INSTALLATION AND OPERATING MANUAL

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AFRISO

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Temperature valve ATV

NOTE!

The product may only be used if you have fully read and understood these operating instructions. The manual is also available on the AFRISO websites in the Internet.

WARNING!

The product may only be installed, commissioned, and dismantled by trained personnel.

Changes and modifications carried out by unauthorised persons may cause danger and are prohibited for safety reasons.

Risk of scalding by hot medium! Perform all installation and maintenance work after the system has cooled down.

APPLICATION

Used in heating systems with solid fuel boilers or heat pumps. In systems with solid fuel boilers, ATV valves can perform two functions depending on the installation method:

- when installed in a mixing function, they protect the boiler before low-temperature corrosion caused by the return of water at too low a temperature;
- when installed in the medium flow separation function, the diverting valves separate the medium between the return to the boiler and the system, allowing the boiler to heat up to the proper temperature.

In a heat pump installation, the ATV valve protects the internal components against excessive temperatures of the medium returning to the heat pump. This situation may occur, for example, when using a heat buffer tank with electric heaters or another high-temperature peak load heat source.

PREDICTABLE INCORRECT APPLICATION

Do not use the ATV temperature valves in the following cases:

- when operating conditions exceed the maximum allowable pressure or temperature of the medium,
- with the following liquids and gases: with the following liquids and gases: a mix of water and glycol with a glycol concentration of more than 50%, water vapour, oil, petrol, water intended for human consumption, other media that damage the valve components or interfere with its operation.

MOUNTING

When the ATV temperature valve is used to maintain a constant elevated temperature of the medium returning to the boiler, it should be installed on the return pipe to the heat source as shown in Fig. 1a, see also Fig. 3, diagrams A and B. If the valve is to distribute the water supply to the system, it should be installed as shown in Fig. 1b, see also diagram C in Fig. 3.

If the ATV valve is used for protecting the internal components of the heat pump before excessive temperature of the medium returning from the system, it should be installed on the return pipe to the heat source, as shown in Fig. 2 (see also diagram in Fig. 4).

During installation you must take special care, as the hydraulic diagram shown on the valve plate does not show the actual flow of the medium in the system.

In order to protect the internal components of the valve and the rest of the system before contamination, we recommend installing a magnetic dirt separator (e.g. ADS AFRISO) in the system and using a corrosion inhibitor.

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Fig. 1a. MIXING IN A SYSTEM WITH A SOLID FUEL BOILER

The ATV temperature valve, used to maintain a constant elevated temperature in the medium return to the boiler, should be installed on the return pipe to the heat source in accordance with the mixing diagram.

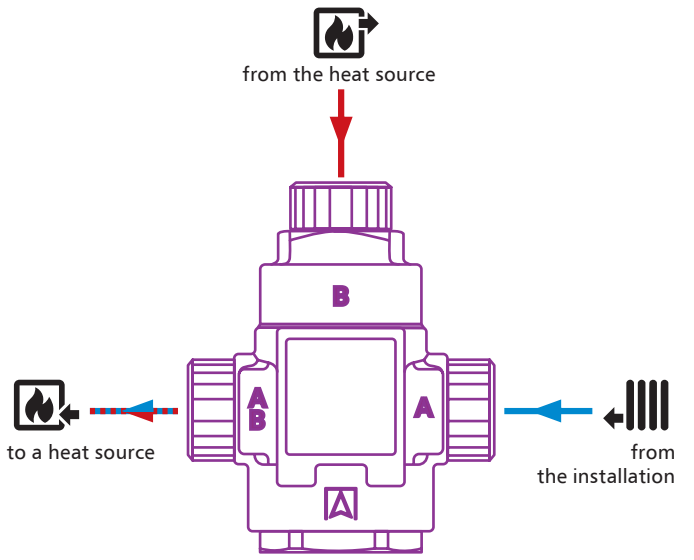


Fig. 1b. DIVERTING IN A SYSTEM WITH A SOLID FUEL BOILER

The ATV temperature valve used to distribute the medium flow to the system must be installed in accordance with the diverting diagram.

