BS EN 16304:2013

BSI Standards Publication

Automatic vent valves for gas burners and gas burning appliances

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National foreword

This British Standard is the UK implementation of EN 16304:2013.

The UK participation in its preparation was entrusted to Technical Committee GSE/22, Safety and control devices for gas and oil burners and gas burning 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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Compliance with a British Standard cannot confer immunity from legal obligations.

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English Version

Automatic vent valves for gas burners and gas burning appliances

Robinets d'évent automatiques pour brûleurs à gaz et appareils à gaz

Automatische Abblaseventile für Gasbrenner und Gasgerät

This European Standard was approved by CEN on 5 February 2013.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN 16304:2013) has been prepared by Technical Committee CEN/TC 58 “Safety and control devices for burners and appliances burning gaseous or liquid fuels”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2013, and conflicting national standards shall be withdrawn at the latest by September 2013.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 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.

This document is intended to be used in conjunction with EN 13611:2007+A2:2011. This document refers to clauses of EN 13611:2007+A2:2011 or adapts clauses by stating “with the following modification”, “with the following addition”, “is replaced by the following” or "is not applicable" in the corresponding clause. This European Standard adds clauses or subclauses to the structure of EN 13611:2007+A2:2011 which are particular to this standard. Subclauses or annexes which are additional to those in EN 13611:2007+A2:2011 are numbered starting from 101 or are designated as Annex AA, BB, CC, etc.

Safety Integrity Level (SIL) classification according to EN 61508 (all parts) cannot be claimed based upon compliance with this standard. Vent valves with SIL classification do not meet automatically the requirements of this standard.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, 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 safety, construction and performance requirements for automatic vent valves for use with gas burners, gas appliances and similar use, hereafter referred to as 'valves'.

This European Standard is applicable to:

— valves with declared maximum inlet pressures up to and including 500 kPa (5 bar) of nominal connection sizes up to and including DN 100 for use with one or more fuel gases in accordance with EN 437:2003+A1:2009;

— electrically operated valves;

— valves actuated by fluids where the control valves for these fluids are actuated electrically, but not to any external electrical devices for switching the control signal or actuating energy;

— valves fitted with open position indicator switches.

NOTE Provisions for final product inspection and testing by the manufacturer are not specified.

2 Normative references

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

EN 13611:2007+A2:2011, *Safety and control devices for gas burners and gas-burning appliances — General requirements*

EN 13906-1, *Cylindrical helical springs made from round wire and bar — Calculation and design — Part 1: Compression springs*

EN 13906-2, *Cylindrical helical springs made from round wire and bar — Calculation and design — Part 2: Extension springs*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 60730-1:2011, *Automatic electrical controls for household and similar use — Part 1: General requirements (IEC 60730-1:2010, modified)*

EN 61058-1, *Switches for appliances — Part 1: General requirements (IEC 61058-1)*

EN 175301-803, *Detail Specification: Rectangular connectors — Flat contacts, 0,8 mm thickness, locking screw not detachable*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13611:2007+A2:2011 and the following apply.

3.101
automatic vent valve
device which closes when energised and opens automatically when de-energised

3.102
actuating mechanism
part of the valve which moves the closure member

3.103
open position indicator switch
device fitted to a valve which indicates when the closure member is in the open position

3.104
actuating energy
required energy for the actuating mechanism to move the closure member to the closed position

Note 1 to entry: The actuating energy can have an external source (electrical, pneumatic or hydraulic) and can be transformed inside the valve.

3.105
opening force
force required to open the valve, independent of any force provided by fuel gas pressure

3.106
frictional force
largest force required to move the actuating mechanism and the closure member from the closed position to the open position with the opener spring removed, independent of any force provided by fuel gas pressure

3.107
actuating pressure
hydraulic or pneumatic pressure supplied to the actuating mechanism of the valve

3.108
opening time
time interval between de-energising the valve and the closure member attaining the open position

3.109
closing time
time interval between energising the valve and the closure member attaining the closed position

3.110
delay time
time interval between energising the valve and the start of the closure member moving to the closed position

3.111
control valve
device which controls the fluid (e.g. compressed air) supplied to the actuating mechanism

3.112
rated voltage
voltage as stated in the installation and operating instructions at which the valve may be operated

3.113
rated current
current as stated in the installation and operating instructions at which the valve may be operated

4 Classification

4.1 Classes of control

EN 13611:2007+A2:2011, 4.1 is not applicable.

