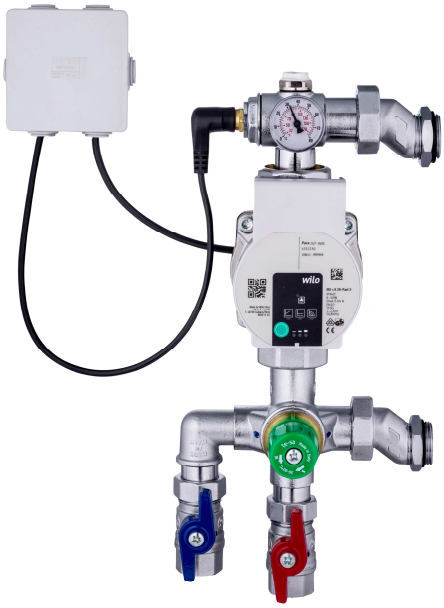
THERMOSTATIC MIXING UNIT FOR UNDERFLOOR HEATING SYSTEMS

Application and Characteristics



The Thermostatic Mixing Unit **te-sa** Art. **248N** has been developed to be installed in distribution heating systems where it is required to maintain constant the supply water temperature, even when the boundary conditions change (upstream or downstream pressures, delivered water flow, inlet temperature). Its main application is to manage underfloor heating systems when assembled directly on distribution manifold. The accurate design of the regulation mechanism, and the high quality wax temperature sensor characterized by low thermal inertia, permit at the mixing valve to have very short response time in consequence to change of the fluid dynamic parameters. The body of the mixer and the multifunction upper connection are made of forged brass alloy that permits to avoid risk of leakage due to the porosity typical in the casted pieces. The forged components are characterized by low roughness with consequently low loss of pressure, and they avoid the deposit of impurities, particles and floccules that can compromise the operating capacity of the unit after few months of service.

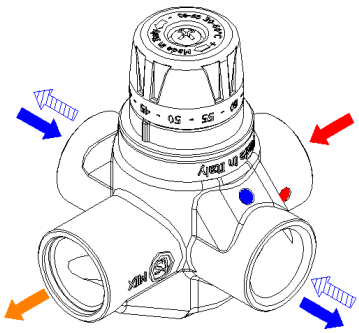
The unit is equipped with eccentric union connections that permit an easy assembly with the manifold, and can be installed with connection at vertical or horizontal main pipelines. The unit is predisposed for a left installation, but by using an available transformation kit 249K it is possible to install the unit to the right of the manifold.

Configuration of the unit

The 248N regulation unit can be combined with **te-sa** brass or stainless steel manifolds series, but also with existing manifolds in case of renovations thanks to its orientable eccentric unions that permit to adjust the center distance of the connections in a range of about 50 mm. In inlet and outlet of the unit there are full port ball valve 3/4" female connection, while in the upper part are located supply thermometer, manual air vent valve and safety thermostat. On the unit is pre-assembled an electronic high efficiency circulator that permits to adjust the supplied flow in all the functioning conditions that can occur in residential applications. Circulator and safety thermostat are pre-wired in box with included terminal board that allows an easy connection of the electrical supply power and of the room thermostat.

The temperature of the supplied water is managed by the thermostatic mixing valve. When inlet temperatures or flows change, the internal mechanism of the mixer self-adjust its position to maintain the required delivery water temperature.

The desired delivery temperature can be obtained by turning the graduated knob on top of the valve. The factory calibration, in exceptional cases, can be adjusted by disassembling and reassembling the knob as shown in the installation instructions.



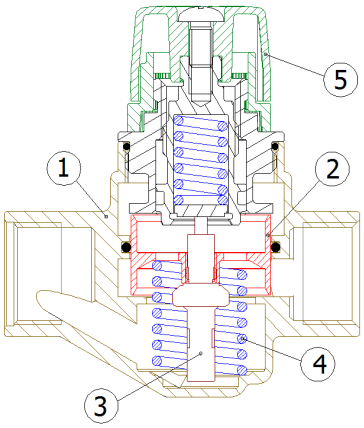
To have a correct functioning of the unit it is important to respect the flow directions in inlet and in outlet of the thermostatic mixer. To facilitate the correct connection of the supply pipeline, on the mixer body are marked with blue color the connection at the return manifold and the connection to the return main pipeline. In red color is marked the inlet connection of the mixer that need to be connected to the supply main pipeline.

Operation of the mixer

The temperature of the outlet water is managed by the temperature sensor that is connected with the regulation cylinder of the valve. Based on the temperature perceived the wax inside of the sensor dilates and contracts, and produce a movement of the regulation cylinder that reach a balancing position where the flow in inlet of hot water mixed with the flow in inlet of cold water give a total flow in outlet at the settled constant temperature. When inlet temperatures or flows change, the mechanism self-adjust its position to maintain the required delivery water temperature.

To maintain efficient for long service time the thermostatic mixing valve it is important that the water system is clean and without circulating impurities. In case of installation on existing systems, it is suggested to install appropriate magnetic filters able to maintain clean the water. In order to prevent undesired circulation of flow in the mixer, on some applications is better to install on the system check valves.

The body of the mixer is strong, but in the assembly it is important to avoid application of torque or bending forces out of the dedicated seats, because in case of deformations the correct operation of the internal mechanism could be compromised.



1 - *Forged brass body*
2 - *Regulation cylinder*
3 - *Regulated temperature sensor*
4 - *Stainless Steel springs*
5 - *Setting knob*

Technical Data

- Pipeline connections at full port ball valve 3/4" female
- Manifold connection 1" male with eccentric union pieces with self-sealing O-ring
- Center distance manifold connection adjustable in the range 200÷250 mm
- Setting range of the mixer 30÷60°C
- Wax temperature sensor of the mixer with high sensibility
- Accuracy ± 2°C (with primary supply temperature at least 15°C higher than set)
- Flow coefficient of the unit KV = 3
- High efficiency circulator Wilo Para 25/7
- Safety thermostat 65°C
- Thermometer range 0÷80°C with non-invasive holder
- Maximum Inlet Temperature 85°C
- Maximum Operating Pressure 6 bar
- Maximum Test Pressure 10 bar
- Maximum glycol percentage 30%
- Forged components made of Brass Alloy UNI-EN 12165 CW617N
- Machined components made of Brass Alloy UNI-EN 12164 CW614N
- O-ring made of EPDM
- Regulation knob made of ABS
- Totally Made in Italy

SET POS.	1	2	3	4	5	6
TEMP. °C	30	38	45	50	55	60

Dimensions