BS EN 498:2012

BSI Standards Publication

Specification for dedicated liquefied petroleum gas appliances — Barbecues for outdoor use contact grills included

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National foreword

This British Standard is the UK implementation of EN 498:2012. It supersedes BS EN 498:1998 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GSE/24, Dedicated LPG appliances.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Specification for dedicated liquefied petroleum gas appliances - Barbecues for outdoor use contact grills included

Spécifications pour les appareils fonctionnant exclusivement aux gaz de pétrole liquéfiés - Barbecues utilisés en plein air y compris grilloirs par contact

Festlegungen für Flüssiggasgeräte - Grillgeräte zur Verwendung im Freien einschließlich Kontaktgrillgeräte

This European Standard was approved by CEN on 12 November 2011.

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Foreword

This document (EN 498:2012) has been prepared by Technical Committee CEN/TC 181 “Dedicated liquefied petroleum gas appliances”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by July 2012, and conflicting national standards shall be withdrawn at the latest by July 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 498:1997.

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(s).

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

The main changes compared to the former version are the following:

— approved quick self closing connection used for auxiliary burners are not subjected to the obligation of being manufactory mounted;

— clearer specifications for lighting and cross lighting when more than one burner are in a same enclosure, use of flash tube;

— introduction of a logo or warning forbidding cylinders in places of the appliance not designed for cylinder storage;

— rewording of the test for checking over heating of gas cylinder compartment;

— addition of a warning about the updating of information relating to national situations;

— addition of an annex listing the mandatory sentences to be written on appliances, packaging and in instructions in the various CEN members countries languages.

Items relating to quality assurance systems, production testing and particularly certificates of conformity of auxiliary equipment are not covered by this European Standard.

Particular attention should be paid to the quality of non metallic materials used in the construction of these appliances. A European Standard specifying requirements for "Rubber materials for seals and diaphragms for gas appliances and equipment" has been prepared by CEN TC 108 (EN 549). A European Standard for "Flexible hose, tubing and assembles for use with butane or propane in the vapour phase" is being prepared.

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, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the constructional and performance characteristics, safety specifications, relevant test methods and marking of barbecues burning liquefied petroleum gas, referred to in the body of the text as "appliances".

This European Standard covers barbecues as defined in 3.6 and contact grills as defined in 3.8, used outdoors and operating with the gases indicated in 4.1 according to the categories indicated in 4.2. They are fitted with at least one cooking device.

This European Standard applies to these appliances and their functional sections whether or not the latter are independent or incorporated into an assembly.

This European Standard also applies to appliances designed to be built-in.

This European Standard only applies to type testing.

Appliances supplied with third family gas at pressures greater those defined in 4.2 are outside the field of application of this European Standard.

During the consideration of this text, it was apparent that the concept of thermal efficiency with regard to appliances such as barbecues was not appropriate.

This is because:

— during cooking, there is an additional transfer of heat due to the meat juices falling onto the refractories;

— there is no relation between the item to be cooked and the useful area;

— the barbecue is an outdoor appliance in which the action of the wind is important in relation to efficiency.

In consequence there is no specific requirement covering thermal efficiency for this type of appliance.

This European Standard does not state all applicable requirements for integral equipments of other nature (for example burners covered by EN 484).

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 125, *Flame supervision devices for gas burning appliances — Thermoelectric flame supervision devices*

EN 126, *Multifunctional controls for gas burning appliances*

EN 437:2003+A1:2009, *Test gases — Test pressures — Appliance categories*

EN 10226-1, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*

EN 10226-2, *Pipe threads where pressure tight joints are made on the threads — Part 2: Taper external threads and taper internal threads — Dimensions, tolerances and designation*

EN 60335-1, *Household and similar electrical appliances — Safety — Part 1: General requirements (IEC 60335-1, modified)*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
cooking devices
component parts of the appliance designed to hold or receive the food to be cooked (grids, turnspits, plates, etc.)

3.2
detachable
can be dismantled without using a tool

3.3
appliance incorporating a gas cylinder
appliance whose body or support includes a compartment for a liquefied petroleum gas cylinder, or a fixing or support device for this cylinder

3.4
built-in appliance
appliance designed to be built into a brick or similar structure

3.5
auxiliary equipment
component and device acting directly or indirectly on the gas rate

3.6
barbecue
appliance principally designed to roast and/or grill foodstuffs

NOTE Cooking is achieved by the action of radiant heat and, possibly by convection and/or conduction.

3.7
movable barbecue
barbecue fitted with at least one wheel enabling it to be moved easily on the ground

3.8
contact grill, plancha
appliance designed to grill foodstuffs by conduction

3.9
locking of an adjuster
immobilisation by the manufacturer or by an installer of an adjuster, in its adjustment position by any means (a screw, etc.)

3.10
turnspit
cooking device enabling the rotation of the food to be roasted

NOTE Its rotation can be effected manually or using a mechanical or electrical motor.

3.11
burner
component that allows the gas to burn

NOTE It may be one of two types:

- non-aerated burner, in which the air for combustion is entrained entirely at the burner outlet;
- aerated burner, in which part of the air for combustion, termed primary air, is entrained by the gas flow and mixed before the burner outlet; the remainder of the air, termed secondary air, is drawn in after the burner outlet.

3.12
ignition burner
small burner whose flame is designed to light another burner

NOTE They are called "pilots" in this European Standard.

3.13
sooting
phenomenon appearing during incomplete combustion and characterized by a deposit of carbon on surfaces in contact with the flame or the products of combustion

3.14
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;

— the lower pressure corresponds to gases of high Wobbe index

[EN 437:2003+A1:2009]

3.15
heat input
Q
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

NOTE The heat input is expressed in kilowatts (kW).

[EN 437:2003+A1:2009]

3.16
nominal heat input of a burner
*Q*n
value of the heat input declared by the manufacturer

NOTE Adapted from EN 437:2003+A1:2009.

3.17
mass flow rate
M
mass of gas consumed by the appliance in unit time during continuous operation

NOTE The mass flow rate is expressed in kilograms per hour (kg/h) or grams per hour (g/h).

[EN 437:2003+A1:2009]

3.18
volume flow rate
V
volume of gas consumed by the appliance in unit time during continuous operation

NOTE The volume flow rate is expressed in 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 437:2003+A1:2009]

3.19
flame lift
phenomenon characterised by the partial or total movement of the base of the flame away from the burner port

3.20
removable
which can only be detached with a tool

3.21
relative density
d
ratio of the masses of equal volumes of dry gas and dry air under the same conditions of temperature and pressure: 15 °C or 0 °C and 1 013, 25 mbar

[EN 437:2003+A1:2009]

3.22
ignition device
device to ignite one or more burners directly or indirectly, for instance through a flash tube

NOTE It may be:

- either electric (resistance, spark, etc.);
- or thermal (flame, pilot, etc.).

3.23
flame supervision device
device which, due to the presence of a flame on the sensing element, keeps open the gas flow to the burner and pilot and which cuts off the gas supply to the burner and pilot in the case of extinction of the supervised flame

3.24
grid
cooking device designed to hold the food to be cooked

NOTE 1 Its useful component(s) can be rigid or flexible.

NOTE 2 A grid with flexible useful components (called a "wallet" grid) is made up of two jointed components enabling tight gripping of the food to be cooked. Each component consists of a rigid frame on which metallic wires are fixed and form a flexible mesh inside the frame distorting around the food.

3.25
glass panel
transparent surface allowing the inside of the appliance to be seen

3.26
Wobbe index
gross Wobbe index W_s;
net Wobbe index W_i
ratio of the calorific value of a gas per unit volume and the square root of its relative density under the same reference conditions

NOTE 1 The Wobbe index is said to be gross or net according to whether the calorific value used is the gross or net calorific value.

NOTE 2 The Wobbe indices are expressed:

- either in megajoules per cubic metre (MJ/m^3) of dry gas under the reference conditions;
- or in megajoules per kilogram (MJ/kg) of dry gas.

NOTE 3 Adapted from EN 437:2003+A1:2009.

3.27
injector
component part that admits the gas into an aerated burner

NOTE There are two types of injectors:

- calibrated injectors where the section of the outlet orifice is fixed;
- adjustable injectors where the section of the outlet orifice is variable.

3.28
control handle
component designed to be operated manually so as to control the movement of a control of the appliance, such as a tap, etc.

3.29
means of sealing
static or dynamic device designed to ensure soundness, for example: flat-faced joints, O-ring joints, conical joints, diaphragms, grease, pastes, putties, etc.

3.30
primary air adjuster
device allowing the aeration rate of a burner to be set at a predetermined value according to the supply conditions

NOTE The action consisting in operating this device is termed "primary air adjustment".

3.31
gas rate adjuster
device allowing the gas rate to a burner to be set at a predetermined value according to the supply conditions

NOTE 1 The adjustment can be continuous (adjustment screw) or discontinuous (changing the calibrated orifices).

NOTE 2 The operation of changing the setting of this device is termed the "adjustment of the gas rate".

3.32
useful part of a cooking device
part of the device in contact with the food during cooking

NOTE In particular, the useful length of the turnspit is the maximum length which is capable of coming in contact with the foodstuff.

3.33
calorific value
quantity of heat produced by the complete combustion, at a constant pressure equal to 1 013,25 mbar, of a 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

NOTE 1 A distinction is made between:

- the gross calorific value H_s: the water produced by combustion is assumed to be condensed;
- the net calorific value H_i: the water produced by combustion is assumed to be in the vapour state.

NOTE 2 The calorific value is expressed:

- either in megajoules per cubic metre (MJ/m^3) of dry gas under the reference conditions;
- or in megajoules per kilogram (MJ/kg) of dry gas.

NOTE 3 Adapted from EN 437:2003+A1:2009.

NOTE 4 For the purposes of this European Standard only the gross calorific value is used. The calorific values are expressed in units of energy referred:

- either to the unit volume of dry gas measured under normal reference conditions: 15 °C, 1 013,25 mbar; it is expressed in megajoules per cubic metre (MJ/m^3);
- or to the unit mass of dry gas. It is then expressed in megajoules per kilogramme (MJ/kg).

3.34
gas supply pressure
difference between the static pressure measured at the gas inlet connection of the appliance and the atmospheric pressure

NOTE It is expressed in millibars (mbar).

3.35
light back
phenomenon characterised by the return of the flame inside the body of the burner

3.36
tap
device designed to isolate a burner from the gas supply pipework and to adjust its rate during use

3.37
locking
means of locking an adjuster so that any attempt to change the adjustment causes the breaking of the sealing device or sealing material and makes the interference with the adjuster apparent

NOTE The adjuster is said to be sealed in the adjusted position. An adjuster sealed at the factory is considered as non existent.

3.38
soft solder
solder for which the lowest temperature of the melting range, after application, is less than 450 °C

3.39
stability of flames
condition of flames when the phenomena of flame lift or light back do not occur

3.40
ignition delay time
time between the ignition of the flame supervised, the appliance being at room temperature, and the moment when the effect of this flame is sufficient to keep the closing member open

3.41
extinction delay time
time between the extinction of the flame supervised and the closure of the gas supply to the burner and to the pilot

3.42
gripping area
area of an appliance component designed to be manipulated during normal use

4 Classification

4.1 Classification of gases used

Gases used are classified in families and groups according to their Wobbe number.

