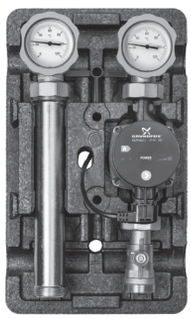
Pump Groups Edition 8

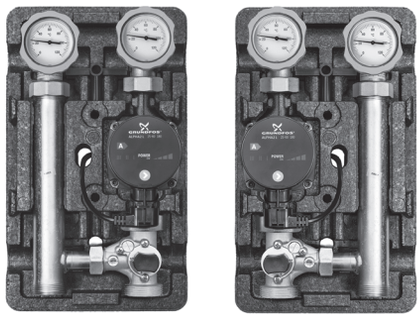
Instructions for Installation and Operation

PR 24002.226 27-09-2017 Technische Änderungen vorbehalten

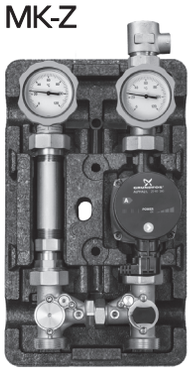
UK



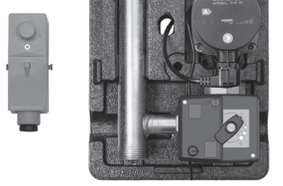
MK



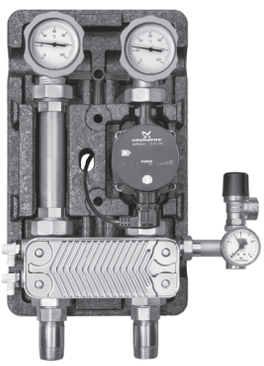
MK-Z



Constant Heat Regulation Set



Separation System



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Content

1. Basics

1.1 Safety instructions

Please follow these safety instructions faithfully to eliminate hazards, personal injury and material damage. The installation, commissioning, inspection, maintenance and servicing may only be performed by an approved, specialist company. Please familiarise yourself with all the parts and their handling before starting work. Observe the applicable accident prevention regulations, environmental regulations and legislation for the assembly, installation and operation of the system. In addition, observe the applicable safety provisions of the DIN, EN, DVGW, VDI and VDE and all relevant country-specific standards, laws and guidelines.

When working on the system: Disconnect the system from the mains and monitor it to ensure that no voltage is being supplied (e.g. at the separate cut-out or a main switch). Secure the system against being restarted. (With gas-fuelled systems, close the gas shut-off valve and secure it to prevent it from being opened unintentionally). Repairs to components with a safety function are not permitted. The installation location must be dry and frost proof. Hazards resulting from adjacent components must be avoided. Free access must be ensured.

1.2 Intended use

The components listed in the following instructions are intended for use in heating systems according to DIN EN 12828. Operation with a contaminated heat transfer medium is prohibited - this includes, among other things, foreign particles, substances that cause scaling and oxygen. The power supply for the recirculation pumps is managed on demand by an external controller – as is the control of the speed regulation. A backflow preventer, usually integrated within a ball valve and manually adjustable, prevents the flow from travelling in the wrong direction. Delivery includes the materials required for integration in systems with a suitable manifold. Accessories allow use as an individual component

Pump groups UK, UK-Z
The pump groups UK and UK-Z are designed for the recirculation of heating water in unmixed heating circuits. Typical applications include radiator heating and tank charging.

Pump groups MK, MK-Z
The pump groups MK and MK-Z are designed for the recirculation of heating water in mixed heating circuits. Typical applications include underfloor and wall heating. Some variants require an actuator for the mixer as an accessory.

Constant heat regulation set
Used like an MK but with a pre-installed actuator and fixed set-point controller set. Typical applications include heating systems with temperature limitation for protecting the system parts, or with a downstream controller for supplying heat on demand.

Separation system
Used like a UK, but includes a plate heat exchanger for the hydraulic separation of the heating circuit from the rest of the system. The set includes protection against overpressure in the separate heating circuit. The recirculation pump is corrosion-resistant. Typical applications include heating circuits with permeable plastic pipes (older underfloor heating systems) or with certain heat transfer media (e.g. antifreeze) or with another system pressure.

