

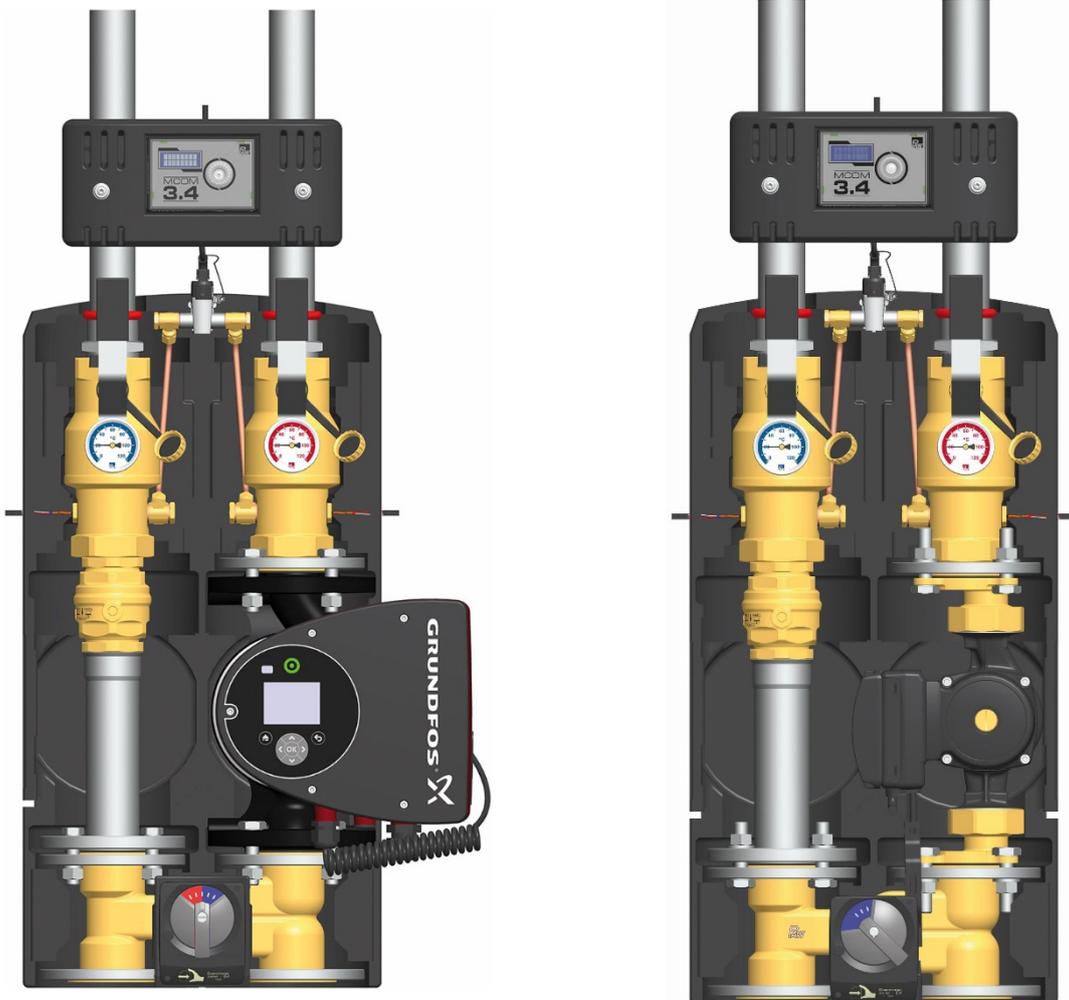


Installation and Operation Instructions

HeatBloC

MC42 / MC43 DN 40

MC42 DN 50





Item no. 9945x1051x-mub-en – Version V03 – Issued 2018/11

Translation of the original instructions

We reserve the right to make technical changes without notice!

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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 the operation of the mixed HeatBloC MC42 / MC43 DN 40 and DN 50.

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

1.2 Designated use

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

The HeatBloC must **not** be used in drinking water applications.

Improper usage of the HeatBloC excludes any liability claims.

Only use PAW accessories with the HeatBloC.

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.

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 of this manual

	<p>CAUTION</p> <p>Personal injury and damage to property!</p> <p>The HeatBloC must only be used in heating circuits filled with heating water according to VDI 2035 / Ö-Norm H 5195-1.</p> <p>The HeatBloC must not be used in drinking water applications.</p>
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<p>NOTICE</p>
<p>Material damage due to mineral oils!</p> <p>Mineral oil products cause lasting damage to seals made of EPDM, whereby the sealant properties get 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 avoid that EPDM gets in contact with substances containing mineral oils. ➤ Use a lubricant based on silicone or polyalkylene and free from mineral oils, such as Unisilikon L250L and Syntheso Glep 1 of the Klüber company or a silicone spray.

3 Product description

The HeatBloC is a preassembled group of fittings for heating circuits. The pump can be isolated, it is thus not necessary to drain the heating circuit during servicing.

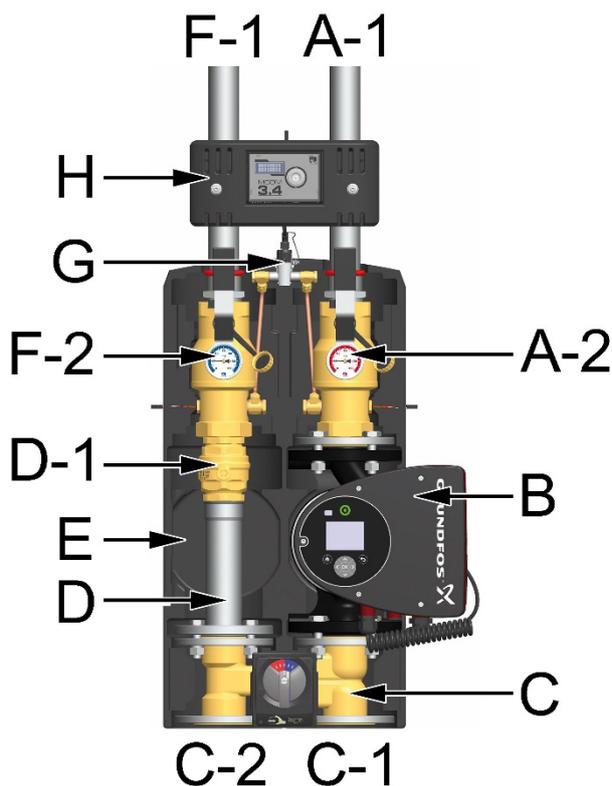
The nominal value for the differential pressure between the flow and the return is adjusted at the controller. On this basis, the controller regulates the pump. Thus, the hydraulic balancing at the distribution manifold is assured and an energy-saving operation of the pump is guaranteed at any time.

For the MC43, a nominal value for the flow temperature is set at the controller.

The controller actuates the actuator on this basis.

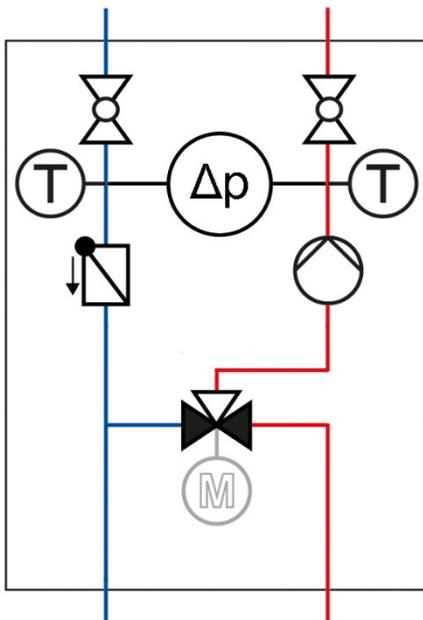
The PAW HeatBloC can be mounted on a PAW modular distribution manifold or on a PAW bracket.