4.2 Groups of control

Shall be according to EN 13611:2007+A2:2011, 4.2.

4.3 Classes of control functions

Shall be according to EN 13611:2007+A2:2011, 4.3.

5 Units of measurement and test conditions

Shall be according to EN 13611:2007+A2:2011, Clause 5.

6 Construction requirements

6.1 General

Shall be according to EN 13611:2007+A2:2011, 6.1.

6.2 Mechanical parts of the control

6.2.1 Appearance

Shall be according to EN 13611:2007+A2:2011, 6.2.1.

6.2.2 Holes

Shall be according to EN 13611:2007+A2:2011, 6.2.2.

6.2.3 Breather holes

Shall be according to EN 13611:2007+A2:2011, 6.2.3.

6.2.4 Test for leakage of breather holes

Shall be according to EN 13611:2007+A2:2011, 6.2.4.

6.2.5 Screwed fastenings

Shall be according to EN 13611:2007+A2:2011, 6.2.5.

6.2.6 Jointing

Shall be according to EN 13611:2007+A2:2011, 6.2.6.

6.2.7 Moving parts

Shall be according to EN 13611:2007+A2:2011, 6.2.7.

6.2.8 Sealing caps

Shall be according to EN 13611:2007+A2:2011, 6.2.8.

6.2.9 Dismantling and reassembly

Shall be according to EN 13611:2007+A2:2011, 6.2.9.

6.2.101 Design

There shall be no exposed shafts or operating levers which could adversely affect the ability of valves to open.

6.2.102 Open position indicator switch

Open position indicator switches, where fitted, shall not impair the correct operation of valves. Adjusters shall be sealed to indicate interference. Any drift of the switch and actuating mechanism from its setting shall not impair correct valve operation.

6.2.103 Controls assembled to a valve

Other controls assembled to a valve shall not interfere with its opening function.

6.3 Materials

6.3.1 General material requirements

Shall be according to EN 13611:2007+A2:2011, 6.3.1.

6.3.2 Housing

Shall be according to EN 13611:2007+A2:2011, 6.3.2.

6.3.3 Test for leakage of housing after removal of non-metallic parts

Shall be according to EN 13611:2007+A2:2011, 6.3.3.

6.3.4 Zinc alloys

Shall be according to EN 13611:2007+A2:2011, 6.3.4.

6.3.5 Springs providing closing and/or sealing force

EN 13611:2007+A2:2011, 6.3.5 is not applicable.

6.3.6 Resistance to corrosion and surface protection

Shall be according to EN 13611:2007+A2:2011, 6.3.6.

6.3.7 Impregnation

Shall be according to EN 13611:2007+A2:2011, 6.3.7.

6.3.8 Seals for glands for moving parts

Shall be according to EN 13611:2007+A2:2011, 6.3.8.

6.3.101 Springs providing opening force

Opening force shall be provided by spring action.

Springs providing the opening force for any closure member of the valve shall be designed for static and dynamic loading according to EN 13906-1 or EN 13906-2.

Springs with a diameter up to and including 2,5 mm shall be made from corrosion-resistant materials.

Springs with wire diameter above 2,5 mm shall be made either from corrosion-resistant materials or shall be protected against corrosion.

6.3.102 Closure members

Closure members shall either have a mechanical support (e.g. metallic) to carry the opening force or shall be made of metal.

6.4 Gas connections

6.4.1 Making connections

Shall be according to EN 13611:2007+A2:2011, 6.4.1.

6.4.2 Connection sizes

Shall be according to EN 13611:2007+A2:2011, 6.4.2.

6.4.3 Threads

Shall be according to EN 13611:2007+A2:2011, 6.4.3.

6.4.4 Union joints

Shall be according to EN 13611:2007+A2:2011, 6.4.4.

6.4.5 Flanges

Shall be according to EN 13611:2007+A2:2011, 6.4.5.

6.4.6 Compression fittings

Shall be according to EN 13611:2007+A2:2011, 6.4.6.

6.4.7 Nipples for pressure test

Shall be according to EN 13611:2007+A2:2011, 6.4.7.

6.4.8 Strainers

Shall be according to EN 13611:2007+A2:2011, 6.4.8 with the following addition:

Strainers fitted to valves of DN 25 and above shall be accessible for cleaning or replacement without removing the valve body by dismantling threaded or welded pipework.

6.5 Electronic parts of controls

Shall be according to EN 13611:2007+A2:2011, 6.5.

6.6 Protection against internal faults for the purpose of functional safety

Shall be according to EN 13611:2007+A2:2011, 6.6.

