SLOVENSKI STANDARD
SIST EN 215-1:1997

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Termostatni ventili za ogrevala - 1. del: Zahteve in postopki za preskušanje

Thermostatic radiator valves - Part 1: Requirements and test methods

Thermostatische Heizkörperventile - Teil 1: Anforderungen und Prüfung

Robinets thermostatiques d'équipement du corps de chauffe - Partie 1: Exigences et méthodes d'essai

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23.060.01	Ventili na splošno	Valves in general
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Part 1

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English version

Thermostatic radiator valves
Part 1: Requirements and test methods

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Thermostatische Heizkörperventile.
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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat : Rue Bréderode 2, B-1000 Brussels

BRIEF HISTORY

This European Standard was prepared by the Technical Committee CEN/TC 105 "Valves and fittings to equip radiators", the Secretariat of which has been allocated to Dansk Standardiseringsråd (DS).

This work on radiator valves started in September 1982 in CEN/TC 105 with the aim of drafting a standard for requirements and a test procedure toq form the basis for a possible certification scheme for radiator valves.

According to the Common CEN/CENELEC Rules, following countries are bound to implement this European Standard:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

Foreword

This part of EN 215 forms the first part of a European Standard on thermostatic radiator valves.

The second part is:

Part 2: Dimensions and details of connections.

This standard may be used as reference for a CENCER certification scheme on radiator valves.

The standard contains an Annex, which is for information only.

Contents

1 Object and field of application

1.1 Object

This European Standard specifies definitions, requirements and test methods for thermostatic radiator valves (referred to hereafter as thermostatic valves).

1.2 Field of application

This standard applies to two port thermostatic valves with or without presetting facility for fitting to radiators in wet central heating installations up to a water temperature of 120 °C and a nominal pressure of PN 10.

This standard may be used as reference in a CENCER certification scheme on thermostatic radiator valves.

