

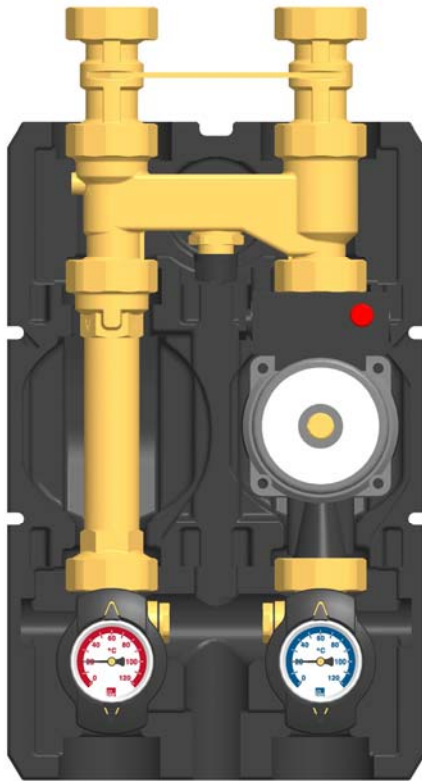


English

## Installation and Operation Instructions

### K36E Modular Heating Circuit - DN 25

#### Boiler charging set





Item no. 993603x2x – Version V04 – Issued 2009/05

We reserve the right to make technical changes without notice!

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PAW GmbH & Co. KG

Böcklerstr. 11

D-31789 Hameln, Germany

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## 1 General information

### 1.1 Scope of these instructions

These instructions describe the installation, commissioning and operation of the modular heating circuit K36E. 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 in combination 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 prescriptions
- Accident prevention regulations of the professional association
- Instructions and safety instructions mentioned in this manual



### **Attention**

The PAW 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. The heating circuit must not be used in sanitary water circuits.



### **Attention: 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.

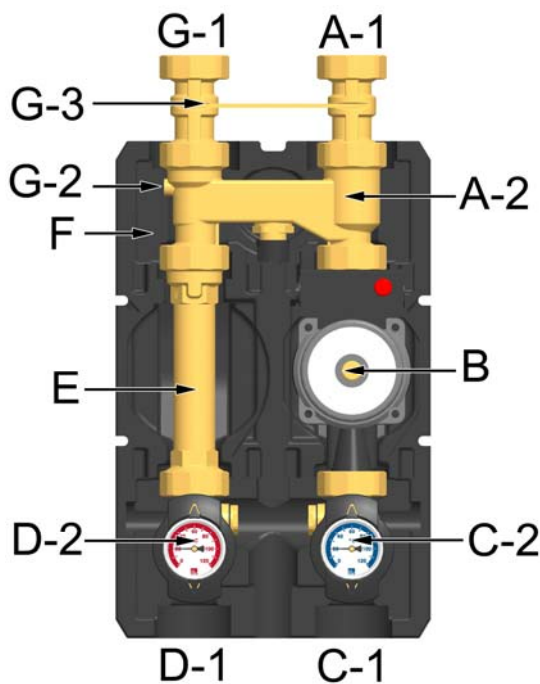
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### 3 Product description

The heating circuit K36E is a preassembled fitting group for hydronic heating closed-loop systems. The pump can be isolated by means of the ball valves and can thus be maintained without draining of the system.

You can mount the modular heating circuit directly onto a wall bracket or under/on a PAW modular distribution manifold. With adaptor connections PAW heating circuits can also be installed under/on PAW distribution manifolds with other dimensions.

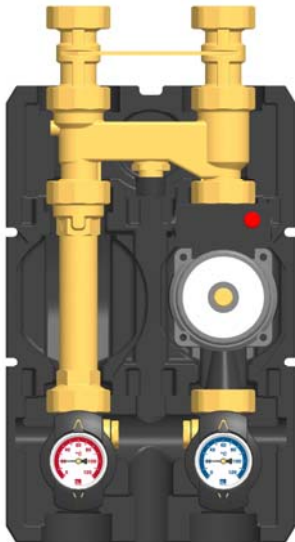
#### 3.1 Equipment



- A-1 Return (consumer circuit)
- A-2 Thermo controller
- B Heating pump
- C-2 Full metal thermometer integrated in the ball valve (return, blue)
- C-1 Return (boiler)
- D-1 Flow (boiler)
- D-2 Full metal thermometer integrated in the ball valve (flow, red)
- E Flow tube
- F Design insulation with optimised function
- G-2 Check valve, can be opened
- G-3 Coupling piece for overhead installation
- G-1 Flow (consumer circuit)

3.2 Function

**K36E boiler charging set for return flow temperature maintenance of solid fuel boilers, wood firing and stove heating systems**

