

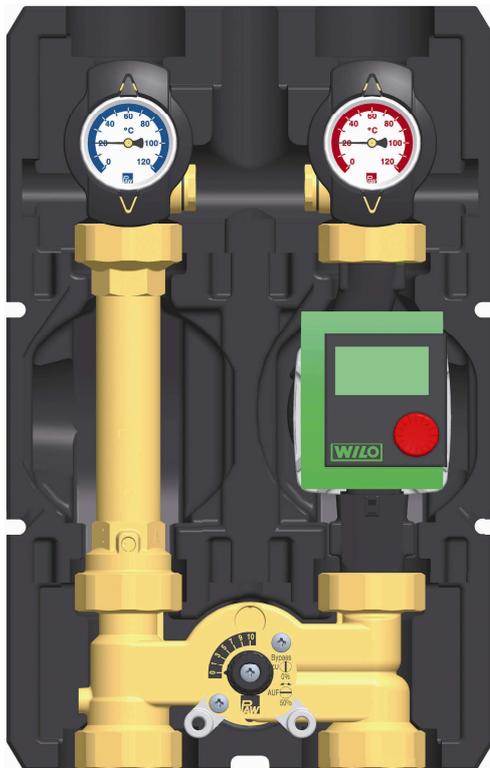


English

# Installation and Operation Instructions

## K35 Modular Heating Circuit

### with 3-temperature mixing valve



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Translation of the original instructions

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## 1 General information

### 1.1 Scope of these instructions

These instructions describe the installation, commissioning and operation of the K35 modular heating circuit with 3-way mixing valve. For other components of the heating system such as pumps, controllers or distribution manifolds, please observe the instructions of the corresponding manufacturer. The chapters called [specialist] are intended for specialists only.

### 1.2 Designated use

The modular heating circuit may only be used in hydronic heating closed-loop systems taking into consideration the technical limit values indicated in these instructions. The heating circuit must **not** be used in domestic water applications. Improper usage excludes any liability claims. Only use PAW accessories with the modular heating circuit.

The wrapping materials are made of recyclable materials and can be disposed of with recyclable materials.

## 2 Safety instructions

The installation and commissioning as well as the connection of electrical components require technical knowledge commensurate with a recognised vocational qualification as a fitter for plumbing, heating and air conditioning technology, or a profession requiring a comparable level of knowledge [specialist]. The following must be observed during installation and commissioning:

- relevant local and national regulations
- accident prevention regulations of the professional association
- instructions and safety instructions mentioned in this manual

	 <b>CAUTION</b>
<p><b>Personal injury and damage to property!</b></p> <p>The modular heating circuit must only be used in hydronic heating closed-loop systems filled with heating water according to VDI 2035 / Ö-Norm H 5195-1.</p> <p>The heating circuit must <b>not</b> be used in domestic water applications.</p>	

### NOTICE

#### Material damage due to mineral oils!

Mineral oil products cause lasting damage to seals made of EPDM, whereby the sealant properties are lost. We do not assume liability nor provide warranty for damage to property resulting from sealants damaged in this way.

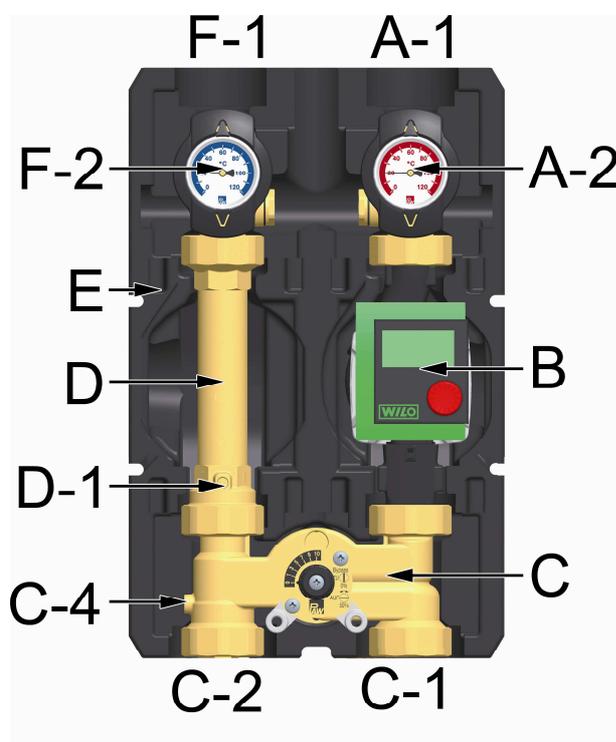
- It is imperative to avoid that EPDM gets in contact with substances containing mineral oils.
- Use a lubricant based on silicone or polyalkylene and free of mineral oils such as Unisilikon L250L and Syntheso Glep 1 of the Klüber company or a silicone spray.