The third family, grouping liquefied petroleum gases, covers Wobbe indexes between 72,9 MJ/m^3 and 87,3 MJ/m^3 (W_S) which corresponds to group B/P. It is subdivided into two groups, group P which covers the range of Wobbe indexes between 72,9 MJ/m^3 and 76,8 MJ/m^3, and group B which covers the range of Wobbe indexes between 81,8 MJ/m^3 and 87,3 MJ/m^3.

4.2 Classification of appliances

Appliances are classified into categories according to the gases that they use. However, for each country, only some of the categories mentioned below are applicable on account of local gas supply conditions (types of gas and supply pressures). For these categories, no requirement different from those defined in this European Standard shall be applied.

The gas supply conditions and types of connection applicable to each country are given in Annex A.

Appliances within the field of application of this standard belong to the following categories:

a) Category $I_{3B/P(30)}$:

Appliances capable of using third family gases (propane, butane or their mixtures), without adjustment at nominal operating pressures from 28 mbar to 30 mbar;

b) Category $I_{3B/P(37)}$:

Appliances capable of using third family gases (propane, butane or their mixtures), without adjustment at nominal operating pressures of 37 mbar;

c) Category $I_{3B/P(50)}$:

Appliances capable of using third family gases (propane, butane or their mixtures), without adjustment at nominal operating pressures of 50 mbar;

d) Category $I_{3+(28\text{-}30/37)}$:

Appliances capable of burning third family gases (butane and propane), and operating without adjustment on the appliance using a pressure couple; for butane, appliances in this category may be used without adjustment at nominal operating pressures from 28 mbar to 30 mbar, for propane they are used at a nominal operating pressure of 37 mbar;

e) Category $I_{3P(37)}$:

Appliances capable of using third family gases in group P (propane), without adjustment at a nominal operating pressure of 37 mbar;

f) Category $I_{3P(50)}$:

Appliances capable of using third family gases in group P (propane), without adjustment at a nominal operating pressure of 50 mbar.

5 Constructional characteristics[1)]

5.1 Conversion to different gases

The appliance shall operate under the conditions of use specified in the instructions, without requiring any intervention on the internal gas circuit or the adjusters of the appliance.

Adjusters shall be locked and sealed by the manufacturer.

5.2 Materials

The quality and thickness of materials used in the construction of an appliance shall be such that the constructional and performance characteristics are not altered in use.

In normal conditions of operation, cleaning or transport, the parts of the appliance:

— shall withstand the mechanical, chemical and thermal actions to which they may be submitted;

— shall not be liable to any alteration which might impair their operation.

Metallic parts not made of corrosion-resistant materials shall be covered with an effective protection against corrosion. This requirement does not apply to grids supporting radiant component (lava rock, ceramic, etc.) or cooking devices.

Asbestos or asbestos based material shall not be used.

The nature and surface state of materials likely to be in contact with food need to:

1) The test methods for verifying the compliance of the appliance to the requirements of this clause are indicated in 7.2.

— comply with EC regulation N°1935/2004;

— satisfy to possible requirements of destination countries.

NOTE Presentation of a declaration of conformity, established for example on the base of test reports, by the manufacturer of the appliance or his representative allow the checking that the appliance meets the above requirements.

5.3 Ease of cleaning

All the parts of the appliance requiring frequent cleaning by the user (e.g. cooking devices) shall be easily accessible without having to use a tool for dismantling. It shall be possible to put these parts back correctly and without difficulty by following the instructions.

Sharp corners and edges which could give rise to injury, for example during the cleaning of appliances shall be avoided.

The accessible edges of glass components shall not be sharp.

It shall not be possible for the gas cylinder, the connection tube and the parts of the gas circuit to be soiled by the spillage of cooking products.

The appliance shall be designed in such a way that possible falling of cooking products do not impair the safety of operation.

Any part of the appliance installed or adjusted at the factory and which does not need to be manipulated by the user shall be protected in appropriate fashion. To this end paint may be used provided that it withstands the heat to which it is exposed during the normal operation of the appliance.

5.4 Strength

5.4.1 General

The construction of an appliance shall be such that, during normal conditions of use:

— any displacement of parts,

— any distortion,

— any deterioration

likely to impair its good performance will not occur.

5.4.2 Characteristics of glass panels

Glass panels shall withstand the various stresses to which they are subjected during all the tests of this standard without damage. In particular they shall resist the tests described in 7.2.4.2.1 and 7.2.4.2.2 without breaking or distorting.

5.5 Assembly

The appliances gas circuit assembly from the connection(s) to the supplying pipe, up to any injector, shall be factory assembled by the manufacturer. This requirement shall not apply if an approved quick self-closing connection is used for an auxiliary burner.

It shall be possible to the user to assemble the components of a barbecue easily and correctly in following the instructions.

An appliance, described as being portable, shall meet the following requirements:

— once assembled the change over from the "transport" configuration to the "use" configuration shall not require the use of tools other than those supplied with the appliance;

— the appliance can be easily transported, without the risk of loosing parts or damage.

5.6 Stability

5.6.1 Stability of the appliance on a horizontal plane

The appliance is placed on a horizontal surface and the tests described in 7.2.6.2 shall be carried out without:

— the appliance falling over;

— any of its component parts becoming loose or moving in such a way that its operation is impaired.

If the radiant device can have several positions, a stop shall be provided for each of them.

If the appliance is fitted with a foldable support, it shall be possible to lock it in the position of use (for example: stop, locking device).

5.6.2 Stability of the appliance placed on a slope

Under the test conditions of 7.2.6.3, the appliance when placed on a slope of 10° from the horizontal shall not fall over and the lid shall not fall accidentally.

None of the gas cylinders indicated in the instructions shall fall during this test, whatever its gas content, when placed as recommended in the instructions.

5.7 Soundness of the gas circuit assembly

Holes for screws, pins, etc. placed upstream of the injector ports and intended for the assembly of components shall not open into the space reserved for the gas ways leading to the injector.

The soundness of parts and assemblies connected to the gas circuit shall be assured by means of metal-to-metal joints or joints with seals (for example, flat-faced joints, O-rings), i.e. excluding the use of any product which ensures soundness in the threads.

For parts that do not require dismantling during normal maintenance, for example taps, injectors, the use of appropriate thread sealing compounds is permitted.

Soft solder shall not be used to ensure the soundness of the gas circuit. However it is permitted for internal connections within the gas circuit when they do not involve soundness.

Joints and sealing compounds shall have characteristics suited to their use.

Removable components or the threaded parts of the pipework which may be dismantled during normal maintenance shall remain sound after five disconnections and re-connections in accordance with the instructions, if necessary after changing a gasket if mentioned in the instructions.

5.8 Connections

Connections shall be easily accessible; it shall be possible to connect the appliance easily and safely following the indications given in the instructions.

The entire gas supply circuit shall be at the pressure delivered by the regulator.

Depending on the various national situations (see Annex A), the end of the supply pipework shall be fitted either with:

— a nozzle allowing the connection of flexible tubing; the nozzle may be fixed or removable, or

— a thread in accordance with EN ISO 228-1 or EN 10226-1 or EN 10226-2.

If the nozzle is removable it shall be fitted on a thread complying with A.3.

During normal conditions of use, connections shall not come loose unintentionally.

Flexible tubing of the length specified in the instructions and connected in accordance with the instructions, shall not come into contact with a part of the appliance whose temperature is higher than that specified in 6.5 a).

The end of the gas inlet connection shall be positioned to allow the free movement of a flexible hose connection.

In the case of connections where pressure-tight joints are not made on the threads according to EN ISO 228-1, the extremity of the gas inlet connection shall have a flat annular surface of at least 2,5 mm wide in the case of threads of nominal size 1/2", 3/8'' and 5/8" and of at least 2,2 mm wide in the case of a thread of nominal size 1/4'' in order to allow the interposition of a sealing washer.

Moreover, when the extremity of the gas inlet connection has a thread of nominal size 1/2'', it shall be possible to insert a gauge of 12,3 mm diameter to a depth of at least 4 mm.

5.9 Locking of wheels and castors

If the appliance has wheels or castors to enable it to be moved, means shall be provided to prevent accidental movement of the appliance during normal use.

This requirement is deemed to be satisfied if:

— at least one of the wheels or castors is fitted with a brake or a blocking system, or

— at least one of the support point of the barbecue is not made of a wheel or a castor.

5.10 Taps

5.10.1 General

Each burner shall be controlled by a tap or device allowing the opening and closing of its supply. For appliances incorporating only one burner, this function can be carried out by the gas cylinder valve. It shall only be possible to supply gas to the burner by deliberate operation.

Taps shall be placed in such a way that their strength, operation, manipulation and accessibility undergo no damage from the actions to which they are subjected in normal use. They shall be protected against external

clogging. Moreover, after testing in accordance with this standard, and in particular after the temperature test in accordance with 7.3.5, their manipulation shall remain easy.

Taps shall be mounted in such a way that no accidental movement relative to the gas supply circuit is possible.

5.10.2 Taps with marked positions

Plug type taps shall have:

— an automatic compensating device to take up play and which ensures soundness;

— two stops, one in the "off" position and one at the end of the tap travel.

The reduced rate may be obtained:

— either at the end of the tap travel;

— or in an intermediate position between the closed and fully opened positions; in this case, a reduced rate position shall be fitted by means of a device that arrests the tap in this position when it is moved is in the direction of closing.

A tap with marked positions may be a plug type tap.

5.10.3 Taps with variable positions

When opening these taps it shall not be possible to unscrew the closing member completely from its housing.

A tap with variable positions can be a needle type tap. When closed, the contact of the needle on its seating shall constitute the stop.

5.11 Control handles

5.11.1 Construction

It shall be obvious which burner is controlled by each control handle. They shall be so arranged relative to one another that the movement of one handle does not cause inadvertent movement of an adjacent one.

Control handles with different markings shall not be interchangeable on a single appliance.

Control handles shall be so designed that they can neither be fitted in the wrong position nor move by themselves. The shape of a handle shall be such that its manipulation is easy.

If control handles operate by turning, the closing direction shall be clockwise.

The manipulation of tap handles shall not cause inadvertent movement of the appliance.

5.11.2 Marking

5.11.2.1 Taps with marked positions

The closed, open and, if applicable, reduced rate positions shall be marked in a visible, legible and durable fashion.

The closed position of the tap shall be marked by a full disc or circle at least 3 mm in diameter. It shall be the same for all the taps on a single appliance.

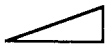
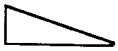
The identification of the closed position of each tap shall not give rise to any possibility of confusion with the identification of an open position.

The other positions shall be identified unambiguously, preferably using the following symbols:

a) full rate position: a large flame;

b) reduced rate position: a small flame;

c) rate range:

1) Triangle  or  ;

2) Scale 1 2 3 4 or 4 3 2 1.

Additional markings are permitted provided that they do not create confusion for the appliances user.

5.11.2.2 Taps with variable positions

For taps with variable positions, the closing direction shall be marked by an arrow whose tip points to a full disc or circle at least 3 mm in diameter. For example:

Figure 1

Additional markings are permitted provided that they do not create confusion for the appliance's user.

5.12 Injectors

Injectors shall be accessible, shall not be detachable and shall be of the calibrated type.

All injectors shall carry an indelible means allowing their identification from the instructions and preventing any confusion. If the injector is integral with the tap (or another part), the assembly shall carry a mean of identification.

5.13 Ignition devices

Where an ignition device exists, it shall ensure rapid and safe ignition.

The components of the ignition device shall be designed to avoid damage and accidental displacement from their correct position during transport or use. The relative positions of the ignition device and the burner shall be sufficiently well defined to ensure correct operation of the assembly.