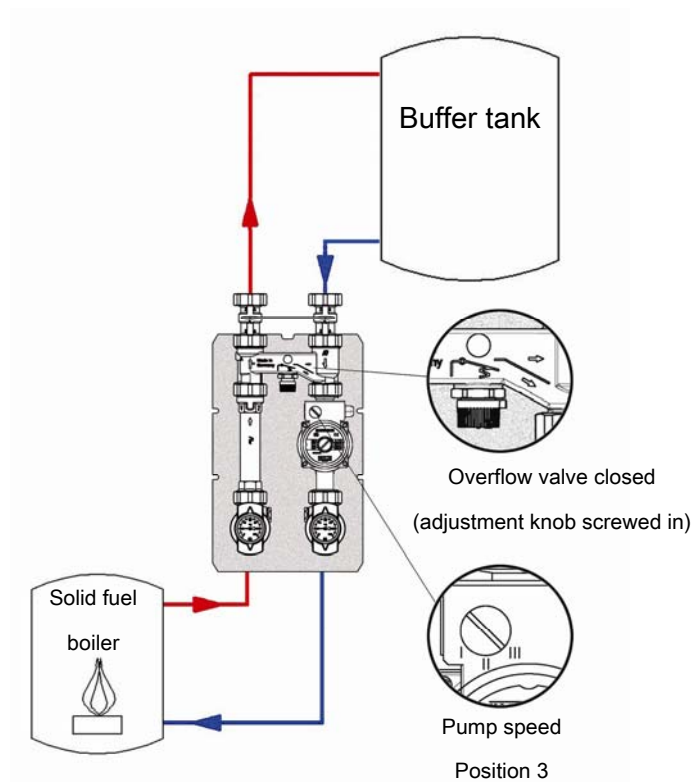
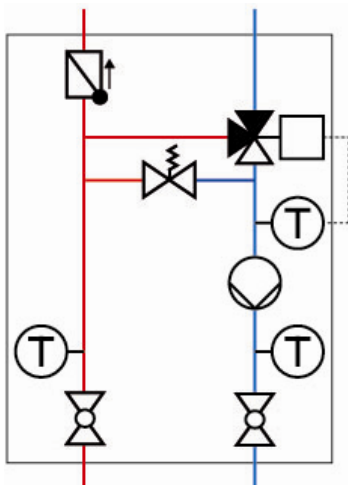


The boiler charging set prevents the temperature in the boiler from falling under the dew point which prevents contamination of the boiler.

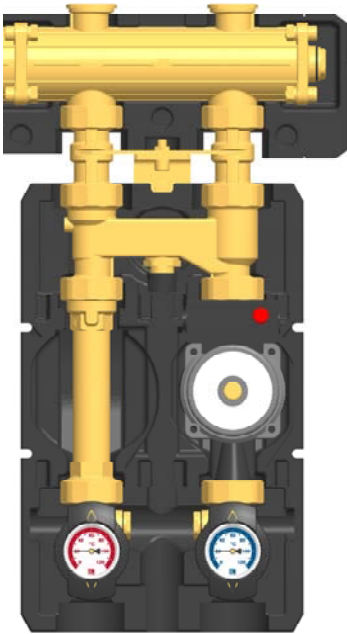
**Applications:**

- The boiler charging set can be mounted to a buffer tank or a hydraulic separator. When the opening temperature of 50 °C, 55 °C or 60 °C is reached in the boiler circuit, the pump permits to charge a tank or to separate the pressures in the hydraulic separator.