### 3 Product description

The heating circuit K35 is a preassembled fitting group for hydronic heating closed-loop systems.

The heating circuit is designed such that it can be directly mounted onto a mounting plate with thread connections or onto a distribution manifold. The distance between the pipe axis and the wall must be at least 10 cm, as the connection C-3 is on the back side of the mixing valve.

#### 3.1 Equipment

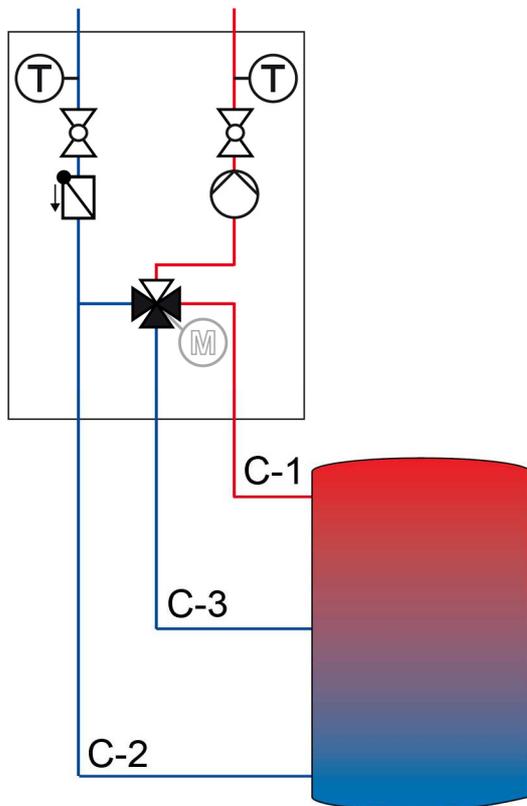


- A-1 Flow to the consumer circuit
- A-2 Full metal thermometer with immersion sleeve integrated in the ball valve (flow)
- B Heating pump
- C 3-temperature mixing valve
- C-1 High-temperature flow from the buffer tank
- C-2 Return to the buffer tank
- C-3 additional connection on the back side of the mixing valve, for supply of the low-temperature flow
- C-4 Non return valve, can be opened
- D-1 Check valve, can be opened
- D Return pipe
- E Design insulation with optimised function
- F-2 Full metal thermometer with immersion sleeve integrated in the ball valve (return)
- F-1 Return from the consumer circuit



Rear view of the mixing valve

### 3.2 Function

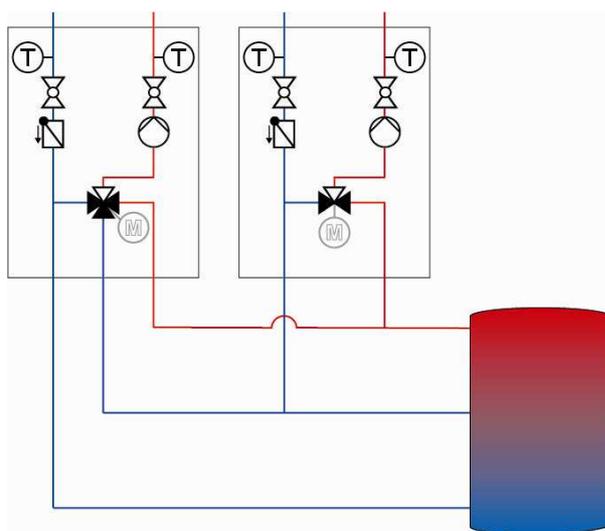


#### K35 - 3-temperature mixing valve with additional connection for a second flow temperature

The 3-temperature mixing valve is used in combination with a buffer tank, which can be heated by either a solar thermal installation, a solid fuel boiler or a conventional boiler.

If the consumer only needs a low temperature level, such as radiant panel heating systems, the 3-T mixing valve first takes the the flow water from the intermediate part of the storage tank. When the temperature in this part is no longer sufficient, the hot water from the upper part of the tank is used.

By using two parts of the storage tank for two different flow temperatures, the energy from the buffer tank can be used more efficiently. The return temperatures are low and the stratification in the tank is maintained.



Assembly with radiator circuit

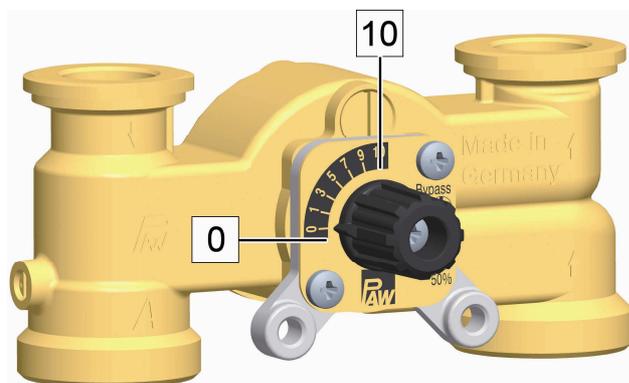
#### Applications:

- Heating systems with buffer tank and solar heating support
- Control of radiant floor or wall heating

### 3.2.1 3-temperature mixing valve [specialist]

The 3-temperature mixing valve driven by an electric motor adjusts the flow temperature of the consumer circuit to the desired value in combination with a flow sensor and the controller.

