SLOVENSKI STANDARD
SIST EN 331:2016

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Nadomešča:
SIST EN 331:2000
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Ročne krogelne pipe in zasuni za plinske napeljave v stavbah

Manually operated ball valves and closed bottom taper plug valves for gas installations for buildings

Handbetätigte Kugelhähne und Kegelhähne mit geschlossenem Boden für die Gas-Hausinstallation

Robinets à tournant sphérique et robinets à tournant conique à fond plat destinés à être manoeuvrés manuellement et à être utilisés pour les installations de gaz dans les bâtiments

Ta slovenski standard je istoveten z: **EN 331:2015**

ICS:

23.060.20	Zapirni ventili (kroglasti in pipe)	Ball and plug valves
91.140.40	Sistemi za oskrbo s plinom	Gas supply systems

SIST EN 331:2016 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 331

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ICS 23.060.20

Supersedes EN 331:1998

English Version

Manually operated ball valves and closed bottom taper plug valves for gas installations for buildings

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This European Standard was approved by CEN on 24 October 2015.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 331:2015) has been prepared by Technical Committee CEN/TC 236 “Non industrial manually operated shut-off valves for gas and particular combinations valves-other products”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by June 2016, and conflicting national standards shall be withdrawn at the latest by September 2017.

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 331:1998.

The revised version:

— includes in one document the previous publications of 1998 and 2010 to allow an easier reading of the text;

— allocates the clauses and the annexes in line with the framework of the standards which support CPR;

— enlarges the field of application to the nominal sizes DN 65, 80 and 100;

— updates the technical content in line with the current edition of the referenced standards;

— considers the proposals coming from the experience of the application of the previous edition of EN 331;

— adds Annex ZA for the relationship between this European Standard and the Essential Requirements of EN Construction Products Regulation.

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.

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, 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

1.1 This European Standard specifies the characteristics for the construction, performance and safety of ball valves and closed bottom taper plug valves. It also details the test methods and marking provisions.

It applies to metallic valves not directly buried for domestic and commercial installations inside or outside of buildings, using gases of the first, second and third family (specified in EN 437) and working up to 0,2 × 10^5 Pa, 0,5 × 10^5 Pa, 1 × 10^5Pa, 5 × 10^5 Pa and 20 × 10^5Pa and with temperature limits from −5 °C or −20 °C to + 60 °C.

NOTE "Not directly buried" within the context of this standard means that valves below ground are not in direct contact with earth or other materials e.g. that they are in a protected encasement.

1.2 Valve nominal sizes (*DN*) covered by this European Standard are as follows: 6, 8, 10, 12, 15, 20, 25, 32, 40, 50, 65, 80, 100.

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 377, *Lubricants for applications in appliances and associated controls using combustible gases except those designed for use in industrial processes*

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

EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

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

EN 751-1, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 1: Anaerobic jointing compounds*

EN 751-2, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 2: Non-hardening jointing compounds*

EN 751-3, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 3: Unsintered PTFE tapes*

EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1092-2, *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 2: Cast iron flanges*

EN 1092-3, *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 3: Copper alloy flanges*

EN 1254-1, *Copper and copper alloys - Plumbing fittings - Part 1: Fittings with ends for capillary soldering or capillary brazing to copper tubes*

EN 1254-2, *Copper and copper alloys - Plumbing fittings - Part 2: Fittings with compression ends for use with copper tubes*

EN 1254-8, *Copper and copper alloys - Plumbing fittings - Part 8: Fittings with press ends for use with plastics and multilayer pipes*

EN 1412, *Copper and copper alloys - European numbering system*

EN 1503-1, *Valves — Materials for bodies, bonnets and covers — Part 1: Steels specified in European Standards*

EN 1503-3, *Valves — Materials for bodies, bonnets and covers — Part 3: Cast irons specified in European Standards*

EN 1555-3, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 3: Fittings*

EN 1593:1999, *Non-destructive testing - Leak testing - Bubble emission techniques*

EN 1982 *Copper and copper alloys - Ingots and castings*

EN 10226 (all parts), *Pipe threads where pressure tight joints are made on the threads*

EN 10255, *Non-Alloy steel tubes suitable for welding and threading — Technical delivery conditions*