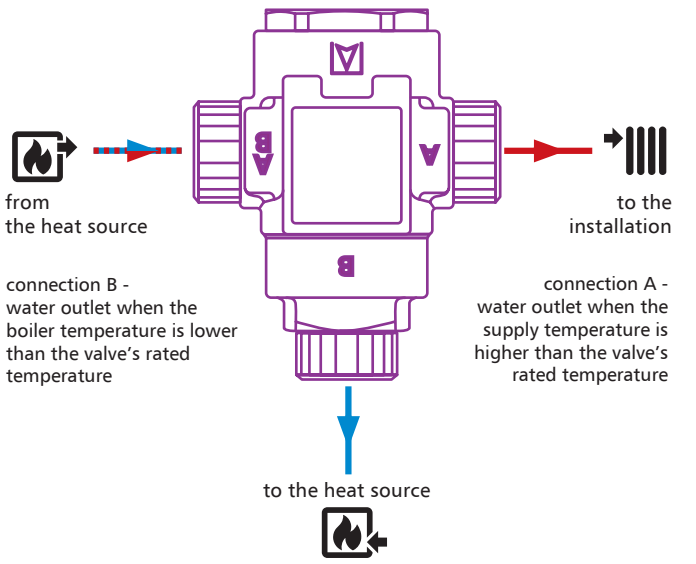


Fig. 2. MIXING IN A SYSTEM WITH A HEAT PUMP

The ATV temperature valve used to provide protection against excessive temperatures of the medium returning from the system before damaging the internal components of the heat pump, should be installed on the return pipe to the pump.

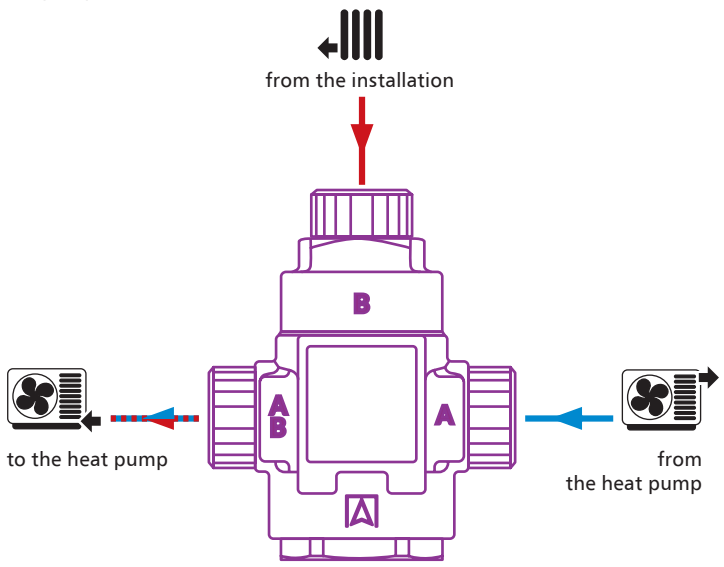


Fig. 3. EXAMPLE APPLICATION DIAGRAMS IN A SYSTEM WITH A SOLID FUEL BOILER

DIAGRAM A

The ATV temperature valve is used to regulate (increase) the temperature of the medium returning to the solid fuel boiler. This solution is particularly recommended for installations with a heat buffer (storage tank).

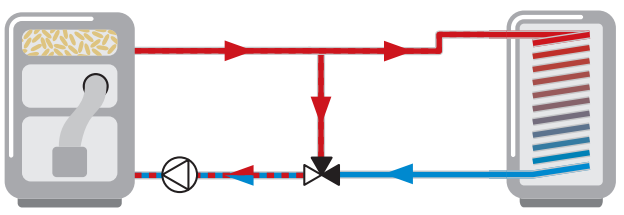


DIAGRAM B

ATV temperature valve used to regulate (increase) the temperature of water returning to a solid fuel boiler. In installations without a heat buffer (buffer tank), we recommend using a low-loss header.

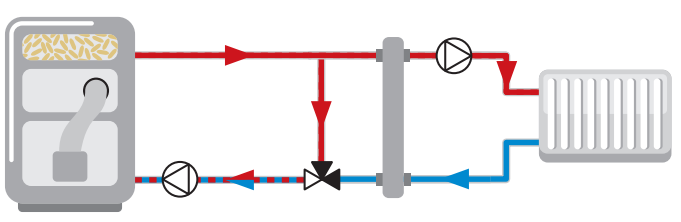


DIAGRAM C

ATV temperature valve used to distribute the medium flow between the heating system supply and the direct return to the heat source via a bypass.

The ATV temperature valve allows the boiler to warm up to a specified temperature before heat is consumed by the system.

Using the ATV valve in this way does not guarantee a minimum return temperature to the heat source. The temperature at the return to the boiler is the result of the temperature from the short circuit and the return from the system.

