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Mehanski termostati za plinske aparate

Mechanical thermostats for gas-burning appliances

Mechanische Temperaturregler für Gasgeräte

Robinets automatiques de sectionnement pour brûleurs à gaz et appareils à gaz

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ICS:

17.200.20	Instrumenti za merjenje temperature	Temperature-measuring instruments
27.060.20	Plinski gorilniki	Gas fuel burners

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English Version

Mechanical thermostats for gas-burning appliances

Thermostats mécaniques pour appareils à gaz

Mechanische Temperaturregler für Gasgeräte

This European Standard was approved by CEN on 19 May 2010.

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Foreword

This document (EN 257:2010) has been prepared by Technical Committee CEN/TC 58 “Safety and control devices for burners and appliances burning gaseous or liquid fuels”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2010, and conflicting national standards shall be withdrawn at the latest by December 2010.

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This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

This document supersedes EN 257:1992.

This European Standard is intended to be used in conjunction with EN 13611:2007. This document refers to clauses of EN 13611:2007 or adapts clauses by stating “with the following modification”, “with the following addition”, “is replaced by the following” or "is not applicable" in the corresponding clause. This European Standard adds clauses or sub clauses to the structure of EN 13611:2007 which are particular to this European Standard. It should be noted that these clauses and sub-clauses are not indicated as an addition.

It should be noted that the following significant technical changes compared to the previous edition have been incorporated in this European Standard:

a) scope is enlarged to maximum inlet pressures up to and including 50 kPa (500 mbar);

b) alignment with EN 13611:2007;

c) updating of Clause 2, normative references;

d) units of measurement and test conditions are updated according to EN 13611:2007;

e) requirements and tests concerning durability of elastomers in contact with gas (7.8 of this European Standard) are now totally aligned with EN 13611:2007, 7.8;

f) marking, installation and operating instructions (Clause 9 of this European Standard) are extended to cover additional information.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies the safety, construction and performance requirements for mechanical thermostats intended for use with gas appliances and similar use, hereafter referred to as 'thermostats'.

This European Standard applies to thermostats with declared maximum inlet pressures up to and including 50 kPa (500 mbar) of nominal connection sizes up to and including DN 50 for use with one or more fuel gases in accordance with EN 437.

This European Standard applies to thermostats controlling the gas flow directly or indirectly through an integral gas valve, and which do not require external electrical energy for their operation.

This European Standard only applies to thermostats used with gas appliances which are not installed in the open air.

Thermostats dealt with in this European Standard are intended for control functions.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13611:2007, *Safety and control devices for gas burners and gas-burning appliances — General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13611:2007 and the following apply.

3.101
mechanical thermostat
thermostat which controls the temperature by adjusting the flow rate accordingly to the temperature of the sensor without any external energy, such that the temperature remains within defined limits

3.102
adjustable thermostat
mechanical thermostat in which the temperature set-point can be adjusted by the user to anywhere between minimum and maximum values

3.103
fixed setting thermostat
mechanical thermostat that has a preset fixed operating temperature which cannot be adjusted by the user

3.104
snap-acting thermostat
mechanical thermostat with only two positions for the flow rate, i.e. 'full on-off', 'full on-reduced rate' or 'reduced rate-off'

3.105
modulating thermostat
mechanical thermostat which controls the flow rate in accordance with a predetermined and continuous function of the temperature of the temperature sensor

3.106
modulating thermostat with additional on-off action
mechanical thermostat which acts as a snap-acting thermostat between the closed and reduced positions and as a modulating thermostat between the reduced and full-on positions

3.107
thermostat closure member
movable part of the thermostat which opens and closes the gas way and/or varies the flow rate

3.108 presetting device
device for adjusting an operating condition only by an authorized person

NOTE It may be fixed or variable, e.g. when it is the gas flow that is adjustable, either an orifice or an adjusting screw may be used.

3.109
fixed bypass
non-adjustable presetting device for fixing the minimum gas flow through a thermostat

3.110
bypass adjusting device
screw adjustment or an exchangeable orifice, that fixes the minimum gas flow rate through the thermostat, and which is accessible only by the use of tools

3.111
temperature sensor
device which senses the temperature of the medium to be controlled or to be supervised

3.112
operating curve
graphical representation of the flow rate as a function of the sensor temperature at a given temperature set-point and at a constant inlet pressure

3.113
backlash
difference of position of the adjusting knob when it is moved in both directions to obtain the same flow rate at a constant sensor temperature

3.114
adjusting knob (or spindle)
part of the thermostat which is used to select the temperature set-point

3.115
temperature set-point
any value selected within the temperature range at which the controlled temperature should be maintained

3.116
temperature set-point range
range between the minimum and maximum adjustable temperature set-points (by means of the adjusting knob)

3.117
calibration flow rate
flow rate declared by the manufacturer for calibration

3.118
calibration temperature set-point
temperature at which the calibration flow rate should be obtained with the adjustment set to the position and in the direction declared by the manufacturer

3.119
temperature differential for snap-acting thermostats
difference in temperature necessary to obtain a change in the flow rate, at a given set-point

3.120
deviation
maximum deviation from the temperature set-point which is declared by the manufacturer

3.121
drift
permanent change in the operating curve of the thermostat

4 Classification

4.1 Classes of control

EN 13611:2007, 4.1 is not applicable.

4.2 Groups of control

Shall be according to EN 13611:2007, 4.2.

4.3 Classes of control functions

EN 13611:2007, 4.3 is not applicable.

5 Units of measurement and test conditions

Shall be according to EN 13611:2007, Clause 5.

