SLOVENSKI STANDARD

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Prostostoječi plinski konvekcijski grelniki z ventilatorjem za zgorevalni zrak in/ali dimne pline

Independent gas-fired convection heaters incorporating a fan to assist transportation of combustion air and/or flue gases

Konvektions-Raumheizer für gasförmige Brennstoffe mit gebläseunterstützter Verbrennungsluftzu- und/oder Abgasabführung

Appareils de chauffage indépendants à convection utilisant les combustibles gazeux et intégrant un ventilateur pour faciliter l'alimentation en air comburant et/ou l'évacuation des produits de combustion

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English version

Independent gas-fired convection heaters incorporating a fan to assist transportation of combustion air and/or flue gases

Appareils de chauffage indépendants à convection utilisant les combustibles gazeux et intégrant un ventilateur pour faciliter l'alimentation en air comburant et/ou l'évacuation des produits de combustion

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This European Standard was approved by CEN on 11 January 2001.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Contents

Foreword

This document (EN 1266:2002) has been prepared by Technical Committee CEN/TC 62" *Independent gas-fired space heaters*", 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 April 2003, and conflicting national standards shall be withdrawn at the latest by April 2003.

This document has been prepared under a mandate given to CEN by the Commission and the European Free Trade Association, and supports the essential requirements of Directive 90/396/EEC.

For relationship with EU Directives, see informative annex ZA, which is an integral part of thisdocument.

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

1 Scope

This European Standard specifies the requirements and test methods for the construction, safety, marking and rational use of energy of independent gas-fired convection heating appliances that are fitted with fan-assisted atmospheric burners, or fully pre-mixed burners.

This standard is applicable to independent convection heaters, burning gas having a fan to assist the transportation of combustion air and/or flue gases, hereafter referred to as 'appliances':

— that are types B_{12}, B_{13}, B_{14}, B_{22}, B_{23}, C_{12}, C_{13}, C_{32}, C_{33}, C_{42}, C_{43}, C_{52}, C_{53}, C_{62} and C_{63} (see 4.2);

— that are wall mounted, free-standing or built-in;

— that have a nominal heat input not exceeding 20 kW (based on the net calorific value).

In addition, this standard is applicable to live fuel effect appliances.

This standard is not applicable to:

a) open fronted appliances to prEN 13278:1998;

b) appliances fitted with automatic forced-draught burners to EN 676;

c) ducted-air appliances;

d) appliances installed by means of a closure plate (see 3.3.3.8).

This standard is only applicable to appliances which are intended to be type tested.

Matters related to quality assurance systems, tests during production and to certificates of conformity of auxiliary devices are not dealt with by this standard.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 88:1991, *Pressure governors for gas appliances for inlet pressure up to 200 mbar*

EN 125:1991, *Flame supervision devices for gas-burning appliances — Thermo-electric flame supervision devices*

EN 126:1995, *Multifunctional controls for gas burning appliances*

EN 161:1991, *Automatic shut-off valves for gas burners and gas appliances*

EN 257:1992, *Mechanical thermostats for gas-burning appliances*

EN 298:1993, *Automatic gas burner control systems for gas burners and gas burning appliances with or without fans*

EN 437:1993, *Test gases — Test pressures — Appliance categories*

EN 12067-1:1998, *Gas/air ratio controls for gas burners and gas burning appliances — Part 1: Pneumatic types*

prEN 13278:1998, *Open fronted gas-fired independent space heaters*

EN 60335-1:1994, *Safety of household and similar electrical appliances — Part 1: General requirements (IEC 335-1:1991)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP code) (IEC 529:1989)*

EN 60730-2-9:1995, *Automatic electrical controls for household and similar use — Part 2: Particular requirements for temperature sensing controls*

CR 1404:1994, *Determination of emissions from appliances burning gaseous fuels during type-testing*

EN ISO 3166-1:1997, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes (ISO 3166-1:1997)*

ISO 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Designation, dimensions and tolerances*

ISO 228-1:1994, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Designation, dimensions and tolerances*

