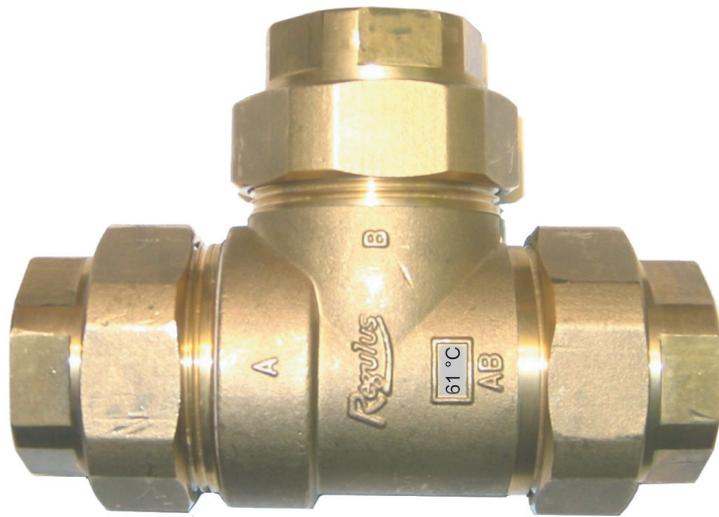


Owners Manual

# **TSV2**

## **3-way Thermostatic Valve**

PN 6, DN 50, 61 °C



EN  
v 1.1

**Regulus**<sup>®</sup>

# INSTRUCTION MANUAL

## 1 - Advantages of using TSV2

TSV2 Thermostatic Mixing Valve is designed to keep minimum temperature of heating water returning to a boiler or other heat source (solid fuel fired boilers, fireplace heat exchangers...) at its nominal temperature. That results in improved boiler combustion and efficiency, prolonged service life and reduced deposit formation on heat-transfer surfaces.

Burning causes releasing of water, among others, from the fuel in the form of steam. If the flue gas is hot enough, the steam leaves through the chimney together with flue gas. However, if the flue gas gets cooler at some spot, condensation of water vapor occurs there. The condensate contains products of burning that can be very aggressive esp. when burning wood or solid fuel and thus cause fast corrosion and deposit formation on heat transfer surfaces. The efficiency and quality of combustion deteriorates.

TSV2 Thermostatic Valve mixes cold water returning from a heating plant or from an accumulation tank with hot water from the boiler outlet and keeps so return water (and the heat transfer surfaces as well) at a temperature that does not allow condensation.

## 2 - Function description and valve balancing

TSV2 3-way Mixing Valve has an inbuilt thermostatic insert that closes „A“ inlet (from a heating plant) if the return water temperature is below its nominal value. After the nominal temperature is reached, the thermostat slowly opens the „A“ inlet for return water from the heating plant. This way the return water („A“ inlet) is mixed with hot water from the boiler outlet („B“ inlet) so that the nominal temperature is reached for water returning to the boiler („AB“ outlet). The „B“ inlet remains permanently open.

However, since the „B“ inlet remains permanently open, it may happen (depending on specific hydraulic conditions) that in case of the return water reaching higher temperature, more hot water from „B“ inlet is mixed than needed for reaching the nominal temperature at „AB“ outlet and thus its temperature is higher. In order to limit the flow of hot water into „B“ inlet, there is a purposely diminished incoming cross section directly inside the valve. However, for a proper flow setting for a specific application, a balance valve shall be fitted before the „B“ inlet. (e.g. a plain ball valve). Its dimension can be 5/4" (the same dimension as the whole piping connecting boiler outlet to the „B“ inlet), but not bigger than the „AB“ outlet piping.

### Setting a balance valve:

- a. for cold ignition - the boiler outlet temperature is  $<60$  °C and the „A“ inlet is closed, and the minimum flow through the boiler specified by its manufacturer must be maintained (usually a temperature drop of 15-30 °C).
- b. for the return water temperature at the „A“ inlet  $>65$  °C, the temperature at „AB“ outlet should be by 2-5 °C higher than at the „A“ inlet.

After balancing the valve, it is recommended to remove the lever in order to prevent its unintended closing or any other tampering.

The 3-way valve is made of brass as well as the optional connecting screw joints.

## 3 - Installation

The thermostatic mixing valve shall be installed in accord with the following instructions:

The valve can be installed in any position.

The boiler inlet piping shall be connected to the „AB“ valve outlet.

The heating plant piping shall be connected to the „A“ inlet, and the boiler outlet piping shall be connected via a bypass to the „B“ inlet.

The valve shall be installed into a heating system in a manner enabling easy later removing for possible cleaning or exchange of the thermostatic insert.