EN 12163 *Copper and copper alloys - Rod for general purposes*

EN 12164 *Copper and copper alloys - Rod for free machining purposes*

EN 12165 *Copper and copper alloys - Wrought and unwrought forging stock*

EN 12167 *Copper and copper alloys - Profiles and bars for general purposes*

EN 12168 *Copper and copper alloys - Hollow rod for free machining purposes*

EN 12420 *Copper and copper alloys - Forgings*

EN 12627, *Industrial valves - Butt welding ends for steel valves*

EN 60730-1:2000, *Automatic electrical controls for household and similar use - Part 1: General requirements (IEC 60730-1:1999, 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)*

EN ISO 9227, *Corrosion tests in artificial atmospheres - Salt spray tests (ISO 9227)*

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

ISO 261, *ISO general purpose metric screw threads — General plan*

ISO 17885, *Plastics piping systems -- Mechanical fittings for pressure piping systems -- Specifications*

3 Terms and definitions

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

3.1
standard reference conditions
conditions to which all measured values are corrected (temperature 15 °C; pressure 1013,25 × 10^2 Pa absolute; dry air)

3.2
shut off valve
device which admits or closes the gas flow by movement of the closure member. A valve is manually operated if operation can be performed by the user

3.3
components
3.3.1
obturator
movable part of the valve which shuts off the gas flow

3.3.2
actuating mechanism
part of the valve which actuates the obturator

3.3.3
manual actuator
manually operated actuating mechanism

3.3.4
gas way
passage in the valve through which the gas flows

3.3.5
joint
means of connecting elements of a gas installation

[SOURCE: EN 1775:2007]

3.3.6
flexible appliance connector
element of flexible pipework to be fitted between the end of fixed pipework and the appliance inlet connection

[SOURCE: EN 1775:2007]

3.4
leak-tightness
3.4.1
external leak-tightness
leak-tightness of a gas-carrying compartment with respect to atmosphere

3.4.2
internal leak-tightness
leak-tightness between the inlet and outlet of the valve with the obturator in the closed position

3.5
pressures
pressures measured under static conditions. All pressures quoted are relative to atmospheric pressure

3.5.1
inlet pressure
pressure at the inlet of the valve

3.5.2
outlet pressure
pressure at the outlet of the valve

3.5.3
maximum operating pressure (MOP)
maximum pressure at which a valve can be operated continuously under normal operating conditions

3.5.4
test pressure
pressure to be applied during the test

3.5.5
pressure difference
difference between inlet and outlet pressures

3.6
rated flow rate
flow rate of air, under standard reference conditions, at a given pressure drop

3.7
temperatures
3.7.1
ambient temperature
temperature of the medium surrounding the gas valve

3.7.2
maximum operating temperature (MOT)
maximum temperature at which a valve can be operated continuously under normal conditions

3.7.3
minimum operating temperature
lowest temperature (−5 °C; −20 °C) declared by the manufacturer at which the valve can be operated

Note 1 to entry: Temperatures lower than −20 °C can be declared by the manufacturers.

3.8
operating torque
3.8.1
opening torque
torque to be applied to the manual actuator to move the obturator from the closed to the open position

3.8.2
closing torque
torque to be applied to the manual actuator to move the obturator from the open to the closed position

3.9
cycling frequency
number of working cycles, i.e. from the closed position to the openposition and back to the closed position, in unit time

3.10
DN (nominal size)
alphanumeric designation of size for components of a pipework system, which is used for reference purposes. It comprises the letters DN followed by a dimensionless whole number which is indirectly related to the physical size, in millimetres, of the bore or outside diameter of the end connections

[SOURCE: EN ISO 6708:1995]

4 Product characteristics

4.1 Reaction to fire

Manually operated ball valves and closed bottom taper plug valves in compliance with this standard are classified as belonging to Class A1 “No contribution to fire”.

4.2 Dimensions and tolerance

4.2.1 Materials

4.2.1.1 The shell, obturator and stem shall be made in one of the following materials:

a) copper alloy excluding aluminium-bronze in accordance with Table 1;

b) ductile cast iron excluding laminar cast iron in accordance with EN 1503-3;

c) forged steel and cast steel in accordance with EN 1503-1.

Any part in contact with the gas or the surrounding atmosphere, shall be manufactured from corrosion-resistant materials or shall comply with salt spray test (see 5.6.3). See Table 1 for a list of suitable copper-alloy materials.

