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Thermostatic balancing valves ATB for D.H.W. circulation

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!



ATB balancing valves 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 D.H.W. circulating systems. Mounted on the return from a specific circulation riser. They automatically maintain the set water temperature, thermally balancing the entire system and limiting the flow in the circulation circuit to the necessary minimum. ATB 200 and 210 valves additionally have an overheating function for thermal disinfection against *Legionella* bacteria.

NOTE! It is forbidden to use valves in installations disinfected with chlorine, solvents with chlorine or similar chemicals.

However, if it is unavoidable to use valves in such installations, please strictly observe the following precautions:

1. Remove valves before disinfection.
Disinfection with chlorine or chlorinated solvents may lead to dangerous chemical reactions with the valve materials, which in turn may lead to valve failure or damage.
2. Flush the system with clean water.
After completing the disinfection process, thoroughly flush the system with clean water to remove any residual disinfectant chemicals. Leaving such substances in the system can lead to corrosion, damage to materials and health hazards.
3. Install the valves after disinfection.
After flushing the system and ensuring that there are no more traces of disinfecting substances, reinstall the valves.

Balancing is done by a thermostatic insert, which is located inside the valve. The thermostatic insert (A), depending on the temperature of the water, regulates the flow by means of an obturator (B). The operation of the valve can be divided into 3 stages:

1. If the water temperature in the circulation riser is lower than that set on the valve knob, the aperture is in such a position as to allow maximum water flow.
2. If the water temperature is close to the temperature set on the knob, the thermostatic insert expands moving the obturator and therefore reducing the flow through the valve. This allows hot water to start flowing to other risers of the system. Thereby begins the process of thermal balancing of the entire installation.
3. If the water temperature is higher than the temperature set on the knob, the water flow is reduced to a minimum. The thermostatic insert has no effect on the flow at this point.

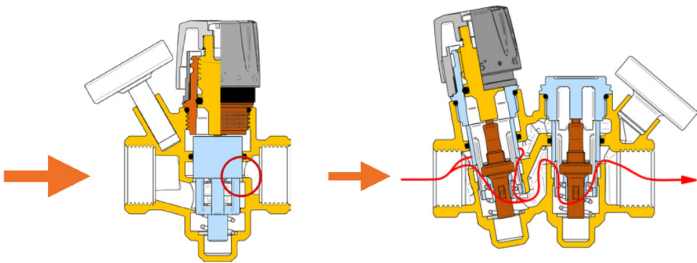


Fig. 4. Water flow through ATB valves during balancing

The ATB 200 and ATB 210 thermostatic balancing valve has an overheating function against *Legionella* bacteria. When the valve's supply water reaches a temperature above 67°C, the second thermostatic insert (C) opens a special bypass to perform thermal disinfection regardless of the position of the first insert. The maximum flow ($K_{vdis} = 0.6 \text{ m}^3/\text{h}$) through the bypass takes place at a water temperature of 70÷75°C. Once the temperature exceeds 75°C, the second thermostatic insert begins to reduce the flow through the bypass to balance the system also during disinfection and to protect it before it becomes overheated.

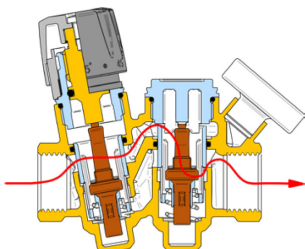


Fig. 5. Water flow through the ATB 200 and ATB 210 valve during overheating

CONSTRUCTION



Fig. 1. Construction of the ATB 100 and ATB 110 valve (without overheating function)

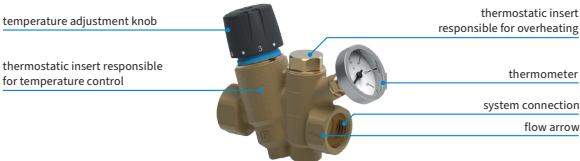


Fig. 2. Construction of the ATB 200 and ATB 210 valve (with overheating function)

ATB valve housings are made of brass alloy, which is characterized by low lead content and resistance to dezincification.

OPERATION

In order to achieve the same water temperature in the entire circulation system, the flow on each riser of the system should be reduced when the proper temperature is reached in it. ATB 100 and ATB 110 valves allow water temperature setting in the range of 35÷75°C. ATB 200 and ATB 210 allow setting in the range of 35÷65°C. The setting of the desired temperature is made using a knob.