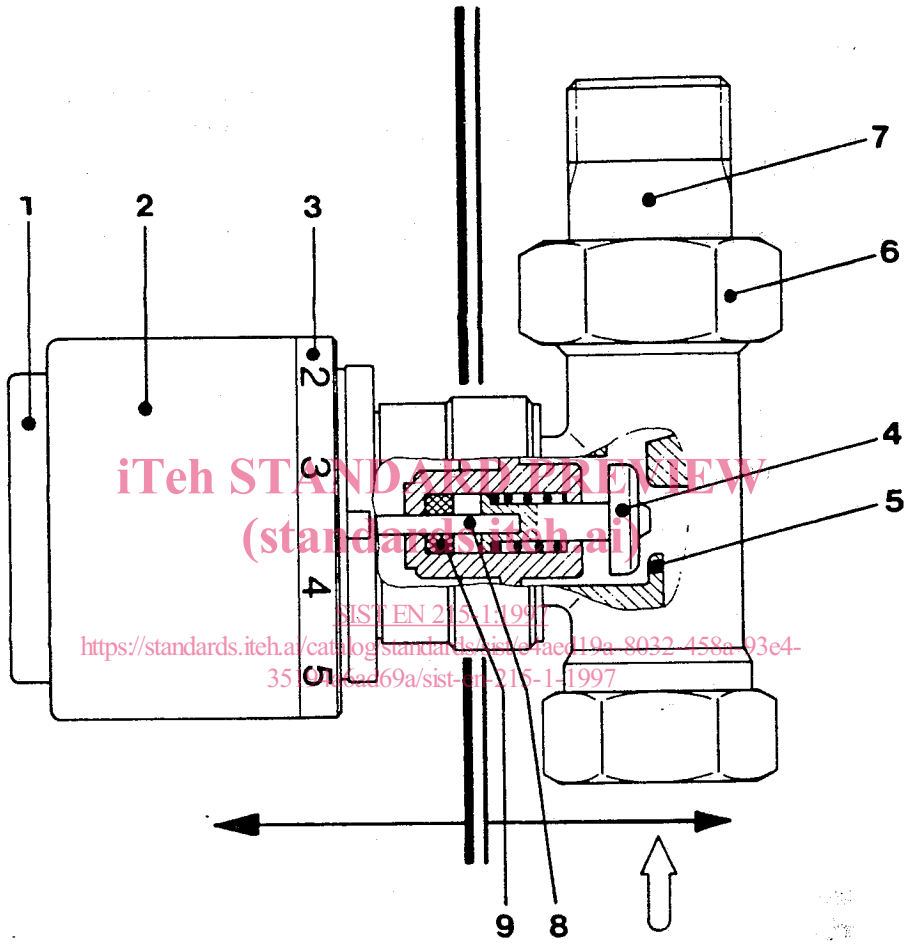
2 References

ISO 6708-1980, Pipe components — Definition of nominal size.

ISO 7268-1983, Pipe components — Definition of nominal pressure.

3 Definitions

3.1 Components (see figure 1)



Thermostatic head assembly

1. Sensor
2. Temperature selector
3. Temperature selector scale

Valve body assembly

4. Valve disc
5. Valve seat
6. Union nut
7. Tail piece
8. Valve stem
9. Stem seal

Figure 1 — Schematic drawing of the assembly of a thermostatic valve with integral sensor

3.1.1 **sensor:** That part of the thermostatic valve that senses the temperature (controlled value) (figure 2).

3.1.2 **transmission unit:** That part of the thermostatic valve that converts a change of temperature or pressure of the sensor into a linear movement of the valve stem (figure 2).

3.1.3 **transmission element:** That part of the thermostatic valve (e.g. capillary) that transmits the volume or pressure changes from the sensor or temperature selector to the transmission unit (figure 2).

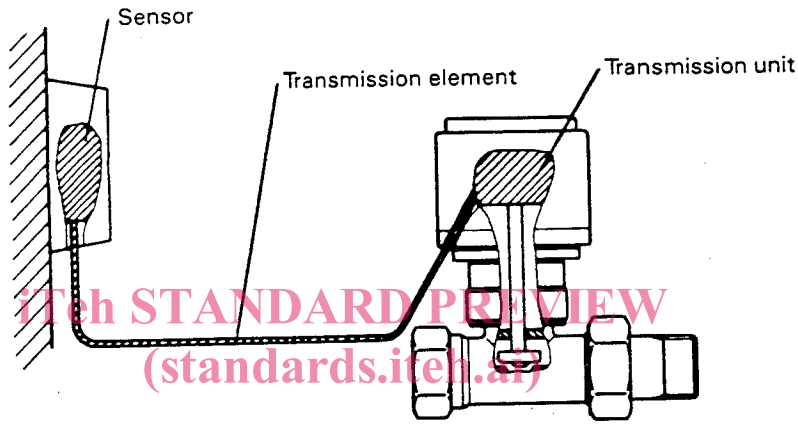


Figure 2 — Thermostatic element

3.1.4 **thermostatic element:** The section containing all parts that are filled with the expansion medium (e.g. sensor, transmission element and transmission unit, shown as cross hatched parts in figure 2).

3.1.5 **protection cap:** A device that protects the valve stem and thread before the initial fitting of the thermostatic head assembly. It may be used to adjust the different flow rates as specified in 5.2.4 and 6.4.1.6

