



Installation and Operation Instructions Return flow temperature maintenance with thermal control valve

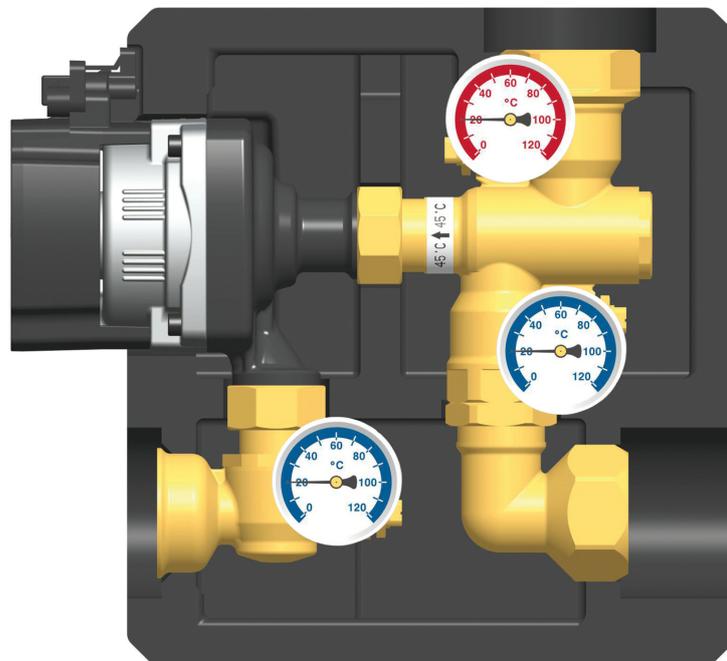
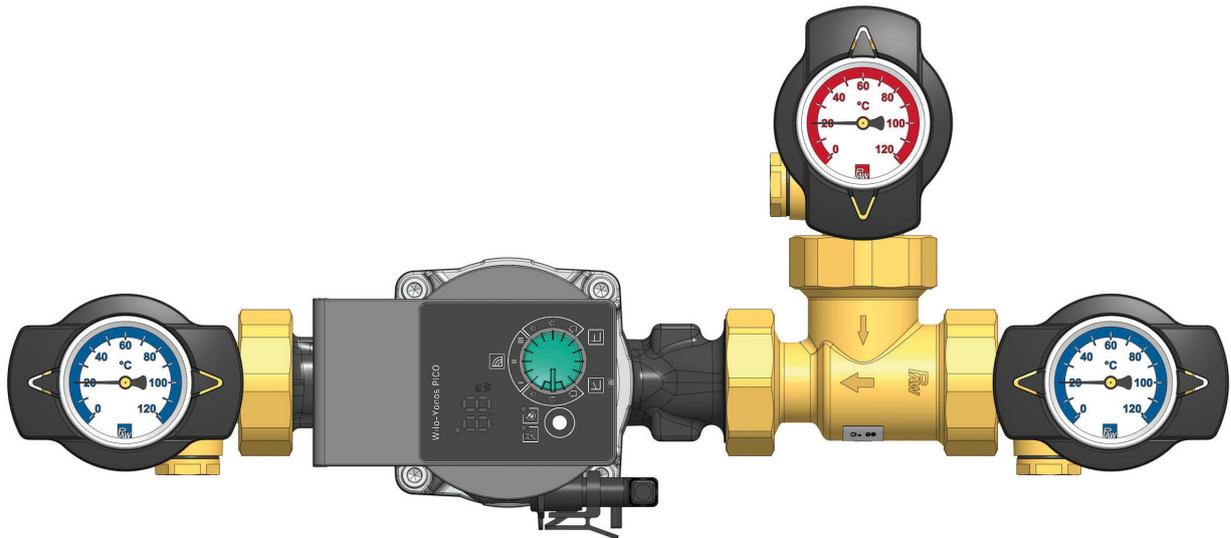


Table of Contents

1	General Information.....	3
1.1	Scope of these instructions.....	3
1.2	Designated use.....	3
2	Safety instructions.....	4
3	Product description.....	5
3.1	Equipment.....	5
3.2	Function.....	6
3.3	Thermal control valve.....	7
4	Mounting and installation [specialist].....	8
4.1	Installation.....	8
4.2	Accessories: Cutting-ring compression fitting (not included in the scope of delivery).....	11
5	Scope of delivery.....	12
5.1	Spare parts DN 20 (9602x).....	12
5.2	Spare parts DN 25 (9612x).....	13
5.3	Spare parts Compact station DN 25 - 32 (96604x).....	15
6	Technical data.....	16
6.1	Pressure drop and pump characteristic curves.....	17
7	Disposal.....	19

1 General Information



Carefully read these instructions before installation and commissioning.

Save these instructions in the vicinity of the installation for future reference.

1.1 Scope of these instructions

These instructions describe the installation, commissioning, function and operation of the return flow temperature maintenance DN 20 and DN 25.

For other components of the installation, such as the pump or the controller, please observe the instructions of the corresponding manufacturer. The chapters called [specialist] are intended for specialists only.

1.2 Designated use

The product may only be used in heating circuits taking into consideration the technical limit values indicated in these instructions.

It must **not** be used in drinking water applications.

Improper usage excludes any liability claims.

This product complies with the relevant directives and is therefore labelled with the CE mark.

The Declaration of Conformity is available upon request, please contact the manufacturer.

Only use PAW accessories with the product.

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 these instructions

 CAUTION	
	<p>Personal injury and damage to property!</p> <p>The product must only be used in heating circuits filled with heating water according to VDI 2035 / Ö-Norm H 5195-1.</p> <ul style="list-style-type: none"> ▶ The product must not be used in drinking water applications.