The ignition area shall be protected against any soiling capable of impairing the performance of the appliance in normal conditions of use and maintenance.

When the burner ignition device does not include a flame supervision device and does not ensure the ignition of all the burners, the relative position of the control handles of burners and of the igniter shall not give rise to any confusion.

If there are two or more burners in the same compartment, controlled by different taps, they shall either:

a) be fitted with an ignition device which is equally effective on each burner;

b) or incorporate a flame supervision device on each burner, provided the igniter operation is clearly marked;

c) or incorporate a control device which allows gas supply solely to the burner fitted with an igniter, until the flame is established;

d) or incorporate a flame supervision device acting on the gas supply to all the valves of burners, provided the igniter operation is clearly marked;

e) or incorporate a crosslighting device (e.g. flash tube) allowing the crosslighting between all burners that do not have their own ignition device; in this case the crosslighting device is considered as an ignition device and the 5 s of 6.4.1.1 shall be met.

5.14 Flame supervision devices

When the flame supervision device falls within in the scope of EN 125, the requirements of that standard shall apply.

When flame supervision devices are fitted, they shall be designed in such a way that, in the case of a failure of any of the components indispensable to their performance, the supply of the gas to the burner and any pilot controlled by the device is cut off automatically and can only be restored by manual intervention. They shall be so mounted as to ensure satisfactory performance.

The sensing element of a flame supervision device shall control only a single burner, except in the case where the element controls the entire supply to the appliance.

The appliance shall not incorporate any device that allows the flame supervision device to be overridden. During the ignition period, a brief passage of unlit gas is permitted under the conditions given in 6.3.

If the burners are not fitted with a flame supervision device the appliance shall be designed and built in such a way as to allow the discharge of un-burnt gases which could accumulate under the burners (for example, via openings or passages in the base of the any chamber).

5.15 Burners

Burners shall be designed in such a way that they cannot move inadvertently in use or during the movement of the appliance. There shall be no leak of gas in a flammable quantity at the joints of the assembly.

It shall be easy to clean the parts of a burner which require cleaning: the parts concerned shall be either accessible without dismantling, or easily dismantled.

The relative position of flash tubes and the burners with which they are intended to function shall be fixed.

It shall not be possible to reassemble removable burner parts incorrectly when following the information given in the instructions. Removable parts of the burners shall not be interchangeable unless of identical design.

Radiant components shall not move accidentally in use. They shall be easy to dismantle and clean.

Crosslighting devices shall have a fixed position in relation to the burners that they control and shall not distort in normal use.

It shall be possible to completely light the burners with an external means (for example: a match) in an easy and safe fashion, even when an ignition device exists.

It shall be possible for the user to visually confirm the ignition of burners.

5.16 Grid

In the useful area of the grid, the bars, if any, shall not be more than 2 cm apart.

The grid shall be capable of withstanding, without deterioration likely to impair its use, the test described in 7.2.16 and it shall remain stable on its supports.

Grids shall be detachable. When their height can be adjusted after the ignition of the burner in accordance with the indications given in the instructions, they shall be provided with a fixed or moveable handle; a detachable handle is permitted.

5.17 Turnspits

Any turnspit shall be fitted with a fixed or detachable handle. This requirement is considered as satisfactory if a motor forming a handle is used. The useful length of the handle (length used for gripping the handle) shall be greater than or equal to 80 mm.

When the distance between the support points of the turnspit is greater than 800 mm, there shall be a second handle, unless the motor can be used as second handle.

In order to hold the food to be grilled, the turnspit shall be fitted with one or several adjustable and lockable devices.

Under the conditions of 7.2.17, the turnspit shall be stable on its supports.

5.18 Appliance incorporating a gas cylinder

5.18.1 If the appliance has a compartment to receive a refillable gas cylinder, this compartment shall be designed in such a way that:

a) effective ventilation is provided by openings in its base and upper section, provided the total area of the openings in the upper section is 1/100 of the base area of the compartment and that of the openings at the base is 1/50 of the base area of the compartment;

b) the support of the cylinder (or cylinders) has sufficient mechanical strength to resist deformation under the load of a full cylinder (or cylinders);

c) the gas cylinder (or cylinders) can be easily inserted in, or removed from, the appliance;

d) the gas cylinder valve is easily accessible and remains easy to manipulate when the gas cylinder is in place; accessibility to the valve may be obtained for example after opening a door without using any accessory (tool or key);

e) when the appliance may be connected by a flexible tube, this shall not come into contact with sharp edges, when fitted in accordance with the indications in the instructions.

5.18.2 If the appliance is fitted with a support or fixing device for the gas cylinder, the cylinders shall be firmly fixed on the support or device and the requirements of 5.18.1, list entries b), c), d) and e) shall be met.

5.19 Durability of markings

The durability of markings is considered satisfactory if, at the end of the tests in this European Standard, markings are still visible and legible after the test described in 7.3.9.

5.20 Auxiliary energy

When the appliance is designed to operate with auxiliary energy by connection to the mains electrical supply, its design shall be such that no danger can arise:

— in the event of normal fluctuation of the auxiliary energy (- 15 %; + 10 %), the appliance shall continue operating in a safe fashion;

— in the event of abnormal fluctuation of the auxiliary energy (outside the range - 15 %; + 10 %), the appliance shall either continue operating in a safe fashion or shut down;

— if failure of auxiliary energy causes the appliance to shut down, its subsequent restoration shall not create any danger.

The electrical equipment of the appliance shall meet the relevant requirements given in EN 60335-1, except as mentioned below.

Protection against electrical shock is not necessary for high voltage ignition devices if the energy content of each impulse, the number of impulses and the time between each impulse meet the limits set by EN 126.

6 Performance characteristics

6.1 Soundness

Under the test conditions defined in 7.3.1, the leakage shall not exceed 0,07 l/h (dry air, 20 °C, 1 013,25 mbar).

6.2 Verification of heat inputs

6.2.1 Verification of individual nominal heat inputs

Under the test conditions defined in 7.3.2 (see also Annex B), each of the burners, supplied separately, shall be capable of giving the nominal heat input stated in the instructions, however a tolerance of ± 8 % between the heat input obtained and the nominal heat input is permitted. The tolerance is increased to ± 10 % for burners fitted with injectors whose diameter is less than or equal to 0,5 mm.

6.2.2 Verification of full heat input

For appliances with several burners able to operate simultaneously (independently of instruction statements), provided all gas-supplying devices are in maximum opening position, the full heat input of those burners obtained under the conditions described in 7.3.2 shall not be less than 90 % of the sum of the rate of the various burners separately supplied under the same conditions.

6.3 Flame supervision devices

Under the test conditions defined in 7.3.3, the ignition delay time shall not exceed 20 s. The extinction delay time shall not exceed 90 s, except for burners placed in a compartment for which it shall not exceed 60 s.

6.4 Safety of operation

6.4.1 Ignition, crosslighting

6.4.1.1 Ignition

Under the test conditions defined in 7.3.4.1.1, full ignition of burners shall occur smoothly within 5 s of the burner tap being placed in the full rate position or, if applicable, in the ignition position.

6.4.1.2 Crosslighting

Gas admitted to burners not controlled by a flame supervision device shall be automatically crosslighted within 15 s if an immediately adjacent burner is already operating in the same enclosure (open or closed).

6.4.2 Flame stability

Under the test conditions defined in 7.3.4.2, after ignition in accordance with 6.4.1, flames shall be stable and quiet. A slight tendency to flame lift is permitted at the time of ignition, but flames shall be stable 60 s after ignition.

When taps are placed on the reduced rate position as indicated in 7.3.4.2, there shall be no extinction or light back.

6.4.3 Resistance to draught

Under the test conditions defined in 7.3.4.3, burners shall neither:

— be extinguished, unless fitted with a flame supervision device;

— nor permanently light back

under the action of a 3 m/s wind.

6.4.4 Resistance to overheating

After the overheating test defined in 7.3.4.4 burners shall show no deterioration likely to impair their operation.

6.5 Temperatures

Under the test conditions defined in 7.3.5, the temperatures shall not exceed the following limits:

a) Surfaces in contact with the flexible tube:

The temperatures of the appliance surface likely to come in contact with the flexible tube, when installed and connected in accordance with the instructions, shall not exceed the ambient temperature by more than 70 K.

b) Nozzle:

If the end of the gas inlet is fitted with a nozzle complying with the national situations indicated in Annex A, this nozzle shall be positioned in such a way that the temperature of the waved parts does not exceed the ambient temperature by more than 30 K.

c) Auxiliary equipment:

The temperature of the auxiliary equipment the failure of which may affect the safety of operation shall not exceed the maximum temperature stated in the instructions of the auxiliary equipment.

d) Control handles and parts intended to be touched:

The rise in temperature above the ambient temperature of parts intended to be touched in normal use, only measured in the gripping areas, shall not exceed the following limits:

1) metal and painted metal: 35 K;

2) glass or porcelain: 45 K;

3) plastics or wood: 60 K.

This requirement also applies to turnspit handles, where the gripping area is considered to be a 80 mm length of the handle measured from the outside end.

Figure 5 gives examples of useful parts of gripping areas and temperature measurement zones.

The minimum length of the useful part of any handle shall be at least 80 mm or 80% of the distance between the fixing points (see Figure 5, key symbol 3).

If a gripping zone is clearly specified, only this zone shall comply with the temperature limit.

e) Support:

The temperature of the panel described in 7.3.5.1 shall not exceed the ambient temperature by more than 70 K.

If the temperature of the support exceeds 50 K, the instructions shall specify the conditions of use of the appliance; in particular it shall specify the type of surface protection to be used.

f) Wall of LPG cylinder compartment (if any):

The temperature rise above ambient temperature of the LPG cylinder compartment walls shall not exceed 45 K at any point that is likely to come in contact with the gas cylinder.

6.6 Overheating of the gas cylinder(s)

Under the test conditions defined in 7.3.6, the rise in vapour pressure inside the cylinder relative to that measured at the start of the test, after one hour of operation at full rate, at normal pressure and during 30 min following the extinction of the appliance, shall not exceed the values given in Table 1.

Table 1 — Values for vapour pressure rise inside the cylinder

Ambient temperature °C	Maximum permitted pressure rise bar	
	for G 30	for G 31
15	0,40	1,00
20	0,45	1,10
25	0,50	1,20

6.7 Combustion

Under the test conditions defined in 7.3.7, the quantity of CO in the air and water vapour free products of combustion shall not exceed 0,20 %.

6.8 Sooting

At the end of all the tests of this European Standard, no deposit of soot likely to impair safe operation shall be observed.

7 Test methods

7.1 General

7.1.1 Test gases

The burners are tested, depending on the tests, with the relevant gases indicated in Table 2 according to the category of the appliance (see 4.2).

The composition of the test gases are given in Annex C.

Table 2 — Test gases corresponding to the appliances category

Test gas	Appliance category	
	I3B/P(30), I3B/P(37), I3B/P(50), I3+(28-30/37)	I3P(37), I3P(50)
Reference gas, incomplete combustion and sooting limit gas	G 30	G 31
Light back limit gas	G 32	G 32
Flame lift limit gas	G 31	G 31

The characteristics of test gases are given in Table 3 which is in agreement with the specifications of EN 437.