3.2 Types of thermostatic valves

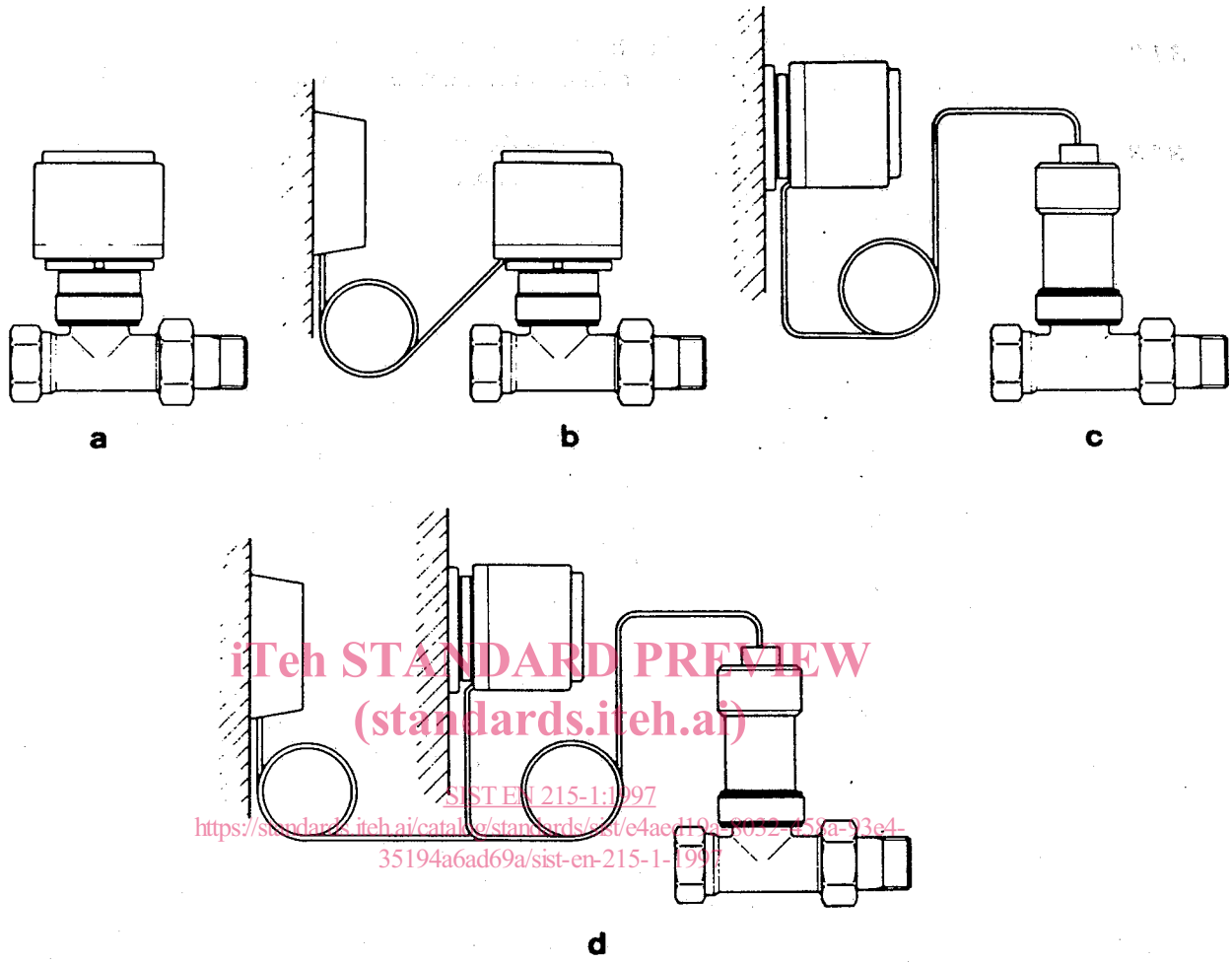


Figure 3 — Types of thermostatic valves

3.2.1 **thermostatic valve with integral sensor:** A valve where the sensor, transmission unit and temperature selector constitute an assembly which is incorporated with the valve body assembly (figure 3a).

3.2.2 **thermostatic valve with integral temperature selector and with remote sensor:** A valve where the temperature selector is incorporated within the valve. The sensor is separated from the transmission unit, and there is a transmission element between the sensor and the transmission unit (figure 3b).