NOTICE
<p>Material damage due to mineral oils!</p> <p>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.</p> <ul style="list-style-type: none"> ▶ It is imperative to prevent the EPDM sealing elements from making contact with substances containing mineral oils. ▶ Use a silicone- or polyalkylene-based lubricant free of mineral oil such as Unisilikon L250L and Syntheso Glep 1 from Klüber or a silicone spray.

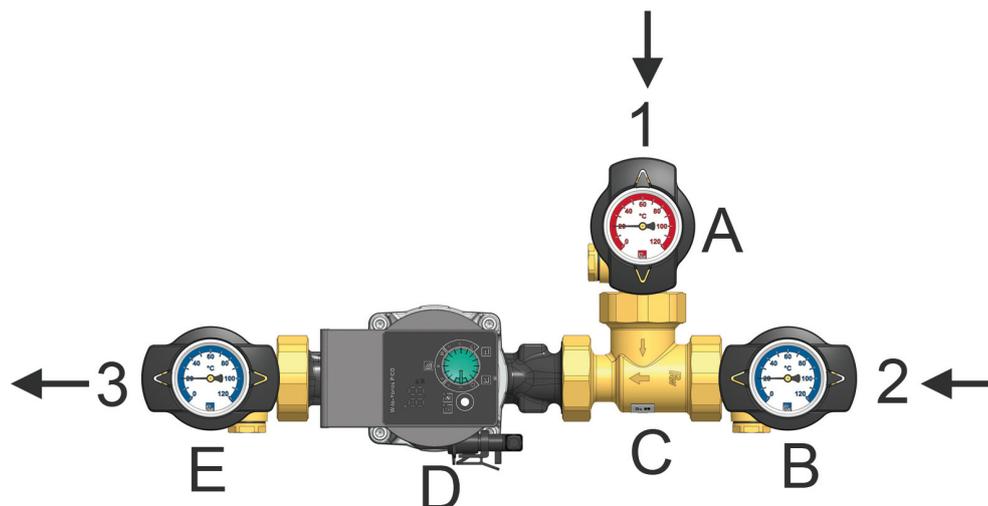
3 Product description

3 Product description

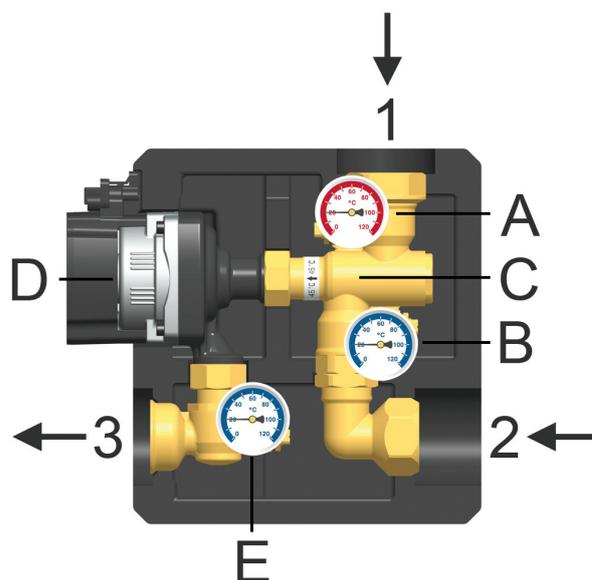
The return flow temperature maintenances are preassembled fitting groups for heating circuits.

The pump can be isolated by means of the ball valves and maintenance work on the pump can thus be carried out without draining the heating circuit.

3.1 Equipment



- 1 Bypass from the boiler flow
- 2 Return from the buffer tank
- 3 Return to the boiler
- A Ball valve - bypass from the boiler flow
- B Ball valve - return from the buffer tank
- C Thermal control valve with automatic bypass
- D Heating pump
- E Ball valve - return



3.2 Function

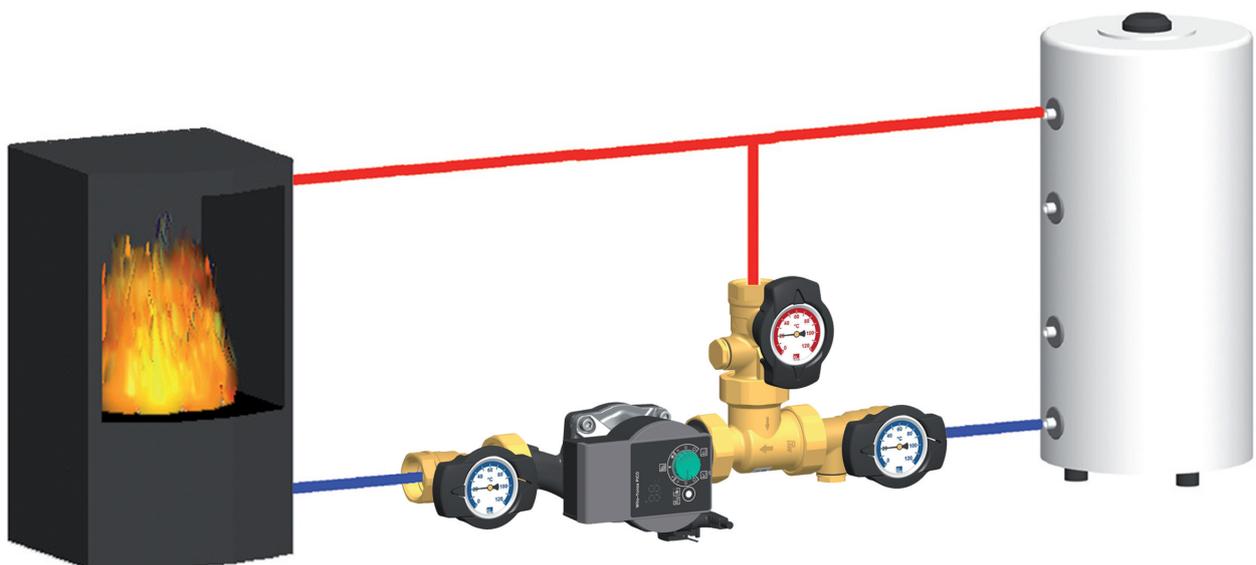
The return flow temperature maintenance prevents the temperature in the boiler from falling under the dew point, thus reducing contamination of the boiler.