ISO 274:1975, *Copper tubes of circular section — Dimensions*

IEC 60479-1:1984, *Effects of current passing through the human body — Part 1: General aspects*

IEC 60479-2:1987, *Effects of current passing through the human body — Part 2: Special aspects*

3 Terms and definitions

For the purposes of this standard the following terms and definitions apply:

3.1 Independent gas-fired convection heaters

3.1.1
convection heater
convection appliance that is designed to heat a room mainly by the emission of air heated by convection. Such an appliance may also contain radiant heating elements provided that it complies with all the requirements of this standard

3.1.2
forced convection heater
convection appliance that incorporates a fan and thus allows an acceleration of the circulation of the air in contact with the heating body. Such an appliance is designed to discharge air directly into the room in which the appliance is installed and not to be connected to a warm air distribution system

3.1.3
convection fan
device to assist in the distribution of heated air

3.1.4
live fuel effect convection heater
convection appliance which simulates the visual effect of a solid fuel appliance

3.1.5
open-fronted appliance
appliance which has exposed flames or exposed incandescent areas

3.1.6
working surfaces
those parts of an appliance, which, due to the nature of the appliance, have temperatures exceeding the limits specified in 6.4.1 excluding parts that are likely to be touched during operations carried out in the normal use of the appliance, for example, the area adjacent to control knobs

Working surfaces do not include that part of any surface within 25 mm of parts that have to be touched or removed during normal operation of the appliance.

3.2 Gases

3.2.1
reference conditions
- for calorific values, temperature: 15 °C;
- for gas and air volumes dry, brought to 15 °C and an absolute pressure of 1 013,25 mbar

3.2.2
calorific value
quantity of heat produced by the combustion, at a constant pressure of 1 013,25 mbar, of unit volume or mass of gas, the constituents of the combustible mixture being taken at reference conditions and the products of combustion being brought back to the same conditions

A distinction is made between:

- the gross calorific value in which the water produced by combustion is assumed to be condensed.

Symbol: H_s

- the net calorific value in which the water produced by combustion is assumed to be in the vapour state.

Symbol: H_i

Units: either:

- megajoules per cubic metre (MJ/m^3) of dry gas at the reference conditions; or
- megajoules per kilogram (MJ/kg) of dry gas;
- [EN 437:1993].

3.2.3
relative density
ratio of the masses of equal volumes of dry gas and dry air at the same conditions of temperature and pressure

Symbol: d

3.2.4
Wobbe index
ratio of the calorific value of a gas per unit volume and the square root of its relative density under the same reference conditions. The Wobbe index is said to be gross or net according to whether the calorific value used is the gross or net calorific value

Symbol: gross Wobbe index: W_s;

: net Wobbe index: W_i.

Units: either:

— megajoules per cubic metre (MJ/m^3) of dry gas at the reference conditions; or

— megajoules per kilogram (MJ/kg) of dry gas.

[EN 437:1993]

3.2.5
test pressures
gas pressures used to verify the operational characteristics of appliances using combustible gases. They consist of normal and limit pressures

They are expressed in millibars (mbar).

NOTE 1 mbar = 100 Pa.

3.2.6
normal pressure
pressure under which the appliances operate in nominal conditions, when they are supplied with the corresponding reference gas

Symbol: p_n

3.2.7
limit pressures
pressures representative of the extreme variations in the appliance supply conditions

Symbols:

maximum pressure: $p_{max;}$

minimum pressure: $p_{min.}$

3.2.8
pressure couple
combination of two distinct gas distribution pressures applied by reason of the significant difference existing between the Wobbe indices within a single family or group in which:

— the higher pressure corresponds only to gases of low Wobbe index;

and

— the lower pressure corresponds to gases of high Wobbe index.

