

Automatic shut-off valves for gas burners and gas appliances

The European Standard EN 161:1991, with the incorporation of its amendments A1:1996 and A2:1997, has the status of a British Standard

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National foreword

This British Standard has been prepared under the direction of the Gas Standards Policy Committee and is the English language version of EN 161:1991 *Automatic shut-off valves for gas burners and gas appliances* (including Amendments A1:1996 and A2:1997), published by the European Committee for Standardization (CEN).

This British Standard together with BS 7461 supersedes BS 5963:1981 which is withdrawn.

EN 161 was produced as a result of international discussion in which the UK took an active part.

National appendix NA gives the constitution of the committees for UK participation in the preparation of this standard.

National appendix NB gives details of international standards quoted in this standard for which there is an identical or technically equivalent British Standard.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 26, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

English version

Automatic shut-off valves for gas burners and gas appliances

(includes amendments A1:1996 and A2:1997)

Robinets automatiques de sectionnement pour
brûleurs à gaz et appareils à gaz
(inclut les amendments A1:1996 et A2:1997)

Automatische Absperrventile für
Gasbrenner und Gasgeräte
(enthält Änderungen A1:1996 und A2:1997)

This European Standard was approved by CEN on 5 June 1991, amendment A1 was approved by CEN on 30 November 1995. CEN members are bound to comply with the requirements of 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

CEN

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

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

This European Standard was prepared by the Technical Committee CEN/TC 58 “*Safety and control devices for gas burners and gas-burning appliances*”, the Secretariat of which is held by BSI.

This European Standard has been prepared under a mandate given to CEN by the Commission of European Communities and the European Free Trade Association and supports essential requirements of EC Directives.

This standard covers type testing only.

In accordance with the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Foreword to amendment A1

This Amendment EN 161:1991/A1:1996 to EN 161:1991 has been prepared by Technical Committee CEN/TC 58 “*Safety and control devices for gas-burners and gas-burning appliances*”, the Secretariat of which is held by BSI.

This Amendment to the European Standard EN 161:1991 is issued to align the standard with the essential requirements of the Gas Appliance Directive (90/336/EEC) and to correct errors in the first edition of the standard.

This Amendment to the European Standard EN 161:1991 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 1996, and conflicting national standards shall be withdrawn at the latest by December 1996.

This Amendment to the European Standard EN 161:1991 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).

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

Foreword to amendment A2

This Amendment EN 161:1991/A2:1997 to EN 161:1991 has been prepared by Technical Committee CEN/TC 58, Safety and control devices for gas-burners and gas-burning appliances, the secretariat of which is held by BSI.

This Amendment to the European Standard EN 161:1991 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 1998, and conflicting national standards shall be withdrawn at the latest by January 1998.

This Amendment to the European Standard EN 161:1991 has been prepared under a mandate given by CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

This Amendment A2 to EN 161 specifies the additional requirements and test methods for class J valves (originally called D' valves in EN 297 and EN 483), so that EN 161 applies also to J valves.

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

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1 General

1.1 Object and field of application

This European standard specifies the safety, constructional and performance requirements for automatic shut-off valves for gas burners and gas appliances, hereafter referred to as valves. It also gives the test procedures for evaluating these requirements and information necessary for the purchaser and the user.

It applies to valves with a declared maximum working pressure up to and including 4 bar for use on burners or in appliances for use with one or more fuel gases of the 1st, 2nd or 3rd families.

It applies to electrically operated shut-off valves and to shut-off valves actuated by fluids if the control valves for these fluids are actuated electrically. The external, electrical switch that switches the control signal or the actuating energy is not covered by this standard.

1.2 Normative references

ISO 7-1:1982, *Pipe threads where pressure tight joints are made on the threads —*

Part 1: Designation, dimensions and tolerances.

ISO 65:1981, *Carbon steel tubes suitable for screwing in accordance with ISO 7-1.*

ISO 228-1:1982, *Pipe threads where pressure-tight joints are not made on the threads —*

Part 1: Designation, dimensions and tolerances.