Table 3 — Characteristics of test gases (dry gas, at 15 °C et 1 013,25 mbar)

Category	Test gas	Designation	Volume composition	W_s	H_s		d
				MJ/m^3	MJ/m^3	MJ/kg	
$I_{3B/P(30)}$, $I_{3B/P(37)}$, $I_{3B/P(50)}$, $I_{3+(28-30/37)}$	Reference gas	G 30	C_4H_{10}	87,33	125,81	49,47	2,075
	Flame lift limit gas	G 31	C_3H_8	76,84	95,65	50,37	1,550
	Light back limit gas	G 32	C_3H_6	72,86	88,52	48,94	1,476
$I_{3P(37)}$, $I_{3P(50)}$	Reference gas	G 31	C_3H_8	76,84	95,65	50,37	1,550
	Flame lift limit gas	G 31	C_3H_8	76,84	95,65	50,37	1,550
	Light back limit gas	G 32	C_3H_6	72,86	88,52	48,94	1,476

7.1.2 Test pressures

The values of test pressure, i.e. at the gas inlet connection of the appliance, are given in Table 4.

Table 4 — Test pressures (millibars)

Category of appliance	Normal pressure p_n	Minimum pressure p_{min}	Maximum pressure p_{max}	Test gas
I3B/P(30)	29 [a]	25	35	G 30, G 31, G 32
I3B/P(37)	37	25	45	G 30, G 31, G 32
I3B/P(50)	50	42,5	57,5	G 30, G 31, G 32
I3+(28-30/37)	29 [a]	20	35	G 30
	37	25	45	G 31, G 32
I3P(37)	37	25	45	G 31, G 32
I3P(50)	50	42,5	57,5	G 31, G 32

[a] Appliances belonging to this category may be used without adjustment at nominal operating pressures of 28 to 30 mbar.

These pressures shall be used according to the requirements of Annex A depending on the country in which the appliance is to be sold.

7.1.3 Test procedures

Unless otherwise stated, the tests are carried out in a still atmosphere at an ambient temperature of (20 ± 5) °C.

Appliances designed to be built in shall be tested in the unit indicated in the instructions.

If there is no predetermined reduced rate position, the value of the reduced rate shall be taken as half the nominal rate.

7.2 Verification of the constructional characteristics

7.2.1 Conversion to different gases

The characteristics concerning the conversion of the appliance to different gases are verified by a visual examination.

7.2.2 Materials

The characteristics of the materials in the appliance are verified by visual examination throughout the tests in this European Standard.

7.2.3 Ease of cleaning

Visual and mechanical examination.

7.2.4 Strength

7.2.4.1 General

Visual and mechanical examination.

7.2.4.2 Characteristics of glass panels

7.2.4.2.1 Resistance to impact

The appliance is at the temperature of the test room and the lid is raised to maximum opening, then it is dropped.

After a 15-min operation during which the appliance is supplied with the reference gas at normal test pressure, and once all the taps are in the full rate position, the test is repeated.

7.2.4.2.2 Resistance to thermal shock

After a 15-min operation during which the appliance is supplied with the reference gas at normal test pressure, and once all the taps are in the full rate position, 50 ml of water are poured onto the middle of the glass panel when moving the device shown in Figure 2 sideways.

The water may be contained in a distortable vessel which allows spraying of the water on the glass panel (vertical surface) by pressure.

7.2.5 Assembly

Visual and mechanical examination.

7.2.6 Stability of the appliance

7.2.6.1 Generals

The tests for the stability of the appliance are carried out with all the cooking devices sold with the appliance or supplied as extras in the instructions for use.

If the gas cylinder(s) is(are) incorporated in the appliance, the tests are carried out with a cylinder of the recommended type, positioned as indicated in the instructions, first with 4/5 of the cylinder filled with gas and then with the cylinder empty.

Where the appliance can use other sources of energy, tests are also carried out without a gas cylinder.

7.2.6.2 Stability of the appliance on a horizontal surface

The appliance is placed on a horizontal plane, with an evenly distributed load of 0,5 kg/dm^2 of useful surface for the grid and the load specified in 7.2.17 for the turnspit; check that:

a) the positioning and the removal of the cooking devices;

b) the change in the position of the radiant device, if applicable;

c) the positioning and removal of the gas cylinder(s)

can be carried out whilst complying with the requirements of 5.6.1.

For appliances directly fixed onto the gas cylinder, the paragraph above, except for c) applies.

7.2.6.3 Stability of the appliance on an inclined plane

The grid with a 0,5 kg/dm^2 load on the useful surface of the turnspit loaded as indicated in 7.2.17 and the lid, if applicable, are placed in the most unfavourable position.

The appliance is placed on a slope of 10° to the horizontal.

The requirements of 5.6.2 shall be checked in all positions and configurations of use.

To prevent the barbecue from slipping or rotating, it may be stopped at the contact points without restricting the possibility of tipping over.

7.2.7 Soundness of the gas circuit assembly

Visual and mechanical examination.

7.2.8 Connections

Visual and mechanical examination.

7.2.9 Locking of wheels and castors

Visual examination.

7.2.10 Taps

Visual and mechanical examination carried out at the start and at the end of tests.

7.2.11 Control handles

Visual and mechanical examination.

7.2.12 Injectors

Visual and mechanical examination.

7.2.13 Ignition devices

Visual and mechanical examination.

7.2.14 Flame supervision devices

Visual and mechanical examination.

7.2.15 Burners

Visual and mechanical examination.

7.2.16 Grid

An evenly distributed load of 0,5 kg/dm^2 of useful surface is applied to the grid.

The requirements of 5.16 shall be verified.

7.2.17 Turnspit

A load of 0,5 kg/(100 mm) of useful length is applied to the turnspit.

The requirements of 5.17 shall be verified.

7.2.18 Appliances incorporating a gas cylinder(s)

Visual and mechanical examination.

7.2.19 Durability of markings

Visual examination carried out at the end of all the tests described in this European Standard.

7.2.20 Auxiliary energy

Examination of the effect of electrical aspects on the gas operation of the appliance.

7.3 Verification of the performance characteristics

7.3.1 Soundness

The tests are carried out at an air pressure of 150 mbar, under the conditions defined in 7.1.3:

— test No. 1: all the taps closed;

— test No. 2: all the taps in the "on" position, the burner injectors being blocked.

These tests shall be carried out firstly on delivery of the appliance and after the tests required by this European Standard have been carried out.

The test method shall be such that the measurement error does not exceed 5 cm^3/h.

In case of dispute, the device shown in Figure 3 shall be used.

7.3.2 Verification of the nominal heat input

The heat input is measured after a 15 min operation (the measurement starts at the end of the fifteenth minute and finishes at the end of the thirtieth minute), once the burner control handle is on the full rate position.

When the appliance is fitted with a lid, the measurement is carried out with the lid opened.

The burner is supplied with the reference gas, at the normal test pressure for the appliance (see Table 4).

The method of calculation of the heat input is given in Annex B.

7.3.3 Flame supervision device

The test is carried out with the reference gas at the normal test pressure for the appliance (see Table 4).

Ignition delay time is verified either at full rate or at the position indicated for ignition in the instructions.

Extinction delay time is measured between the moment when the burner is extinguished intentionally, by cutting off the gas supply, and the moment when this supply, once it has been immediately restored, ceases through the action of the device.

Extinction delay time is verified after the appliance has been in operation for 15 min at full rate.

When the appliance is fitted with a lid, measurement is carried out in the two positions of this device (open and closed).

7.3.4 Safety of operation

7.3.4.1 Ignition, crosslighting

7.3.4.1.1 Ignition

With the taps either in the full rate position or in the position for ignition indicated in the instructions, the requirements of 6.4.1.1 relating to ignition are verified separately for each burner when the appliance, at ambient temperature, is supplied under the conditions indicated in Table 5. Depending on the appliance category, the corresponding test pressures are given in Table 4.

When the appliance is fitted with a lid, this shall be placed in the opened position.

For each of the supply conditions given in Table 5, the tests are subsequently carried out on each burner, while the other burners operate at full rate for 15 min.

7.3.4.1.2 Crosslighting

It is checked, under the supplying conditions of Table 5, that crosslighting occurs between immediately adjacent burners in a same enclosure non protected by a flame supervision device. The verification is made when:

— the taps of the new burner to be lit are on the full rate position (or in the ignition position indicated in the instructions);

— the taps of the burner(s) already lit are on the full rate position or in the ignition position(s) indicated in the instructions;

— the burners already lit have been operating for at least 60 s.

Table 5 — Conditions for the ignition test

Test gas	Test pressures
Reference gas	p_{min} p_{max}
Light back limit gas	p_{min}
Flame lift limit gas	p_{max}

7.3.4.2 Flame stability

The flame stability requirements given in 6.4.2 are verified for each burner separately, once the other burners are first off, then alight with the tap fully opened, once the appliance is supplied under the conditions indicated in Table 6. Depending on the appliance category, the corresponding test pressures are given in Table 4.

If the instructions allow the use of the appliance with the lid closed, the flame stability is verified:

— for normal use of the lid (opening and closing);

— for extended operation with the lid open then closed.

Table 6 — Conditions for the flame stability tests

Test gas	Test pressure	Burner operation
Reference gas	p_{min} p_{max}	when cold
Reference gas	p_{min} p_{max}	after 15 min of operation
Light back limit gas	p_{min}	after 15 min of operation
Flame lift limit gas	p_{max}	when cold

For each test, after having checked the stability of flames (60 s after ignition for tests in the cold condition), the tap is turned, at normal speed, to the position corresponding to reduced rate at normal pressure and checks are made that there is neither extinction nor light back.

7.3.4.3 Draught resistance

The appliance is supplied when the flame lift limit gas is set at the normal test pressure (see Tables 2 and 4) for 15 min at full rate, and once the lid, if applicable, is open then closed.

The test shall be carried out in turn on each burner operating separately.

A substantially laminar draught of 3 m/s is directed horizontally towards the appliance at the burner height.

The air stream shall cover the whole burner under test.

The air flow shall be adjusted so as to obtain a speed of 3 m/s using a measuring device fixed at burner height. The measuring device shall be removed and the appliance shall be placed in such a way that the burner occupies the same position as that of the device at the time of measurement.

The draught is interrupted so as to produce 5 gusts of 10 s with a 10 s interval between them.

Tests are repeated for successive rotations of 45°.

In all cases, the requirements of 6.4.3 shall be met.

7.3.4.4 Resistance to overheating

The appliance is supplied with the light back limit gas at normal test pressure (see Table 4) and the gas is lit intentionally at the injector outlet orifice and if possible at the burner. Only the burner under test is supplied with gas.

If the flame cannot be maintained at the injector or inside the burner:

— the rate is reduced gradually until a stable flame is obtained or when the reduced rate position is reached;

— if combustion cannot be maintained at the injector or inside the burner, the pressure is reduced, without however going below the corresponding minimum test pressure (see Table 4).

The test for resistance to overheating is carried out by leaving the flame under these conditions for 15 min.

The requirements of 6.4.4 shall be met.

7.3.5 Temperatures

7.3.5.1 Test installation

The appliance, positioned as indicated in the instructions for use, is placed on a 25 mm thick wooden horizontal panel whose surface is coated with matt black paint.

Thermocouples are incorporated in the panel at the centre of 10 cm squares. These penetrate the panel from the outside so that the junctions are situated 3 mm from the surface facing the appliance.

Additional thermocouples may be added in areas likely to reach high temperatures.

The turnspit, if applicable, is installed with its motor in the nearest position to the burner.