6 Construction requirements

6.1 General

Shall be according to EN 13611:2007, 6.1.

6.2 Mechanical parts of the control

6.2.1 Appearance

Shall be according to EN 13611:2007, 6.2.1.

6.2.2 Holes

Shall be according to EN 13611:2007, 6.2.2.

6.2.3 Breather holes

Shall be according to EN 13611:2007, 6.2.3.

6.2.4 Test for leakage of breather holes

Shall be according to EN 13611:2007, 6.2.4.

6.2.5 Screwed fastenings

Shall be according to EN 13611:2007, 6.2.5.

6.2.6 Jointing

Shall be according to EN 13611:2007, 6.2.6.

6.2.7 Moving parts

Shall be according to EN 13611:2007, 6.2.7.

6.2.8 Sealing caps

Shall be according to EN 13611:2007, 6.2.8.

6.2.9 Dismantling and reassembly

Shall be according to EN 13611:2007, 6.2.9 with the following addition:

If, in accordance with the manufacturers instructions the thermostat can be dismantled for servicing, such action shall not result in a change in temperature calibration exceeding the declared maximum set point deviation (see 7.101.1).

6.2.101 Presetting devices

A presetting device shall only be adjustable by use of a tool. The means of adjustment shall be easily accessible and shall not change of its own accord, but shall be protected against unauthorized interference, e.g. use of a sealing (lacquer).

A presetting device which connects a gas-carrying part to atmosphere shall be made sound by a means which shall not seal on the thread, e.g. use of an O-ring seal.

The presetting device shall not be able to fall into the gas ways of the thermostat. If an O-ring or equivalent gasket provides a seal against the atmosphere, then when the presetting device is completely unscrewed it shall not be able to be pushed out by gas pressure and shall remain tight at the maximum pressure specified in 7.3.

If a presetting device is used for different gas families it shall have a fixed minimum orifice.

A cover of any presetting device shall require a tool for removal and replacement and it shall not interfere with the adjustment of the temperature range.

6.3 Materials

Shall be according to EN 13611:2007, 6.3.

6.4 Gas connections

6.4.1 Making connections

Shall be according to EN 13611:2007, 6.4.1.

6.4.2 Connection sizes

Shall be according to EN 13611:2007, 6.4.2.

6.4.3 Threads

Shall be according to EN 13611:2007, 6.4.3.

6.4.4 Union joints

Shall be according to EN 13611:2007, 6.4.4.

6.4.5 Flanges

Shall be according to EN 13611:2007, 6.4.5.

6.4.6 Compression fittings

Shall be according to EN 13611:2007, 6.4.6.

6.4.7 Nipples for pressure test

Shall be according to EN 13611:2007, 6.4.7.

6.4.8 Strainers

Shall be according to EN 13611:2007, 6.4.8.

6.4.101 Flow characteristics

An adjustable bypass shall be set by means of a variable presetting device or shall be adjusted by means of a fixed presetting device.

It shall be possible to gain access to any fixed bypass or bypass adjusting device for cleaning without changing the calibration temperature set-point.

The opening and closing of the thermostat closure member with a total shut-off function shall happen by snap-action between the off position and the reduced flow position.

Figure 2 shows typical operating curves of a modulating, snap-acting and modulating on-off thermostat.

The flow rate at the moment of snap-action shall not be less than the value as stated in the operating instructions.

6.4.102 Temperature adjustment

6.4.102.1 Range adjustment

The allowed temperature setting range shall be limited by stops. Where applicable the operating instructions shall state the limits in which the temperature setting range may be adjusted using appropriate tools. The temperature setting range stops shall not change on their own accord.

6.4.102.2 Set point adjustment

If the adjusting knob is supplied as part of the thermostat, the marking of its positions shall be easily recognizable. It shall indicate the direction in which the temperature is raised or lowered. If numbers are used,

higher numbers shall indicate higher temperatures, except for thermostats for refrigerators where higher numbers shall indicate lower temperatures.

It shall be possible to select any temperature set-point over the whole temperature range by setting the adjusting knob or spindle between the stops within the maximum and minimum ambient temperatures as stated in the operating instructions.

The temperature setting means shall not change on its own accord.

6.4.102.3 Fixed setting thermostat

If provided, the adjuster of a fixed setting thermostat shall be sealed (e. g. lacquer).

6.5 Electronic parts of the control

EN 13611:2007, 6.5 is not applicable.

6.6 Protection against internal faults for the purpose of functional safety

EN 13611:2007, 6.6 is not applicable.

7 Performance

7.1 General

Shall be according to EN 13611:2007, 7.1 with the following addition:

Tests shall be conducted in the sequence shown in Table 1.

Table 1 — Sequence of testing

Clause	Test	Thermostat number	
		1	2
7.2 / 7.3	Leak-tightness / Test for leak-tightness (except **6.3.2** / **6.3.3**)	X	X
7.107	Effect of storage and transport temperatures	X	
7.108	Thermal overload of the temperature sensor	X	
7.101	Calibration temperature set-point	X	X
7.106	Ambient temperature range of the body		X
7.102	Backlash	X	X
7.6 / 7.7	Rated flow rate / Test for rated flow rate		X
7.105	Operating characteristic of the thermostat		X
7.103	Opening of snap-acting thermostat with a closed position		X
7.104	Opening pressure and closing pressure for thermostats with a closed position	X	
7.109	Operating torque of the thermostat set-point adjuster	X	X
7.4 / 7.5	Torsion and bending / Torsion and bending tests	X	