ISO 262:1973, *ISO general purpose metric screw threads — Selected sizes for screws, bolts and nuts.*

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

ISO 301:1981, *Zinc alloy ingots intended for casting.*

ISO 1817:1985, *Rubber, vulcanized — Determination of the effect of liquids.*

ISO 7005:1988, *Metallic flanges.*

IEC 335-1 (1983), *Safety of household and similar electrical appliances — Part 1: General requirements.*

IEC 335-1, *Amendment No. 4 (1984).*

IEC 335-1, *Amendment No. 5 (1986).*

IEC 529 (1978), *Classification of degrees of protection provided by enclosures.*

IEC 685-2-1 (1980), *Connecting devices (junction and/or tapping) for household and similar fixed electrical installations — Part 2: Particular requirements — Screwless terminals for connecting copper conductors without special preparation.*

IEC 685-2-2 (1983), *Connecting devices (junction and/or tapping) for household and similar fixed electrical installations — Part 2: Particular requirements — Screw-type terminals for connecting copper conductors.*

IEC 730-1 (1986), *Automatic electrical controls for household and similar use — Part 1: General requirements.*

CEE Rec. 6 (1974), *Snap-on connectors.*

1.3 Definitions

1.3.1

automatic shut-off valve

valve designed to, open when energized and to close automatically when de-energized

1.3.2

closure member

moveable part of the valve which shuts off the gas flow

1.3.3

actuating mechanism

part of the valve which actuates the closure member

1.3.4 energy and force

1.3.4.1

actuating energy

energy necessary for the actuating mechanism to move the closure member to the open position. It is supplied from an external source (electric, pneumatic, hydraulic) and may be converted within the valve

1.3.4.2

opening force

force required to move the closure member to the open position

1.3.4.3

closing force

force available to close the valve independent of any force provided by fuel gas pressure

1.3.4.4

sealing force

force acting on the valve seat when the closure member is in the closed position, independent of any force provided by fuel gas pressure

1.3.4.5

frictional force

largest force which, with the closure spring removed, is necessary for the displacement of the actuating mechanism together with the closure member from the open to the closed position, independent of any force provided by fuel gas pressure

1.3.5 leak-tightness**1.3.5.1****external leak-tightness**

leak-tightness of a gas-carrying compartment with respect to the atmosphere

1.3.5.2**internal leak-tightness**

leak-tightness of the closure member (in the closed position) sealing a gas-carrying compartment with respect to another compartment or to the outlet of the valve

1.3.6 pressures**1.3.6.1****inlet pressure**

pressure at the inlet of the valve

1.3.6.2**outlet pressure**

pressure at the outlet of the valve

1.3.6.3**maximum working pressure**

highest inlet pressure declared by the manufacturer at which the valve may be operated

1.3.6.4**minimum working pressure**

lowest inlet pressure declared by the manufacturer at which the valve may be operated

1.3.6.5**actuating pressure**

pressure, either hydraulic or pneumatic, supplied to the actuating mechanism of the valve

1.3.7**pressure difference**

difference between the inlet and outlet pressures

1.3.8**flow rate**

volume flowing through the valve in unit time

1.3.9**rated flow rate**

air flow rate at a specified pressure difference, declared by the manufacturer, corrected to standard conditions

1.3.10 times**1.3.10.1****opening time**

time interval between the instant the electrical control signal to open the valve is given and the achievement of the maximum or other defined flow rate

1.3.10.2**closing time**

time interval between the instant the electrical control signal is removed and the achievement of the closed position

1.3.10.3**delay time**

time interval between the instant the electrical control signal to open the valve is given and the start of flow through the valve

1.3.11**mounting position**

position declared by the manufacturer for mounting the valve

1.3.12**control valve**

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

1.3.13 temperature**1.3.13.1****maximum ambient temperature**

highest temperature of the surrounding air declared by the manufacturer at which the valve may be operated

1.3.13.2**minimum ambient temperature**

lowest temperature of the surrounding air declared by the manufacturer at which the valve may be operated

1.3.14**rated voltage**

voltage declared by the manufacturer at which the valve may be operated

1.4 Classes and groups**1.4.1 Classes of valve**

— *Classes A, B, C and J valves*

Valves where the sealing force is not decreased by the gas inlet pressure are graded A, B, C or J according to their sealing force (see 3.8).

— *Class D valves*

Valves which are not subject to any sealing force requirement.

— *Class E valves*

Valves where the sealing force is decreased by the gas inlet pressure and which meet the requirements of 3.8.