7.3.5.2 Test method

The appliance, supplied with the reference gas at normal test pressure (see Table 4), is operated for one hour at full rate.

The temperatures of handles and parts intended to be touched (6.5, list entry d)) shall be measured with surface temperature probe.

7.3.5.3 Results

It is verified that:

— the temperatures measured remain below the limits given in 6.5;

— it is possible to operate the gas taps.

7.3.6 Overheating of the gas cylinder

In order to produce the more severe conditions, the tests described in 6.6 are carried out as follows:

— All burners are supplied with one of the reference gases by a cylinder outside the appliance;

— The controls for the burners are in the full-on position; for burners able to receive pans, pans are placed according to the user instructions. It is allowed to add water to the pans during the test so that boiling can continue during the time necessary for the test;

— The cylinder (non connected) placed in the appliance compartment is the largest of those recommended in the instructions for use and maintenance (see 8.3, c), 1)); it is filled to 4/5 of its capacity with one of the reference gases;

— The temperatures of the nozzle and of the walls of the compartment are checked with thermocouples.

The increase of pressure is measured with a manometer.

For this test, account is taken of the existence of any means of guiding the flexible tube, of the appropriate instructions and of the warning notice.

The measurement is carried out, after 1 h of operation and during the first 30 min which follow complete extinction.

7.3.7 Combustion

7.3.7.1 Test conditions

The appliance is supplied with incomplete combustion limit gas at maximum test pressure (see Table 4).

After 15 min of operation at nominal heat input position, a sampling device for the products of combustion (for example that of Figure 4 or any other equipment giving equivalent results allowing measurement of at least 2 % of CO_2) is placed above the burner under test.

The test is repeated, once the tap is placed in the reduced rate position, at normal pressure.

If the appliance can operate in several configurations (for example, lid open or closed) the test shall be carried out for each case permitted in the instructions for use.

The test shall then be carried out with all burners operating at maximum pressure in the nominal heat input position then at the normal pressure at the reduced rate position.

The result of the analysis carried out in accordance with 7.3.7.2 shall meet the requirements of 6.7.

7.3.7.2 Analysis of the products of combustion

The quantity of CO in the air and water vapour free products (neutral combustion) is given by the following equation:

$$(CO)_N = (CO)_M \times \frac{(CO_2)_N}{(CO_2)_M}$$

where

$(CO)_N$ is the percentage of CO in the dry, air free products of combustion;

$(CO_2)_N$ is the percentage of CO_2 calculated for the dry, air free products of combustion of the gas involved (neutral combustion);

$(CO)_M$ and $(CO_2)_M$ is the carbon monoxide and carbon dioxide concentrations measured in the sample during the combustion test, both expressed in the same units.

The values in percent of $(CO_2)_N$ (products of neutral combustion) are given for test gases in Table 7.

Table 7 — Percentage of CO_2 in the products of neutral combustion

Designation of test gas	% $(CO_2)_N$
G 30	14,0
G 31	13,7

For all the tests carbon monoxide is measured with a selective method allowing a concentration of 0,005 % by volume to be detected accurately and allowing the measurement with a relative error not exceeding 6 %.

Carbon dioxide is measured with a method allowing the measurement with a relative error not exceeding 6 %.

7.3.8 Sooting

The requirements of 6.8 shall be verified by visual examination and a combustion test (according to 6.7 and 7.3.7) if a soot deposit is visible.

7.3.9 Durability of the marking

The markings are manually rubbed during 15 s with a water soaked rag and then again during 15 s with a water gasoline soaked rag. The gasoline to be used is aliphatic solvent hexane with a maximum content of aromatic of 0,1 % by volume, a value of kauri-butanol of 29, an initial boiling point of approximately 65 °C, a drying point of approximately 69 °C and a specific mass of approximately 0,66 kg/l.

8 Marking

8.1 Appliance marking

All appliances shall carry on a non mobile part, in a visible, legible to the user and durable fashion, in indelible characters at least the following information. The information shall be given in the official language(s) of the destination country or countries of the appliance:

— the name of the manufacturer or his identifying symbol (for manufacturer definition, see Decision No 768/2008/EC);

— the appliance name;

— the total nominal heat input of all the burners expressed in kilowatts based on the gross calorific value and in grams per hour;

— the type of gases which may be used and the corresponding supply pressures;

— the appliance category(ies);

— the type of electrical supply used, if applicable;

Furthermore the following markings shall be visible, legible to the user during the operation of the appliance and durable:

— "Use outdoors only."

— "Read the instructions before using the appliance."

— "WARNING: accessible parts may be very hot. Keep young children away."

The translation of all required sentences in all European languages is given in Annex D.

In addition a logo or a warning shall be used to forbid gas cylinders in places of the appliance not intended to receive gas cylinders if any.

8.2 Packaging marking

The packaging of the appliance shall carry the following information in a visible and legible fashion, in the official language(s) of the destination country or countries of the appliance:

— the type of gases which may be used and the corresponding supply pressures;

— the appliance category(ie);

— "Read the instructions before using the appliance";

— "Use outdoors only".

8.3 Instructions for assembly, use and maintenance

Instructions for assembly, use and maintenance shall be supplied with the appliance. All the information shall be given in the official language(s) of the destination country or countries of the appliance.

The instructions shall repeat the information required by 8.1. In addition they shall specify:

a) the manufacturer's address (for manufacturer definition see Decision No 768/2008/EC);

b) the conditions of assembly and possibly dismantling and of storage of the functional section of the appliance, in particular:

    1) the precautions to be taken when storing the appliance;

    2) the precautions to be taken in the case of blockage of the Venturi or Venturis;

    3) the precaution to be taken in case of humidity of refractory materials, if exist;

    4) the assembly diagrams, if applicable;

    5) the marking of injectors;

6) special requirements for built-in appliances, in particular unit dimensions, the type of materials in contact with the appliance, the installation of the cylinder, the precautions to be taken for fixing the flexible hose which must be accessible for its entire length, protection against bad weather;

c) the conditions of connection to the gas cylinder, in particular:

1) the type(s) of cylinder(s) to be used, their maximal external dimensions (regulator included) and their position(s); those information may be illustrated by a scheme as the one presented in Figure 6;

2) the type of regulator to be used indicating that it shall comply with the relevant EN standard;

3) the type of flexible tube connecting the appliance to the gas cylinder and the length recommended which shall not exceed 1,50 m;

4) the routing of the flexible tube and the use of guides if any;

5) the necessity of changing the flexible tube when the national conditions require it, and/or depending on its validity;

d) the conditions of servicing, in particular:

1) the position of the connection flexible tube so as to ensure that it is not subjected to twisting;

2) "This appliance must be kept away from flammable materials during use";

3) the absolute necessity of not obstructing the ventilation openings of the cylinder compartment;

4) the precautions to be taken when changing the gas cylinder which shall be carried out away from any source of ignition;

5) the type of protection for the surface to be used when the support temperature exceeds 50 K;

e) the conditions of use, in particular:

1) the usual cleaning and maintenance as well as the frequency of such tasks;

2) the procedure in the event of gas leak (turning off the gas supply);

3) the method of lighting (positions of taps, lids, etc.);

4) the recommendation of the use of protective gloves when handling particularly hot components;

5) a note advising that parts sealed by the manufacturer or his agent shall not be manipulated by the user;

f) the following warnings:

1) "Use outdoors only."

2) "Read the instructions before using the appliance."

3) "WARNING: accessible parts may be very hot. Keep young children away."

4) "Do not move the appliance during use."

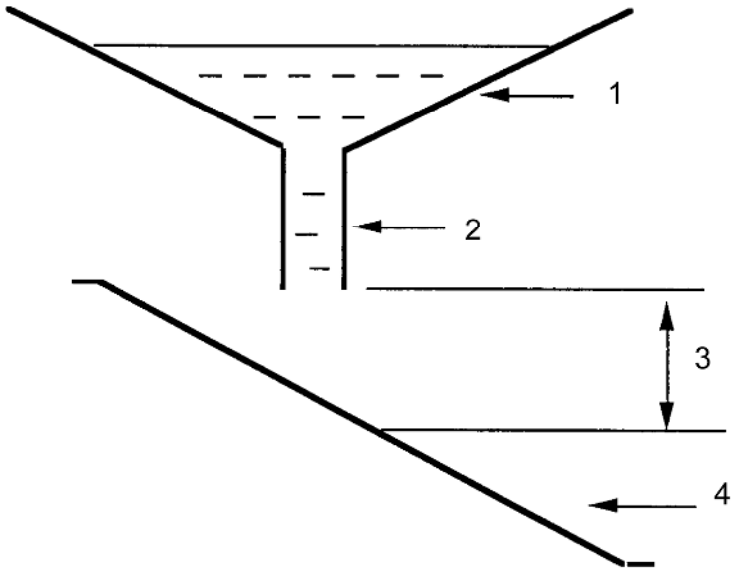
5) "Turn off the gas supply at the gas cylinder after use."

For appliances using other sources of energy, the instructions shall contain the instructions specified by the corresponding standards.

g) information relating to general revision and reparations:

1) Indication: " Do not modify the appliance";

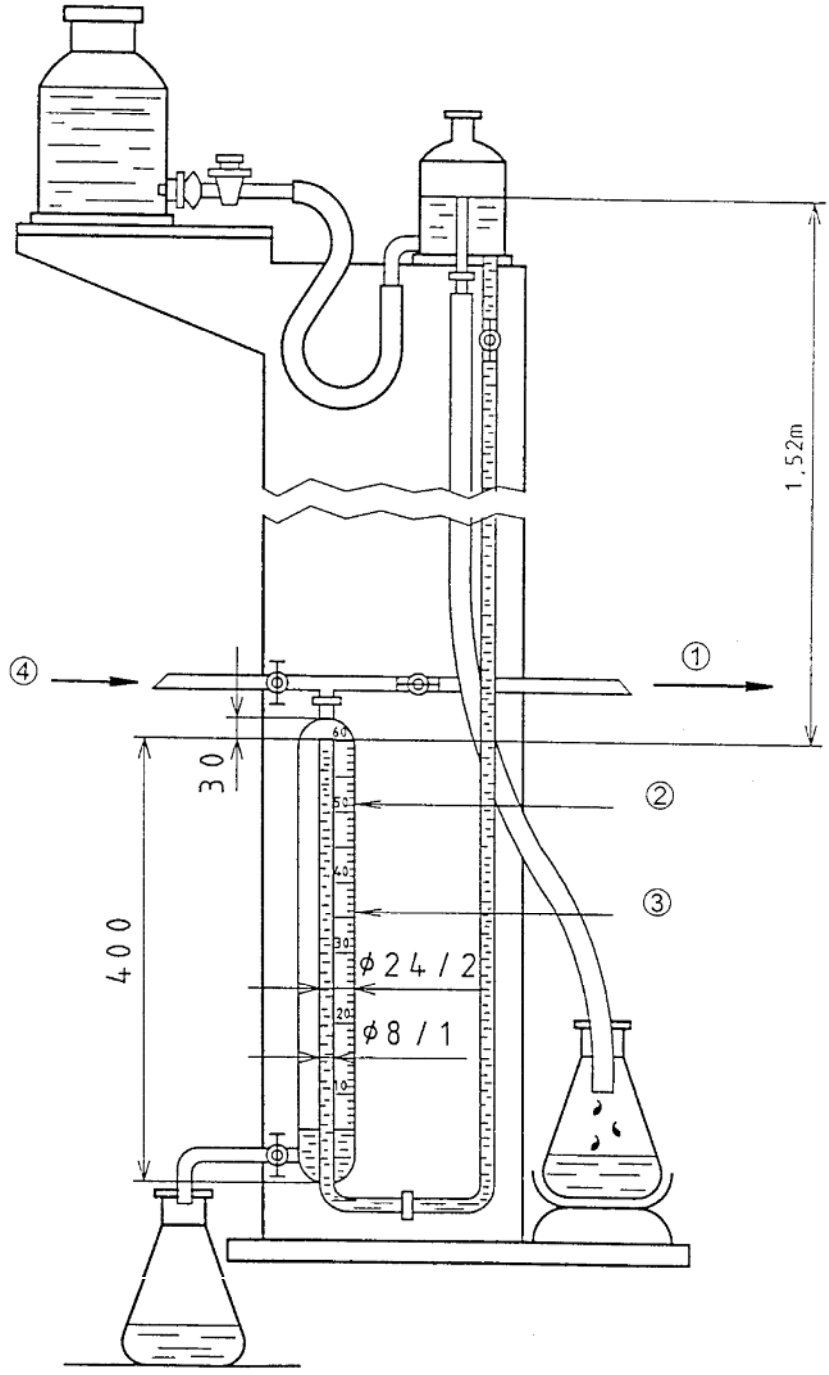
2) Indication of reparation service address or the internet website giving its access.