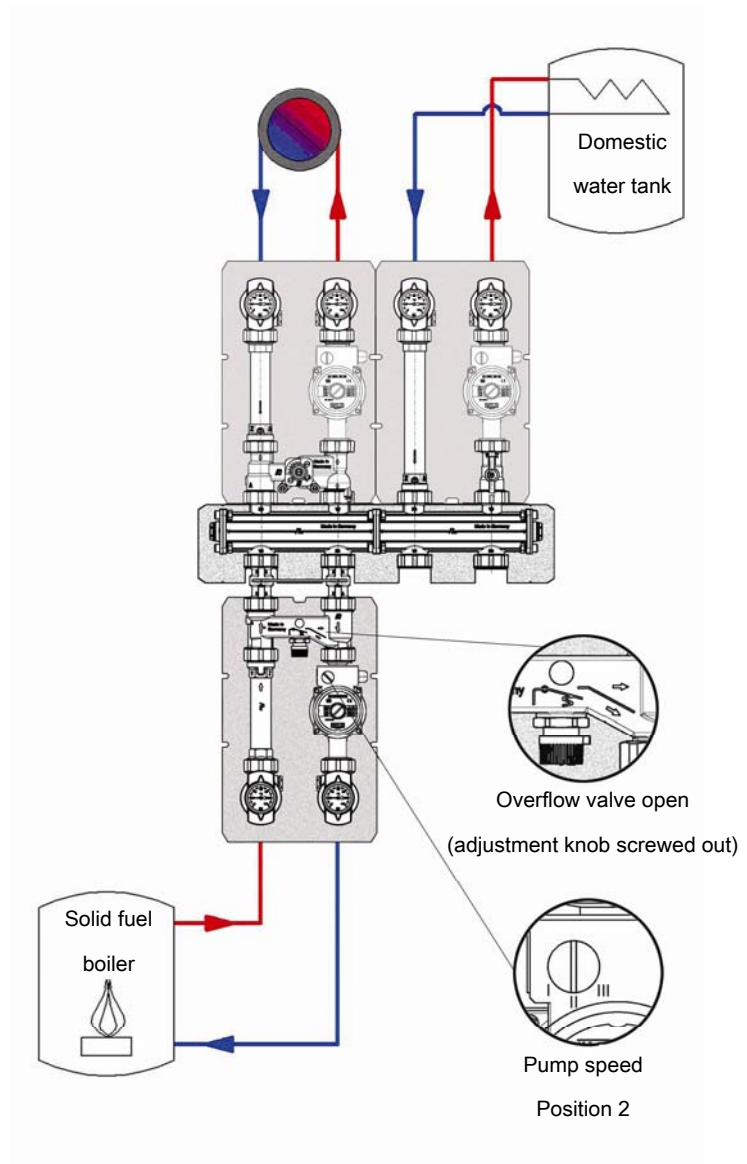
The following figure shows the adjustments necessary for this system.



- The boiler charging set can be mounted under/on a distribution manifold. In this system the pump exerts a pressure on the entire installation. When the overflow valve in the thermo controller is open, the pressure can be reduced via the valve. Undesired circulation, which could lead to overcharging of the domestic water tank, can thus be prevented.



The following figure shows the adjustments necessary for this system.





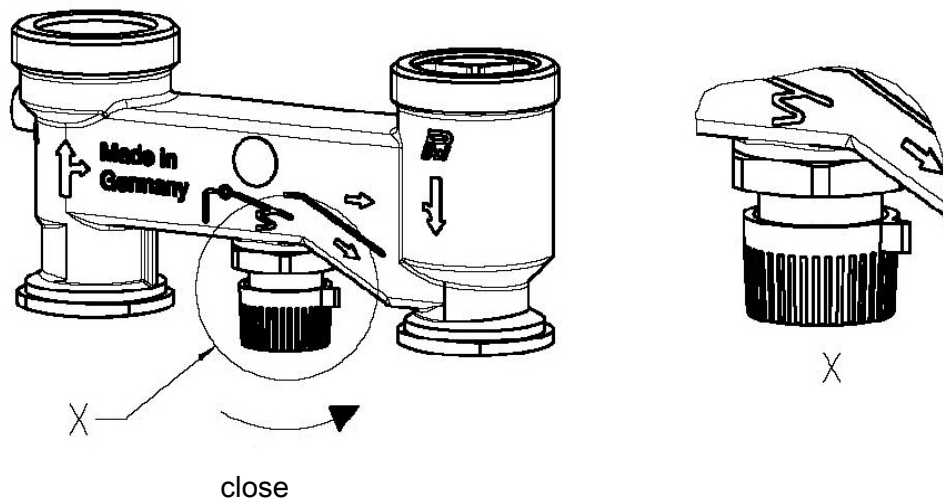
### 3.3 Thermo controller

The thermo controller is equipped with an overflow valve and a thermal control valve.

