Open all ball valves and perform a tightness test.
5. Fill and vent the system.
6. Connect the circulation pump to supply voltage.

10 Decommissioning, disposal

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

Electronic components must not be disposed of together with the normal household waste.



1. Disconnect the product from the supply voltage.
2. Dismount the product (see chapter "Mounting", reverse sequence of steps).
3. Dispose of the product.

11 Returning the device

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

12 Warranty

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