



SLOVENSKI STANDARD

oSIST prEN 16678:2020

01-maj-2020

Varnostne in nadzorne naprave za plinske gorilnike in plinske aparate - Samodejni zaporni ventili za delovni tlak nad 500 kPa do vključno 6300 kPa

Safety and control devices for gas burners and gas burning appliances - Automatic shut-off valves for operating pressure of above 500 kPa up to and including 6 300 kPa

Sicherheits- und Regeleinrichtungen für Gasbrenner und Gasbrennstoffgeräte - Automatische Absperrventile für einen Betriebsdruck über 500 kPa bis einschließlich 6 300 kPa

Équipements auxiliaires pour brûleurs à gaz et appareils à gaz - Robinets automatiques de sectionnement pour pression de service supérieure à 500 kPa et inférieure ou égale à 6300 kPa

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ICS:

23.060.40	Tlačni regulatorji	Pressure regulators
27.060.20	Plinski gorilniki	Gas fuel burners

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EUROPEAN STANDARD
NORME EUROPÉENNE
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Safety and control devices for gas burners and gas burning appliances - Automatic shut-off valves for operating pressure of above 500 kPa up to and including 6 300 kPa

Équipements auxiliaires pour brûleurs à gaz et appareils à gaz - Robinets automatiques de sectionnement pour pression de service supérieure à 500 kPa et inférieure ou égale à 6300 kPa

Sicherheits- und Regeleinrichtungen für Gasbrenner und Gasbrennstoffgeräte - Automatische Absperrventile für einen Betriebsdruck über 500 kPa bis einschließlich 6 300 kPa

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 58.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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prEN 16678:2020 (E)

European foreword

This document (prEN 16678:2020) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 16678:2015.

This document has been prepared under a standardization request 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 or ZB, which are an integral part of this document.

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Introduction

This document is intended to be used in conjunction with EN 13611:2019. This document refers to clauses of EN 13611:2019 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 document adds clauses or sub clauses to the structure of EN 13611:2019 which are particular to this document. It should be noted that these clauses and subclauses are not indicated as an addition. Subclauses which are additional to those in EN 13611:2019 are numbered starting from 101. Additional Annexes are designated as Annex AA, BB, CC, etc.

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prEN 16678:2020 (E)**1 Scope**

This document specifies the safety, design, construction and performance requirements and testing for automatic shut-off valves with or without modulating control functions (hereafter referred to as 'valves') for burners and appliances burning one or more gaseous fuels according to EN 437:2003+A1:2009.

This document is applicable to valves with declared maximum inlet pressures of more than 500 kPa (5 bar) and up to and including 6 300 kPa (63 bar).

This document is applicable to

- electrically operated valves and to valves actuated by fluids including the pilot valves for these fluids if actuated electrically and including release valves, but not to any external electrical devices for switching the actuating energy;
- automatic shut-off valves where the flow rate is controlled by external electrical signals proportional to the applied signal.

This document is not applicable to valves specifically designed for use in transmission and distribution networks.

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 161:2011+A3:2013, *Automatic shut-off valves for gas burners and gas appliances*

EN 682:2002, *Elastomeric Seals - Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids*

EN 10226-1:2004, *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 10226-2:2005, *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 12516-1:2014, *Industrial valves — Shell design strength — Part 1: Tabulation method for steel valve shells*

EN 12516-2:2014, *Industrial valves - Shell design strength - Part 2: Calculation method for steel valve shells*

EN 12516-3:2002, *Valves - Shell design strength - Part 3: Experimental method*

EN 12516-4:2014, *Industrial valves — Shell design strength — Part 4: Calculation method for valve shells manufactured in metallic materials other than steel*

EN 12627:1999, *Industrial valves — Butt welding ends for steel valves*

EN 12760:1999, *Valves — Socket welding ends for steel valves*

EN 13611:2019, *Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - General requirements*

EN 61058-1:2002, *Switches for appliances - Part 1: General requirements (IEC 61058-1:2000)*

EN 175301-803:2006, *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 13611:2019, EN 161:2011+A3:2013 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.101

pilot valve

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

Note 1 to entry: A typical pilot and release valve application is shown in Figure 1.