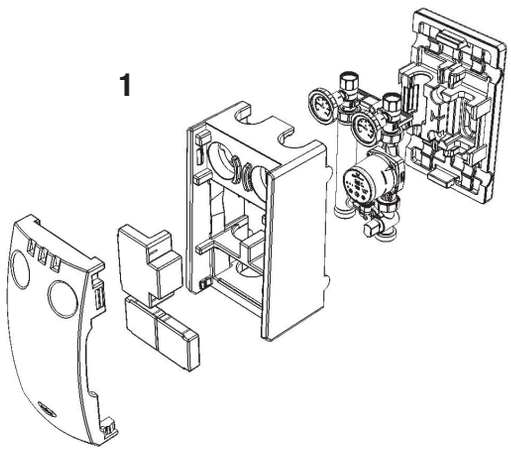
1. Basics

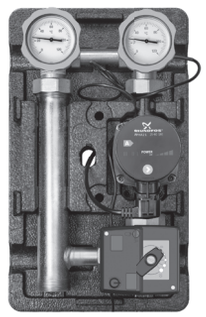
1.3 Functions

1 Thermal insulation
Robust insulation shells with locking mechanism minimise the heat losses while keeping the pump electronics cool. Can be (dis-)assembled for installation on manifolds at a later stage. Smooth, uniform front hood for easy cleaning and attractive appearance of various pump groups in the heating system.

2 Ball valves
with thermometer. Integrated, adjustable backflow preventer in backflow ball valve.

3 Mixer
As standard with bypass or with throttle plate as an accessory for exact control of the supply temperature. Various actuators available (230V, 24V, etc.). Actuator with integrated controller already installed with constant heat regulation set.





2. Installation and operation

2.1 Installation

2.1.1 General assembly instructions

- Sufficient space for installation, maintenance and service
- Tighten all screw fittings if necessary during a pressure test or following the initial heating

2.1.2 General assembly instructions for protecting the pump

When installing the pump group, please also refer to the instructions of the pump manufacturer:
- Only install a pump shaft horizontally
- Note the minimum supply pressures: e.g. 0.5 bar at 95°C; e.g. 1.08 bar at 110°C
- Only operate the pump when filled and bled
- Do not additionally insulate the connection box (the pump electronics must be kept cool)

2.1.3 Installing on a heating circuit manifold

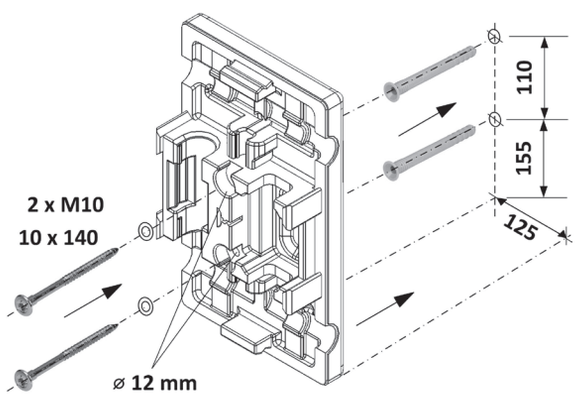
The pump group is installed on the flat sealing screw fittings of the heating circuit manifold. Secure the manifold appropriately to ensure it is capable of taking the weight of the pump groups.

(Warning: this is only possible if the lower insulation shell can be attached afterwards from the rear. The combination with our heating circuit manifold provides sufficient distance from the wall.)

1. Remove the supply and return line from the rear insulation shell
   – extend with additional accessories as required (e.g. screw fittings, heat flow meter)
2. Screw the pump group with flat gaskets to the installed manifold.
3. Establish the piping to the connections.
4. Attach the lower insulation shell from the rear
5. Engage the central insulation shell into the lower shell and attach the front hood

2.1.4 Installing on a wall

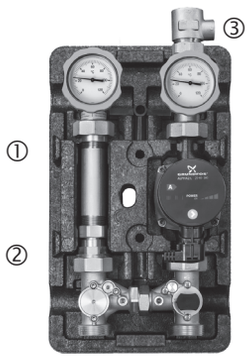
1. Remove the supply and return line from the rear insulation shell - extend with additional accessories as required (e.g. screw fittings, heat flow meter)
2. Position the lower insulation shell on the wall and mark the drill holes. Alternatively: Mark the drill holes according to the drawing.
3. Drill the holes (ø 10 mm) and knock in a rawl plug.
4. Guide the pump power cable through the lower insulation shell.
5. Mount the lower insulation shell on the wall using hexagon head screws and washers.
6. Engage the supply and return lines into the lower insulation shell. Secure them as required to prevent them from falling off.
7. Establish the piping to the connections.
8. Engage the central insulation shell into the lower shell and attach the front hood