3.1 Equipment



- A-1 Flow to the consumer circuit
- A-2 Flow ball valve with temperature sensor T_V and thermometer
- B Heating pump
- C 3-way mixing valve
- C-1 Flow from the heat generator
- C-2 Return to the heat generator
- D-1 Check valve, can be opened
- D Return pipe
- E Design insulation according to EnEV directive
- F-2 Return ball valve with temperature sensor T_R and thermometer
- F-1 Return from the consumer circuit
- G Differential pressure sensor
- H Controller MCom

3.2 Function



MC42 / MC43 – HeatBloC with 3-way mixing valve

The flow temperature of the heating circuit is controlled by the integrated mixing valve. Hot water from the boiler and cold return water are mixed to obtain the desired flow temperature of the heating circuit. For the MC42, the mixing valve is adjusted via an external controller in combination with the electric actuator. For the MC43, the actuator is controlled by the MCom controller.

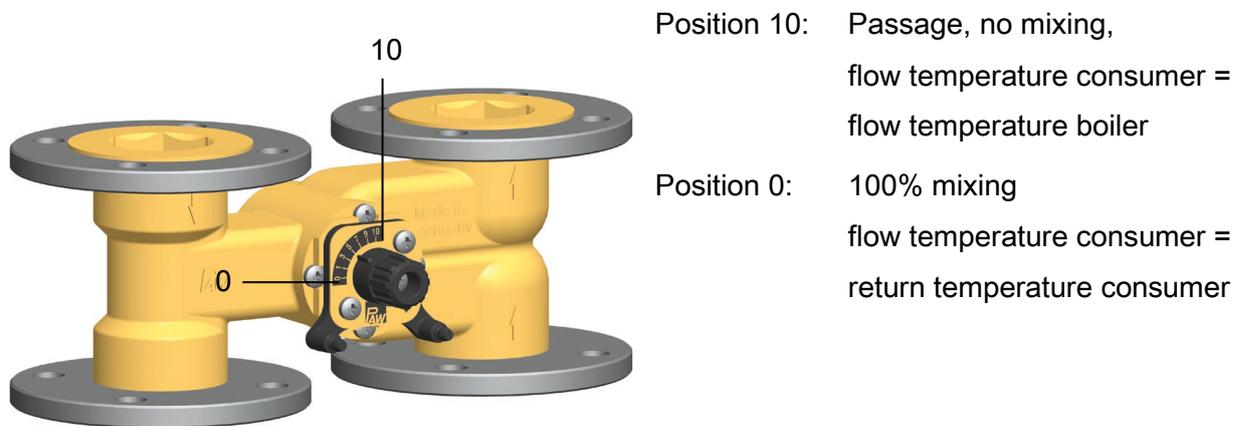


Application range:

- Installations with several heating circuits and different flow temperatures (radiators and radiant floor heating)
- Installations with high fluctuations of the flow temperature due to the heat generator (solid fuel boilers, installations with power-heat cogeneration)

3.3 3-way mixing valve [specialist]

The 3-way mixing valve (C), driven by an electric actuator, adjusts the flow temperature of the consumer circuit to the required value by means of the flow sensor and the controller.



3.4 Pump [specialist]

The pump can be completely isolated. It can be replaced and maintained without draining the heating installation.

The pump must be connected to the power supply on site. The pump Grundfos Magna 3 must be configured after the electrical commissioning. For the pump Grundfos UPMXL GEO 32-125 (only DN 40), no configuration is necessary.

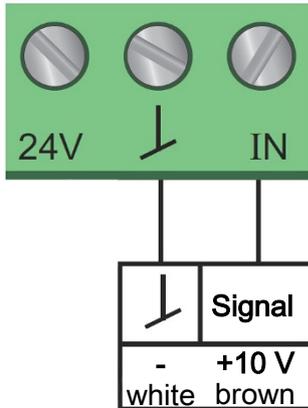
Isolation of the pump

1. Close the ball valves in the flow and return (A-2, F-2).
2. Remove the actuator from the mixing valve.
3. Turn the rotary knob of the mixing valve such that the black nose is directed to "VL zu" (flow closed).

Cut off the expansion tank to depressurise the installation.

The mixing valve is now closed and drop tight. The pump can be dismantled.

3.4.1 Commissioning (only Grundfos Magna 3)



1. Connect the control cable to the pump and the controller MCom. The cable gland is enclosed.
2. Connect the pump to the power supply. The cable gland is provided in the pump housing. Please observe the separate instructions of the pump!
3. Remove the protective film from the display.

3.4.2 Configuration (only Grundfos Magna 3)

The configuration is carried out via the pump display. Please observe the separate instructions of the pump for operating the display.

I) Set the control type

1. You are in the menu *Settings*.
2. Select *Control mode* and confirm by pressing OK.
3. Select *Constant curve* and confirm by pressing OK.
4. Press the Home button to return to the main menu.

II) Set the nominal value

1. You are in the menu *Settings*.
2. Select *Nominal value* and confirm by pressing OK.
3. Press OK.
4. Set *100%* as nominal value and confirm by pressing OK.
5. Press the Home button to return to the main menu.

III) Set the analogue input

1. You are in the menu *Assist*.
2. Select *Analogue input setup* and confirm by pressing OK.
3. Continue to scroll.
4. Select *External nominal value adjustment* and continue to scroll.
5. Select *0-10 V* as signal type and continue to scroll.
6. Check the displayed summary and confirm by pressing OK.

IV) Set the setpoint influence

1. You are in the menu *Settings*.
2. Select *Nominal value adjustment* and confirm by pressing OK.
3. Select *External nominal value function* and confirm by pressing OK.
4. Select *Linear to MIN* and confirm by pressing OK.
5. Press the Home button to return to the main menu.

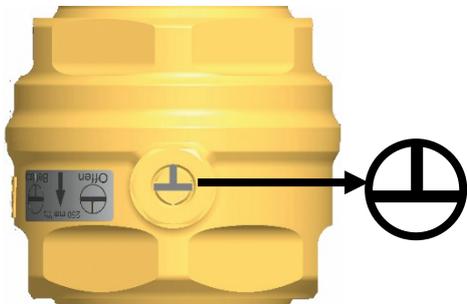
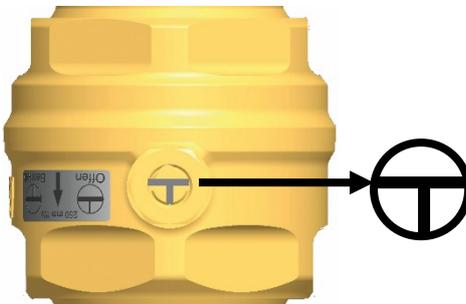
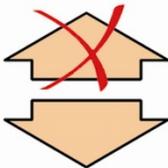
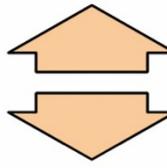
NOTICE (only Grundfos Magna 3)

A stop of the pump via the controller MCom is not possible, it must be carried out via the heating controller or the building control system.

3.5 Check valve

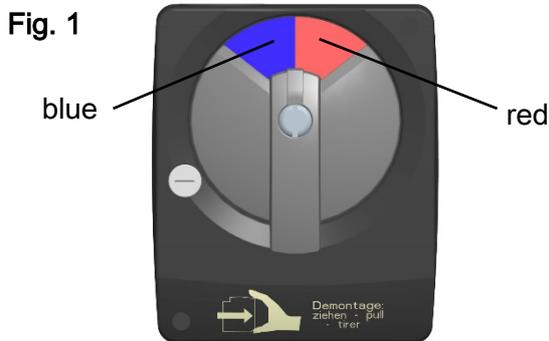
The HeatBloC is equipped with a check valve (D-2) in the return line. The check valve can be opened.