The 3-temperature mixing valve is equipped with a second flow connection (C-3) on the back side. This connection allows to take water with a low flow temperature from the intermediate part of the tank (for example a buffer tank).



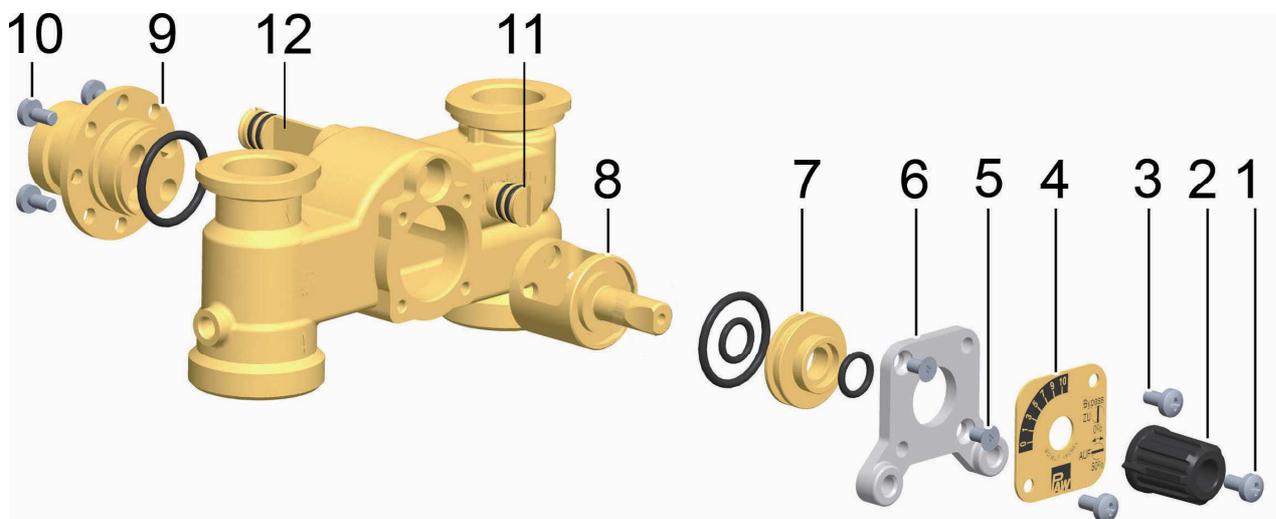
- Position 0-5: The flow temperature is attained by mixing return water and water from the intermediate part of the tank
- Position 5: 100% supply from the intermediate part of the tank
- Position 5-10: The flow temperature is attained by mixing water from the intermediate part and the upper part of the tank

### 3.2.2 Change of the flow line [specialist]

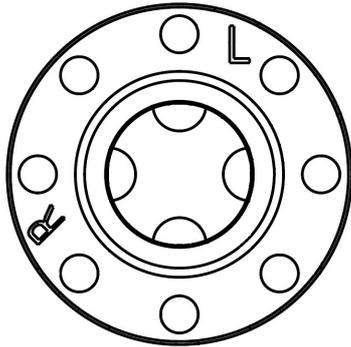
#### Dismounting the mixing valve

1. Take off the thermometer handles (A-2, F-2) and remove the insulating front shell.
2. Take the heating circuit out of the insulating back shell.
3. Dismount the mixing valve (C).

#### Conversion of the mixing valve

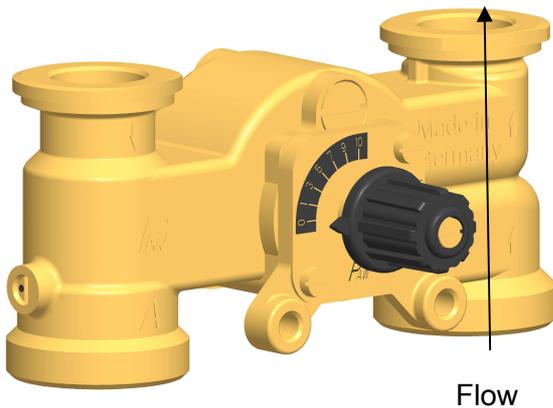


1. Unscrew the screw (1).
2. Take the rotary knob (2) off the rod of the cock.
3. Unscrew the screw (3).
4. Take off the cover plate (4).
5. Unscrew the two screws (5).
6. Remove the front plate (6).
7. Extract the sealing bush (7) and the valve cock (8) from the mixing valve body.
8. Unscrew the screws (10) on the back side of the mixing valve and take off the cover (9).
9. Pull the sealing plug (11) to the front using pliers. Remove the flow-reducing plate (12) by pushing from front to back.