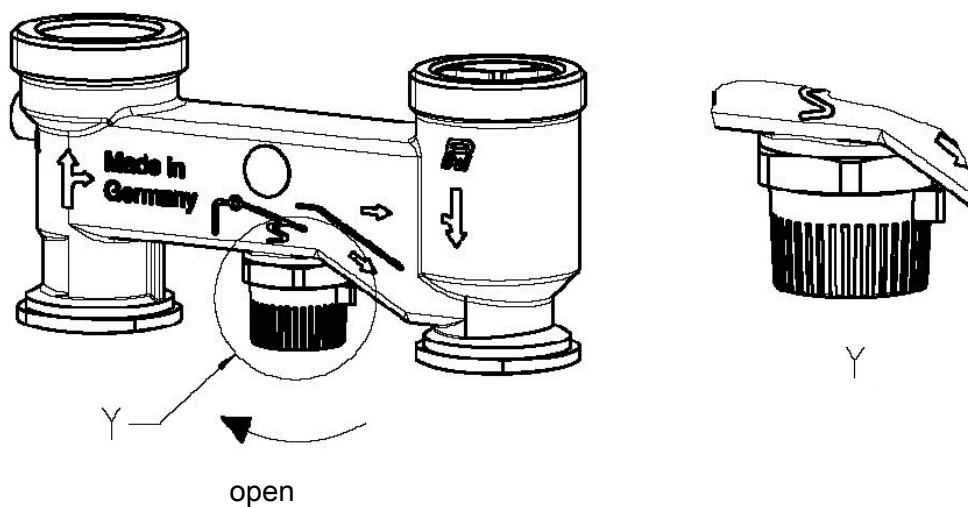
#### Overflow valve

In systems with a distribution manifold the pump of the boiler charging set exerts a pressure on the entire installation. When the overflow valve in the thermal controller is open, the pressure can be reduced via the valve. Undesired circulation, which could lead to overcharging of the domestic water tank, can thus be prevented.

Overflow valve open

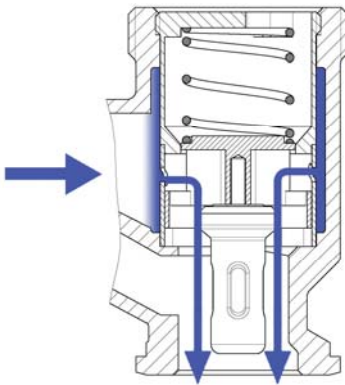


Overflow valve closed

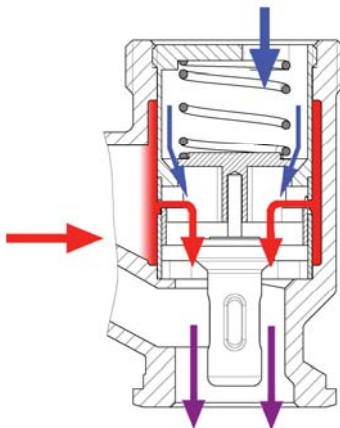


## Thermal control valve

The thermal control valve serves as a bypass in the start-up phase.

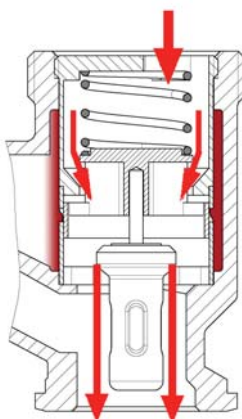


1. When the temperature of the water in the boiler circuit is lower than the opening pressure of the thermal control valve, the valve is closed and thus the line to the consumers. The water is circulated in the boiler circuit through the completely open bypass.



2. When the water in the boiler circuit has obtained the opening temperature ( $\pm 3$  K), the thermal control valve opens the line from/to the consumers. The circulation in the consumer circuit is thus guaranteed.

The cold water from the consumer return line is mixed in the control valve with the hot water from the bypass. Depending on the temperature and the flow rate of the water from the return line the thermal control valve shuts off or opens the line to the consumers. Thus the return line which leads to the boiler always remains at a certain temperature level.



3. With rising temperature from the return line of the consumers the thermal control valve opens the line to the consumers completely. The temperature of the boiler return remains nearly constant ( $\pm 3$  K).



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

1. Take off the thermometer handles (C-2, D-2) and remove the front insulation shells.
2. Take the heating circuit out of the back shell of the insulation.
3. Take off the union nuts at the thermo controller (A-2).
4. Dismount the thermo controller and turn it by 180°.

#### **Modification and commissioning of the heating circuit**

1. Interchange the return line (D) with the flow line and the pump (B).
2. Mount the thermo controller and tighten the union nuts

#### **Consider the direction of flow!**

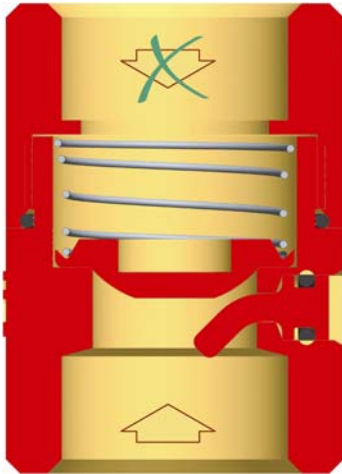
Turn the pump head such that the terminal head is directed to the top or to the centre of the heating circuit.

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

### 3.4 Check valve

The heating circuit is equipped with a check valve (G-2) in the thermo controller (A-2). It can be opened manually.