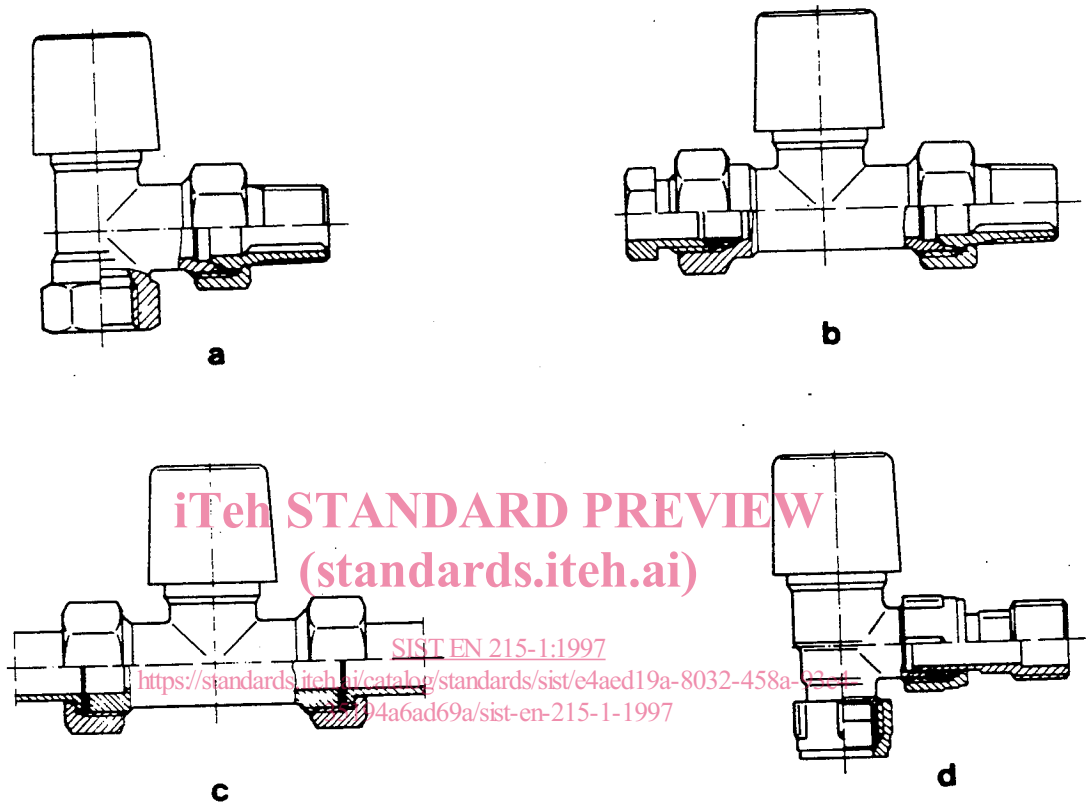
3.2.3 **thermostatic valve with the remote sensor incorporating the selector:** A valve where the sensor and temperature selector assembly is mounted remotely from the valve body assembly and from the transmission unit. There is a transmission element between the sensor and the transmission unit (figure 3c).

3.2.4 **thermostatic valve with remote sensor and remote selector:** A valve where both the sensor and the temperature selector are separate from each other and from the valve body assembly with transmission unit. There is a transmission element between the sensor and the transmission unit and between the temperature selector and the transmission unit (figure 3d).

3.2.5 **thermostatic valve with presetting:** A valve where a reduced flow rate can be obtained by means of mechanical preadjustment incorporated in the valve body assembly.

3.3 Types of connections

Examples of connections used to fit the valve to the radiator and to the pipework are shown in figure 4.



a. Internal pipe thread and cone seated union.
b. Compression fitting and cone seated union.
c. Washered union connections.
d. Compression fittings.