The return flow temperature maintenance is mounted between the buffer tank and the boiler.

When the boiler circuit has reached the opening temperature of 45 °C respectively 60 °C, the thermal control valve opens the return line to the tank. Then the pump can charge the tank.

Application ranges:

- for heat sources requiring a return flow temperature maintenance, as for example solid fuel boilers, wood firing and stove heating systems



NOTICE

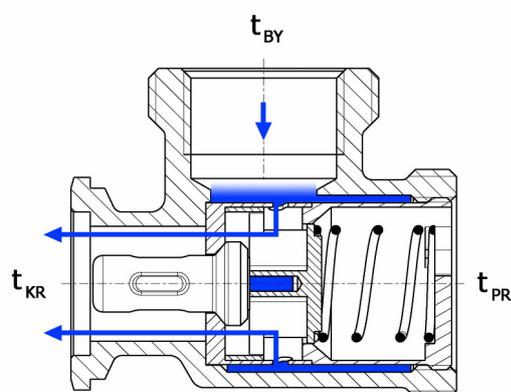
Malfunction!

- ▶ When the boiler output is controlled by the boiler temperature, the boiler must heat up 20 °C above the opening temperature of the temperature maintenance system. Otherwise the boiler might reduce the output even before the thermal control valve is completely open.

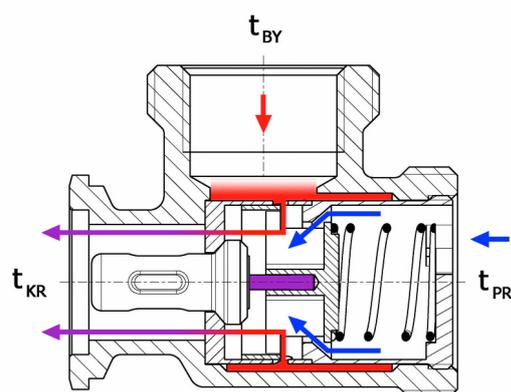
3 Product description

3.3 Thermal control valve

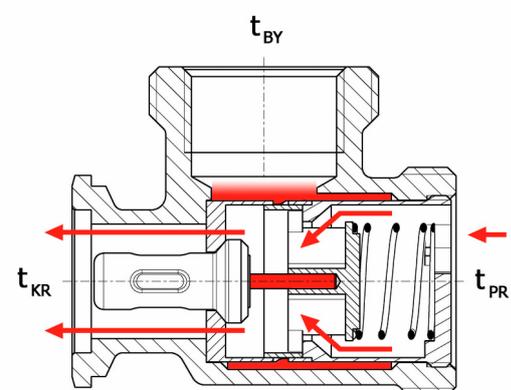
The thermal control valve allows for an automatic opening of the bypass in the startup phase.



$$t_{BR} < t_{FIX} \quad t_{BR} = t_{BY}$$



$$t_{BR} = t_{FIX} \quad t_{BR} < t_{BY} \quad t_{BR} > t_{BTR}$$



$$t_{BR} \geq t_{FIX} \quad t_{BR} = t_{BTR}$$

1. The thermal valve shuts off the connection to the buffer tank, as long as the water in the boiler circuit is colder than the opening temperature of the thermal control valve.

The pump circulates the water through the bypass, the small quantity of water in the boiler circuit can now heat up quickly.

2. When the boiler circuit reaches the opening temperature of the control valve, the valve closes the bypass flow rate and opens the line to the buffer tank circuit. The cold water from the buffer tank return is mixed with the hot boiler circuit water in the control valve. This leads to an increase of the return temperature in the boiler circuit to the desired level and avoids condensation in the boiler.

3. When the buffer tank return temperature is higher than the opening temperature, the control valve completely shuts off the bypass. The water from the buffer tank circuit now flows directly into the boiler circuit.

Temperatures:

t_{BY} = Bypass, t_{BTR} = Buffer tank return

t_{BR} = Boiler return, t_{FIX} = Opening temperature

4 Mounting and installation [specialist]

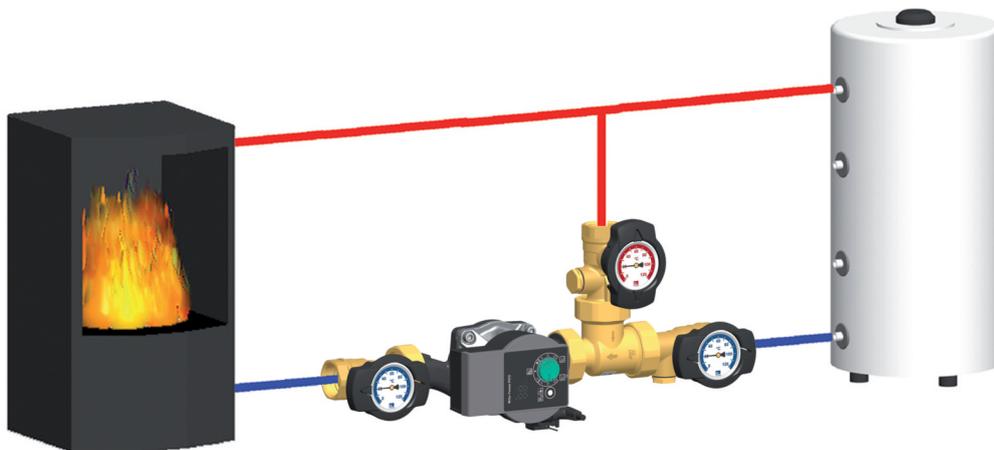
NOTICE

Damage to property!