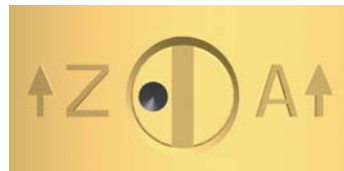
#### Operation



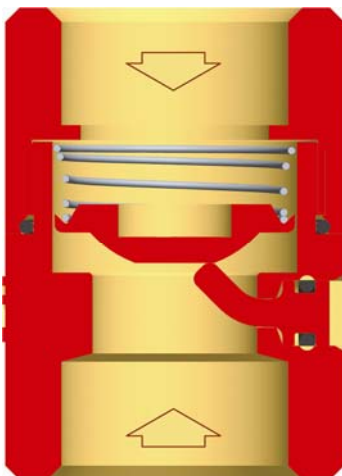
During operation the mark must be directed to "Z".

→ The check valve is 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 is open.

→ Flow in both directions



## 4 Assembly and installation [specialist]

The modular heating circuit K36E must be either installed with a wall bracket or under/on a PAW modular distribution manifold. The K36E is prepared for assembly **under** a distribution manifold DN 25 when it is delivered. If you want to mount the K36E **on** a distribution manifold, remove the coupling piece for overhead installation (G-3).

The wall bracket and the distribution manifold are not included in delivery.



### **Attention: Damage to property**

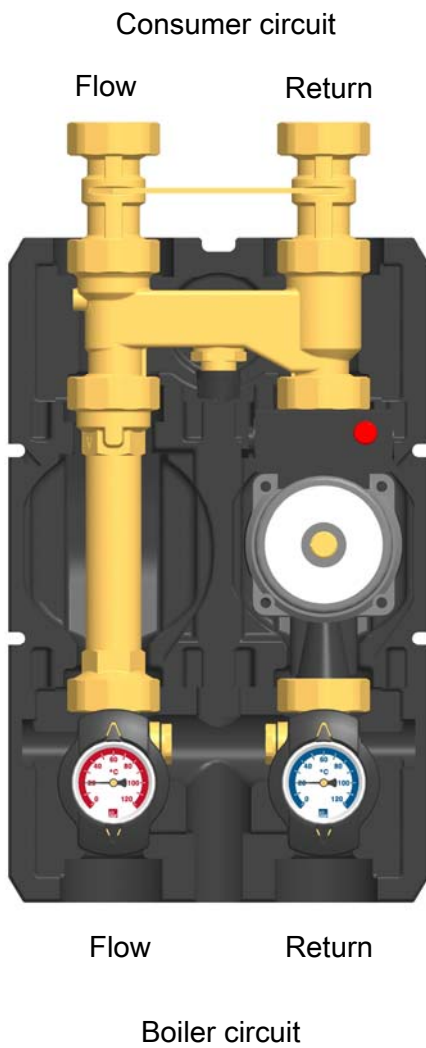
The location of installation must be dry, load-carrying and frost-proof to prevent material damage to the installation.

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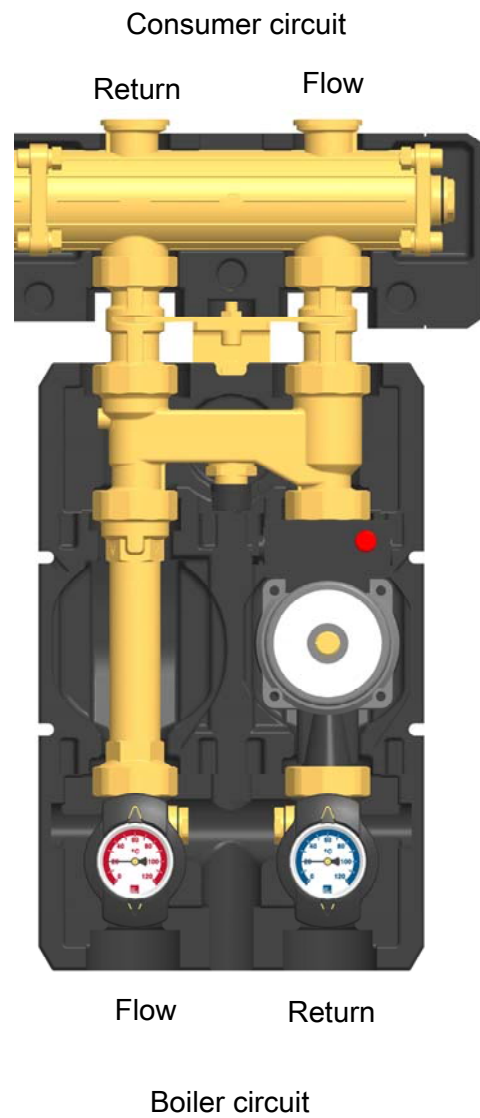
### 4.1 Installation of the modular heating circuit and commissioning