Check valve (Normal flow direction in the figure: downwards)

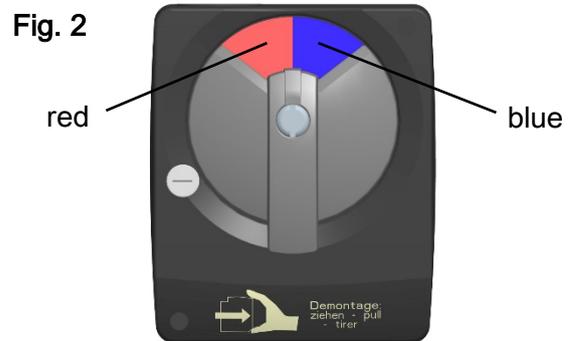
	
	
<p>Position 0° Check valve is operating, flow only in direction of flow.</p>	<p>Position 180° Check valve is not operating, flow in both directions.</p>

3.6 Actuator

For mixing valves with flow on the left, the scale must be turned by 180°.



for mixing valve with flow on the right



for mixing valve with flow on the left

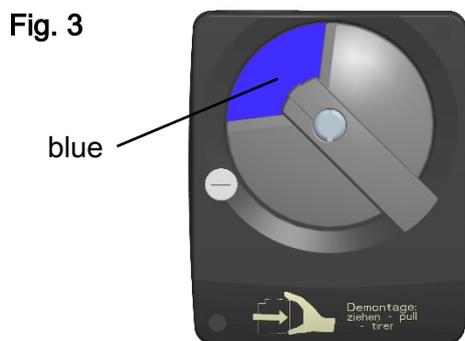


Fig. 4

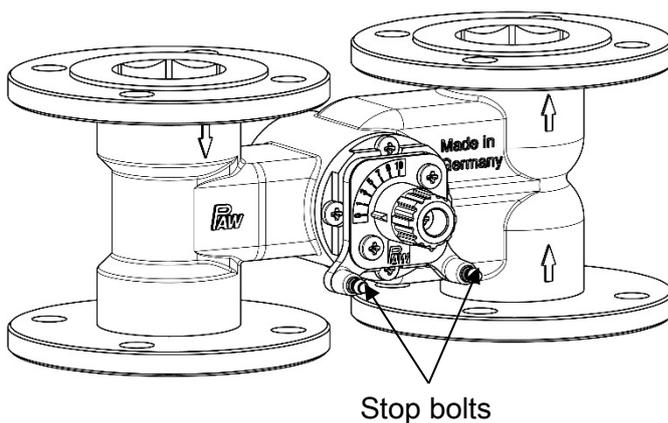


Fig. 5

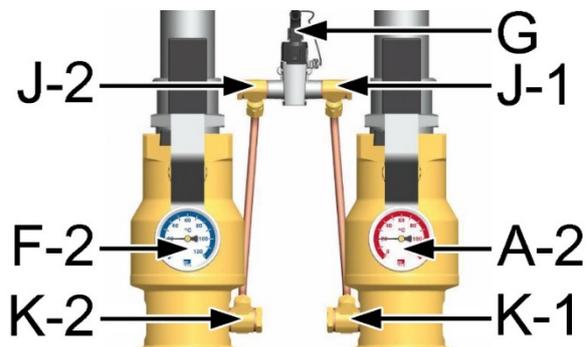
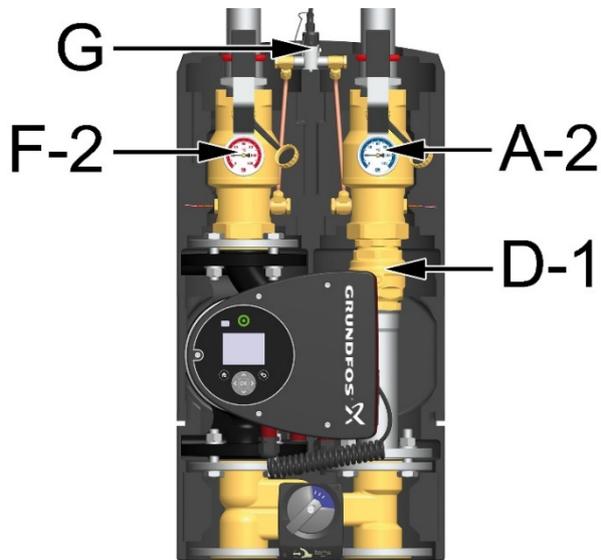


Assembly of the actuator

for mixing valves with flow on the right:

1. Turn the rotary knob of the mixing valve into position 0.
2. Set the actuator to manual mode by turning the selector switch.
3. Turn the rotary knob of the actuator to the left to the position shown on the adjacent figure.
4. Put the actuator on the adjusting knob of the mixing valve and the two stop bolts. The actuator must be mounted according to figure 5.
5. Set the actuator to automatic mode.

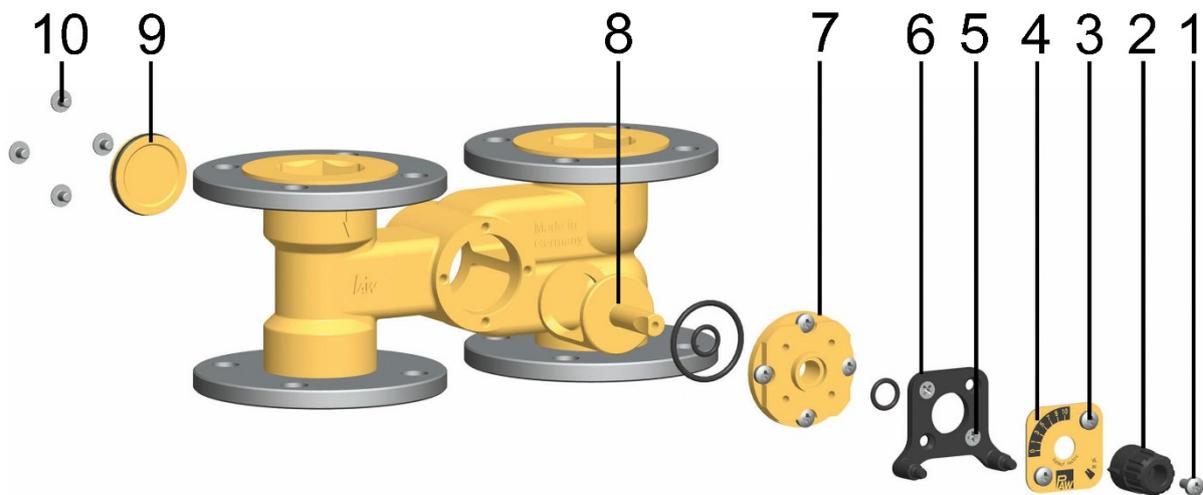
4 Change of the flow line [specialist]



1. Dismount the temperature sensors and the thermometers of the ball valves (A-2 and F-2).
2. Unscrew the return line from the mixing valve.
3. Retrofit the mixing valve as described in chapter 4.1 **Conversion of the mixing valve**.
4. Interchange and mount the flow and return line. Please observe the position of the opening mechanism of the check valve (D-1).
5. Mount the pump.
6. Loosen the screw connections (J-1 and J-2) between the sensor (G) and both copper pipes.
7. Turn the sensor (G) by 180°.
8. Mount the sensor (G) between the screw connections (J-1 and J-2).
9. Mount the screw connections (K-1 and K-2) to the ball valves (A-2 and F-2). The marking "P1" on the sensor (G) must point towards the pump.
10. Firmly tighten the clamping-ring compression fitting.
11. Mount the temperature sensors T_R and T_V into the ball valves.
Observe the correct attribution:
Red = Flow
Blue = Return
12. Convert the actuator as described in chapter 3.6 **Actuator**.