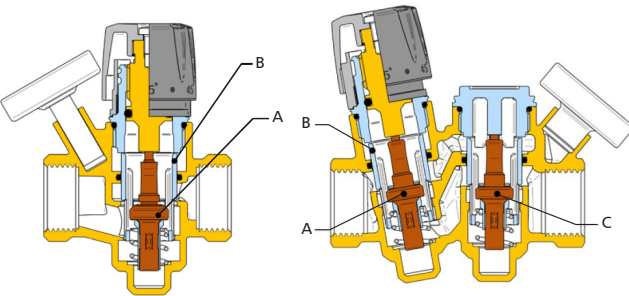


Fig. 3. Internal construction of ATB valves.
ATB 100 and 110 on the left. ATB 200 and 210 on the right

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MOUNTING

Before installing the valve in the system, the system should be flushed to remove any dirt that could cause the valve to malfunction or reduce its efficiency. On the inlet connection to the valve, it is recommended to install a proper mesh filter to protect the internal components of the valve against dirt. To facilitate maintenance or possible replacement, we recommend installing shut-off valves on the valve connections.

The valve can be mounted in any position - horizontally, as well as vertically. However, pay attention to the arrow on the valve housing indicating the direction of flow through the valve. The place of installation must allow free access to the valve. Example application diagrams of ATB valves are shown in Fig. 6, 7 and 8.

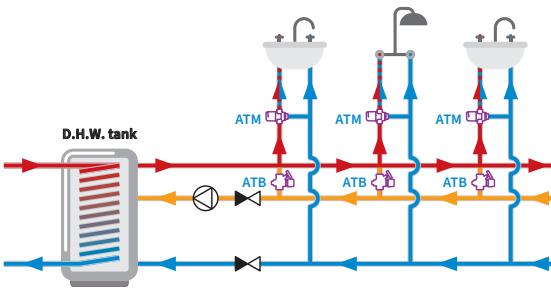


Fig. 6. ATB valves used in a vertical circulation system with ATM thermostatic valves

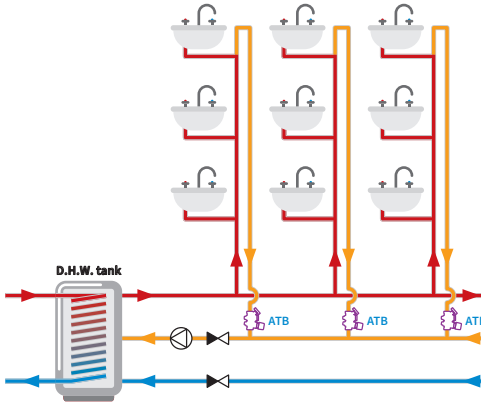


Fig. 7. ATB valves used in a vertical circulation system

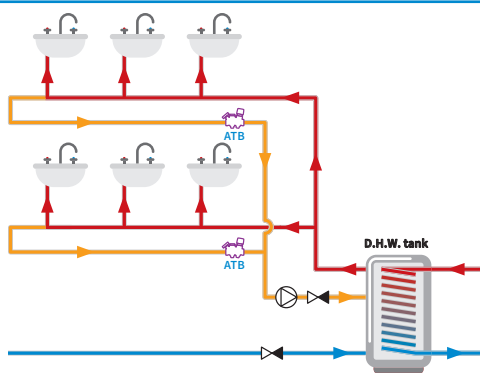


Fig. 8. ATB valves used in horizontal circulation system

The circulation system is sized for the required flow rate in a specific riser based on the heat loss and temperature drop along the pipes. The maximum allowable temperature drop in the system from the point of preparation to the point of outlet is 5°C. Note that the sum of the minimum flow rates through the ATB valves in each circulation branch must be greater than the minimum required flow rate for the mixing valves located in the system.

USE OF THE ATB VALVE

The temperature of water maintained in the circulation branch is set with the knob. The table below shows the settings.

Setting	Temperature	
	Range 35÷65°C	Range 35÷75°C
Min	35°C	35°C
1	40°C	40°C
2	45°C	45°C
3	50°C	55°C
4	55°C	60°C
5	60°C	65°C
Max	65°C	75°C

A thermometer located in the housing of the valve allows you to control the currently existing temperature in the circulation branch. Using the knob, you can lock the setting. To do this, unscrew the knob and then insert a special groove on the spline.