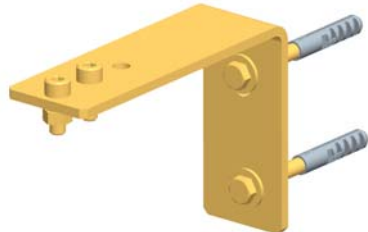
The modular heating circuit can be installed

- **Option 1:**  
directly to the wall with a wall bracket



- **Option 2:**  
under a PAW modular distribution manifold.



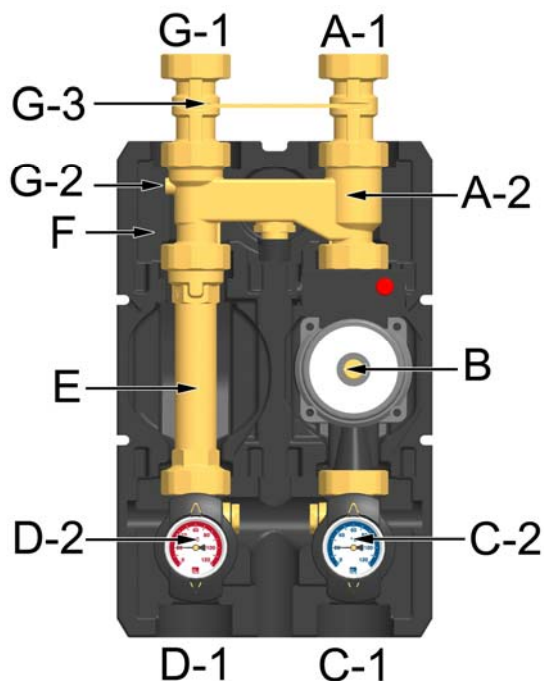


### Installation

1. Fix the wall bracket to the wall with the enclosed screws and washers.
2. Screw the modular heating circuit with the coupling piece of overhead installation to the wall bracket.

### only for assembly under a modular distribution manifold

3. Mount the distribution manifold on the PAW wall bracket. You can mount the heating circuit K36E directly on the connections of the manifold. Remove the plugs in the connections if necessary.

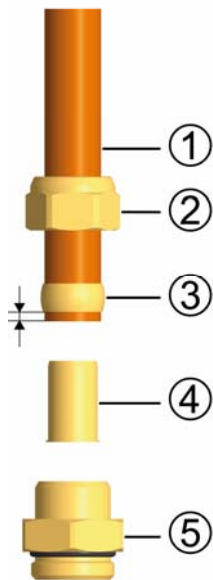


### Tubing

1. Connect the heating circuit to the installation. The hydraulic schemes for the two assembly versions can be found on pages 7 and 8. The connections to the installation must be stress-free.
2. Connect the pump.
3. Carry out the pressure test and check all thread connections.