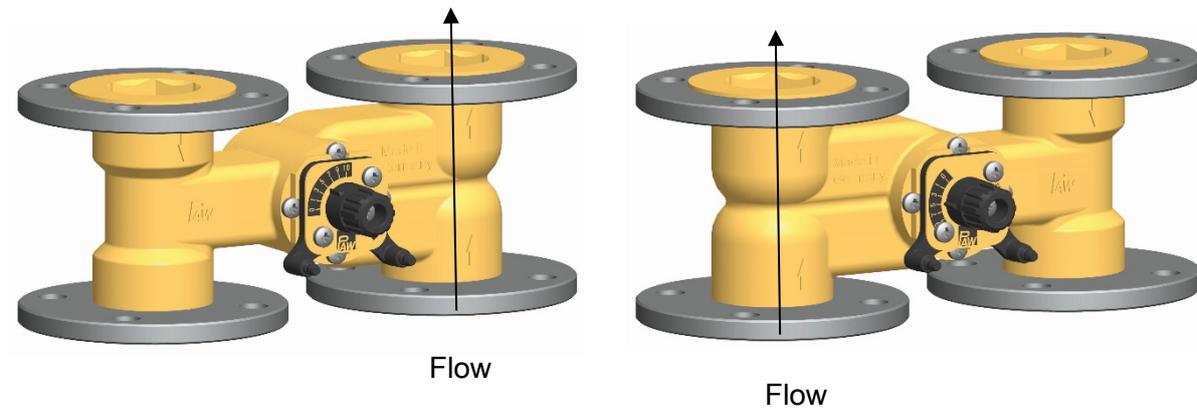
13. Please observe the instructions of the boiler control manual when changing the flow line.
14. Mount the HeatBloC as described in chapter 5.1 Installation of the HeatBloC.

4.1 Conversion of the mixing valve



1. Loosen the screw (1).
2. Take off the rotary knob (2) from the cock rod.
3. Loosen the screws (3).
4. Remove the cover plate (scale) (4).
5. Loosen the two screws (5).
6. Remove the front plate (6).
7. Dismount the sealing bush (7). Pull out the valve cock (8) from the housing of the mixing valve.
8. Loosen the screws (10) on the rear side of the mixing valve.
9. Take off the cover (9) from the rear side of the mixing valve.
10. Reverse the housing of the mixing valve such that the two channels lying upon each other are on the flow side. Please observe the flow direction arrows on the housing.
11. Put the mixing valve cover in again on the other side of the mixing valve and fix it by using the screws (10).

12. Insert the valve cock (8) from the front into the channel of the mixing valve.
Fix the valve cock with screws.
13. Fix the front cover (6) by using the screws (5).



Mixing valve with flow on the right

Mixing valve with flow on the left

14. Turn the cover plate (4) in such a way that the marking PAW is at the bottom and that the scale is positioned as shown in the figure above.
15. Fix the cover plate (4) by using the screws (3).
16. Put the rotary knob (2) onto the cock rod.
17. Fix the rotary knob (2) on the cock (8) by using the screw (1).

5 Assembly and installation [specialist]

The PAW HeatBloC can be mounted on a PAW modular distribution manifold or on a PAW bracket.

NOTICE

Damage to property!

The location of installation must be dry, load-carrying, frost-proof and protected against ultraviolet radiation in order to prevent material damage of the installation.

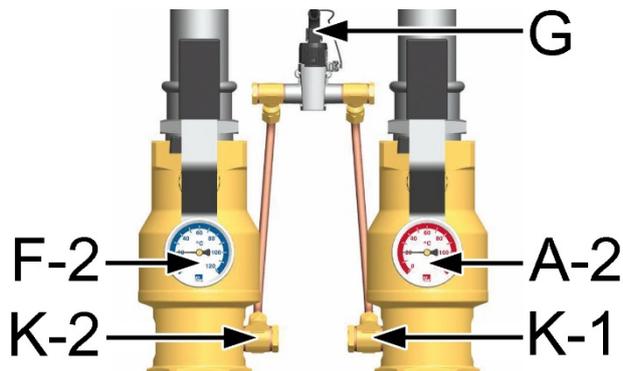
5.1 Installation of the HeatBloC

NOTICE

- Verify if the grounding cable holds securely in place at the differential pressure sensor!
- Carry out the following mounting instructions in parallel at each heating circuit of the system.



1. Mount the modular distribution manifold or the bracket. Please observe the separate instructions!
2. Remove the station from the packaging.
3. Remove the thermometers from the handles.
4. Take off the insulating front shells of the HeatBloC.
5. Put the HeatBloC with the gaskets onto the flanges of the distribution manifold or of the bracket and screw the flanges together.
6. Only Grundfos Magna 3: Mount the pump. Please observe the instructions of the pump!
7. Connect the HeatBloC to the installation by using the pipes. The installation to the piping must be carried out without any tension.

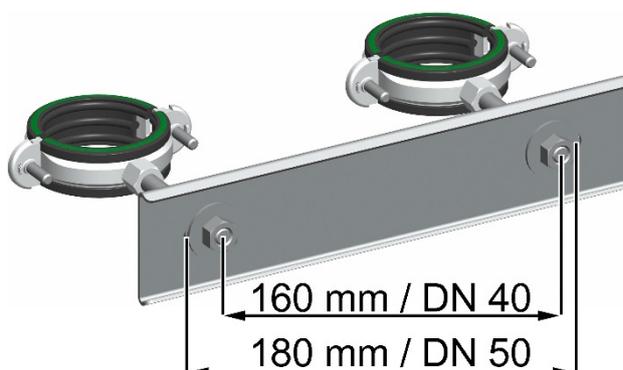
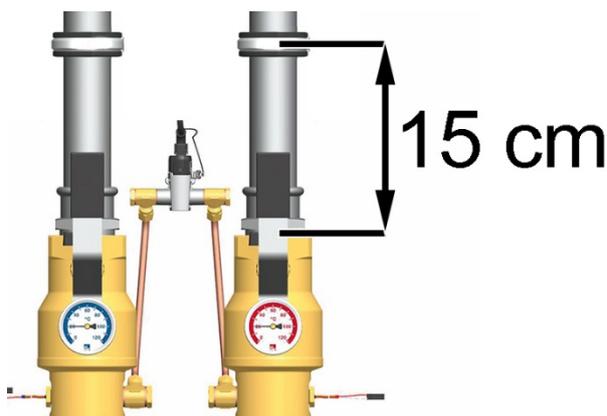


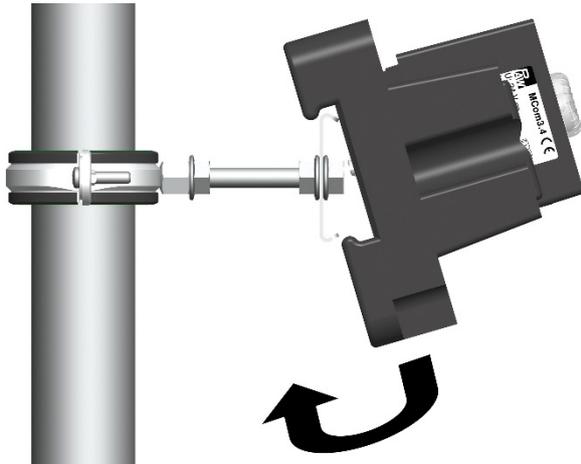
8. Mount the enclosed sensor (G) with copper pipes and screw connections (K-1 and K-2) between the flow and return ball valve (A-2 and F-2).

Observe the marking on the sensor housing: P1 = flow; P2 = return.

The bend of the copper pipe points backwards. The sensor cable is led out at the top of the insulation.

9. Repeat these steps for all the HeatBloCs that are mounted.
 10. Check all thread connections and carry out a pressure test.
 11. Mount the actuator (see page 11) and run the cable backwards.
 12. Only for MC42: Connect the power supply of the actuator to the heating controller.
 13. Fix the rail to the pipe observing a distance of 15 cm above the ball valves (see figure).
- For DN 40 use the inner holes, for DN 50 the outer holes.