Table 1 — Type of suitable copper-alloy materials

Material		Reference standards Choice of the standard following the material processing		
Symbol	**Number (According to EN 1412)**	**Turning**	**Stamping Forging**	**Casting**
CuZn37	CW508L	EN 12167 EN 12163	EN 12420 EN 12165	
CuZn40	CW509L	EN 12167 EN 12163	EN 12420 EN 12165	
CuZn36Pb3	CW603N	EN 12167 EN 12164 EN 12168		
CuZn37Pb1	CW605N	EN 12168		
CuZn37Pb2	CW606N	EN 12167 EN 12164 EN 12168		
CuZn39Pb0,5	CW610N	EN 12164 EN 12167	EN 12165 EN 12420	
CuZn39Pb1	CW611N	EN 12164 EN 12167 EN 12168	EN 12165 EN 12420	
CuZn39Pb2	CW612N	EN 12164 EN 12167 EN 12168	EN 12165 EN 12420	
CuZn39Pb3	CW614N	EN 12164 EN 12167 EN 12168	EN 12165 EN 12420	
CuZn40Pb2	CW617N	EN 12164 EN 12167 EN 12168	EN 12165 EN 12420	
CuZn39Pb1AlB-C	CC755S			EN 1982
CuZn38Al-C	CC767S			EN 1982
CuSn10-C	CC480K			EN 1982
CuSn5Zn5Pb5-C	CC491K			EN 1982
CuSn3Zn8Pb5-C	CC490K			EN 1982
NOTE Materials of equal or better chemical and mechanical characteristics can be accepted.				

The corrosion protection for springs and other moving parts shall not be impaired by any movement.

4.2.1.2 Material indicated in 4.2.1.1 b) and c), excluding a), shall be tested in accordance with 5.6.3 (salt spray resistance).

Once the test has been run, no corrosion which could impair the device's operation shall be revealed by visual examination (disregarding possible salt deposits), and the external tightness of the device (connected and disconnected) remains in conformity with the requirement defined in 4.4 (leak-tightness).

4.2.1.3 Springs and other moving parts manufactured from non-corrosion-resistant materials shall be protected against corrosion and shall retain their protective coating despite any movement resulting from the operation of the valve. After the test of 5.6.1 these parts shall withstand the test of 5.6.3.

4.2.1.4 Elastomeric sealing materials shall comply with EN 549 or EN 682. Additionally the temperature range of the materials specified in technical data sheet shall cover the valve temperature classes of Table 3 of this standard.

4.2.1.5 Lubricants shall comply with EN 377. Additionally the temperature range of the lubricant specified in technical data sheet shall cover the valve temperature classes of Table 3 of this standard.

4.2.1.6 Anaerobic jointing compounds shall comply with EN 751-1.

4.2.2 Construction

Valves shall be designed such that, once installed, it is impossible to remove the obturator or a seal without damaging the valve or leaving clear signs of tampering on it.

4.2.3 Product appearance

All valve components, when viewed with the naked eye corrected for normal vision, shall be free from sharp edges and corners which could cause damage, injury or incorrect operation.

4.2.4 Valve maintenance

All valves shall be designed to be maintenance free.

4.2.5 Springs

If a spring is used, the two end-faces of the spring shall be parallel and perpendicular to the axis of the spring. The end coils of a spring shall not damage their mating faces.

4.2.6 Wall thickness

The wall thickness from any gas way to atmosphere or to holes connected to the atmosphere, shall not be less than 1 mm. Holes for screws, pins, etc., which are used for the assembly of parts and for mounting, shall not provide any leak path between gas ways and the atmosphere.

4.2.7 Plug valves

4.2.7.1 The plug shall be designed and mounted in the housing in such a way that the top edge of the sealing surface protrudes into the corresponding sealing surface of the housing taper.

4.2.7.2 A minimum spacing of 1 mm shall be provided to ensure that the plug is able to advance in the event of wear. The top of the sealing surface of the plug shall be lower than the sealing surface in relation to the body.

4.2.8 Angular seal

With the valve in the fully closed position, the angular distance between the gas port in the obturator and both the inlet port and outlet port in the valve body, shall be at least 8° for DN up to 50 and 6° for DN from 65 to 100 with a measurement uncertainty of 1°, when measured according to 5.7 (see Figure 1).