6.101 Pneumatic and hydraulic actuating mechanisms

Pneumatically or hydraulically actuated valves shall be provided with protection to ensure that the blockage of an orifice in the control system does not adversely affect the performance requirements as given in Clause 7.

7 Performance

7.1 General

Shall be according to EN 13611:2007+A2:2011, 7.1 with the following addition:

Valves shall open automatically when de-energised or in the absence of actuating energy.

Valves with DC supplies shall fulfil the requirements of this European Standard from the minimum rated voltage to the maximum rated voltage, as stated in the installation and operating instructions.

For DC supplies type A, B, and C according to EN 13611:2007+A2:2011, I.1, a tolerance of 20 % to the minimum and the maximum rated voltage applies. For DC supplies of other types, the tolerance shall be stated in the installation and operating instructions.

The electrical control valve of pneumatic or hydraulic actuating mechanisms shall also meet these requirements.

The closing of pneumatically or hydraulically actuated valves shall be ensured over the range from 85 % to 110 % of the actuating pressure or pressure range as stated in the installation and operating instructions.

7.2 Leak-tightness

Shall be according to EN 13611:2007+A2:2011, 7.2 with the following modification:

Replace the values in the column for internal leak tightness by 1 dm^3/h.

7.3 Test for leak-tightness

7.3.1 General

Shall be according to EN 13611:2007+A2:2011, 7.3.1.

7.3.2 External leak-tightness

Shall be according to EN 13611:2007+A2:2011, 7.3.2.

7.3.3 Internal leak-tightness

Shall be according to EN 13611:2007+A2:2011, 7.3.3.

7.4 Torsion and bending

Shall be according to EN 13611:2007+A2:2011, 7.4.

7.5 Torsion and bending tests

Shall be according to EN 13611:2007+A2:2011, 7.5.

7.6 Rated flow rate

Shall be according to EN 13611:2007+A2:2011, 7.6.

7.7 Test for rated flow rate

7.7.1 Apparatus

Shall be according to EN 13611:2007+A2:2011, 7.7.1.

7.7.2 Test procedure

Shall be according to EN 13611:2007+A2:2011, 7.7.2.

7.7.3 Conversion of air flow rate

Shall be according to EN 13611:2007+A2:2011, 7.7.3.

7.8 Durability

Shall be according to EN 13611:2007+A2:2011, 7.8.

7.9 Performance test for electronic controls

Shall be according to EN 13611:2007+A2:2011, 7.9.

7.10 Long-term performance for electronic controls

Shall be according to EN 13611:2007+A2:2011, 7.10.

7.101 Opening function concerning remanence

7.101.1 Requirement

Valves shall open automatically on reducing the voltage or current to 15 % of the minimum rated value.

Valves with pneumatic or hydraulic actuating mechanisms shall open automatically on reducing the voltage or current to 15 % of the minimum rated voltage of the control valve.

Valves shall open automatically on removal of the voltage or current of between 15 % of the minimum rated value and the maximum rated value including the tolerance according to 7.1.

In all cases, the opening time shall be in accordance with 7.103.

7.101.2 Test of opening function

Energise the valve at the maximum rated voltage or current and at the maximum actuating pressure, if applicable. Slowly reduce the voltage or current to 15 % of the minimum rated value. Verify that the valve has opened.

Energise the valve at the maximum rated voltage or current and at the maximum actuating pressure, if applicable. Increase the voltage or current to the maximum rated value increased by the tolerance according to 7.1, keeping the actuating pressure, if any, unchanged. De-energise the valve and verify that it has opened. For AC valves, remove the voltage at the peak of the current waveform.

7.102 Opening force

7.102.1 Requirement

Valves shall have an opening force of:

— at least 5 times the value of the frictional force where the frictional force is up to and including 5 N;

— at least 2,5 times the value of the frictional force but at least 25 N where the frictional force is above 5 N.

The frictional force is measured in the ungreased condition.

7.102.2 Test of opening force

Measure the minimum opening force over the travel of the closure member from the closed position to the open position.

Remove the spring(s) providing the opening force from the valve and measure the maximum force required to move the closure member from the closed position to the open position.

7.103 Opening time

7.103.1 Requirement

The opening time for valves shall not exceed 1 s when tested to 7.103.2.