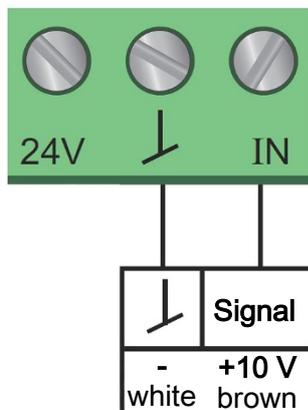




14. Loosen the screws of the controller insulation.
15. Dismount the insulating front shell of the controller.
16. Fix the controller on the mounting rail (see figure).



5.2 Electrical connection and configuration of the pump (only Grundfos Magna 3)



1. Connect the control cable to the pump and the controller MCom. The cable gland is enclosed.
2. Connect the pump to the power supply. The cable gland is provided in the pump housing. Please observe the separate instructions of the pump!
3. Remove the protective film from the display.
4. Put the pump into operation and flush the installation.
5. Configure the pump. The configuration is carried out via the pump display. Please observe the separate instructions of the pump for operating the display.

I) Set the control type

1. You are in the menu *Settings*.
2. Select *Control mode* and confirm by pressing OK.
3. Select *Constant curve* and confirm by pressing OK.
4. Press the Home button to return to the main menu.

II) Set the nominal value

1. You are in the menu *Settings*.
2. Select *Nominal value* and confirm by pressing OK.
3. Press OK.
4. Set *100%* as nominal value and confirm by pressing OK.
5. Press the Home button to return to the main menu.

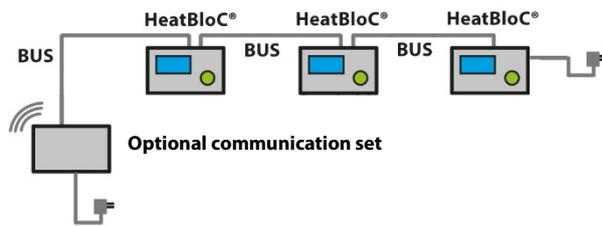
III) Set the analogue input

1. You are in the menu *Assist*.
2. Select *Analogue input setup* and confirm by pressing OK.
3. Continue to scroll.
4. Select *External nominal value adjustment* and continue to scroll.
5. Select *0-10 V* as signal type and continue to scroll.
6. Check the displayed summary and confirm by pressing OK.

IV) Set the setpoint influence

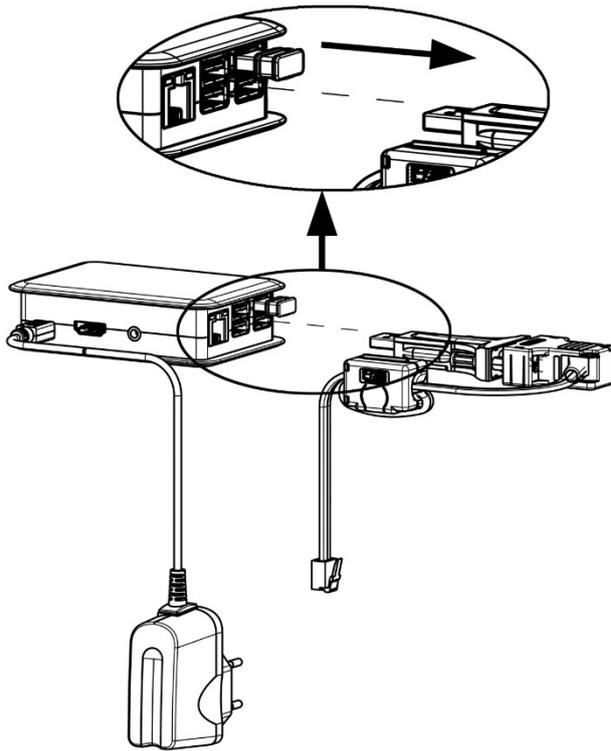
6. You are in the menu *Settings*.
7. Select *Nominal value adjustment* and confirm by pressing OK.
8. Select *External nominal value function* and confirm by pressing OK.
9. Select *Linear to MIN* and confirm by pressing OK.
10. Press the Home button to return to the main menu.

5.3 Cabling



1. Connect the temperature sensors, the actuator (only for MC43) and the differential pressure sensor to the controller (see below).
2. Connect the wall power supply to the socket X6.2 (see below) at the last (right) controller.
3. Connect the bus line from controller 1 to controller 2 in the socket X6.1. As the two sockets of the bus line (X6.1 and X6.2) are connected in parallel, the position has no importance.
4. Repeat these steps for all HeatBloCs.
5. Remove the bus line from the first controller. Keep the bus line as spare part.

		X1	X2	X3	X4	X5	X6.1	X6.2
X1	not used			X4	Temperature sensor T_V , flow, red marking			
X2	PWM signal of the pump			X5	Differential pressure sensor			
X3	Temperature sensor T_R , return, blue marking			X6.1	Supply voltage or bus line (connected in parallel and therefore interchangeable)			
				X6.2				



6. If you do not mount the communication set, continue at point 10.
 7. If you additionally mount the optional communication set, run the bus line of the communication set to the first (left) controller. For this purpose, disconnect the plug of the bus line from the mini PC of the communication set.
 8. Make sure that the plug does not get wet.
9. Mount the optional communication set now. Please observe the separate instructions of the communication set!
 10. Carry out the electrical commissioning of the controllers (see controller instructions).
 11. Carry out the electrical commissioning of the communication set (see instructions of communication set).
 12. Mount the insulating front shell of the controller.
 13. Screw the screws in the controller insulation.
 14. Mount the insulating front and back shells of the HeatBloC.
 15. Mount the handles and insert the thermometers.
 16. Mount the insulating front and back shell of the distribution manifold.

17. Please fill in the enclosed insert
and fix it on the insulation:

HeatBloC® MC	
Typ:	MC42
Name:	Radiant panel heating
No:	2
 www.paw.eu	

Type:	Type of the heating circuit, f. ex. MC42
Name:	Type of the application, f. ex. radiant panel heating
No.:	Number of the heating circuit according to the controller instructions, f. ex. 2

5.4 Optional accessories: Communication set (not included in the scope of delivery)

The communication set with insulated housing can be mounted on the wall using the enclosed mounting rail. It is connected with the controllers via a bus line. The internal mini PC is equipped with a power supply unit to assure the power supply and establishes its own local WLAN network. With a smartphone and the corresponding PAW app, you can establish a connection with your installation via this WLAN and set parameters or read out current values.