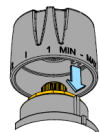


Fig. 9. Locking of the setting on the ATB valve

The diagrams below show the changes in Kv depending on the valve setting and water temperature in the circulation branch.

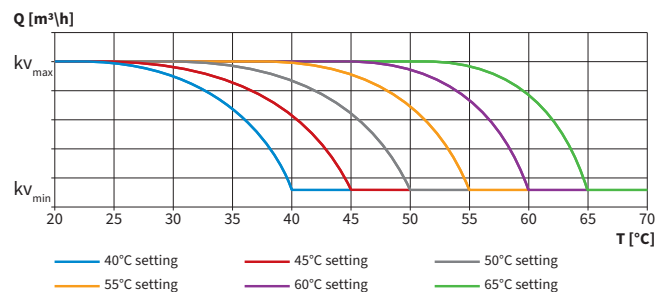


Fig. 10. Diagram of change in Kv coefficient for ATB 100 and ATB 110 valves

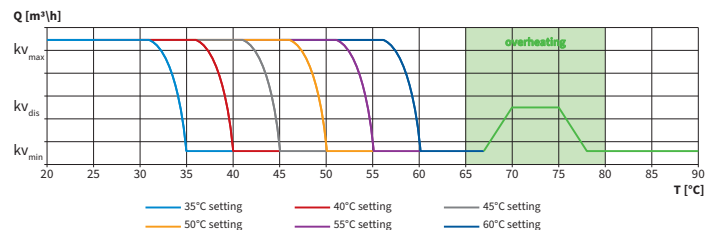


Fig. 11. Diagram of change in Kv coefficient for ATB 200 and ATB 210 valves

To determine the pressure drop across the valve, the diagrams below show the flow characteristics for both types of valves.

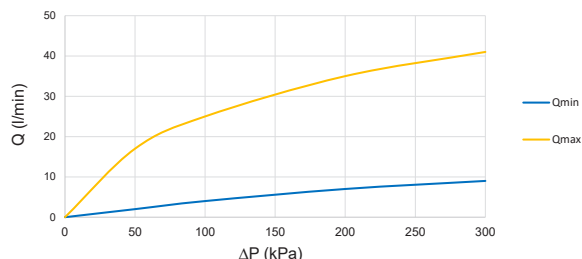


Fig. 12. Flow characteristics for ATB 100 and ATB 110 valves

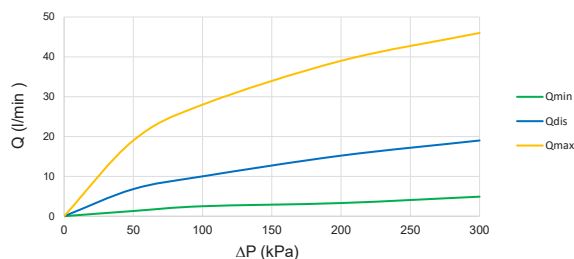


Fig. 13. Flow characteristics for ATB 200 and ATB 210 valves

TECHNICAL DATA

Parameter / part	Value / material
Connections	ATB 100 and ATB 200: G½" F ATB 110 and ATB 210: G¾" F
Diameter	ATB 100 and ATB 200: DN15 ATB 110 and ATB 210: DN20
Pressure	max 16 bar
Temperature	max 90°C
Kv _{max}	ATB 100 and ATB 110: 1,5 m³/h ATB 200 and ATB 210: 1,7 m³/h
Kv _{dis} (only ATB 200 and ATB 210)	0,6 m³/h
Kv _{min}	ATB 100 and ATB 110: 0,24 m³/h ATB 200 and ATB 210: 0,15 m³/h
Temperature control range	ATB 100 and ATB 110: 35÷75°C ATB 200 and ATB 210: 35÷65°C
Control accuracy	± 2°C
Housing	brass
Sealing	EPDM
Springs	stainless steel
Medium	water

MAINTENANCE

ATB thermostatic balancing valves does not require any maintenance.

APPROVALS AND CERTIFICATES

ATB thermostatic balancing valves are subject to the Pressure Directive 2014/68/EU and in accordance with Article 4.3 (recognized engineering practice) are not CE marked. They are hygienically certified by the National Institute of Public Health NIH in Poland.

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.