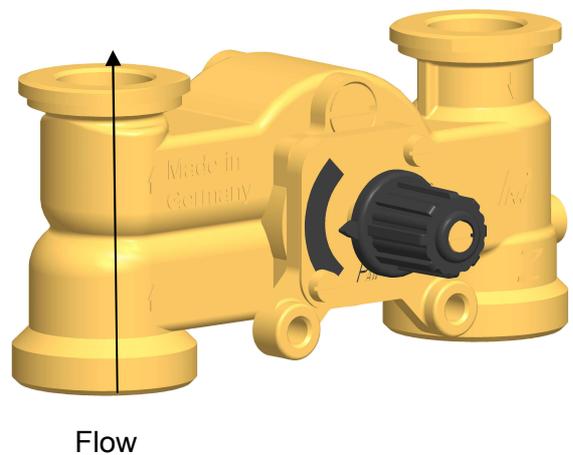


Assembly position  
for mixing valve with flow on the left

10. Turn the body of the mixing valve by 180°.
11. Mount the flow-reducing plate (12) on the back side and the sealing plug (11) on the front.
12. Mount the cover (9) on the back side of the mixing valve. The letters on the cover indicate the correct assembly position:  
flow on the left: L points upwards  
flow on the right: R points upwards
13. Fix the cover (9) using the screws (10).
14. Insert the sealing bush (7) and the valve cock (8) into the channel of the mixing valve.
15. Fix the front cover (6) with the screws (5).



Mixing valve with flow on the right



Mixing valve with flow on the left

16. Turn the cover plate (4) such that the designation PAW is at the bottom and the scale is located as can be seen in the figure above.
17. Fix the cover plate (4) with the screws (3).
18. Put the rotary knob (2) onto the cock rod.
19. Fix the rotary knob (2) to the cock (8) with the screw (1).

**Modification and commissioning of the heating circuit**

1. Interchange the return pipe (D) and the flow pipe and the pump (B).

**Consider the flow direction of the pump!**

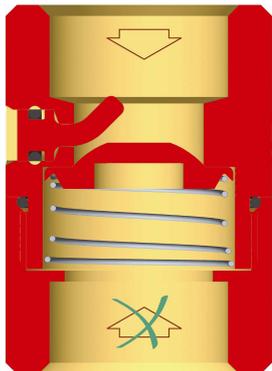
Turn the pump head such that the terminal head is directed to the top or to the centre of the heating circuit.

2. Dismount and interchange the ball valves.
3. Mount the heating circuit and connect it to the installation.
4. Check all union nuts before commissioning and firmly tighten them if necessary.
5. Mount the insulation after the pressure test. Mount the thermometer handles (A-2, F-2).

### 3.2.3 Check valve and non return valve [specialist]

The heating circuit is equipped with a check valve (D-1, opening pressure 200 mm wc) in the return pipe and a non return valve (C-4, opening pressure 50 mm wc) in the mixing valve return. They can be opened manually.

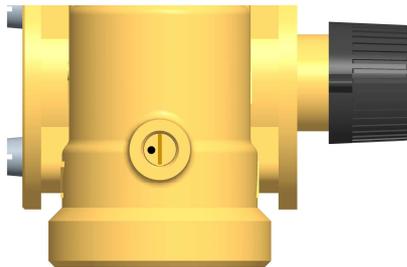
#### Operation



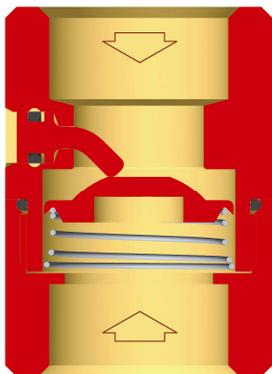
During operation, both marks must point to "Z" (closed).

→ The check valve and the non return valve are closed.

→ Flow only in the direction of the arrow



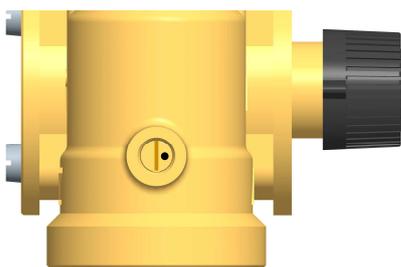
#### Filling, emptying, bleeding



For filling, emptying and bleeding the mark must be directed to "A".

→ The check valve and the non return valve are open.