2. Installation and operation

2.1.5 Installing a heat flow meter (UK-Z and MK-Z only)

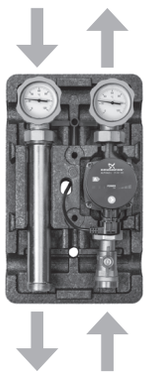
Delivery includes a 1" x 130 mm pipe nipple in the return line of the UK-Z or MK-Z ①. This is removed to install a meter. Attention: A meter should only be installed once the system has been flushed through. A 1" meter with an installation length of 130 mm is installed in place of the pipe nipple. For a 3/4" meter with an installation length of 110 mm, two flat sealing reductions (1" male thread × 3/4" female thread) are included. These are installed on the meter. With the reductions and the ¾" seals, the meter has an installed length of 90 + 2*9 = 108 mm. By pulling out the telescopic piece ② the meter is installed between the 1" union nuts. A T-piece (1" male thread x ½" female thread x 1" female thread) incl. extension piece ③ is included for a directly immersed supply sensor. Cut holes in the insulation shells as required (e.g. in the case of a heat flow meter or removable control unit).



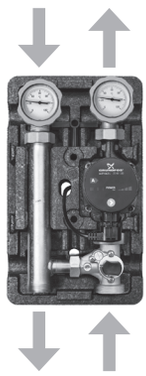
2.2 Hydraulic connection

Connect the supply and return lines according to the following illustrations or application examples. The side with the 1 ½" male thread is prepared for direct installation on manifolds. Without a manifold, use the union fittings for connecting to the heat generator. The heating circuit is connected to the side with the female thread.

UK, UK-Z

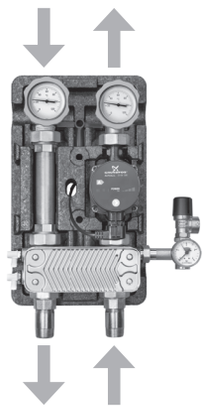


MK, MK-Z



Constant heat regulation set

Separation system



Note

UK, UK-Z:	Supply line and return line are interchangeable
MK:	Also available as a variant with the supply line on the left
MK-Z:	Supply line and return line are interchangeable (by swapping the mixing fitting from the right to the left)
Constant heat regulation set:	The pipe between the ball valves in not a hydraulic connection; it is used as a sensor mounting.
Separation system:	At bottom with screw fitting and double nipple for direct connection to another pump group with 1" female thread and 125 mm distance. Install the MAG connector set (included in the pump group scope of supply) and vent line of the safety valve on the safety group.

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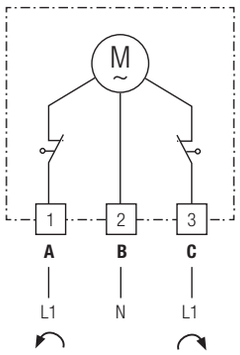
2.3 Electrical connection

Electrical connection work may only be carried out by qualified electricians. The VDE guidelines and the provisions of the responsible energy utility company must be observed.

I. Connect the recirculation pump to the power supply. This should only be operated on demand, with it usually being controlled via the boiler control unit. Some controllers enable the speed regulation of the selected pump to be externally controlled.

II. The actuator with integrated temperature regulation (constant heat regulation set) is connected in parallel with the power supply to the pump (230V, 50 Hz); there is no standby operation and no controlled opening while the pump is not in operation. Continuous current is possible. Connection and operation instructions can be found in the supplied "Technical Information" for the actuator. Please check the direction of rotation. Adjust this if necessary using the DIP switch in a currentless state.

III. The actuator without an integrated regulation of the temperature is controlled by an external controller. The mixer closes or opens depending on which wire is supplied with 230V / 50 Hz.
A brown **B** blue **C** white



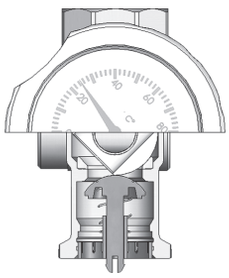
IV. A safety temperature limiter (STW) interrupts the power supply to the pump if the set temperature is exceeded and switches it back on if it drops below. The STW is therefore connected in series with the pump.

2.4 Commissioning

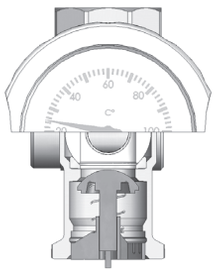
2.4.1 Ball valve positions / backflow preventer (gravity break)

Some ball valves include an integrated backflow preventer (RV) or gravity break (SB). These are individually marked. The RV can be opened manually by turning the rotating handle by approx. 45°.