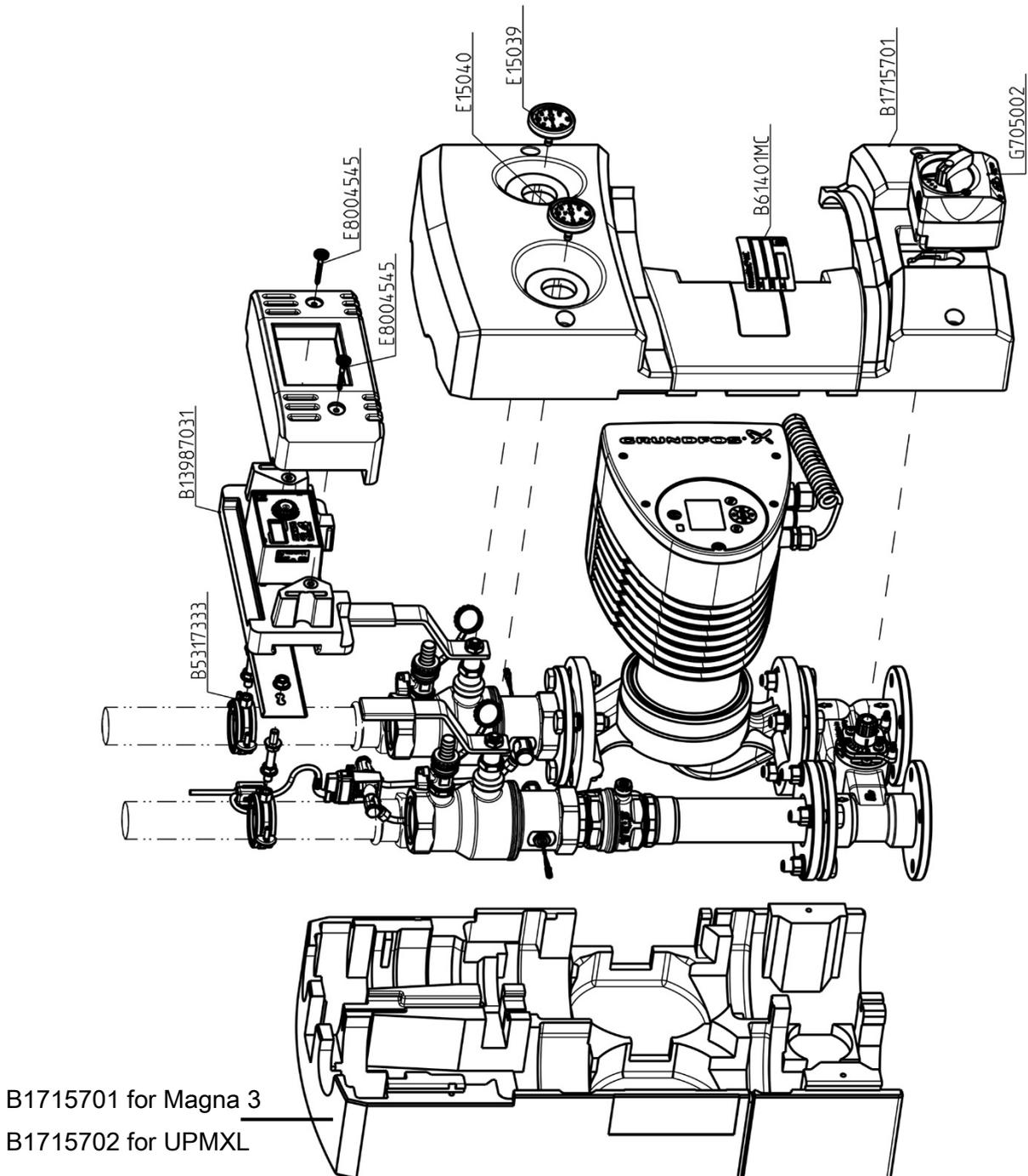
You will get the app in the App Store for iOS devices and in the Google Play Store for Android devices entering the search term "PAW MCom".

6 Scope of delivery [specialist]

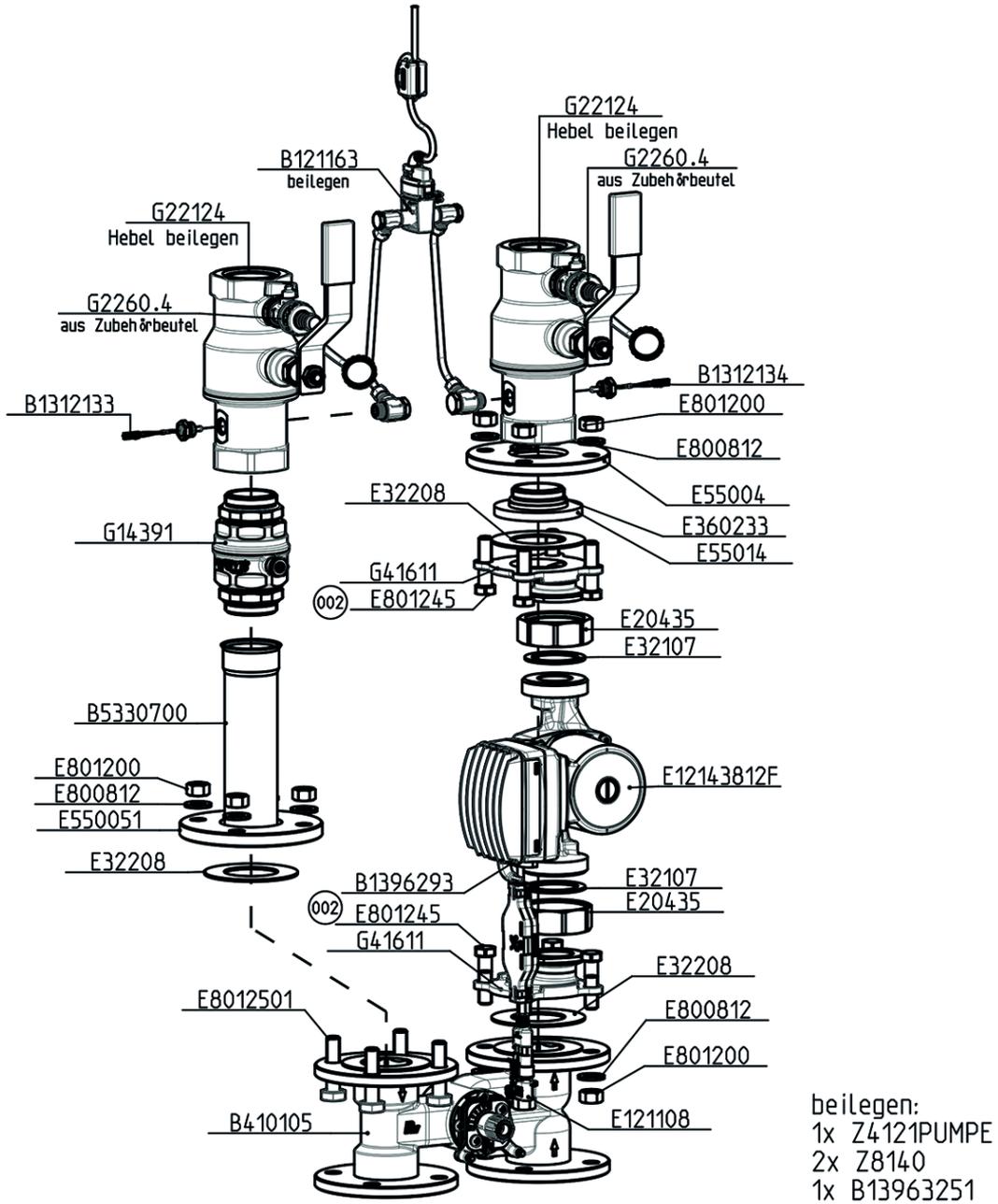
NOTICE

Complaints and requests/orders of spare parts will only be processed with information on the serial number! The serial number is placed on the return pipe of the heating circuit.