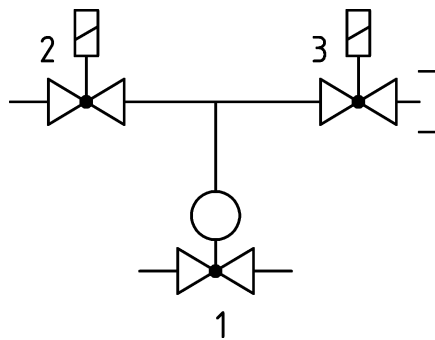
3.102

release valve

valve in the line from the pilot valve to the actuating mechanism which closes the vent automatically when the actuating fluid is released by the pilot valve and opens it automatically when the pilot valve is closed

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Note 1 to entry: A typical pilot and release valve application is shown in Figure 1.



Key

- 1 control under test
- 2 pilot valve (normally closed)
- 3 release valve, normally open

Figure 1 — Typical pilot and release valve application

prEN 16678:2020 (E)**3.103****maximum allowable pressure****PS**

maximum pressure for which the body, its inner metallic partition walls and some other pressure containing parts are designed

4 Classification**4.1 Classes of control**

EN 13611:2019, 4.1 is replaced by the following:

— Class A valves

Valves where the sealing force is not decreased by the gas inlet pressure. They are classified A according to the sealing force requirements of 7.105. Balanced valves according to this document are Class A valves.

— Class D valves

Valves which are not subject to the requirements for the sealing force and fixed closing time.

4.2 Groups of control

Shall be according to EN 13611:2019, 4.2.

4.3 Classes of control functions (standards.iteh.ai)

EN 13611:2019, 4.3 is not applicable.

5 Units of measurement and test conditions

Shall be according to EN 13611:2019, Clause 5.

6 Construction requirements**6.1 General**

Shall be according to EN 13611:2019, 6.1 with the following addition:

If an automatic shut-off valve requires a release and/or a pilot valve to fulfil the requirements of this document, these are considered to be part of the automatic shut-off valve and shall be specified in the installation and operating instructions. The combination of automatic shut-off valve and release and/or pilot valve shall conform to all requirements of this document.

The interaction of all valves participating in the closing mechanism shall be evaluated. An appropriate risk assessment shall be carried out.

For each pressurized compartment the local maximum pressure shall be considered for the strength design and for the selection of the material. It shall be ensured by mechanical means that parts for different pressures are separated. A diaphragm shall not be used for this purpose.

6.2 Mechanical parts of the control**6.2.1 Appearance**

Shall be according to EN 13611:2019, 6.2.1.

6.2.2 Holes

Shall be according to EN 13611:2019, 6.2.2.

6.2.3 Breather holes

EN 13611:2019, 6.2.3 is not applicable.

6.2.4 Screwed fastenings

EN 13611:2019, 6.2.4 is replaced by the following:

Screwed fastenings shall be specified in the installations and operating instructions.

Self-tapping screws which cut a thread and produce swarf shall not be used for connecting gas-carrying parts or parts which can be removed for service.

Self-tapping screws which form a thread and do not produce swarf may be used provided that they can be replaced by metric machine screws.

6.2.5 Jointing

Shall be according to EN 13611:2019, 6.2.5.

6.2.6 Moving parts

Shall be according to EN 13611:2019, 6.2.6 with the following addition:

There shall be no exposed shafts or operating levers which could adversely affect the ability of valves to close by unintended blockage.

6.2.7 Sealing caps

Shall be according to EN 13611:2019, 6.2.7.

6.2.8 Dismantling and reassembly

Shall be according to EN 13611:2019, 6.2.8.

6.2.9 Auxilliary canals and orifices

Shall be according to EN 13611:2019, 6.2.9.

6.2.10 Presetting devices

Shall be according to EN 13611:2019, 6.2.10.

6.2.101 Closed position indicator switch

Closed 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.