Key
1 50 ml of water at (20 ± 3) °C
2 Ø int = 2 mm
3 distance: 20 mm to 50 mm
4 glass panel

Figure 2 — Glass panels - Apparatus for the thermal shock test

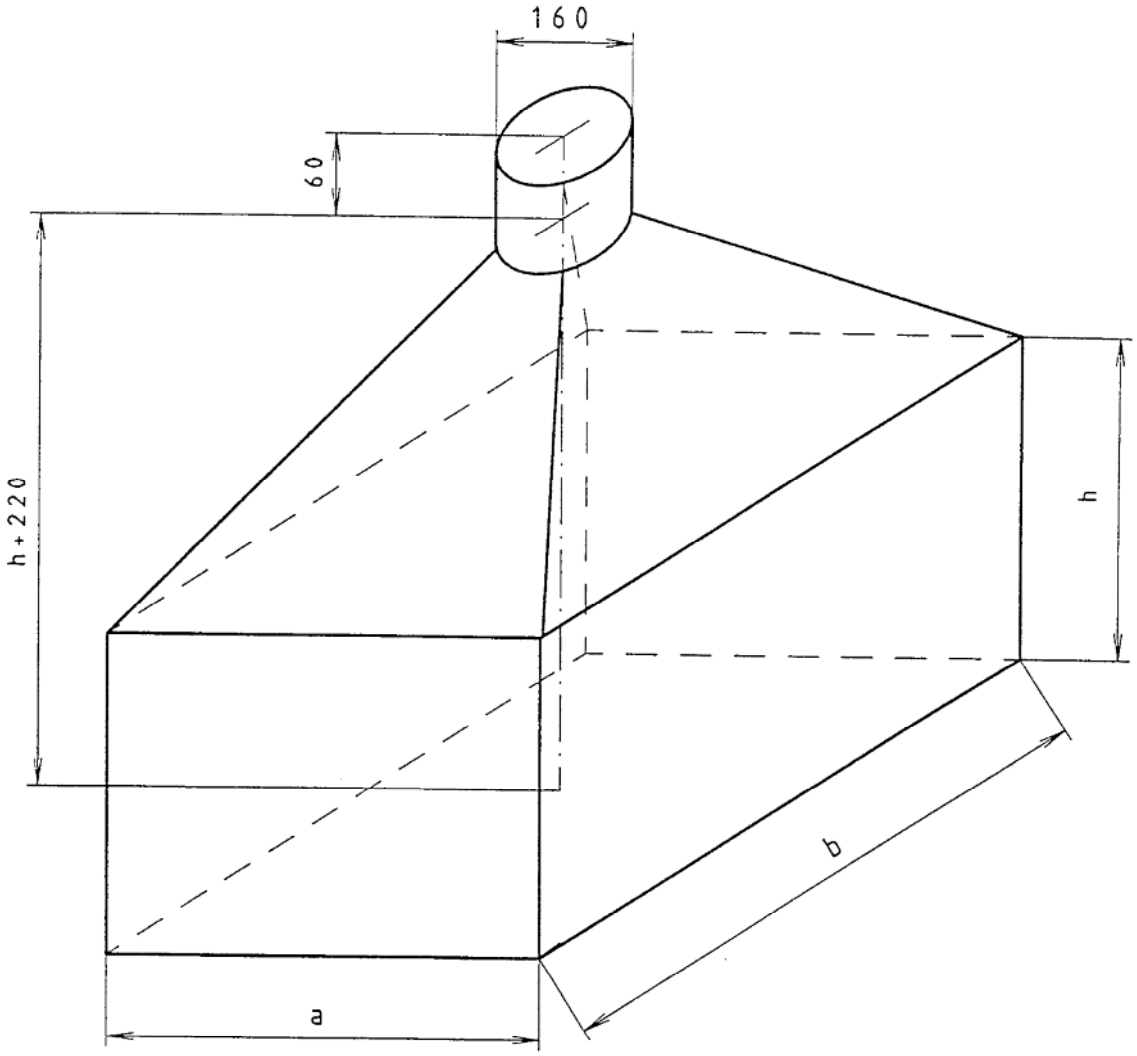
Dimensions in millimetres



Key
1 appliance under test
2 graduated scale
3 measuring volume
4 compressed air

Figure 3 — Apparatus for testing soundness

Dimensions in millimetres



Key

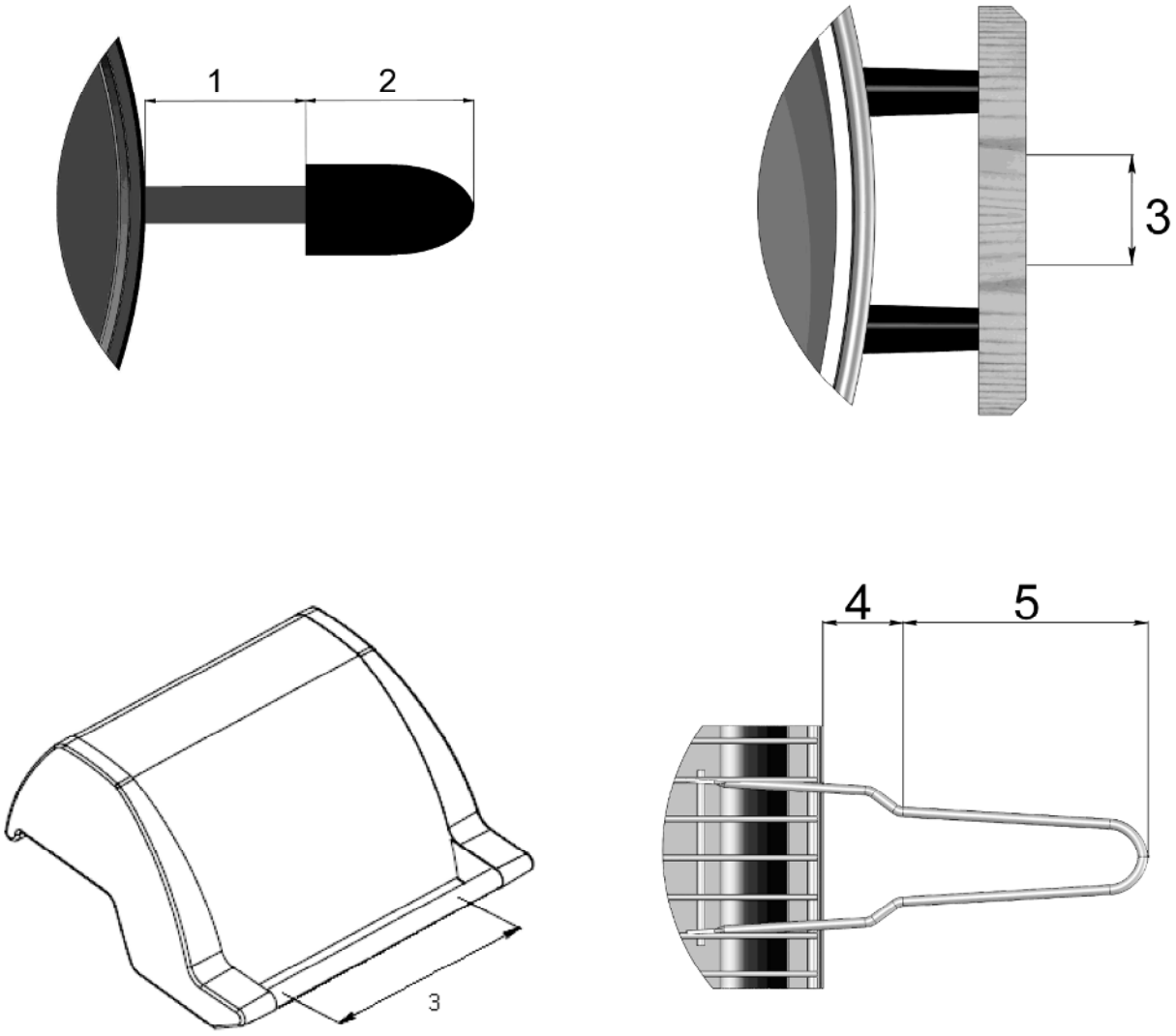
$h \geq 320$ mm

a	500	580	680	710	630	790
b	600	700	680	780	1 140	1 000

The sizes of *a* and *b* for the sampling device shall be chosen in accordance with the requirements of 7.3.7.2.

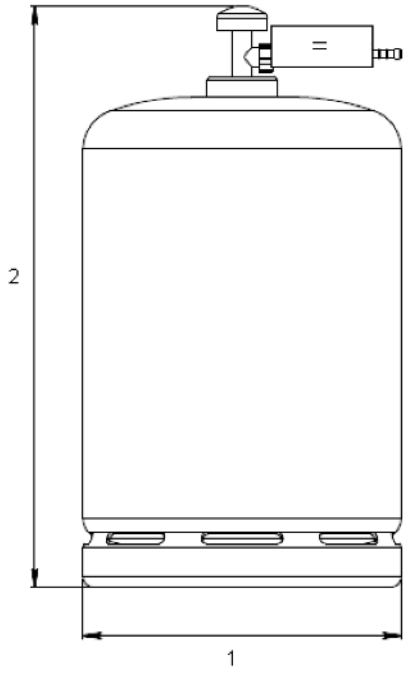
As a guide, the six devices whose dimensions are given above cover most cases met.

Figure 4 — Sampling device for checking combustion



Key
1 no measurement zone
2 80 mm: useful part – limit temperature
3 80 mm and at least 80 % of the distance between the fixing points: useful part – limit temperature
4 no measurement zone
5 80 mm: useful part – limit temperature

Figure 5 — Examples of useful parts of gripping areas



Key
1 “Maximum diameter or breadth:”….
2 “Maximum height (regulator included):”…

Figure 6 — Example of schemes for dimensions of gas cylinders

Annex A
(normative)

National situations

A.1 General

NOTE 1 Some of the tables in this annex are incomplete or may include data that are not fully up to date. This is because the CEN/TC 181 Secretariat has not received the relevant information from the CEN member countries concerned prior to the publication of this European Standard.

NOTE 2 Attention is drawn on the fact that specific queries concerning updated information should be directly addressed to the relevant CEN member country.