#### 4.2 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.

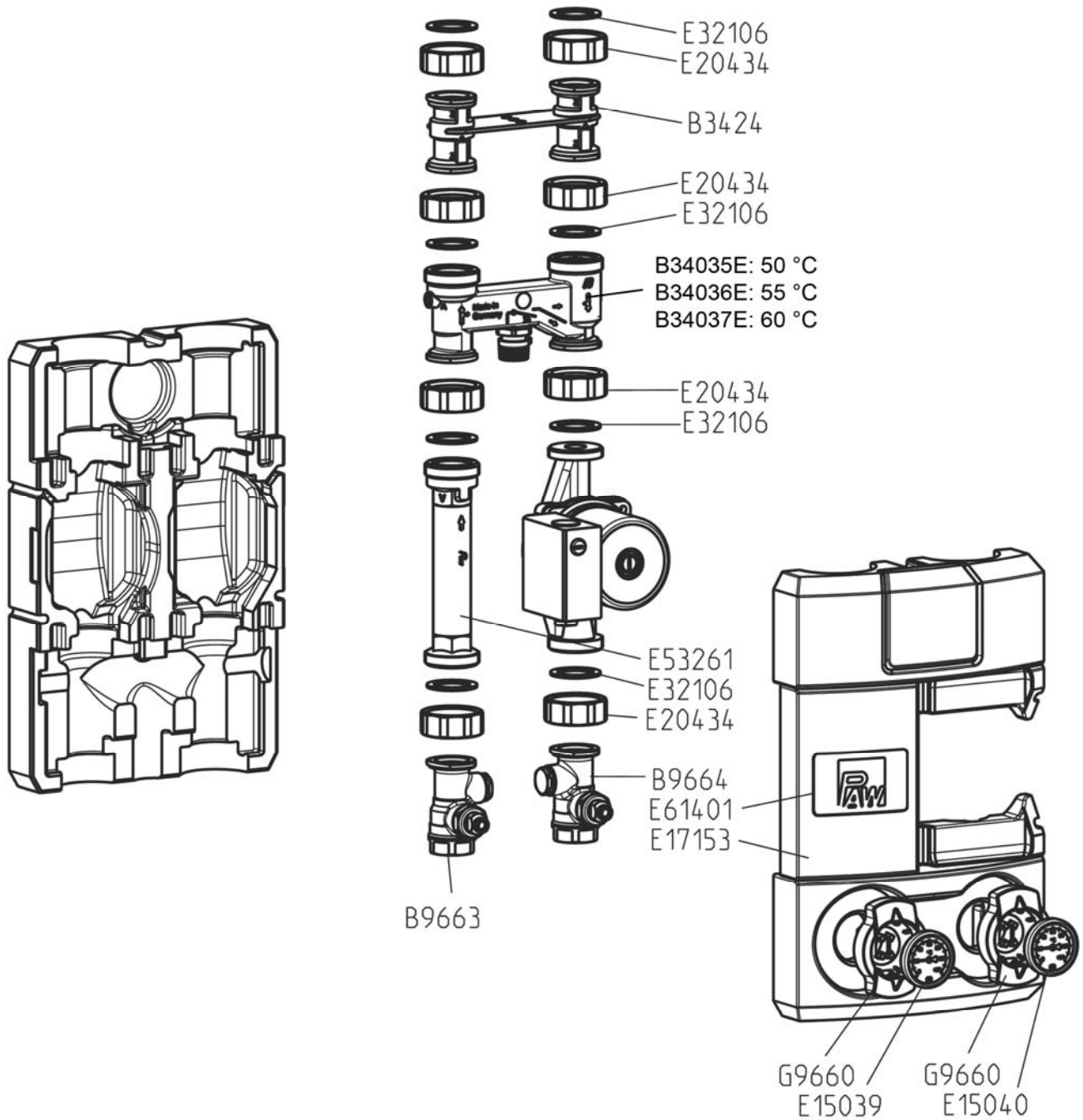


1. Push the union nut ② and the cutting ring ③ onto the copper pipe ①. The pipe must protrude at least 3 mm from the cutting ring in order to ensure the force transmission and the sealing.
2. Insert the support sleeve ④ into the copper pipe.
3. Insert the copper pipe with the plugged-on individual parts (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.

Not included in the scope of  
delivery!



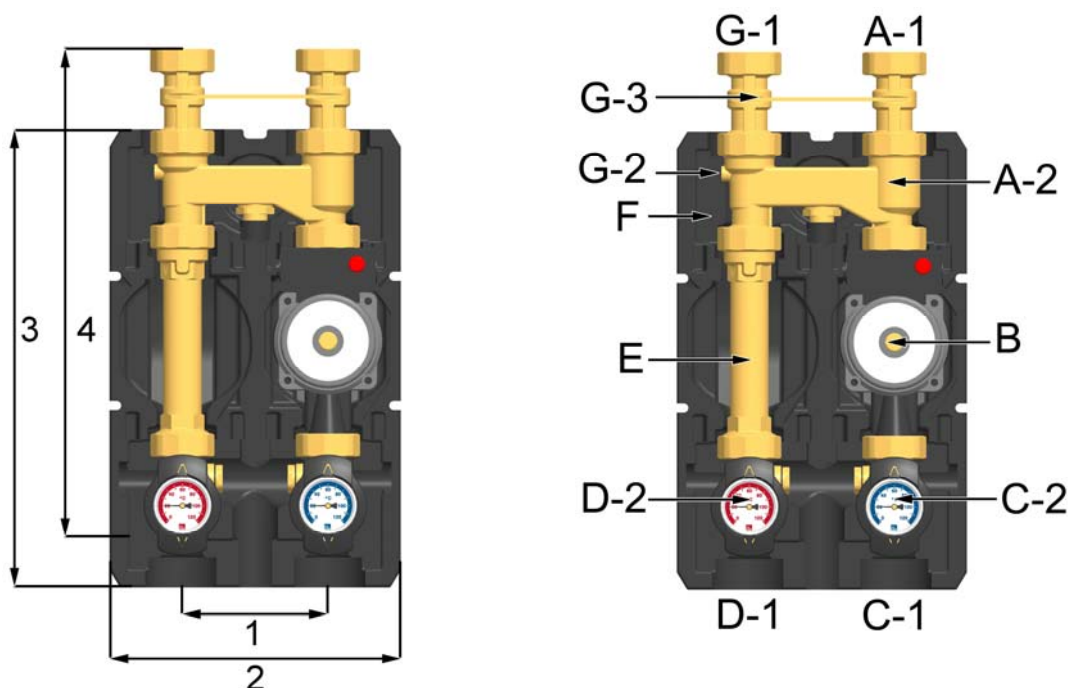
5 Scope of delivery [specialist]