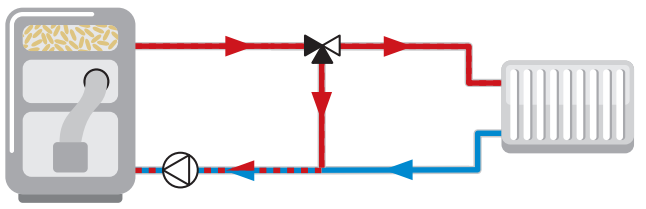


Fig. 4. EXAMPLE APPLICATION DIAGRAM IN THE SYSTEM WITH A HEAT PUMP

The ATV temperature valve used to reduce the temperature of the medium returning to the heat pump. This situation may occur when using a heat pump with a buffer tank to which a second, high-temperature heat source (e.g. a solid fuel boiler, electric heater, etc.) is also connected.

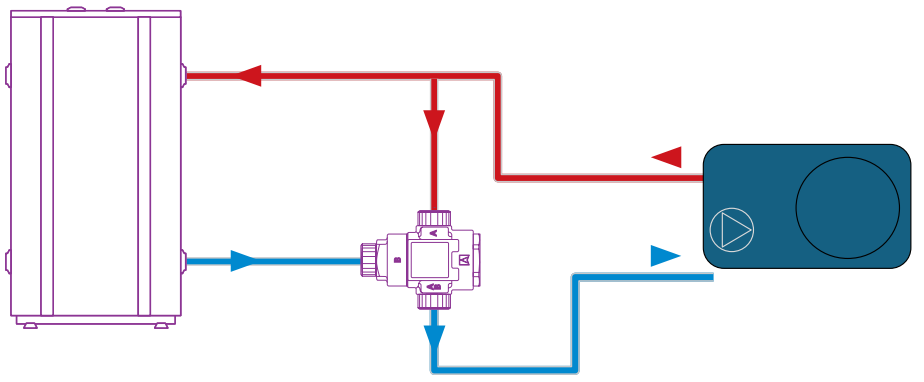
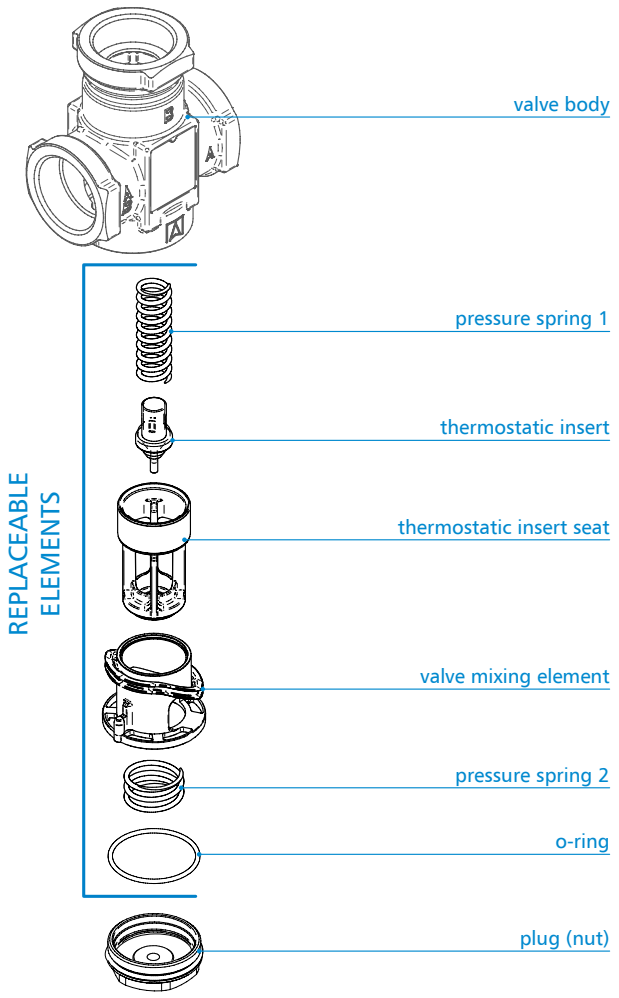


Fig. 5. CONSTRUCTION



REPLACEMENT OF INTERNAL VALVE ELEMENTS

The rated temperature of the ATV temperature valve should not be lower than the temperature specified by the boiler manufacturer as the minimum temperature of the heating medium returning from the system to the heat source. When installing an ATV temperature valve in a heat pump system, the rated temperature of the valve should not exceed the maximum permissible medium temperature specified by the heat pump manufacturer.

