SLOVENSKI STANDARD
SIST EN 16304:2014

01-januar-2014

Samodejni varnostno izpustni ventili za plinske gorilnike in plinske aparate

Automatic vent valves for gas burners and gas burning appliances

Automatische Abblaseventile für Gasbrenner und Gasgerät

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

Ta slovenski standard je istoveten z: **EN 16304:2013**

ICS:

23.060.40	Tlačni regulatorji	Pressure regulators
27.060.20	Plinski gorilniki	Gas fuel burners

SIST EN 16304:2014 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16304

March 2013

ICS 23.060.40

English Version

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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.

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

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Ref. No. EN 16304:2013: E

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of an identical text or by endorsement, at the latest by September 2013, and conflicting national standards shall be withdrawn at the latest by September 2013.

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This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(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 dm³/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.