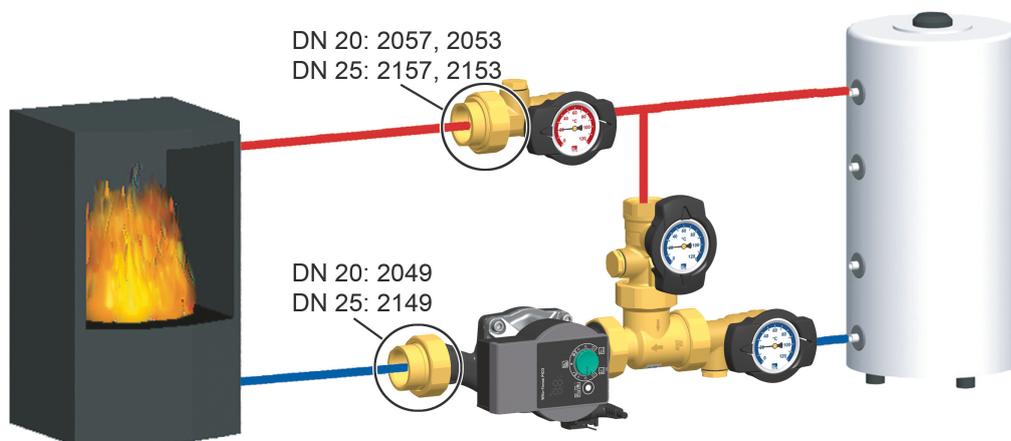
The installation site must be dry, stable, frost-proof and protected against ultraviolet radiation in order to prevent material damage of the installation. Always mount the pump into the return line to the boiler, as the high flow temperatures could damage the pump.

4.1 Installation

Mounting version 1A

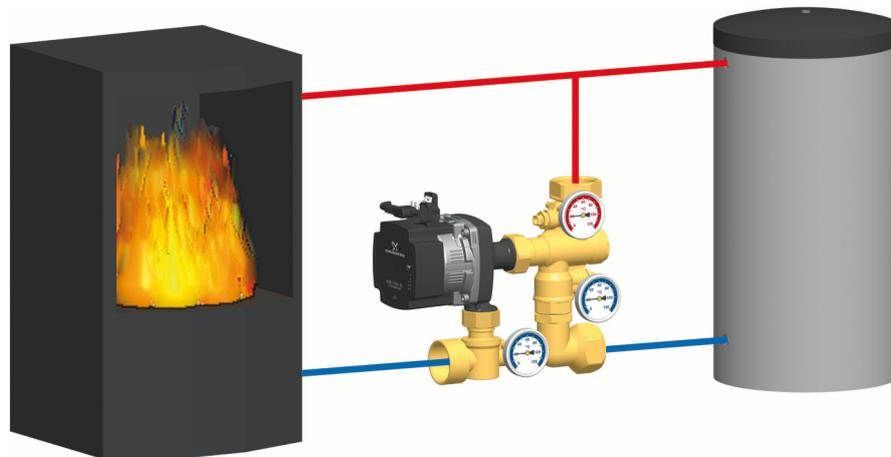


Mounting version 1B

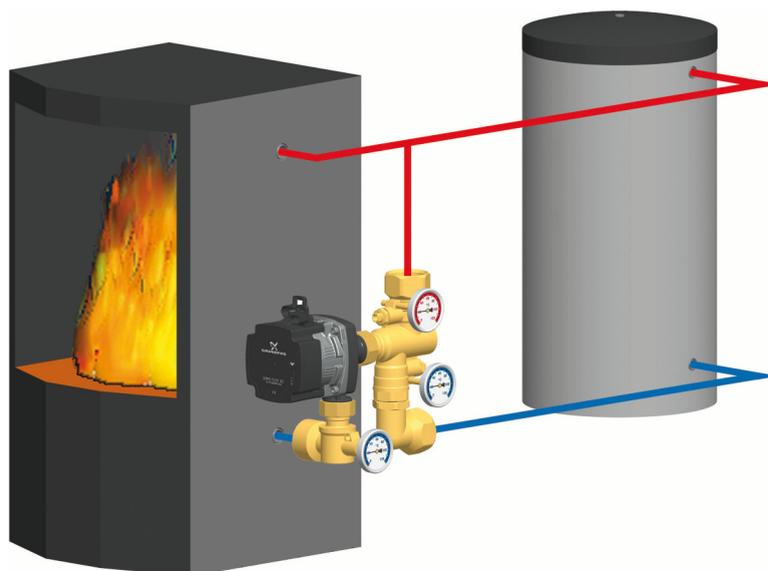


Mounting version 1B permits to easily isolate the heat generation system without further shutoff valves. Necessary accessories: gasket, fitting, pump fitting