→ Flow in both directions

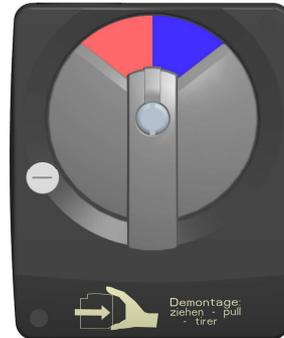


### 3.3 Optional equipment: actuator [specialist]

The PAW actuator for weather-compensated control is available as an accessory. For mixing valves with flow on the left, the scale must be turned by 180°.



for mixing valves with flow on the right

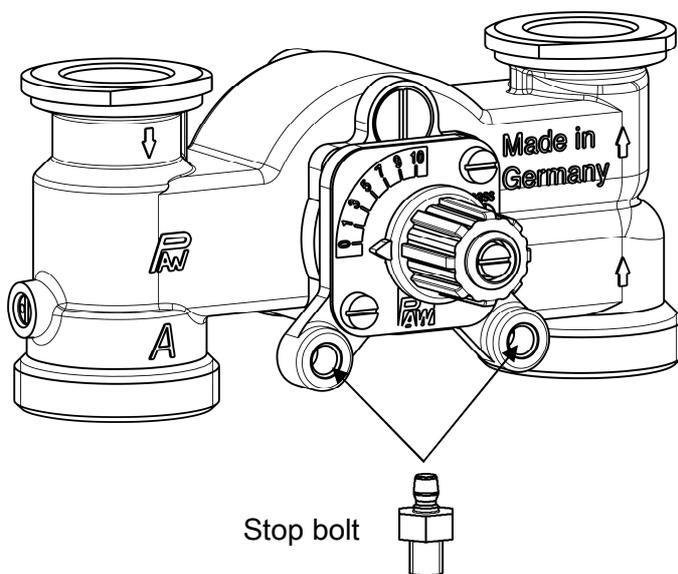


for mixing valves with flow on the left



#### Assembly of the actuator for mixing valves with flow on the right:

1. Turn the rotary knob of the mixing valve to position 0.
2. Set the actuator to manual mode by turning the selector switch.
3. Turn the rotary lever of the actuator to the left to the position shown in the figure.
4. Put the actuator onto the rotary knob of the mixing valve and the two stop bolts.
5. Set the actuator to automatic mode.



## 4 Assembly and installation [specialist]

The K35 modular heating circuit must be either installed on a set of wall bracket and mounting plate or a modular distribution manifold. The wall bracket and the mounting plate (item no. 3422SET) or the distribution manifold are not included in delivery.

The distance between the pipe axis and the wall must be at least 10 cm, as the connection C-3 is on the back side of the mixing valve.

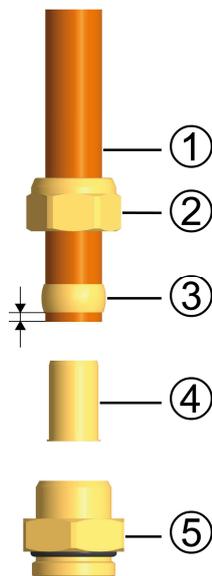
### NOTICE

#### Damage to property!

The location of installation must be dry, load-carrying and frost-proof to prevent material damage to the installation.

#### 4.1 Accessories: compression fitting (not included in delivery)

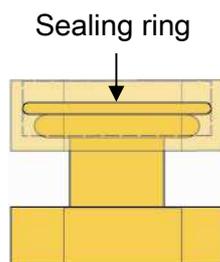
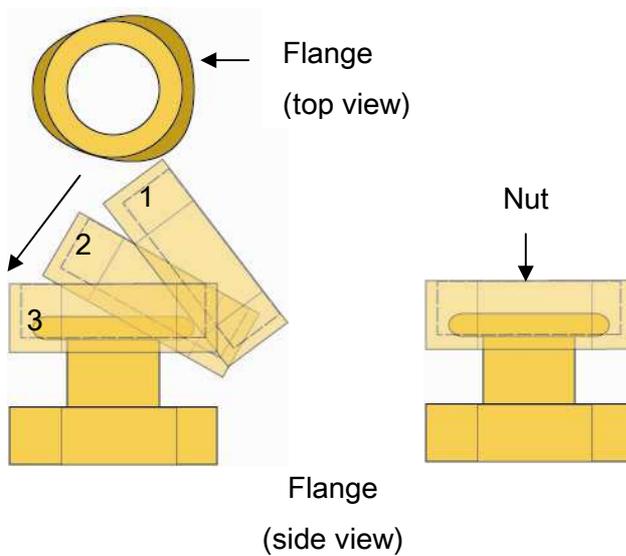
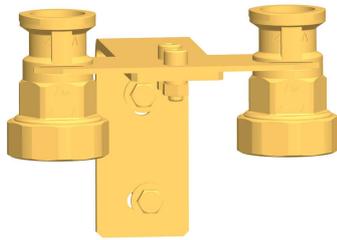
The connection to the heating installation can be carried out fast, pressure-proof and without soldering when you use the optionally available compression fittings.