[EN 437:1993]

3.3 Appliance construction

3.3.1 The gas circuit

3.3.1.1
inlet connection
part of the appliance intended to be connected to the gas supply

3.3.1.2
mechanical joint
connection device assuring soundness in an assembly of several parts, generally of metal

Example:

— cone seated joints

— torroidal sealing rings ('O' rings)

— flat joints

— metal to metal joints

3.3.1.3
gas circuit
part of an appliance that conveys or contains the gas between the appliance gas inlet connection and the burner(s)

3.3.1.4
gas restrictor
non-adjustable device which is placed in the gas circuit so as to create a pressure drop and thus reduce the gas pressure at the burner to a predetermined value for a given supply pressure and rate

3.3.1.5
gas rate adjuster
component intended for the manufacturer or installer to set the gas rate to each burner at a predetermined value according to the supply conditions

The adjustment may be progressive (screw adjuster) or discontinuous (changing restrictors).

The adjuster of an adjustable governor is regarded as a gas rate adjuster.

The action of setting this device is called 'setting the gas rate'.

3.3.1.6
gas rate control
component allowing the user to open or close the gas supply to one or more burners. It may also be used to adjust the gas rate of certain burners to a predetermined value, called the 'reduced rate'. This device may be a 'tap'

3.3.1.7
injector
component that admits the gas into a burner

3.3.1.8
start gas
initial quantity of gas ignited to give a flame which is used to ignite the main burner. It may be discharged through a separate ignition burner or part of the main burner

3.3.2 Burner

3.3.2.1
main burner
burner that assures the thermal function of an appliance. It is usually called simply 'burner'

3.3.2.2
fully premixed burner
burner in which the gas and a quantity of air at least equal to that theoretically necessary for complete combustion are mixed before the combustion head

3.3.2.3
ignition burner
separate burner intended to light the main burner

3.3.2.3.1
permanent ignition burner
ignition burner that operates continuously throughout the whole period that the appliance is in use

3.3.2.3.2
intermittent ignition burner
ignition burner that is ignited before and extinguished at the same time as the main burner

3.3.2.3.3
alternating ignition burner
ignition burner that is extinguished as soon as ignition of the main burner is effected. It re-ignites at the main burner flame just before the latter goes out

3.3.2.4
fixed primary aeration restrictor
non-adjustable device which limits the supply of primary air to a burner

3.3.3 Combustion products circuit

3.3.3.1
flue outlet
part of a type B appliance (see 4.2) that connects with a flue to evacuate the products of combustion

3.3.3.2
draught diverter
device placed in the combustion products circuit to reduce the influence of flue-pull and to minimize the effect of down-draught on the burner flame stability and combustion

3.3.3.3
combustion products discharge safety device
device that automatically shuts off the gas supply to the main burner, and perhaps to the ignition burner, when there is unacceptably high spillage of combustion products from the draught diverter

3.3.3.4
atmosphere sensing device
device designed to shut off the gas supply before the combustion products of the surrounding atmosphere reaches a set value

3.3.3.5
terminal
device fitted at the end of the duct system to direct the flow of air and/or flue gases and to restrict the ingress of foreign matter

3.3.3.6
C_6 terminal
terminal which is specially approved for type C_6 appliances

3.3.3.7
adaption box
means of adapting the appliance for connection to different duct systems, e.g. from concentric to separate ducts

3.3.3.8
closure plate
non-combustible plate used to cover and seal the front plane of a builder's opening, or fireplace opening, such that when the appliance is installed, any air flowing from the room into the flue does so in accordance with the design requirements of the appliance

This plate contains an aperture through which the flue outlet spigot of the appliance projects into the cavity of the builder's opening, or fireplace recess, but is not connected to the flue.

The plate may be a separate component, or an integral part of the appliance, e.g. the back panel, but in either case shall be considered as part of the appliance.

3.3.3.9
builders opening
enclosure constructed by the builder to accommodate fireplace components

3.3.3.10
fireplace opening
aperture formed in the face of the builder's opening, the fireplace recess or fire surround if fitted

3.3.3.11
fireplace recess
recess formed by the inclusion of fireplace components in the builder's opening

3.3.3.12
fitting piece
device which allows for the fitting of the air supply and combustion products evacuation ducts to two ducts of a shared duct system for type C_4 appliances. The fitting piece may be part of the appliance or of the air supply and/or combustion products evacuation system

3.3.4 Auxiliary equipment

3.3.4.1
pressure governor
device that maintains, within a fixed range, a constant downstream pressure , independent of the upstream pressure and/or the gas rate

3.3.4.2
ignition device
device that ignites one or more burners

3.3.4.3
flame supervision device
device, including a sensing element, that causes the gas supply to a burner to be opened or closed according to the presence or absence of the flame that activates the sensing element

3.3.4.4
control knob
component designed to be moved by hand in order to operate an appliance control (tap, thermostat, etc.)