7.103.2 Test of opening time

Measure the time interval between de-energising the valve and the closure member attaining an open position with a flow rate, at least equal to the rated flow rate, under the following conditions:

— at the maximum inlet pressure, at the maximum rated voltage or current increased by the tolerance according to 7.1, and at the maximum actuating pressure, if applicable;

— at an inlet pressure of 0,6 kPa (6 mbar), at the maximum rated voltage or current increased by the tolerance according to 7.1, and at the maximum actuating pressure, if applicable.

7.104 Delay time and closing time

7.104.1 Requirement

The delay time and the closing time shall be:

— within $\pm$ 20 % of the value for times above 1 s as stated in the installation and operating instructions;

— less than 1 s for declared times $\leq$ 1 s.

7.104.2 Test of delay time and closing time

Measure the time interval between energising the valve and the start of the closure member moving to the closed position.

Measure the time interval between energising the valve and the attainment of a flow rate equal to 5 % of the rated flow rate.

Carry out the tests under the following conditions, allowing the de-energised valve to reach thermal equilibrium before carrying out the tests:

— at 60 °C (or at the maximum ambient temperature, if higher), at the maximum inlet pressure, at a pressure difference for which the valve is designed for, at the minimum rated voltage or current decreased by the tolerance according to 7.1, and at the minimum actuating pressure, if applicable;

— at 0 °C (or at the minimum ambient temperature, if lower), at an inlet pressure of 0,6 kPa (6 mbar), at the minimum pressure difference for which the valve is designed for, at the minimum rated voltage or current decreased by the tolerance according to 7.1, and at the minimum actuating pressure, if applicable.

7.105 Open position indicator switch

7.105.1 Requirement

An open position indicator switch shall indicate the open position of the valve. The switch shall indicate opening when either:

— the flow rate is equal to or greater than 80 % of the rated flow rate at the same pressure difference; or

— the closure member is within 1 mm of its open position.

7.105.2 Test of open position indicator switch

Modify a single valve to enable the closure member to be moved and positioned in any partially open position. Slowly move the closure member until the switch just indicates valve open. Measure the rated flow rate, if applicable.

7.106 Endurance

7.106.1 Requirement

This endurance test may be combined with EN 13611:2007+A2:2011, 7.10, where applicable.

After the endurance test described in 7.106.2, the valve shall conform to the requirements of 7.2, 7.3, and 7.101 to 7.105.

7.106.2 Endurance test

Carry out tests according to 7.106.1, before the endurance test, after the test at 60 °C and after the test at 20 °C.

Energise the valve at the maximum rated voltage or current increased by the tolerance according to 7.1, at maximum ambient temperature for a period of at least 24 h. Without de-energising the valve, slowly reduce the voltage or current to 15 % of the minimum rated value. Verify that the valve has opened.

Connect the gas inlet to an air supply at the maximum inlet pressure. Do not exceed 10 % of the maximum rated flow rate.

Operate the valve to the number of cycles given in Table 1 with a cycle period of no less than that the valve is designed for. Ensure that the valve travels to the fully closed and fully opened position during each cycle.

The test at maximum ambient temperature shall be carried out at maximum rated voltage or current. For the test at 20 °C, carry out 50 % of the cycles at the maximum rated voltage or current and 50 % at the minimum rated voltage or current.

If the minimum ambient temperature is below 0 °C, carry out 25 000 cycles at −15 °C at the minimum rated voltage or current. Reduce the number of cycles for the test at 20 °C by 25 000 cycles.

Where the valve has a pneumatic or hydraulic actuating mechanism, carry out the endurance test at the maximum actuating pressure.

Check the operation of the valve throughout the endurance test, for example by monitoring the outlet pressure or the flow rate.

Table 1 — Operating cycles

Nominal inlet size DN	**Number of cycles at:**	
	Maximum ambient temperature – at least (60 ± 5) °C	**(20 ± 5) °C**
DN ≤ 25	50 000	150 000
25 < DN ≤ 80	25 000	75 000
80 < DN ≤ 100	25 000	25 000

7.106.3 Endurance test for open position indicator switch

Carry out the endurance test described in 7.106.2 on an unmodified valve with the maximum inductive or capacitive load on the open position indicator switch as stated in the installation and operating instructions.

During the test, monitor the switch to ensure that it indicates that the valve is open when it is de-energised and closed when energised.

After the endurance test, carry out the test for indication of opening according to 7.105.2.

8 EMC/Electrical requirements

8.1 Protection against environmental influences

Shall be according to EN 13611:2007+A2:2011, 8.1.

8.2 Supply voltage variations below 85 % of rated voltage

EN 13611:2007+A2:2011, 8.2 is not applicable.