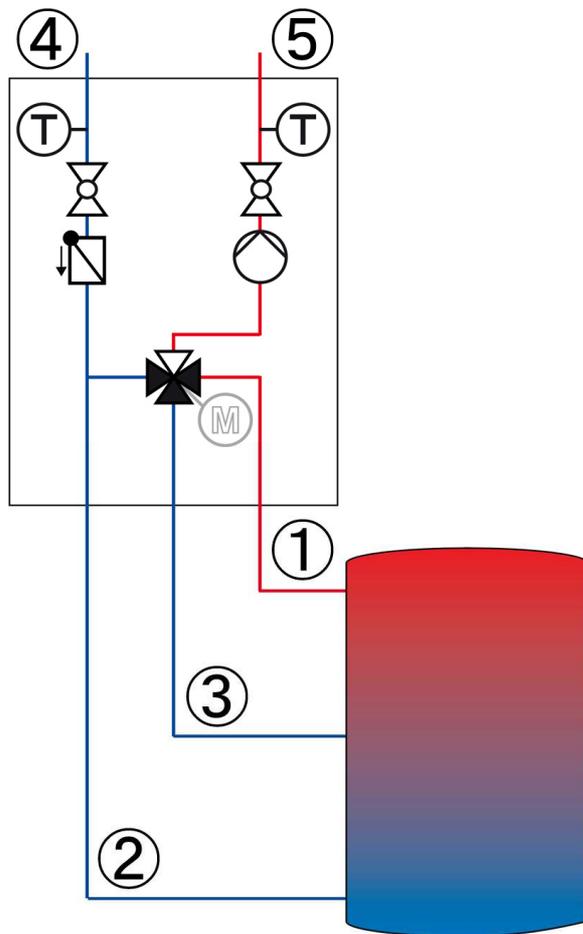
Not included in the scope of delivery!

1. Push the union nut ② and the cutting ring ③ onto the copper pipe ①. The pipe must protrude at least 3 mm from the cutting ring in order to ensure the force transmission and the sealing.
2. Insert the support sleeve ④ into the copper pipe.
3. Insert the copper pipe with the plugged-on individual parts (②, ③ and ④) all the way into the housing of the compression fitting ⑤.
4. First screw the union nut ② manually.
5. Tighten the union nut ② by rotating one full turn. Secure the housing of the compression fitting ⑤ against distort in order to avoid damaging the sealing ring.

## 4.2 Assembly of the heating circuit



1. Mount the wall bracket with mounting plate.
2. Take off the thermometer handles and remove the insulating front shell of the heating circuit.
3. Unscrew the nuts on the lower connections of the heating circuit and take out the sealing rings.
4. Flip the two nuts over the flanges.
5. Insert the sealing rings into the nuts.
6. Put the heating circuit onto the two nuts.
7. Tighten the nuts. Take care that the nuts do not get jammed and that the sealing rings do not slip.



8. Connect the heating circuit to the installation. The connections to the installation must be stress-free.

① - flow from the upper part of the storage tank

② - return to the storage tank

③ - flow from the intermediate part of the storage tank (connection on the back of the mixing valve)