3.3.4.5
full sequence automatic control unit
control unit which can automatically bring an appliance into operation from a completely shut down condition in response to an external demand without the need for further intervention. This control unit comprises a programming unit and all the elements of a flame detector device

3.3.4.6
flame detector device
device by which the presence of a flame is detected and signalled

It can consist of a flame sensor, an amplifier and a relay for signal transmission. These parts, with the possible exception of the actual flame sensor, may be assembled in a single housing for use in conjunction with a programming unit.

3.3.4.7
programming unit
unit which reacts to signals from control and safety devices, gives control commands, controls the start up sequence, supervises the burner operation and causes controlled shut-down, and if necessary safety shut-down and lock-out. The programming unit follows a predetermined sequence of actions and always operates in conjunction with a flame detector device

3.3.4.8
automatic burner system
burner system in which, when starting from the completely shut-down condition, the gas is ignited and the flame is detected and proved and the main gas valve(s) is actuated without manual intervention

3.3.4.9
restart interlock (manual)
device which prevents the restoration of the gas supply to the main burner, or to the main burner and ignition burner, until the end of the extinction delay time

3.3.4.10
purge
mechanical introduction of air into the combustion circuit in order to displace any fuel/air mixture which could remain there. A distinction is made between

pre-purge — the purge that takes place between the start command and the ignition device being energized;

and

post-purge — the purge that is carried out after burner shutdown.

3.3.4.1.1
air proving device

device intended to cause safety shut-down in the event of abnormal conditions of air admission or of combustion products evacuation

3.3.4.1.2
air/gas ratio device
device that automatically adapts the combustion air rate to the gas rate or vice versa

3.4 Adjusters and controls

3.4.1
setting an adjuster
action of immobilizing an adjuster in the operating position by some means such as a screw , etc. It is said that the adjuster is "set" in this position

3.4.2
sealing an adjuster
procedure by which after setting an adjuster, material is added such that any attempt to alter the adjustment setting is apparent

A factory sealed pre-set adjuster is considered to be non-existent.

A pressure governor is considered to be non-existent if it has been factory sealed in the fully opened position.

3.4.3
putting a control out of service
procedure by which a control (of temperature, pressure, etc.) is put out of action and sealed in this position. The appliance then functions as if this device had been removed

3.5 Appliance performance

3.5.1 Gas rates

3.5.1.1
volumetric flow rate
volume of gas consumed by the appliance in unit time during continuous operation

Symbol: *V*

Units: cubic metres per hour (m^3/h), litres per minute (l/min), cubic decimetres per hour (dm^3/h), or cubic decimetres per second (dm^3/s).

[EN 437:1993]

3.5.1.2
mass flow rate
mass of gas consumed by the appliance in unit time during continuous operation

Symbol: *M*

Units: kilograms per hour (kg/h), or grams per hour (g/h).

[EN 437:1993]

3.5.1.3
heat input
quantity of energy used in unit time corresponding to the volumetric or mass flow rates, the calorific value used being either the net or gross calorific value

Symbol: *Q*

Unit: kilowatt (kW)

[EN 437:1993]

3.5.1.4
nominal heat input
value of the heat input declared by the manufacturer

Symbol: Q_n

Unit: kilowatt (kW)

3.5.2 Gas combustion

3.5.2.1
flame stability
state of the flames resting in a stable manner on the burner ports or the flame contact area provided by the design with no flame lift or light-back

3.5.2.2
flame lift
phenomenon characterized by the total or partial lifting of the base of the flame from the burner port or the flame contact area provided by the design

3.5.2.3
light-back
phenomenon characterized by the entry of a flame into the body of a burner