Mounting version 2A

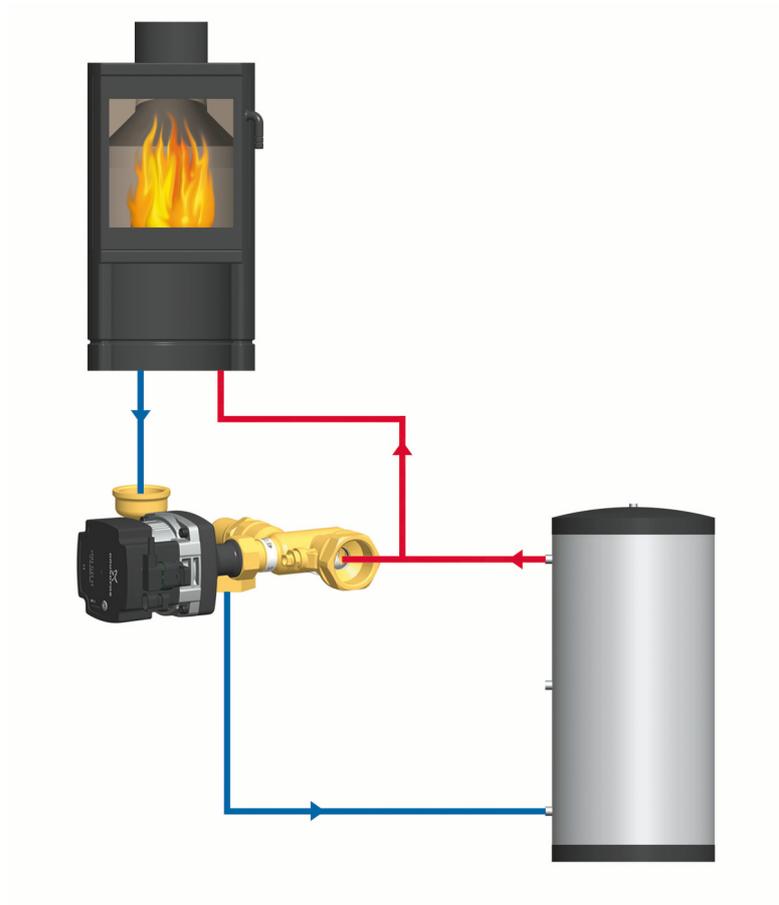


Mounting version 2B



The mounting example 2B enables a comfortable installation of the valves and fittings directly to the connection socket of the boiler return.

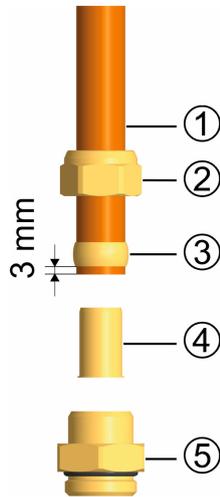
Mounting version 2C



4 Mounting and installation [specialist]

4.2 Accessories: Cutting-ring compression fitting (not included in the scope of delivery)

The connection to the heating installation can be carried out fast, pressure-proof and without soldering if 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 as far as possible into the body 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 body of the compression fitting ⑤ against distort in order to avoid damaging the sealing ring.

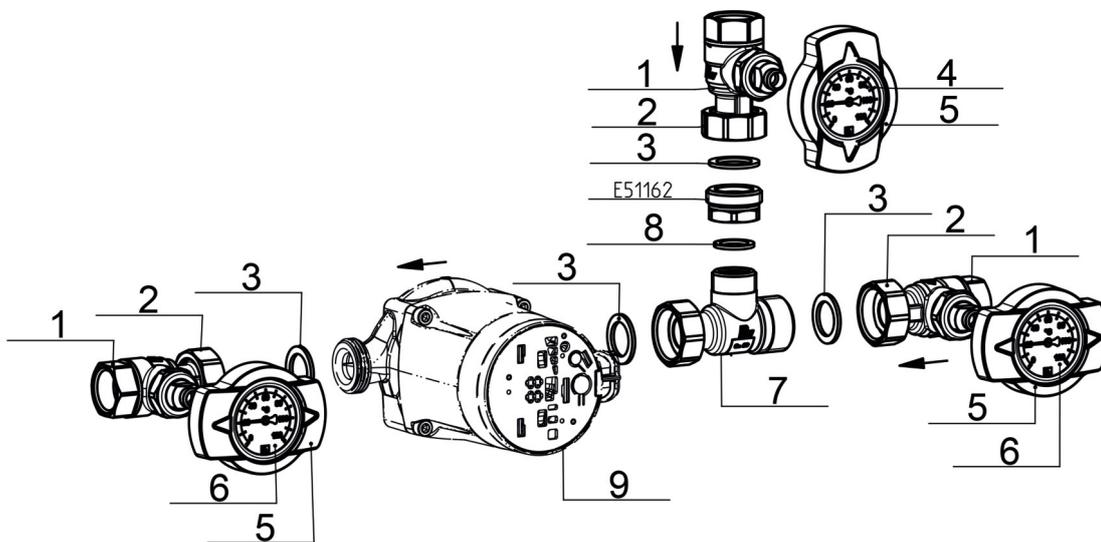
5 Scope of delivery

NOTICE

Serial number

Complaints and requests/orders of spare parts will only be processed with information on the serial number!