④ - return from the consumer

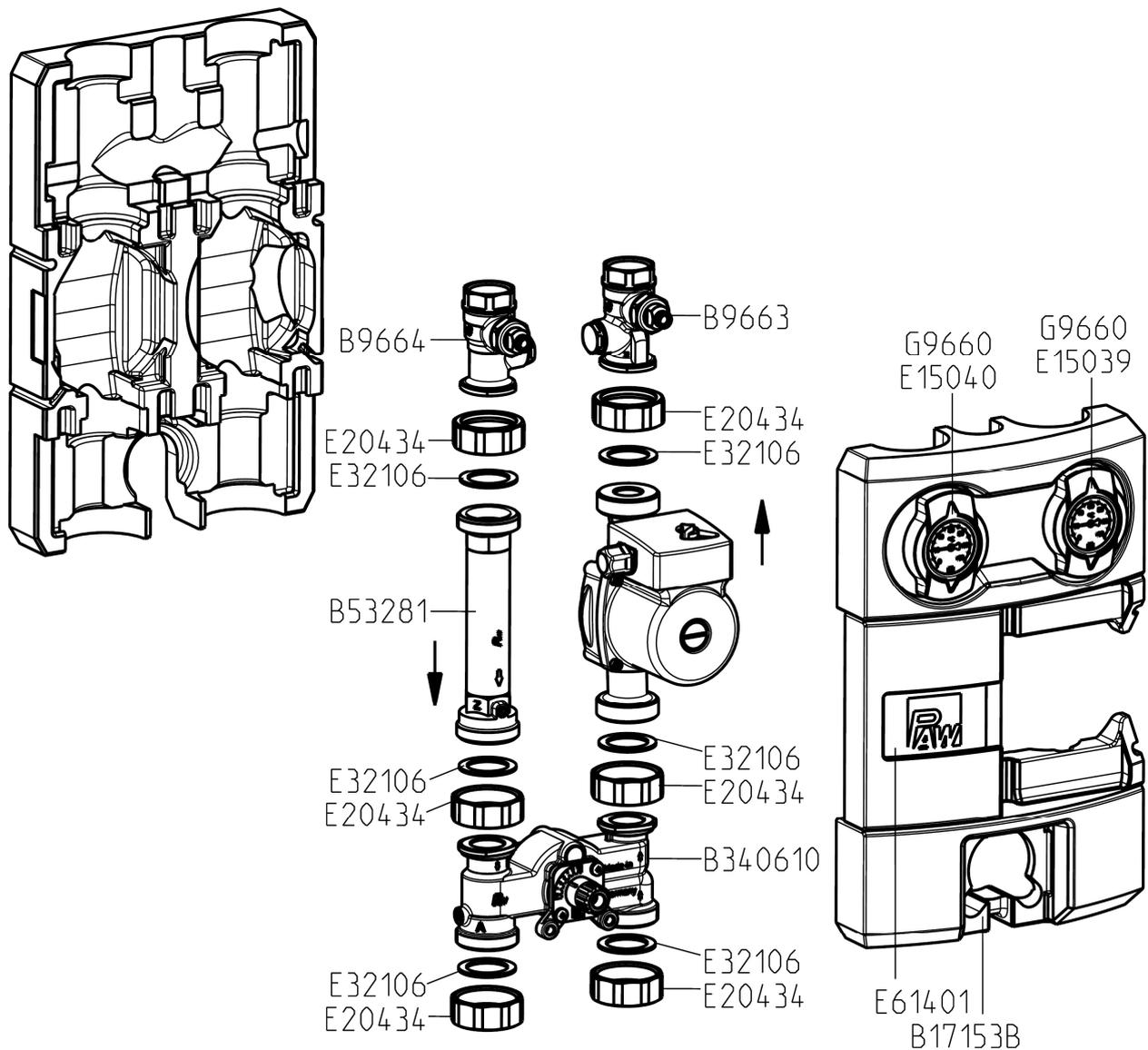
⑤ - flow to the consumer

9. Connect the pump.

10. Carry out the pressure test and check all thread connections.

11. Mount the insulating front shell and the thermometer handles.

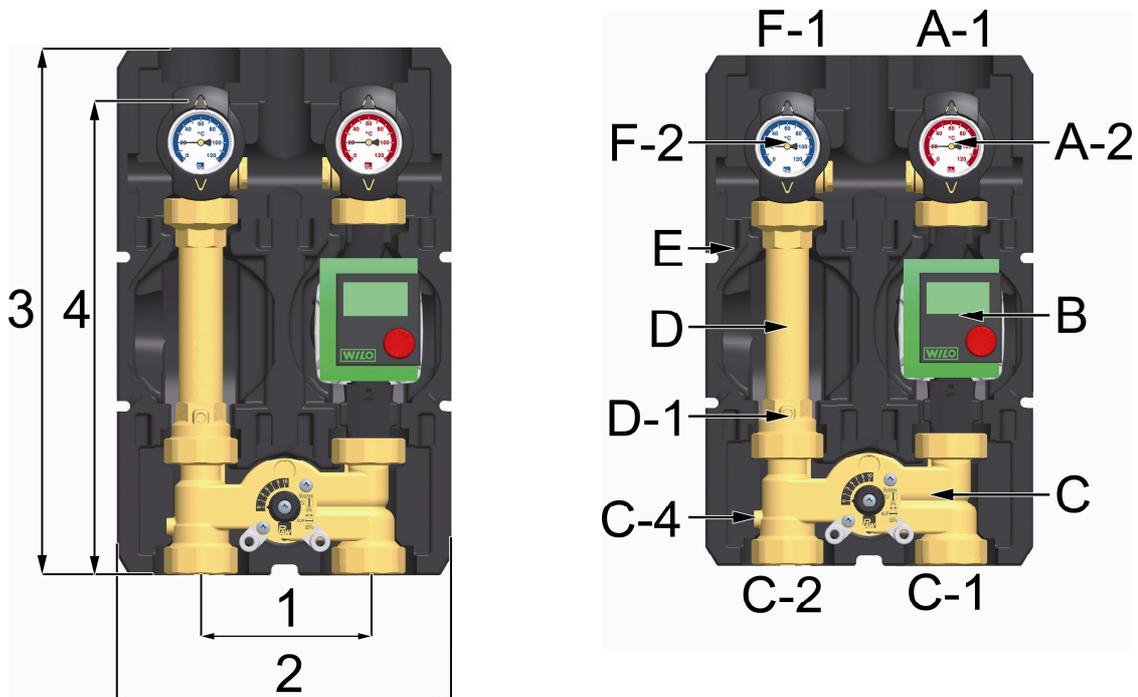
## 5 Scope of delivery [specialist]