8.3 Short term voltage interruptions and decreases

EN 13611:2007+A2:2011, 8.3 is not applicable.

8.4 Supply frequency variations

Shall be according to EN 13611:2007+A2:2011, 8.4.

8.5 Surge immunity test

Shall be according to EN 13611:2007+A2:2011, 8.5.

8.6 Electrical fast transient/burst

Shall be according to EN 13611:2007+A2:2011, 8.6.

8.7 Immunity to conducted disturbances

Shall be according to EN 13611:2007+A2:2011, 8.7.

8.8 Immunity to radiated fields

Shall be according to EN 13611:2007+A2:2011, 8.8.

8.9 Electrostatic discharge immunity test

Shall be according to EN 13611:2007+A2:2011, 8.9.

8.10 Power frequency magnetic field immunity test

Shall be according to EN 13611:2007+A2:2011, 8.10.

8.11 Electrical requirements

EN 13611:2007+A2:2011, 8.11 is replaced by the following:

8.11.101 General

Electrical equipment shall comply with the relevant requirements of EN 60730-1:2011, Clauses/Subclauses 8, 9, 10, 11.1, 11.2, 11.7.2, 11.8, 11.9, 11.10, 11.11.1, 11.11.2, 11.11.4, 11.11.5, 11.11.7, 11.12, 13.1, 13.2, 14, 18.1, 18.2, 18.4, 18.9, 19, 20, 21, 24, 27.2 and 28.

NOTE Please note Guidance B 5 for interpretations relating to the Essential Requirements of the Directive (Annex I) (see GAD guidance sheets).

The test of EN 60730-1:2011, Clause 13 shall be carried out after the humidity test according to EN 13611:2007+A2:2011, 7.8.7.

8.11.102 Electrical equipment

8.11.102.1 Degree of protection

The degree of protection shall be stated in the installation and operating instructions in accordance with EN 60529.

8.11.102.2 Switches

Switches shall conform to EN 61058-1. The number of operating cycles shall be in accordance with Table 1 of this European Standard.

8.11.102.3 Plug connections

Valves supplied with assembled electrical plug connector(s) in accordance with EN 175301-803 shall have connections to the following pins and to earth:

— Valve:

PE	earth contact
Pin 1	N
Pin 2	L

— Open position indicator switch:

Pin 4 (e)	earth contact
Pin 1	common
Pin 2	open valve
Pin 3	closed valve

8.11.102.4 Power saving circuits

8.11.102.4.1 Opening of the valve

Valves with power-saving circuits shall be designed such that any fault in the power-saving circuit does not affect the correct opening of the valve.

If the power-saving circuit has an independent power supply it has to fulfil EN 13611:2007+A2:2011, 6.6.4.

8.11.102.4.2 Overheating

If the power-saving circuit meets the requirement of EN 13611:2007+A2:2011, 6.6.4, the test under 8.11.102.4.3 does not apply.

8.11.102.4.3 Test of power-saving circuits

Energise the valve according to 7.1 of this European Standard at maximum rated voltage or current and at maximum ambient temperature for a period of at least 24 h with the power saving circuit taken out of function. Without de-energising the valve, slowly reduce the voltage or current to 15 % of the minimum rated value. Verify that the valve has opened and remains open.

9 Marking, installation and operating instructions

9.1 Marking

EN 13611:2007+A2:2011, 9.1 is replaced by the following:

The following information, at least, shall be durably marked on the valve in a clearly visible position:

a) manufacturer and/or his identification symbol;

b) type reference;

c) "N. O." (normally open) for information of the valve type;

d) maximum inlet pressure in Pa or kPa (mbar or bar);

e) ambient temperature range;

f) group 1 (if applicable).

In addition, the valve shall be marked with:

g) direction of gas flow (by a cast or embossed arrow);

h) date of manufacture (at least year) — may be in code;

i) marking of the earth connection (if applicable);

j) supply pressure for hydraulic or pneumatic actuator in Pa or kPa (mbar or bar), if applicable.

Valves with electrical actuating mechanisms shall additionally be marked with the following:

k) identification of terminals;

l) nature and frequency of supply voltage;

m) rated voltage in V or rated current in A and its related voltage in V;

n) rated load in VA, or in W if above 25 W;

o) degree of protection (IP-Code);

p) symbol of Class II construction for Class II valves (if applicable).

Additional electrically operated devices which are integral parts of the valve shall be provided with the same information.