5.1 Spare parts DN 20 (9602x)



Position	Spare part	Item number
1	Thermometer ball valve DN 20, flange ½" x ¾" int. thread	N00202
2	Union nut G 1", passage 28.1 mm, wrench size 37	N00302
3	Sealing kit 30.0 x 21.0 x 2.0, ½", for thread connection 1", 10 pieces	N00024
4	Dial thermometer, red, d = 50 mm, 0 - 120 °C	N00242
5	Thermometer handle for thermometer ball valve 1" + 1¼"	N00248
6	Dial thermometer, blue, d = 50 mm, 0 - 120 °C	N00243
7	Thermal control valve, 45 °C, DN 20-¾", 1" ext. thread, 1" M, 3/8" int. thread	B3103045
	Thermal control valve, 60 °C, DN 20-¾", 1" ext. thread, 1" M, 3/8" int. thread	B3103061

5 Scope of delivery

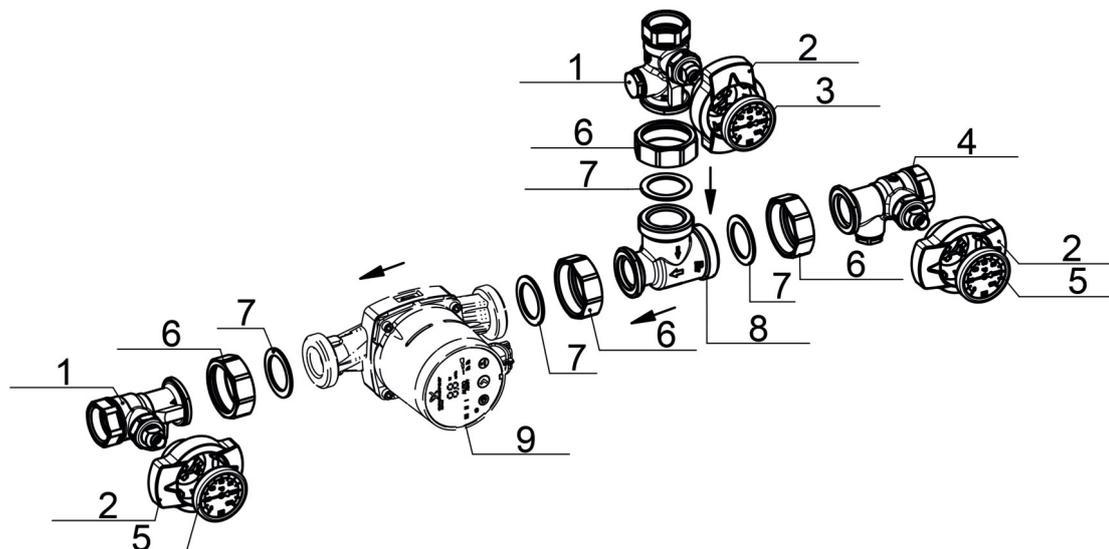
Position	Spare part	Item number
8	Sealing kit 24.0 x 17.0 x 2.0, ¼", for thread connection ¾", 10 pieces	N00030
9	Pump see following table	

Item no. product*	Pump	Item no. pump	EEl
9602x0WP6	Wilo Para SC 15/6-43	N00258	< 0.20
9602x0WN06	Wilo Yonos PICO 15/1-6	N00315	< 0.20
9602x0GM6	Grundfos UPM3 Auto 15-70	N00333	< 0.20
9602x0GH6	Grundfos Alpha2.1 15-60	N00336	< 0.17

*960250 for thermal valve 45 °C, 960260 for thermal valve 60 °C

Optional accessories for assembly into the ½" sleeves of the ball valves	
Item no. 566001	Immersion sleeve (as a point for temperature measurement)
Item no. 2260	Valve with counter nut for draining the boiler circuit

5.2 Spare parts DN 25 (9612x)



Position	Spare part	Item number
1	Thermo ball valve TK DN 25, F1" x 1" int. thread, ½"-sleeve left	N00013
2	Thermometer handle for thermometer ball valve 1" + 1¼"	N00248

Position	Spare part	Item number
3	Dial thermometer, red, d = 50 mm, 0 - 120 °C	N00242
4	Thermo ball valve TK DN 25, F1" x 1" int. thread, ½"-sleeve right	N00015
5	Dial thermometer, blue, d = 50 mm, 0 - 120 °C	N00243
6	Union nut G 1½", passage 42 mm, wrench size 52	N00269
7	Sealing kit 44.0 x 32.0 x 2.0, 1", for thread connection 1½", 10 pieces	N00036
8	Thermal control valve, 45 °C, DN 25, F 1", 2x 1½" ext. thread	B3404446
	Thermal control valve, 60 °C, DN 25, F 1", 2x 1½" ext. thread	B3404461
9	Pump see following table	