Item no.	Equipment
37013	Sealing set for mixing valve
3422SET	Wall bracket set (wall bracket and mounting plate)
36092KS2	Pipe set for connecting the connections on the back of the mixing valves of two K35 modular heating circuits (for example for assembly on a PAW distribution manifold).
36092KS3	Pipe set for connecting the connections on the back of the mixing valves of three or more K35 modular heating circuits

## 6 Technical data

K35	DN 25 (1")
<b>Dimensions</b>	
Centre distance (1)	125 mm
Width insulation (2)	250 mm
Height insulation (3)	396 mm
Installation length (4)	345 mm
<b>Connections</b>	
Upper connections (A-1, F-1)	1" internal thread
Lower connections (C-1, C-2)	1½" external thread
Connection on the back (C-3)	1" external thread
<b>Technical data</b>	
Opening pressure check valve (D-1)	200 mm wc, can be opened
Opening pressure non return valve (C-4)	50 mm wc, can be opened
<b>Materials</b>	
Valves and fittings	Brass
Gaskets	EPDM / NBR
Insulation	EPP

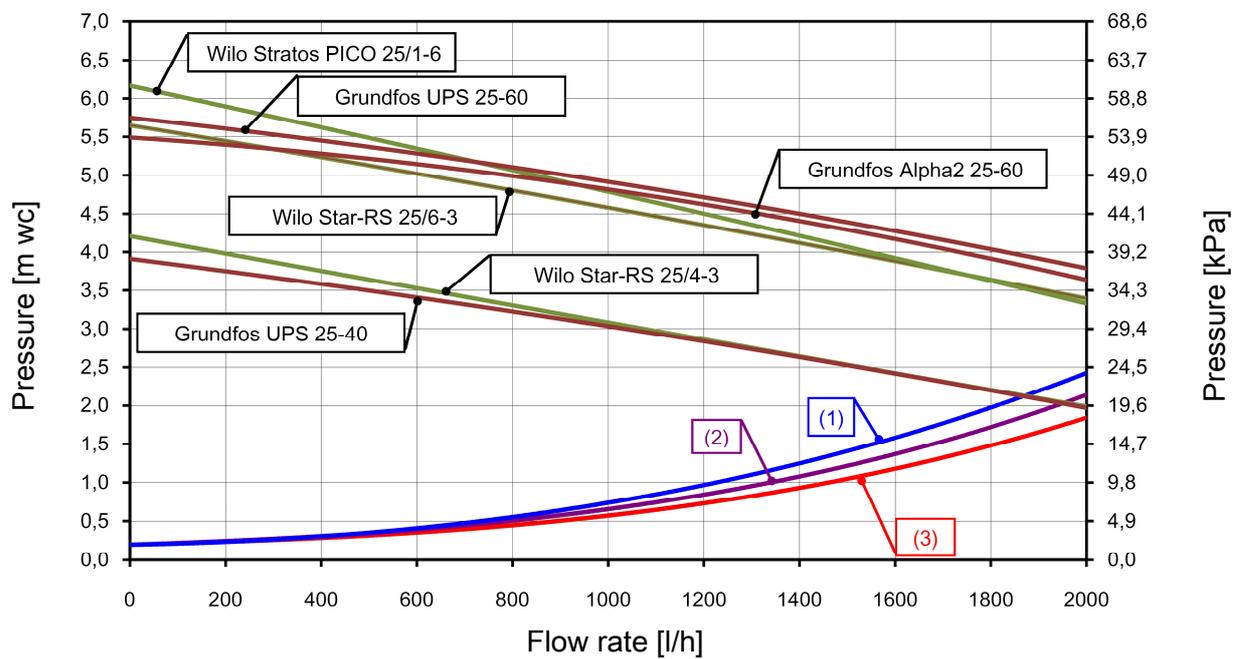


K35

DN 25 (1")

**Hydraulics**

Maximum pressure 8 bars  
 Maximum temperature 110 °C

**6.1 Pressure drop and pump characteristics**


- (1) 100% return, Kvs value = 4.1
- (2) 100% low-temperature flow, Kvs value = 4.35
- (3) 100% high-temperature flow, Kvs value = 4.65