Item no.	Accessories:
G3811	Element for thermal control valve 50 °C
G3809	Element for thermal control valve 55 °C
G3808	Element for thermal control valve 60 °C

## 6 Technical data

<b>K36E</b>	<b>DN 25 (1")</b>
<b>Dimensions:</b>	
Centre distance (1)	125 mm
Width insulation (2)	250 mm
Height insulation (3)	396 mm
Installation length (4)	405 mm
<b>Connections</b>	
Outlet (A-1, G-1)	1½" internal thread
Inlet (C-1, D-1)	1" internal thread
<b>Technical data</b>	
Opening pressure check valve (G-2)	200 mm wc, can be opened
Opening temperature	50 °C / 55 °C / 60 °C
<b>Materials</b>	
Valves and fittings	Brass
Gaskets	EPDM / NBR
Insulation	EPP

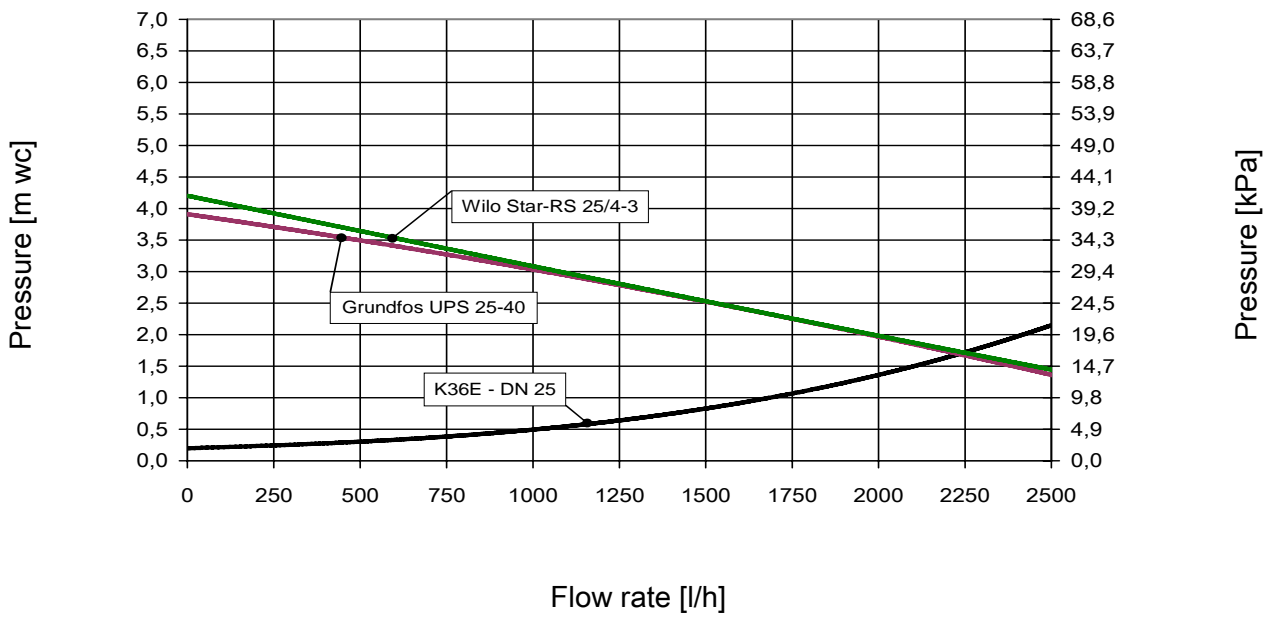


<b>K36E</b>	<b>DN 25 (1")</b>
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**Hydraulics**

Maximum pressure	8 bars
Maximum temperature	110 °C
K <sub>vs</sub> value [m <sup>3</sup> /h]	5.5

**6.1 Pressure drop and pump characteristics**



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PAW GmbH & Co. KG  
Böcklerstraße 11  
D-31789 Hameln, Germany

[www.paw.eu](http://www.paw.eu)

Phone: +49 (0) 5151 9856 - 0

Fax: +49 (0) 5151 9856 98