9.2 Installation and operating instructions

EN 13611:2007+A2:2011, 9.2 is replaced by the following:

Instructions shall include all relevant information on use, installation, operating, and servicing, in particular:

a) "N. O." (normally open) for information of the valve type;

b) group 1 or 2;

c) rated flow rate at a specified pressure difference;

d) electrical data;

e) ambient temperature range;

f) mounting position(s);

g) inlet pressure range in Pa or kPa (mbar or bar);

h) gas connection(s);

i) strainer details;

j) opening time;

k) closing time (and maximum delay time if applicable);

l) notice for installer to consider e.g. conditions for up-stream pressure (overpressure at the inlet in case of failure of upstream components), dirt, corrosion products;

m) class of control function of the valve according to 4.3 (if applicable);

n) safety class identification for safety-related electronics (if applicable).

9.3 Warning notice

Shall be according to EN 13611:2007+A2:2011, 9.3.

Annex A
(informative)

Gas connections in common use in the various countries

Shall be according to EN 13611:2007+A2:2011, Annex A.

Annex B
(informative)

Leak-tightness test – volumetric method

Shall be according to EN 13611:2007+A2:2011, Annex B.

Annex C
(informative)

Leak-tightness test – pressure loss method

Shall be according to EN 13611:2007+A2:2011, Annex C.

Annex D
(normative)

Conversion of pressure loss into leakage rate

Shall be according to EN 13611:2007+A2:2011, Annex D.

Annex E
(normative)

Electrical/electronic component fault modes

Shall be according to EN 13611:2007+A2:2011, Annex E.

Annex F
(normative)

Additional requirements for safety accessories and pressure accessories as defined in EU Directive 97/23/EC

Shall be according to EN 13611:2007+A2:2011, Annex F.

Annex G
(normative)

Materials for pressurised parts

Shall be according to EN 13611:2007+A2:2011, Annex G.

Annex H
(informative)

Additional materials for pressurised parts

Shall be according to EN 13611:2007+A2:2011, Annex H.

Annex I
(normative)

Requirements for controls used in DC supplied gas burners and gas burning appliances

Shall be according to EN 13611:2007+A2:2011, Annex I.

Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 2009/142/EC relating to appliances burning gaseous fuels

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 2009/142/EC relating to appliances burning gaseous fuels.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 2009/142/EC relating to appliances burning gaseous fuels

N/A = Not applicable

Essential requirement (ERs) of Directive 2009/142/EC		**Clause(s)/subclause(s) of this European Standard**
1	**GENERAL CONDITIONS**	
1.1	Safety of operation	1, 6, 7
1.2	Instructions	9.2, 9.3
1.2.1	Installation instructions	9.2
1.2.2	User instructions	9.2
1.2.3	Warning notices	9.3
1.3	Correct operation	7, 9.2
2	**MATERIALS**	
2.1, 2.2	Suitability for safety and intended purpose	6.2, 6.3
3	**DESIGN AND CONSTRUCTION**	
3.1	General	
3.1.1	Mechanical stability	6.1, 6.2, 6.3, 6.4
3.1.2	Condensation	N/A
3.1.3	Risk of explosion	7.2, 7.3
3.1.4	Water penetration	N/A
3.1.5	Normal fluctuation of auxiliary energy	7.1
3.1.6	Abnormal fluctuation of auxiliary energy	7.101, 8

Table ZA.1 *(continued)*

Essential requirement (ERs) of Directive 2009/142/EC		Clause(s)/sub-clause(s) of this European Standard
3.1.7	Hazards of electrical origin	8
3.1.8	Pressurised parts	6.1, Annexes F, G and H
3.1.9	Failure of safety, controlling and regulating devices	N/A
3.1.10	Safety/adjustment	N/A
3.1.11	Protection of parts set by the manufacturer	6.2
3.1.12	Controlling and setting devices	6.2
3.2	Unburned gas release	
3.2.1	Gas leakage	6.2.3, 6.2.4, 6.3.2, 6.3.3, 7.2, 7.3
3.2.2, 3.2.3	Gas accumulation	N/A
3.3	Ignition	N/A
3.4	Combustion	N/A
3.5	Rational use of energy	7.2, 7.3.3
3.6	Temperatures	7.1
3.7	Foodstuffs and water used for sanitary purposes	N/A

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

Bibliography

As per EN 13611:2007+A2:2011, Bibliography, with the following added references:

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

[2] GAD Guidance B 5, *Interpretations relating to the Essential Requirements of the Directive (Annex I)*

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