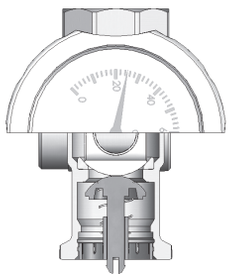
45° (flush, drain):
Ball valve open, RV open



0° (normal operation):
Ball valve open, RV closed



90° (service):
Ball valve closed, RV open



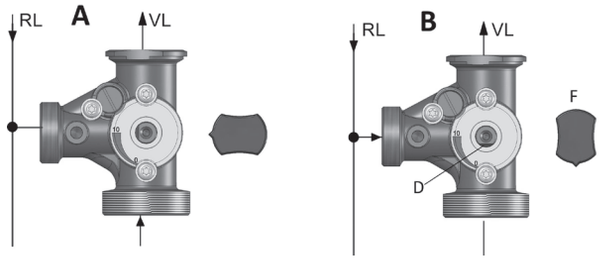
2. Installation and operation

2.4.2 Mixer

Mixer position

A) Mixer "open" full inlet on boiler side, no mixing on return line side
B) Mixer "closed" full inlet on return line side, no inlet on boiler side

D) Flat face on shaft end in this position
F) Associated handle position



Bypass position

A bypass is integrated into the mixer, which is closed in its delivered state (left-hand image). The bypass can be opened steplessly (right-hand image). To adjust it, the safety screw (1) needs to be loosened by approx. 1 mm.

Bypass in CLOSED position **Bypass in OPEN position**

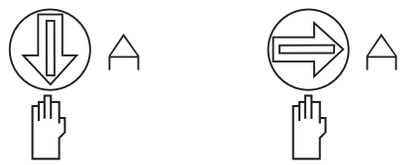
It makes sense to open the bypass when the heat generator temperature level provided is always much higher than the required temperature in the heating circuit (e.g. wood-fired boiler in combination with underfloor heating). The continuous mixing of cold return water lowers the supply temperature of the heating circuit. The adjustment travel of the mixer is greater to enable the servomotor to make more accurate adjustments.

1. The heating system must be in normal operation mode (boiler temperature high (e.g. 70°C), heating circuit pump on).
2. Open the bypass to 100%.
3. Set the mixer to position A) = no mixing on the return line side.
4. Close the bypass very slowly until the maximum supply is achieved in the heating circuit (e.g. 40°C = safety temperature limitation for underfloor heating)

2.4.3 Installing the actuator

- Rotate the mixer to the CLOSED position (flat face towards boiler supply) and remove the handoperated lever.
- Mixer right: Rotate the actuator counter-clockwise to the stop.

- Mixer left: Rotate the actuator clockwise to the stop.
- To rotate the mixer, have the arrow pointing to manual mode.
- Install the locking device / assembly kit on the mixer



- Place the actuator, including adapter, onto the mixer shaft. Align the housing according to the recess on the front insulation shell. Secure the actuator with the screw through the hand lever to the mixer shaft.
- Switch from manual mode (position A) to automatic (position B).
- Check the direction of rotation. The mixer should rotate to the OPEN position when heat is required (to change the direction of rotation: see "Electrical connection")

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2.5 Commissioning

1. Check the leak tightness of the system
2. Flush, fill and bleed the pipework (with filling water in accordance with VDI 2035).

Warning!
Once the boiler or tank has been filled and has undergone a pressure and leak-tightness test, the heating circuit may only be operated by opening the ball valve in the supply line, because the overpressure (test pressure) in the boiler/tank could damage the backflow preventer in the backflow ball valve.

3. Select the appropriate recirculation pump setting.
4. Check the functions

2.6 Operation

Please note the application limits:

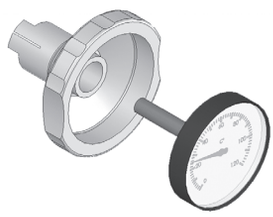
- Permissible media: Heating water (in accordance with VDI 2035, non-corrosive), max. glycol
- content: 50%
- Permissible pressure rating: PN6
- Permissible temperature of the medium: 0-110°C
  Room temperature 5°C to 70°C for UK(-Z) and separation system (non-condensing)
  Room temperature 5°C to 50°C for MK(-Z) and constant heat regulation set (non-condensing)

Prevent oxygen from entering the medium.

2.7 Maintenance

The pump groups are maintenance-free. We recommend performing regular leak-tightness tests.

Thermometer
The thermometers are simply inserted and can be removed easily.
It should be ensured that any thermometer that is removed is replaced with a similar one.
Please observe the colour coding. (Red lettering = SL; blue lettering = RL)
The thermometers are not suitable for taking exact measurements. The display can be adjusted by rotating the groove on the measurement element.



Pumps
Pumps can be exchanged without having to drain the entire heating system. Close the pump ball valve and mixer. In the case of the mixer, the bypass must be closed and the shaft rotated so that the flat face points in the direction of the closed side.

Note
The closed mixer is not 100% leak-tight. Any drops can be caught by an absorbent cloth or bucket.