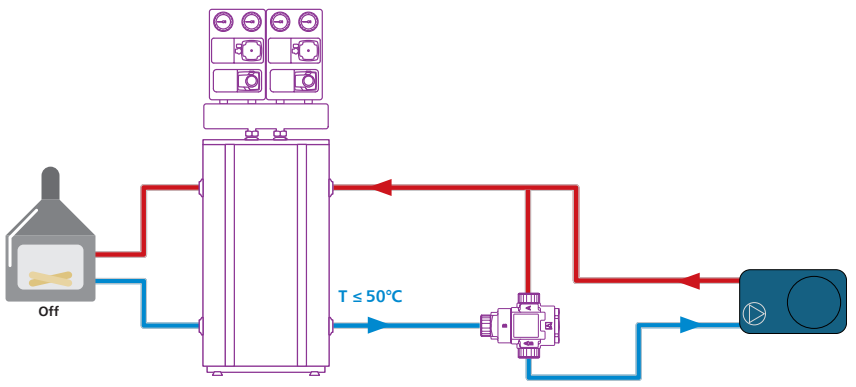
All internal elements of the valve can be replaced if the rated temperature has been incorrectly selected or if mechanical wear has occurred. Repair kits are available separately and are not included in the scope of delivery.

Before replacing the valve, close the shut-off valves before the ATV valve connections. Then unscrew the nut, remove all replaceable valve elements (Fig. 5) and replace them with new ones. After completing the above steps, screw the plug (nut) back into its original position and open all shut-off valves.

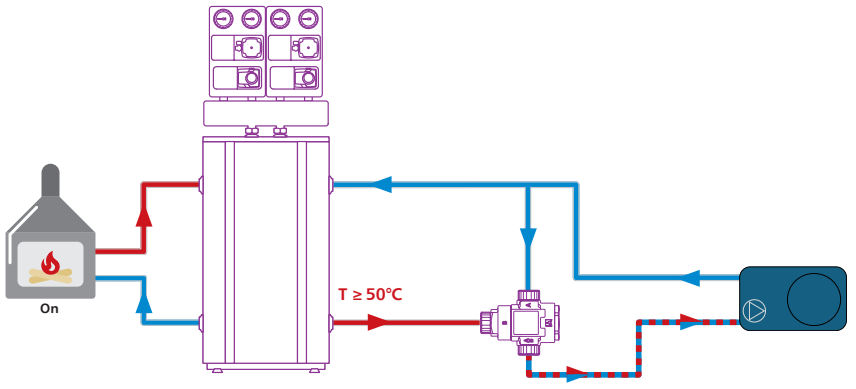
OPERATING IN THE SYSTEM WITH A HEAT PUMP

The operation of the ATV valve (for example, with a rated temperature of 55°C) in the system with a heat pump can be divided into three stages.

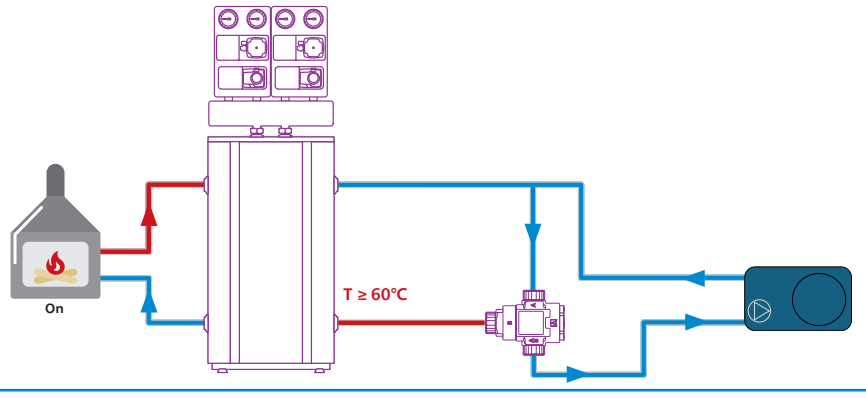
STAGE 1. During normal operation, when the return temperature from the system does not exceed 50°C, the ATV valve directs the entire flow straight to the heat pump. The flow only takes place through connections B and AB.



STAGE 2. After heating the heat buffer tank to a high temperature (above 50°C) using a peak heat source (electric heater, boiler, etc.), the ATV valve opens connections A and B via a mixing component to reduce the temperature of the medium returning to the heat pump.