NOTE 3 Some guidance can also be found in EN 437, but the information collected should be checked with the specific CEN Member Country to verify they are applicable to the appliances covered by this standard.

In order to determine both at the time of testing the appliances and also at the time of their delivery, the right choice among all the cases considered, the various national situations are summarized in Tables A.1 and A.2.

A.2 Categories marketed in the various countries and corresponding pressures

Table A.1 gives the situations concerning marketing of categories of appliances in the various countries and the corresponding pressures.

Table A.1 — Appliance categories marketed in various countries and the corresponding pressures

Categories	I3 B/P	I3 B/P	I3 B/P	I_{3P}	I_{3P}	I_{3+}
Pressures (mbar) Countries [a]	30	37	50	37	50	Couple 28-30/37
AT			x			
BE				x		x
BG						
CH			x			x
CY						
CZ	x		x	x	x	x
DE	x [b]		x		x	
DK	x					
EE						
ES				x	x	x
FI	x					
FR						x
GB	x [b]			x		x
GR						
HU						
IE				x		x
IS						
IT	x					x
LT						
LU						
LV						
MT						

Categories	I3 B/P	I3 B/P	I3 B/P	I_{3P}	I_{3P}	I_{3+}
Pressures (mbar) Countries [a]	30	37	50	37	50	Couple 28-30/37
NL	x				x	
NO	x					
PL		x				
PT				x		x
RO	x					
SE	x					
SI	x			x		x
SK						

[a] Country codes are in accordance with EN ISO 3166-1:2006.

[b] Only for barbecues intended to be supplied by a LPG installation leisure vehicle (EN 1949) with special connection.

NOTE The information contained in this table in no way prohibits the manufacture and approval of appliances belonging to other categories intended for sale in other countries.

A.3 Types of connection used in various countries

Among the types of connection specified in A.4, the various national situations are defined in Table A.2.

Table A.2 — Types of connection used in various countries

Countries [a]	Categories I_{3+}, I_{3P}, $I_{3B/P}$		
	Threads		Other connections see Figure A.1
	EN 10226-1 and EN 10226-2	EN ISO 228-1	
AT	X		H
BE	X	X	E, FØ6 and FØ8
CH	X	X	E, F, H
CY			
CZ	X	X	E, F, H
DE	X	X	H
DK	X	X	C, E
EE			
ES			C, E
FI	X	X	B, E, FØ8
FR		X	E, FØ6
GB	X		E, FØ8
GR	X		
HU			
IE	X		A, C, E
IS			
IT	X		E, FØ8 ,FØ13
LT			
LU			
LV			
MT			
NL	X		
NO	X	X	A
PL			FØ13 [b]
PT	X	X	E, FØ13 [b], FØ6 [c]
RO		X	FØ6
SE			
SI	X	X	A, B, C, E, F, H
SK			

[a] Country codes are in accordance with EN ISO 3166-1:2006.

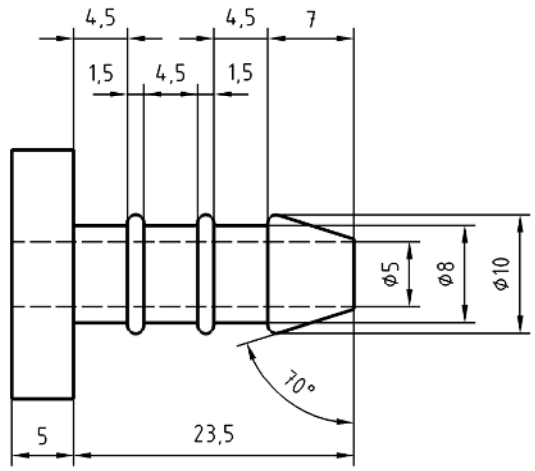
[b] with d_1 = 5 mm, d_2 = 9 mm, l = 24 mm.

[c] with d_1 = 5,5 mm, d_2 = 6,5 mm.

NOTE In some countries it is the custom and practice that these appliances are supplied complete with flexible hose or tubing and, in certain cases, regulators. National regulations with regard to use should be consulted for further information.

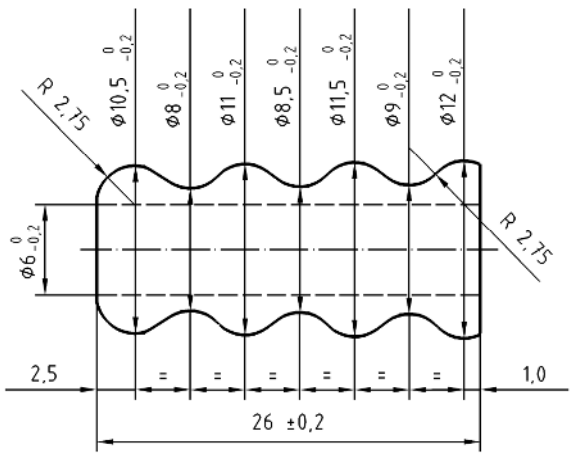
A.4 Connection of appliances

A



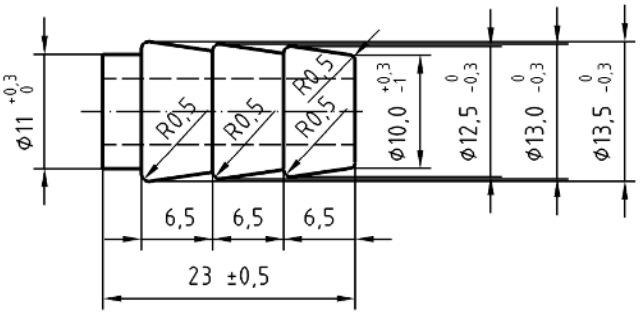
a)

B



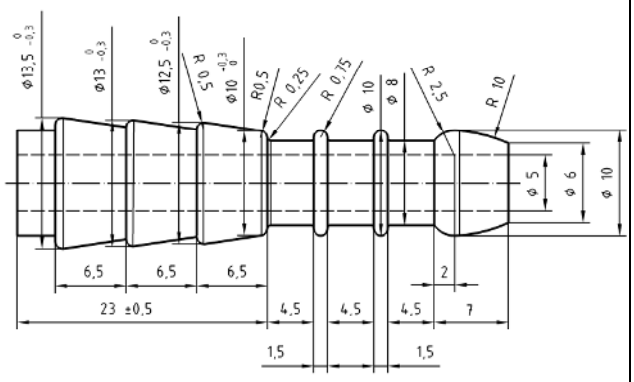
b)

C



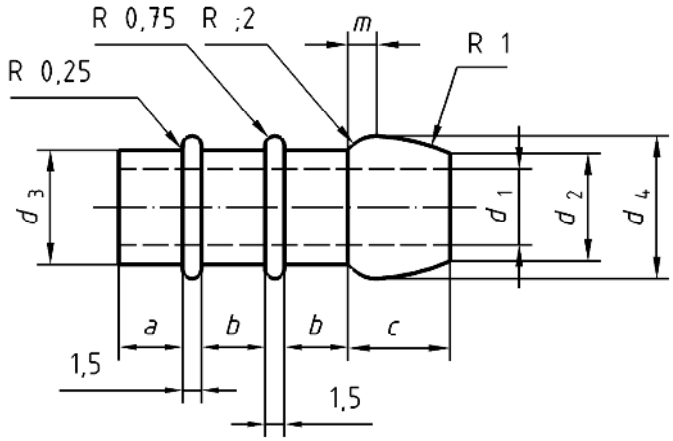
c)

E



d)

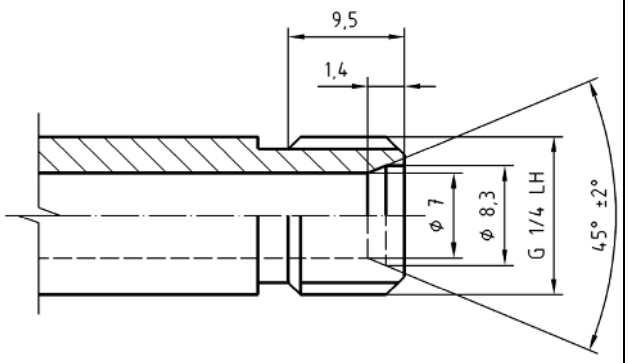
F



	a	*b*	*c*	d_1	d_2	d_3	d_4	L	*m*	R1	R2
∅ 6	4,5	4,5	7	5	6	8	10	23,5	2	10	2,5
∅ 8	4,6	4,6	7	5	6,35	7,9	10,3	23,8	2	10	2,5
∅ 13	16	7	11	9	11	12	14	44	3	22	5

e)

H



f)

NOTE For homogeneity with other standards, the alphabetic designation of connections has been kept, but some types are not taken over in this European Standard (D and G).

Figure A.1 — Diagrams showing the various types of connections

Annex B
(normative)

Method of calculation of the nominal heat input

B.1 Heat input determination

The nominal heat input, indicated in the instructions, is given by one of the following expressions:

$$Q_n = \frac{1}{3\,600 \times 10^{-3}} \times M_n \times H_s$$

or

$$Q_n = \frac{1}{3\,600 \times 10^{-3}} \times V_n \times H_s$$

where

Q_n is the nominal heat input, expressed in kilowatts;

M_n is the nominal mass rate (in kilogramme per hour) under reference test conditions;

V_n is the nominal volume rate (in cubic metres per hour) obtained under reference test conditions;

H_s is the gross calorific value of reference gas, expressed in megajoules per cubic metre or in megajoules per kilogramme.

The mass and volume rates correspond to a measurement and to a flow of reference gas, under reference conditions, that is assuming the gas to be dry at 15 °C and under a pressure of 1 013,25 mbar. In practice, the values obtained during the test do not correspond to the reference conditions, so then they shall be corrected so as to bring them to the values that would actually have been obtained if these reference conditions had existed at the injector outlet during the test.

B.2 Correction formulas for reference conditions

Depending on whether it is determined by mass or by volume, the corrected mass rate is calculated from the following equation:

— determination by mass:

$$\frac{M_o}{M} = \sqrt{\frac{1\,013{,}25 + p}{p_a + p} \times \frac{273{,}15 + t_g}{288{,}15} \times \frac{d_r}{d}}$$

— determination from volume rate:

$$\frac{V_o}{V} = \sqrt{\frac{(1\ 013{,}25 + p)}{1\ 013{,}25} \times \frac{p_a + p}{1\ 013{,}25} \times \frac{288{,}15}{273{,}15 + t_g} \times \frac{d}{d_r}}$$

The corrected mass is calculated by the following equation:

$$M_O = 1{,}226 \times V_O \times d_r$$

where

M_O is the mass rate under reference conditions, expressed in kilograms per hour;

M is the mass rate obtained under test conditions, expressed in kilograms per hour;

V_O is the mass rate under reference conditions, expressed in cubic metres per hour;

V is the volume rate obtained under test conditions, expressed in cubic metres per hour;

p_a is the atmospheric pressure, expressed in millibars;

p is the supply pressure, expressed in millibars;

t_g is the temperature of the gas at the measuring point, in degrees Celsius;

d is the density of dry (or wet) test gas relative to dry air;

d_r is the density of the dry reference gas relative to dry air.

These equations shall be used to calculate, from the mass heat input, M, or volume heat input, V, measured during the test, the corresponding rate M_O or V_O which would have been obtained under the reference conditions. It is these values M_O and V_O which shall be compared with the values M_n and V_n calculated from the nominal heat input using the formulas given at the beginning of this annex.