6.1 Insulation and controller DN 40

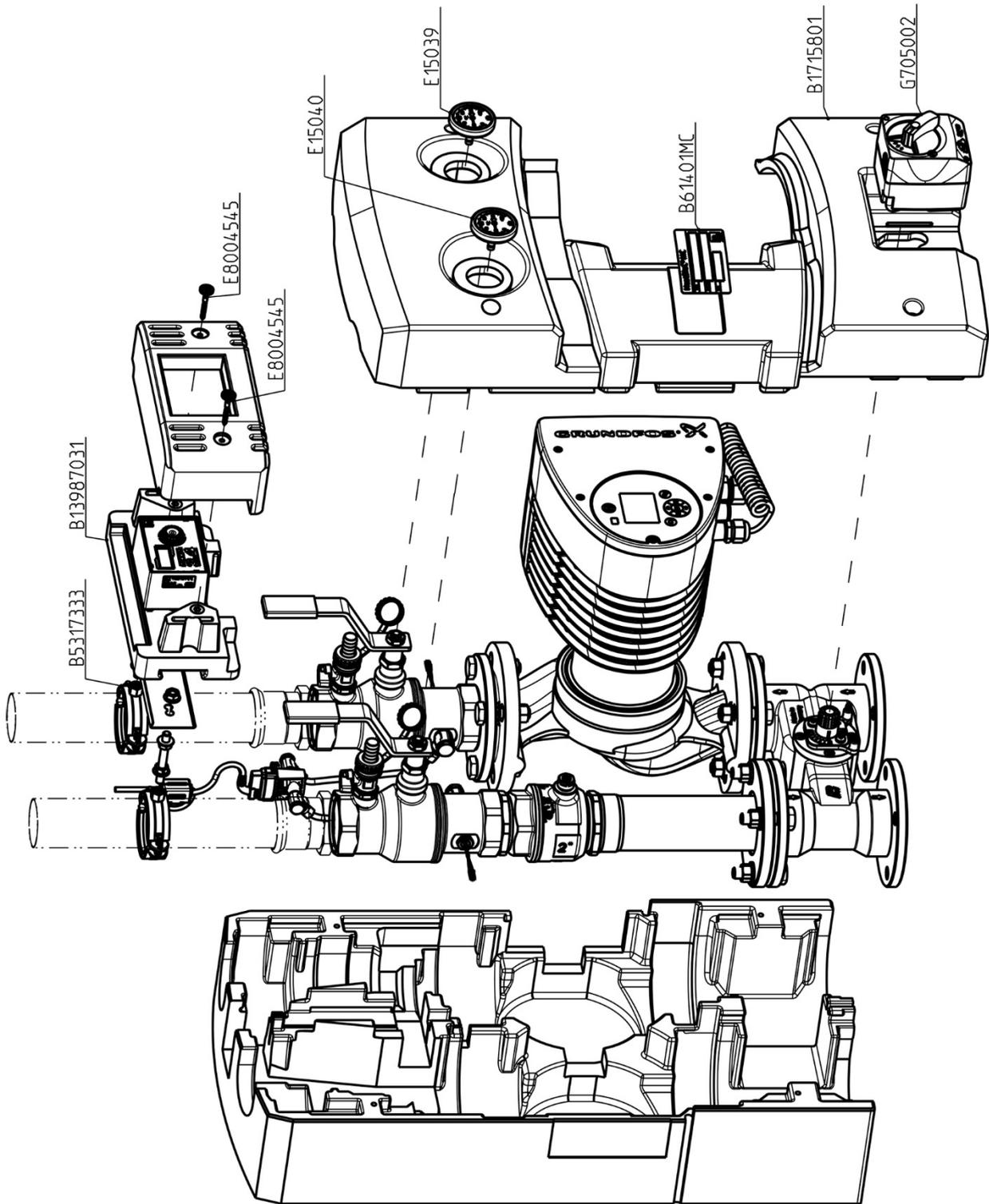


6.3 Hydraulics DN 40 with Grundfos UPMXL



Pump	Item number	EEI
Grundfos UPMXL GEO 32-125	E12143812F	< 0.23

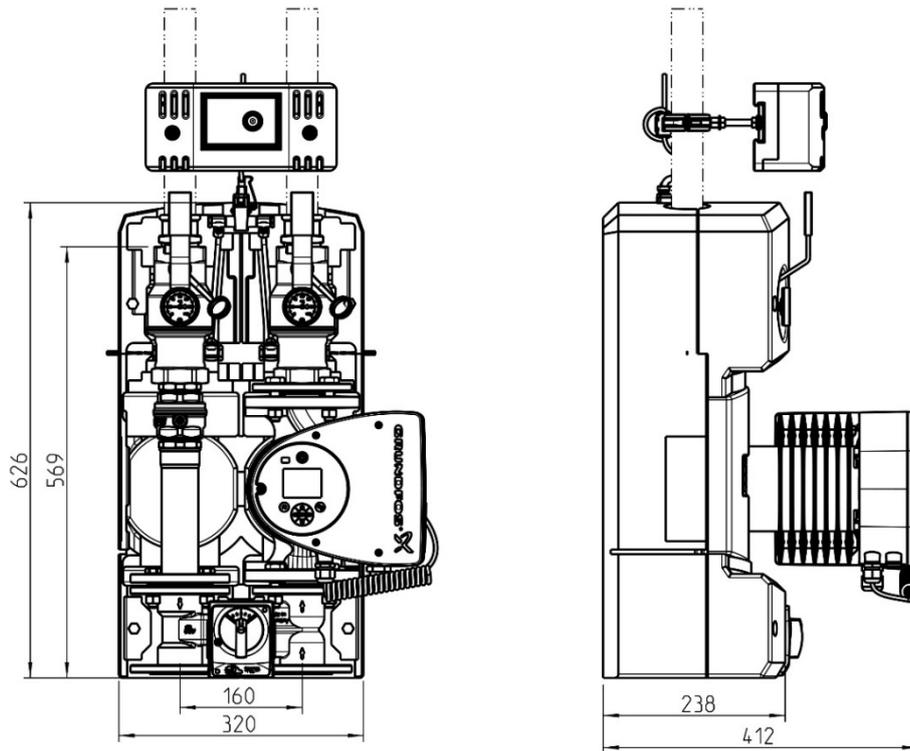
6.4 Insulation and controller DN 50



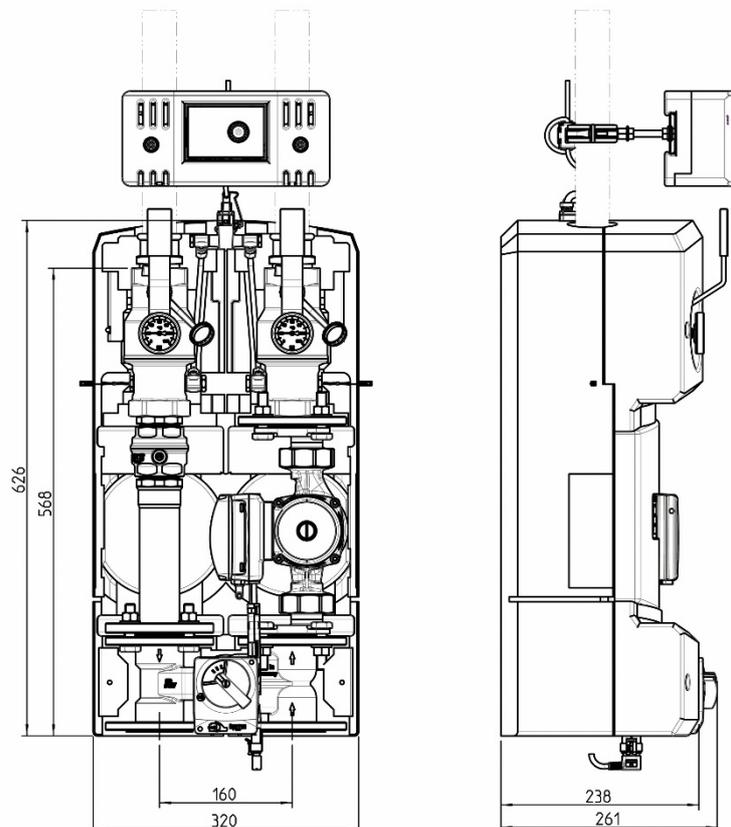
7 Technical data

MC42	DN 40 (1½")	DN 50 (2")
Dimensions		
Centre distance	160 mm	180 mm
Width insulation	320 mm	360 mm
Height insulation	626 mm	685 mm
Installation length	569 mm	624 mm
Connections		
Connection generator	Flange DN 40 / PN 6	Flange DN 50 / PN 6
Connection consumer	1½" internal thread	2" internal thread
Technical data		
Opening pressure check valve	200 mm wc, can be opened	
Materials		
Valves and fittings	Brass	
Gaskets	AFM34 / EPDM / NBR	
Insulation	EPP, EnEV conform	
Hydraulics		
Maximum pressure	6 bars	
Maximum temperature	110 °C	
K _{VS} value [m ³ /h]	17.7	25.7