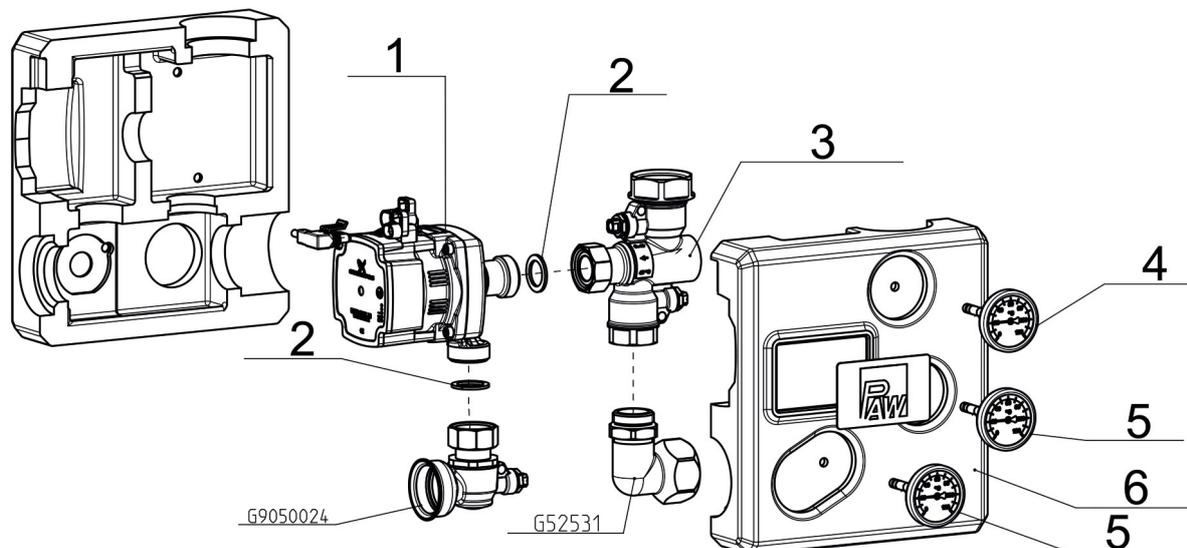
Item no. product*	Pump	Item no. pump	EEI
9612x0WP6	Wilo Para SC 25/6-43	N00259	< 0.20
9612x0WN06	Wilo Yonos PICO 25/1-6	N00214	< 0.20
9612x0GM6	Grundfos UPM3 Auto 25-70	N00237	< 0.20
9612x0GH6	Grundfos Alpha2.1 25-60	N00236	< 0.17

*961250 for thermal valve 45 °C, 961260 for thermal valve 60 °C

Optional accessories for assembly into the ½" sleeves of the ball valves	
Item no. 566001	Immersion sleeve (as a point for temperature measurement)
Item no. 2260	Valve with counter nut for draining the boiler circuit

5 Scope of delivery

5.3 Spare parts Compact station DN 25 - 32 (96604x)



Position	Spare part	Item number
1	Pump Grundfos UPM3 FLEX AS 15-75	N00441
2	Sealing kit 30.0 x 21.0 x 2.0, ½", for thread connection 1", 10 pieces	N00024
3	Thermal controller K36K, 45 °C, 1" nut x 1¼" int. thr. x 1" int. thr., with seal	N00605
	Thermal controller K36K, 60 °C, 1" nut x 1¼" int. thr. x 1" int. thr., with seal	N00442
4	Dial thermometer, red, d = 50 mm, 120 °C	N00403
5	Dial thermometer, blue, d = 50 mm, 120 °C	N00404
6	Insulation Return flow temperature maintenance DN 25/32	N00445

966041GF7 for thermal valve 45 °C, 966042GF7 for thermal valve 60 °C

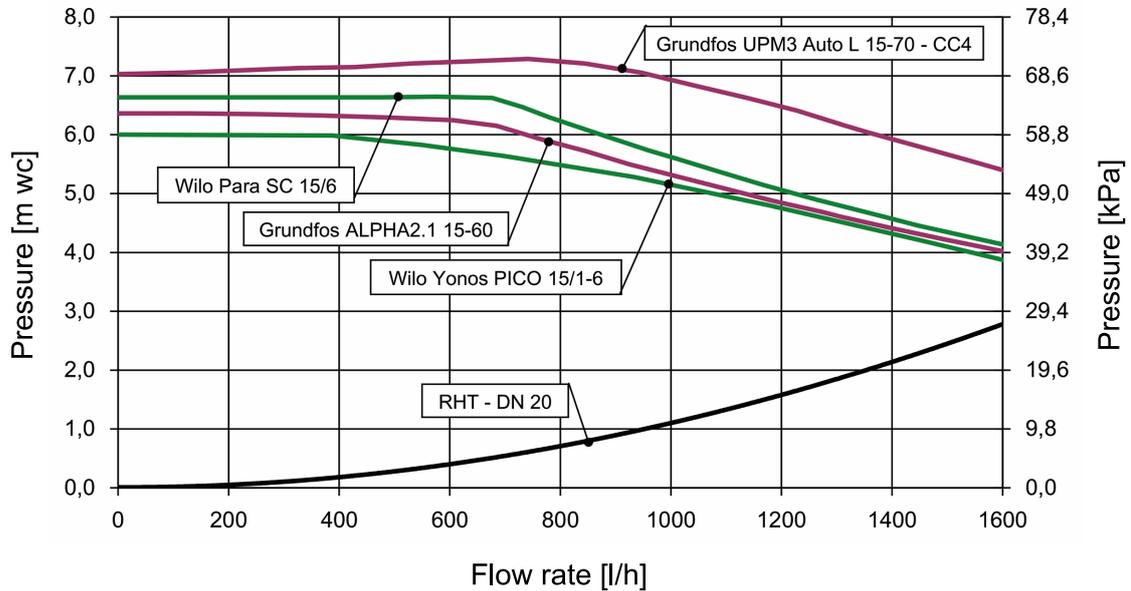
6 Technical data

Return flow temperature maintenance	DN 20	DN 25	Compact station DN 25 - 32
Dimensions			
Installation height	112 mm	128 mm	250 mm
Installation length	337 mm	428 mm	230 mm
Connections	¾" int. thread	1" int. thread	1¼" int. thread
Hydraulics			
Max. pressure	6 bar	6 bar	6 bar
Maximum temperature	110 °C	110 °C	110 °C
K _{VS} value [m ³ /h]	3.2	7.4	7.2
Range of application 6 m pump	30 kW (1300 l/h)	53 kW (2285 l/h)	26 kW (2250 l/h)
Opening temperature	Depending on the type: 45 °C / 60 °C, Δt = 20 K		
Materials			
Valves and fittings	Brass		
Seals	EPDM / NBR		
Insulation	EPP		