These equations are applicable if the gas used is dry.

B.3 Use of wet gas meter

If a wet meter is used or if the gas used is saturated, the value d (density of dry gas in relation to dry air) shall be replaced by the value of the density of the wet gas d_h given by the following equation:

$$d_h = \frac{d(p_a + p - W) + 0{,}622 \times W}{p_a + p}$$

where

W is the saturated vapour pressure of water, expressed in mbar, at the temperature t_g.

B.4 Pressure correction

If for practical reasons, there is a significant difference in pressure between the outlet of the meter and the inlet of the appliance, in order to obtain the volume rate, V, under test (appliance inlet) conditions, the measured volume shall be multiplied by the coefficient C:

$$C = \frac{P_a + P_m}{P_a + P}$$

where

p_m is the pressure measured at the meter, expressed in millibars.

Annex C
(normative)

Composition of test gases

C.1 Gas used

The compositions of the gases used for the tests shall be as near as possible to those given in Table 3. The constitution of these gases shall be in accordance with the rules given in C.2 and C.3.

C.2 Acceptance criteria for test gases

The Wobbe index of the gas used shall be within ± 2 % of the value indicated in Table 3 for the corresponding test gas (this tolerance includes the error of the measuring devices).

C.3 Purity

The gases used shall have the following minimum degrees of purity:

— butane C_4H_{10} 95 %

— propene C_3H_6 95 %

— propane C_3H_8 95 %

) with a total quantity of hydrogen, carbon monoxide and oxygen under 1 % and a total quantity of nitrogen and carbon dioxide under 2 %.

Annex D
(informative)

Mandatory sentences

D.1 English

1) "Use outdoors only"

2) "Read the instructions before using the appliance"

3) "WARNING: accessible parts may be very hot. Keep young children away"

4) "This appliance must be kept away from flammable materials during use"

5) "Do not move the appliance during use"

6) "Turn off the gas supply at the gas cylinder after use"

7) “Do not modify the appliance”

D.2 French

1) "A n'utiliser qu'à l'extérieur des locaux”

2) "Consulter la notice avant l'utilisation"

3) "ATTENTION : des parties accessibles peuvent être très chaudes. Eloigner les jeunes enfants"

4) "Cet appareil doit être éloigné des matériaux inflammables durant l'utilisation"

5) "Ne pas déplacer l’appareil pendant l’utilisation"

6) "Fermer le robinet du récipient de gaz après usage"

7) “Ne pas modifier l’appareil”

D.3 German

1) "Nur im Freien verwenden"

2) "Lesen Sie die Bedienungsanleitung vor Inbetriebnahme des Gerätes"

3) "ACHTUNG: Zugängliche Teile können sehr heiß sein. Kinder fernhalten"

4) "Das Gerät muss während des Betriebs von brennbaren Materialien

ferngehalten werden"

5) "Das Gerät während des Betriebes nicht bewegen"

6) "Nach Gebrauch das Schließventil der Gasflasche schließen"

7) "Das Gerät nicht verändern!"

D.4 Italian

1)

2)

3)

4)

5)

6)

7)

D.5 Polish

1) “Stosować tylko na wolnej przestrzeni”

2) “Przeczytaj instrukcję przed użyciem urządzenia”

3) “OSTRZEŻENIE: dostępne części urządzenia mogą być bardzo gorące. Trzymaj dzieci z dala od urządzenia”

4) “Stosować z dala od materiałów łatwopalnych”

5) “Nie przesuwać urządzenia w trakcie jego działania”

6) “Po użyciu należy zakręcić zawór na butli z gazem”

7) “Nie wolno zmieniać konstrukcji urządzenia”

D.6 Spanish

1)

2)

3)

4)

5)

6)

7)

D.7 Dutch

1) “Alleen buiten gebruiken.”

2) “Lees de instructies voor ingebruikname.”

3) “WAARSCHUWING: Aanraakbare delen kunnen erg heet zijn. Houdt jonge kinderen op afstand.”

4) “Dit toestel gedurende gebruik verwijdert houden van ontvlambare materialen.”

5) “Toestel niet verplaatsen tijdens gebruik.”

6) “Gastoevoer op de gasfles afsluiten na gebruik.”

7) “Toestel niet aanpassen of modificeren.”

D.8 Czech

1) “Používat pouze ve venkovním prostředí“

2) “Před použitím spotřebiče přečíst návod”

3) “UPOZORNĚNÍ: Přístupné části mohou být velmi horké. Zamezte přístupu dětí”

4) “Tento spotřebič musí být umísťován mimo dosah hořlavých materiálů”

5) “Během provozu spotřebičem nepohybovat”

6) “Po použití uzavřít přívod paliva na lahvi na plyn”

7) “Jakékoliv úpravy spotřebiče mohou být nebezpečné”

D.9 Greek

1)

2)

3)

4)

5)

6)

7)

D.10 Hungarian

1) “Csak kültéri használatra”

2) “Olvassa el a használati előírást a készülék használatba vétele előtt”

3) “FIGYELEM: a hozzáférhető részek nagyon forróak lehetnek. A kisgyermekeket tartsuk távol tőle.”

4) “A készülék használata során az éghető anyagokat tartsuk távol.”

5) “Ne mozdítsa el a készüléket használat közben.”

6) “Használat után zárja el a gázpalackot.”

7) “A készüléken végzett mindenfajta módosítás veszélyes lehet.”

D.11 Portuguese

1) "Utilizar apenas no exterior"

2) "Consultar o manual de instruções antes da utilização"

3) "ATENÇÃO: existem partes acessíveis que podem estar quentes. Afastar as crianças"

4) "Este aparelho deve estar afastado dos materiais inflamáveis durante a utilização"

5) "Não deslocar o aparelho durante a utilização"

6) "Fechar a alimentação de gás depois do uso"

7) "Não modificar o aparelho"

D.12 Swedish

1)

2)

3)

4)

5)

6)

7)

D.13 Danish

1)

2)

3)

4)

5)

6)

7)

D.14 Finnish

1)

2)

3)

4)

5)

6)

7)

D.15 Lithuanian

1)

2)

3)

4)

5)

6)

7)

D.16 Norwegian

1)

2)

3)

4)

5)

6)

7)

D.17 Slovak

1)

2)

3)

4)

5)

6)

7)

D.18 Estonian

1)

2)

3)

4)

5)

6)

7)

D.19 Latvian

1)

2)

3)

4)

5)

6)

7)

D.20 Slovenian

1) “Samo za uporabo na prostem”

2) “Pred uporabo aparata preberite navodila

3) “OPOZORILO : Dostopni deli so lahko zelo vroči. Uporabljajte zunaj dosega otrok”

4) “Aparata ne uporabljajte v bližini vnetljivih materialov”

5) “Med uporabo aparata ne premikajte”

6) “Po uporabi zaprite ventil na plinski jeklenki”

7) “Ne spreminjajte aparata”

D.21 Icelandic

1)

2)

3)

4)

5)

6)

7)

D.22 Maltese

1)

2)

3)

4)

5)

6)

7)

D.23 Romanian

1)	A se utiliza numai în exterior.
2)	A se citi instrucțiunile înainte de utilizare.
3)	ATENȚIE: Părțile accesibile pot fi calde. A se ține copiii mici departe.
4)	Acest aparat, în timpul utilizării, trebuie ținut departe de materiale inflamabile.
5)	A nu se deplasa aparatul în timpul utilizări.
6)	Închideți robinetul buteliei după utilizare.
7)	Nu modificați aparatul.

Annex ZA
(informative)

Clauses of this European Standard addressing essential requirements or other provisions of EU Directives

This European Standard 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 Directives.

WARNING — Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.

The following clauses of this standard are likely to support requirements of Directive 2009/142/EEC "Gas appliances".

Compliance with the clauses of this standard provides one means of conforming to the specific essential requirements of the Directive concerned and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 2009/142/EEC

Essential requirement	**Subject**	**Requirements in the standard**	**Comments**
1	**Annex 1** **General conditions**		
1.1	**Safety of operation**	1	
1.2	**Marking and instructions** Installation instructions Users instructions Warnings Official languages	))) 8 - Annex E)	
1.2.1	Information in the technical instructions	)) 8.3))	Fresh air supply - not applicable

Table ZA.1 *(continued)*

Essential requirement	**Subject**	**Requirements in the standard**	**Comments**
1.2.2	Content of the users and maintenance instructions		
1.2.3	Appliance and packing marking	5.12 - 5.19 - 8.1 - 8.2	
1.3	**Fittings**		Not applicable
2	**Materials**		
2.1	**Characteristics**	5.2	
2.2	**Guarantee**	1 and Foreword	
3	**Design and construction**		
3.1	**General**		
3.1.1	Distortion, breakage and wear	5.2 - 5.3 - 5.4 - 5.5 - 5.6 - 5.8 - 5.9 - 5.10 - 5.13 - 5.15 - 5.16 - 5.17 - 5.18 - 6.4.4 - 6.5 a), b), c), d) and f)	
3.1.2	Condensation		Not applicable
3.1.3	Risk of explosion	5.7 - 6.1	
3.1.4	Air and water penetration		Not applicable
3.1.5	Normal fluctuation of auxiliary energy	5.20	
3.1.6	Abnormal fluctuation of auxiliary energy	5.20	
3.1.7	Electrical risks	5.20	
3.1.8	Pressurized parts		Not applicable
3.1.9	Failure of safety devices: Flame supervision devices	5.14	
3.1.10	Safety and controlling devices	5.14	
3.1.11	Protection of parts adjusted by the manufacturer	5.1 - 5.3	
3.1.12	Marking of handles and of control or adjusting devices	5.11	

Table ZA.1 *(continued)*

Essential requirement	Subject	Requirements in the standard	Comments
3.2	**Unburned gas release**		
3.2.1	Gas leakage rate	5.7 - 5.8 - 5.15 - 6.1	
3.2.2	Accumulation in the appliance	5.14 - 6.3 - 6.4.1	
3.2.3	Accumulation in rooms		Not applicable
3.3	**Ignition**	5.13 - 6.4.1	
3.4	**Combustion**		
3.4.1	Flame stability - Concentration of substances hazardous to health in the products of combustion	6.4.2 - 6.4.3 - 6.7 - 6.8	
3.4.2	Accidental release of combustion products		Not applicable
3.4.3	Abnormal draught conditions		Not applicable
3.4.4	Quantity of CO in the room (flueless heaters and water heaters)		Not applicable
3.5	**Rational use of energy**		Not applicable
3.6	**Temperatures**		
3.6.1	Floor and adjacent surfaces	6.5 e)	
3.6.2	Control handles	6.5 d)	
3.6.3	Temperatures of external surfaces	8.1	
3.7	**Materials in contact with food and sanitary water**	5.2	"Potable water": not applicable
	Annexe II	1 and Foreword	
	Annexe III	8.1	

Bibliography

[1] EN 484, *Specification for dedicated liquefied petroleum gas appliances — Independent hotplates, including those incorporating a grill for outdoor use*

[2] EN 1949, *Specification for the installation of LPG systems for habitation purposes in leisure accommodation vehicles and accommodation purposes in other vehicles*

[3] EN ISO 3166-1:2006, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes (ISO 3166-1:2006)*

[4] DECISION No 768/2008/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 July 2008 on a common framework for the marketing of products, and repealing Council Decision 93/465/EEC

[5] REGULATION (EC) No 1935/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 October 2004 on materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC

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