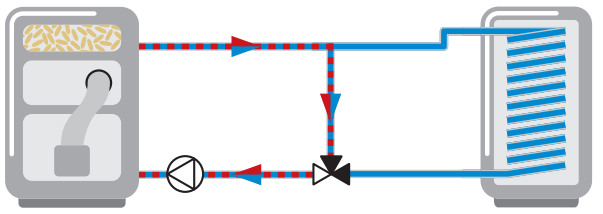
STAGE 3. If the medium returning from the buffer tank reaches a temperature of 60°C, the flow through the valve will only take place via connections A and AB – in a short circuit.



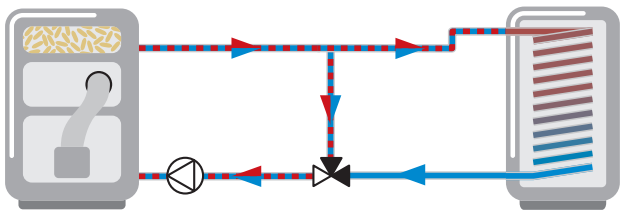
OPERATING IN THE SYSTEM WITH A SOLID FUEL BOILER

The operation of the ATV valve in the system (for example, in the mixing function) can be divided into four stages.

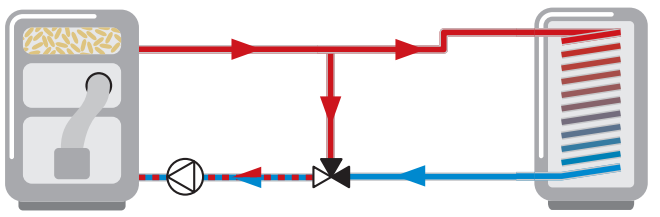
STAGE 1. After the boiler is started, the ATV temperature valve allows water to flow only in the short circuit. This allows the heat source to warm up until the proper temperature is reached.



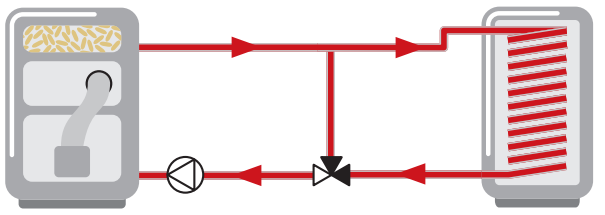
STAGE 2. When the return temperature to the boiler is 5°C lower than the rated temperature of the valve, the thermostatic insert inside the ATV valve opens the connection on the buffer tank side (connection A) via a mixing element and starts the heating process, maintaining the required minimum temperature of the water returning to the boiler, protecting it against moisture condensation and corrosion.



STAGE 3. During the entire buffer tank charging process, the ATV valve regulates both connections (A and B) in order to maintain high combustion efficiency and protect the boiler against low-temperature corrosion.



STAGE 4. When the temperature of the medium returning to the boiler is 5°C higher than the rated temperature of the ATV valve, the thermostatic insert cuts off the flow in the short circuit (connection B) via the mixing element. All of the medium is pumped directly to the buffer tank.



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APPROVALS AND CERTIFICATES

ATV temperature valves are subject to the Pressure Directive 2014 /68/EU and are not CE marked in accordance with Article 4.3 (recognised engineering practice). The products have been marked with the B construction mark, in accordance with the regulations in force in Poland.

TECHNICAL DATA

Parameter	Value / material
Differential pressure	mixing: max 100 kPa diverting: max 30 kPa
Internal leakage	flow A - AB: max 1% Kvs at Δp=100 kPa flow B - AB: max 3% Kvs at Δp=100 kPa
Operating temperature	max. 100°C
Operating pressure	max. 10 bar
Glycol concentration	max. 50%
Material	CW617N brass, stainless steel, UDEL, ULTRASON, EPDM

USAGE

The rated temperature of the ATV valve is a constant value and does not require additional adjustment during operation of the system.

MAINTENANCE

The ATV valve is a fully maintenance-free device and does not require any maintenance.

The internal elements of the valve can be removed for cleaning from scale and other dirt. To do this, follow the instructions in the section “Replacement the internal elements of the valve”.

The internal elements can be rinsed under running water. We recommend paying particular attention to the correct installation of the internal valve elements in accordance with Fig. 5.

DECOMMISSIONING, DISPOSAL

1. Dismount the product.
2. Dispose of the product according to local directives and guidelines.

The product is built from recyclable materials. If you have any questions or problems with disposal, please contact the appropriate distributor or manufacturer’s point.

WARRANTY

Product guarantee in accordance with the general conditions of sale and delivery.

CUSTOMER SATISFACTION

For AFRISO customer satisfaction is paramount. If you have any questions, suggestions or product problems, please contact us.