This is best reached when connected using cap nuts or the recommended screw joints in the sizes of 5/4", 6/4" and 2". Using a smaller screw joint for the balance valve is an advantage (e.g. 2" for „A“, „AB“ and 5/4" for „B“).

Remember also fitting some closing valves to suitable positions in order to avoid the need of bleeding the complete plant when the thermostatic valve needs to be removed.

Always respect valid local rules and boiler manufacturer's instruction when installing the valve.

## 4 - Technical parameters

Nominal temperature („AB“ outlet):

(valid for the temperature of A<55 °C, B>61 °C and proper balancing)

61 °C +0 /-5 °C

Flow rate coefficient:

Kvs=20.4 m<sup>3</sup>/h

Max. operation pressure:

0.6 MPa

Nominal inner diameter DN:

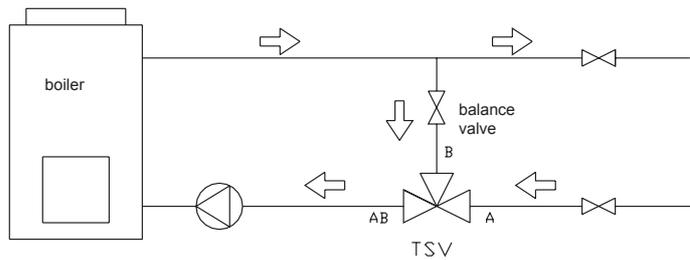
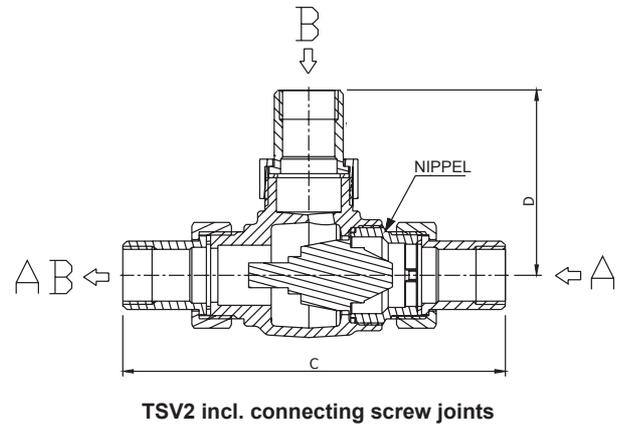
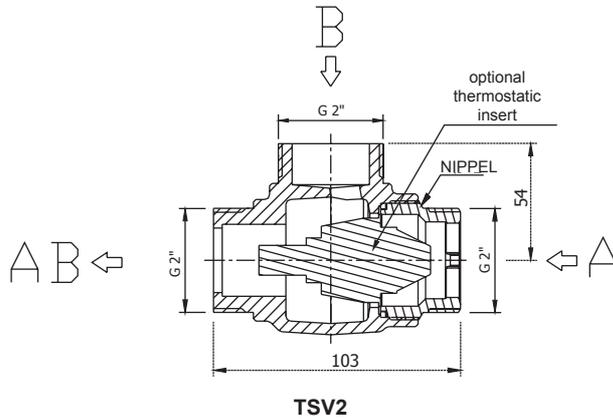
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Weight:

1.96 kg

Optional screw joints:

5/4", 6/4", 2" female



### Connection dimensions:

	5/4"	6/4"	2"
C	157	215	192
D	81	110	98



## 5 - Maintenance and repairs

A thermostatic 3-way valve works automatically, needs no electric power, operation or maintenance. If it is clogged with impurities from the heating plant, take it out and clean. In order to exchange the thermostatic insert, the threaded nipple on the „A“ inlet must be released. This threaded joint is sealed and thus needs to be warmed up prior to unscrewing using a hot air gun. It can be unscrewed with a flat tool, 45 mm wide, inserted into the nipple on the „A“ inlet. By means of the inner protrusions the nipple can be released (like in section radiators). After eventual exchange of the thermostatic insert, the threaded nipple on the „A“ inlet shall be sealed again with Siseal thread sealant.

# WARRANTY CERTIFICATE

## *for TSV2 3-way Thermostatic Valve*

Thermostatic Insert Serial Number: .....

### Warranty Conditions

1. The warranty period is 24 months from the date of purchase, either of the valve itself, or of a boiler, if the product was supplied in a boiler.
2. Failure to respect instructions in the instruction manual will render the warranty null and void.
3. The warranty does not cover any mechanical damage to the product.

Date of purchase:.....

Seller's rubber stamp print and signature:

12/2009



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