Figure 4 — Types of radiator valve connections

3.4 Operating characteristics

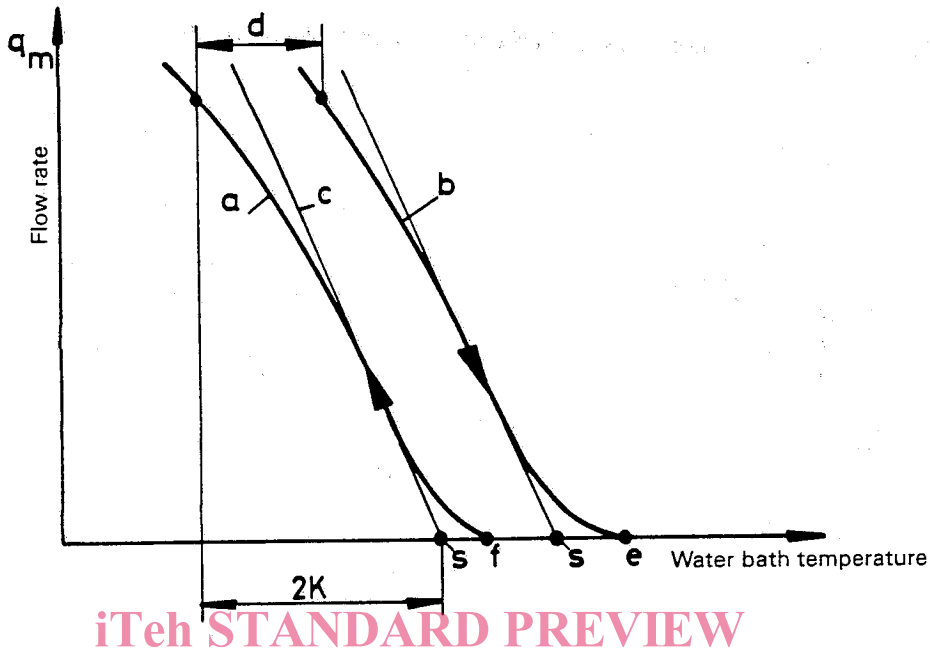
3.4.1 **characteristic flow rate** ($q_{m\,s}$): The water flow rate that is obtained at a temperature of point S -2K, and at a differential pressure of 10 kPa (0,1 bar), at any desired setting.

3.4.2 **nominal flow rate** ($q_{m\,N}$): The characteristic flow rate for an intermediate setting of the temperature selector according to 6.2.1.2

The nominal flow rate for thermostatic valves having a pre-setting facility is that obtained when the pre-setting facility is inoperative.

3.4.3 **maximum flow rate** ($q_{m\,max}$): The maximum water flow rate that can be obtained at a differential pressure of 10 kPa (0,1 bar).

3.4.4 **hysteresis:** The temperature difference between the opening and closing curves obtained at the same flow rate (figure 5).



a. Opening curve
b. Closing curve
c. Theoretical curve
d. Hysteresis
e. Closing temperature
f. Opening temperature
S. Temperature point S

Figure 5 — Explanatory graph of characteristic curves

3.4.5 **differential pressure influence:** The difference between the temperature points S on the theoretical closing curves obtained at different differential pressures.

3.4.6 **influence of static pressure:** The temperature difference between two closing curves plotted at different static pressures at the same flow rate.

3.4.7 **water temperature effect:** The difference in sensor temperatures which is equivalent to the flow rate deviation caused by a change of temperature of the water flowing through the valve.

3.4.8 **influence of ambient temperature on thermostatic valves with transmission elements:** The temperature difference obtained at the same flow rate between two opening curves, one recorded with and one without temperature difference between sensor and transmission unit (valves acc. to 3.2.2 to 3.2.4).

3.4.9 **response time:** The time taken for a change of flow rate after a step-change of air temperature.

This change of flow rate corresponds to a pre-determined temperature difference in accordance with 6.4.1.13