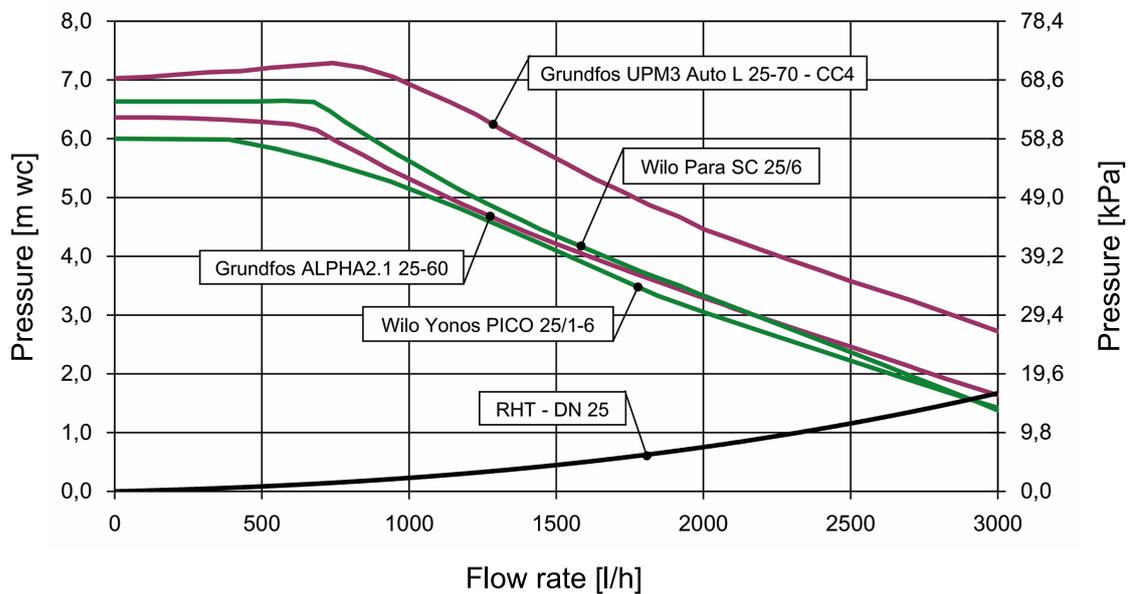
6 Technical data

6.1 Pressure drop and pump characteristic curves

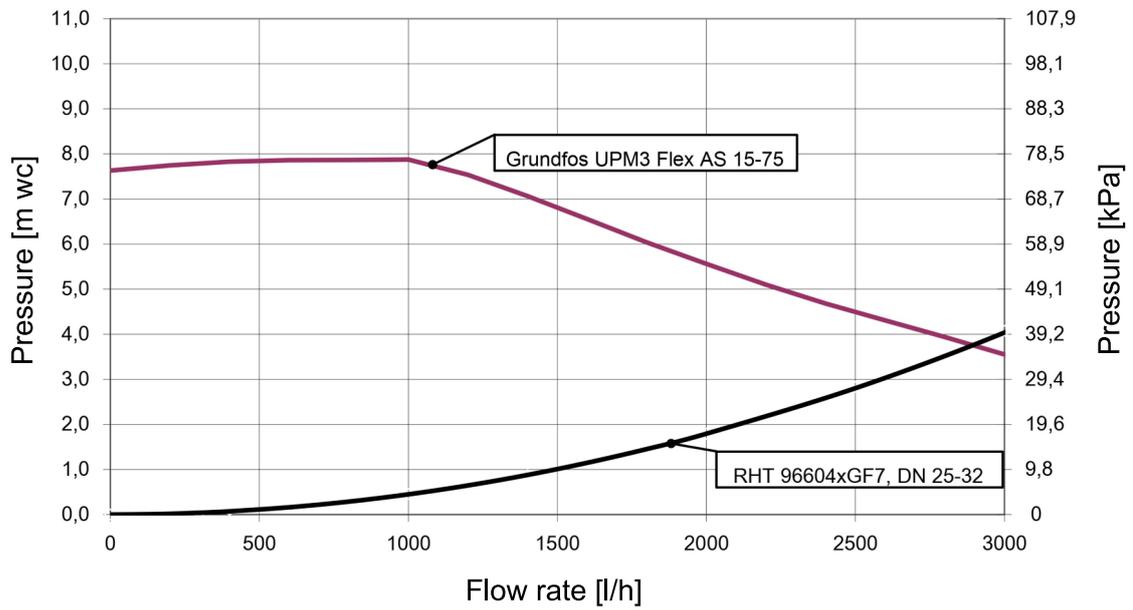
DN 20



DN 25



Compact station DN 25 - 32



7 Disposal

NOTICE	
	<p>Electrical and electronic devices must not be disposed of in the household waste.</p> <p>For your return, there are free collection points for electrical appliances and, if necessary, additional points of acceptance for the reuse of the devices in your area. The addresses can be obtained from your city or communal administration.</p> <p>If the old electrical or electronic device contains personal data, you are responsible for deleting it before returning the device.</p> <p>Batteries and rechargeable batteries must be removed prior to the disposal of the product. Depending on the product equipment (partly with optional accessories), single components can also contain batteries and rechargeable batteries.</p> <p>Please observe the disposal symbols on the components.</p>

Disposal of transport and packaging materials

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

Item no. 999612x-mub-en

Translation of the original instructions

We reserve the right to make technical changes without notice!

Printed in Germany - Copyright by PAW GmbH & Co. KG

PAW GmbH & Co. KG

Böcklerstraße 11

31789 Hameln, Germany

www.paw.eu

Phone: +49-5151-9856-0

Fax: +49-5151-9856-98