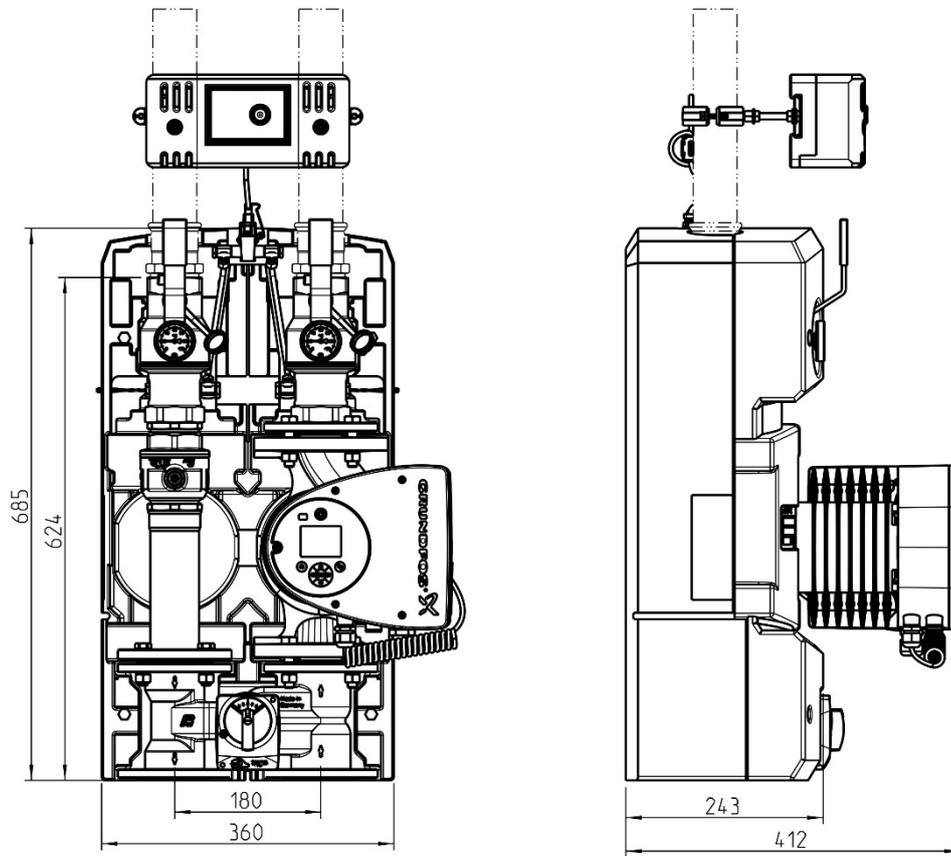
7.1 Dimensional drawing DN 40 with Grundfos Magna 3



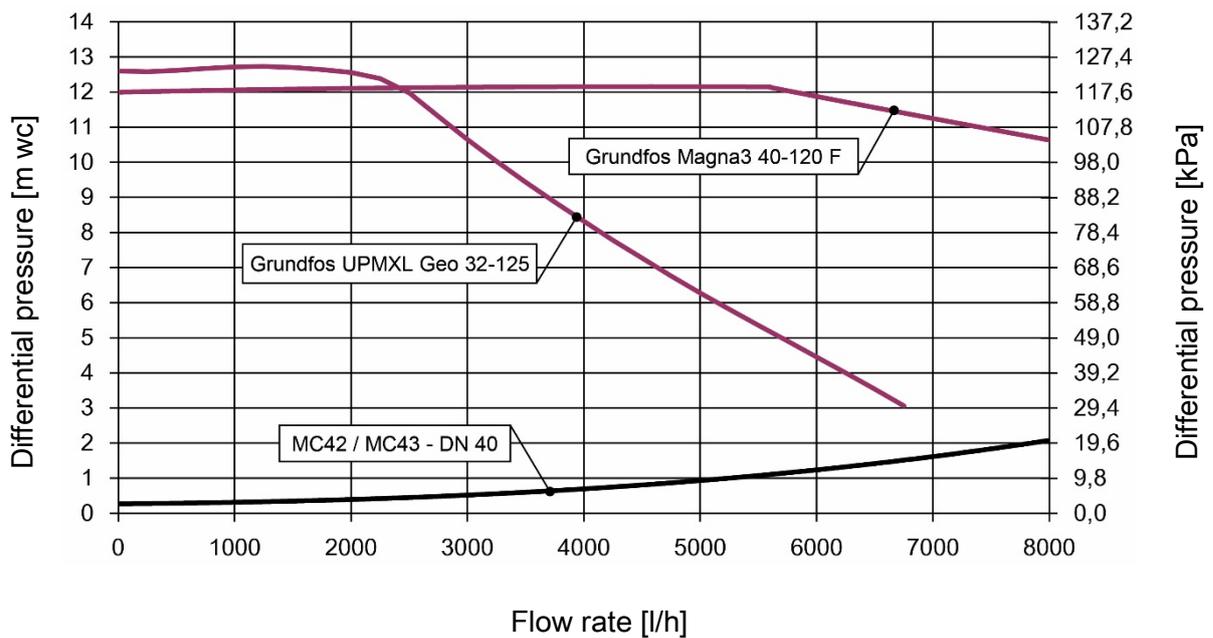
7.2 Dimensional drawing DN 40 with Grundfos UPMXL



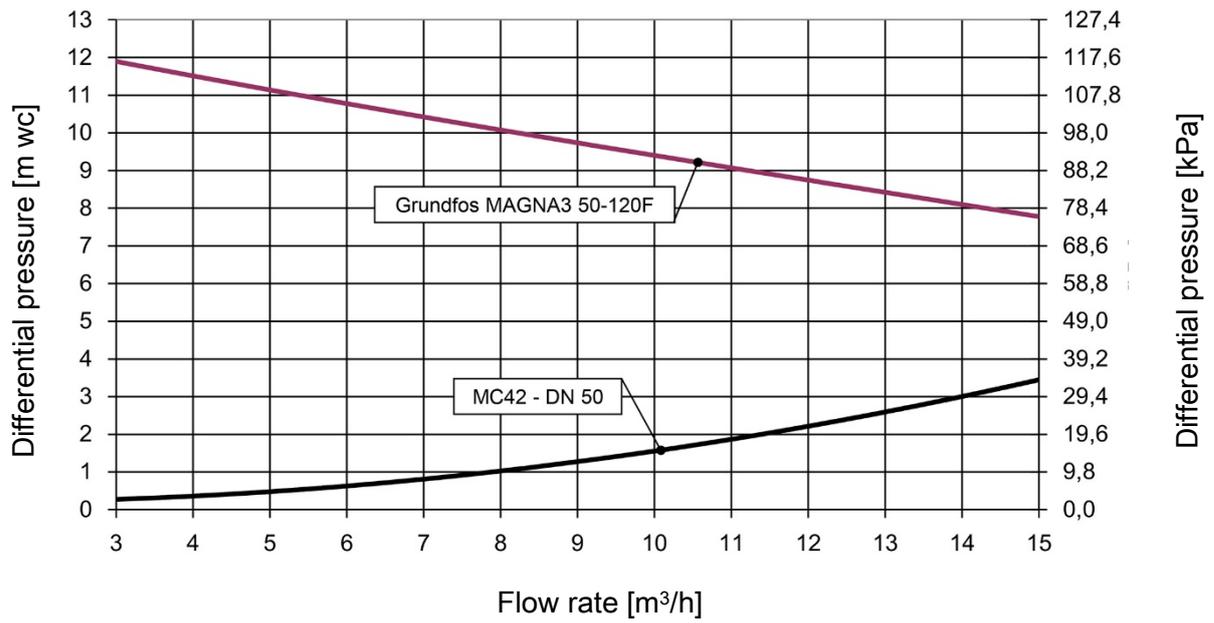
7.3 Dimensional drawing DN 50



7.4 Pressure drop and pump characteristic curves DN 40



7.5 Pressure drop and pump characteristic curves DN 50







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