6.2.102 Valve with modulating control

Flow rates of valves with modulating control shall be adjustable over the full range as stated in the installation and operating instructions. If the adjustment of one flow rate affects the setting of any other flow rate, this shall be clearly stated in the installation and operating instructions. The setting of any flow rate shall require the use of mechanical or electrical tools and shall be designed to discourage unauthorized adjustment.

prEN 16678:2020 (E)**6.2.103 Other controls assembled to a valve**

Other controls assembled to a valve shall not interfere with its shut-off function.

6.2.104 Balanced valves

The closure member of a balanced valve shall have a resulting force in the closing direction where the sealing force is not decreased by the gas inlet pressure.

For a balanced valve with one single valve seat a resulting force in the closing direction shall remain, if the balancing force is removed. The closure member shall have the same closing direction as the flow direction through the valve.

6.2.105 Additional requirements for shut-off function**6.2.105.1 Diaphragms that assist the shut-off function**

Shut-off functions using a diaphragm to apply (part of) the closing force to the closure member shall be designed in such a way that, when the diaphragm is damaged, the closure member closes and the maximum internal leakage rate of the valve is limited to 1 dm³/h. Conformity shall be verified by the method given in 6.2.105.2.

6.2.105.2 Leakage test

Rupture the diaphragm assisting the shut-off function. De-energize the valve. Measure the internal leakage rate of the valve according to EN 161:2011+A3:2013, 7.3.3.

6.3 Materials**6.3.1 General material requirements**

Shall be according to EN 13611:2019, 6.3.1 and Annex F

6.3.2 Housing**6.3.2.1 Requirements**

EN 13611:2019, 6.3.2.1 is replaced by the following:

Parts of the housing which directly or indirectly separate a gas-carrying compartment from atmosphere shall be made from metallic materials.

6.3.2.2 Test

EN 13611:2019, 6.3.2.2 is not applicable.

6.3.3 Zinc alloys

EN 13611:2019, 6.3.3 is not applicable.

6.3.4 Springs providing closing and/or sealing force

Shall be according to EN 13611:2019, 6.3.4 with the following addition.

This requirement applies also for pilot and release valves for pneumatic or hydraulic actuators.

6.3.5 Resistance to corrosion and surface protection

Shall be according to EN 13611:2019, 6.3.5.

6.3.6 Impregnation

EN 13611:2019, 6.3.6 is replaced by the following.

Valves conforming to this document shall not be impregnated.

6.3.7 Seals for glands for moving parts

Shall be according to EN 13611:2019, 6.3.7.

6.3.101 Closure members

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

6.3.102 Parts transmitting the closing force

Parts transmitting the closing force shall be made of metal and shall be designed to withstand a force equal to 5 times the closing force.

6.3.103 Balanced valves

The strength of the connection between closure members of a balanced valve shall be at least five multiplied by the maximum inlet pressure multiplied by the total opening area of the closure members.

6.3.104 Bellows

When bellows are used as sealing elements proof of limiting fatigue stress shall be provided for at least the number of cycles stated in Table 4.

For the calculation not less than the number of cycles as stated in Table 4 shall be taken for the respective nominal widths.

As a calculation basis, EN 14917:2009+A1:2012 or comparable methods may be used.

6.4 Gas connections

6.4.1 Making connections

Shall be according to EN 13611:2019, 6.4.1 with the following addition:

If the valve is equipped with welding ends for welding to the pipe, EN 13611:2019, 6.4.1 is not applicable.

6.4.2 Connection sizes

Shall be according to EN 13611:2019, 6.4.2.

6.4.3 Threads

EN 13611:2019, 6.4.3 is replaced by the following:

Inlet and outlet threads shall be according to EN 10226-1:2004 or EN 10226-2:2005 and shall be chosen from EN 13611:2019, Table 3. Threads shall only be used for valves up to DN 25 for inlet pressures not greater than 2 500 kPa (25 bar).

6.4.4 Union joints

Shall be according to EN 13611:2019, 6.4.4.

6.4.5 Flanges

Shall be according to EN 13611:2019, 6.4.5 with the following addition: