SLOVENSKI STANDARD
SIST EN 16767:2020

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Nadomešča:
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Industrijski ventili - Kovinski protipovratni ventili

Industrial valves - Metallic check valves

Industriearmaturen - Rückflussverhinderer aus Gusseisen und Stahl

Robinetterie industrielle - Clapets de non-retour métalliques

Ta slovenski standard je istoveten z: **EN 16767:2020**

ICS:

23.060.50	Blokirni ventili	Check valves

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EUROPEAN STANDARD

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English Version

Industrial valves - Metallic check valves

Robinetterie industrielle - Clapets de non-retour métalliques

Industriearmaturen - Metallische Rückflussverhinderer

This European Standard was approved by CEN on 17 February 2020.

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

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European foreword

This document (EN 16767:2020) has been prepared by Technical Committee CEN/TC 69 “Industrial valves”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by October 2020, and conflicting national standards shall be withdrawn at the latest by October 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 16767:2016.

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.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

The main changes are the following:

— inclusion of copper alloy check valves (in Clause 1 and in 4.2);

— update of the normative references;

— addition of informative Annex B giving the correspondence between DN and NPS;

— update of Annex ZA according to Directive 2014/68/EU.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies the general requirements for metallic check valves, which are forged, cast or fabricated in straight, angle or oblique pattern (see EN 736-2) with end connections flanged or wafer, butt welding, socket welding, or threaded.

This document applies to metallic check valves used for all industrial applications.

Additional requirements given in the relevant application standards may apply to check valves used for more specific applications (e.g. for the water industry, the chemical and petrochemical process industry, the gas distribution industry).

Sanitary check valves and back flow prevention anti-pollution check valves are excluded from the scope of this document.

NOTE 1 Double disc type and tilting disc type are also based on butterfly valve and are in the scope of this document.

The range of nominal sizes covered is:

— DN 8, DN 10; DN 12, DN 15; DN 20; DN 25; DN 32; DN 40; DN 50; DN 65; DN 80; DN 100; DN 125; DN 150; DN 200; DN 250; DN 300; DN 350; DN 400; DN 450; DN 500; DN 600; DN 700; DN 750; DN 800; DN 900; DN 1 000; DN 1 200.

DN 8 and DN 12 are not used for PN designated flanged end connections.

DN 8, DN 10 and DN 12 are not used for Class designated flanged end connections.

DN 750 is used for Class designated check valves only.

Socket welding end check valves and threaded end check valves are limited to the range DN 8 to DN 65.

The range of nominal diameters for capillary and compression end valves is 6 mm to 110 mm.

The range of pressure designations covered is:

a) for flanged end and wafer type end cast iron bodies:

   — PN 2,5; PN 6; PN 10; PN 16; PN 25;

   — Class 125; Class 250;

b) for flanged end, wafer type and butt welding end bodies in steel materials:

   — PN 2,5; PN 6; PN 10; PN 16; PN 25; PN 40; PN 63; PN 100; PN 160; PN 250; PN 320; PN 400;

   — Class 150; Class 300; Class 600; Class 900; Class 1 500; Class 2 500;

c) for socket welding end and threaded end bodies in steel materials:

   — PN 40; PN 63; PN 100;

   — Class 600; Class 800.

NOTE 2 Class 800 is a widely used Class designation for socket welding and threaded end check valves.

d) for flanged end and wafer type bodies in copper alloy materials:

— PN 2,5; PN 6; PN 10; PN 16; PN 25; PN 40;

— Class 150; Class 300;

e) for threaded end, capillary end and compression end bodies in copper alloy materials:

— PN 16; PN 20; PN 25; PN 32; PN 40;

— Class 125; Class 250.

The correspondence between DN and NPS is given for information in Annex B.

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 19:2016, *Industrial valves — Marking of metallic valves*

EN 558:2017, *Industrial valves — Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems — PN and Class designated valves*

EN 736-1:2018, *Valves — Terminology — Part 1: Definition of types of valves*

EN 736-2:2016, *Valves — Terminology — Part 2: Definition of components of valves*

EN 736-3:2008, *Valves — Terminology — Part 3: Definition of terms*

EN 1092-1:2018, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1092-2:1997, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 2: Cast iron flanges*

EN 1092-3:2003, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated – Part 3: Copper alloy flanges*

EN 1759-1:2004, *Flanges and their joint — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 1: Steel flanges, NPS 1/2 to 24*

EN 1759-3:2003, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 3: Copper alloy flanges*

EN 10269:2013, *Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties*

EN 12266-1:2012, *Industrial valves — Testing of metallic valves — Part 1: Pressure tests, test procedures and acceptance criteria — Mandatory requirements*

EN 12351:2010, *Industrial valves — Protective caps for valves with flanged connections*

EN 12516-1:2014+A1:2018, *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 12516-4:2014+A1:2018, *Industrial valves — Shell design strength — Part 4: Calculation method for valve shells manufactured in metallic materials other than steel*

EN 12627:2017, *Industrial valves — Butt welding ends for steel valves*

EN 12760:2016, *Industrial valves — Socket welding ends for steel valves*

EN 12982:2009, *Industrial valves — End-to-end and centre-to-end dimensions for butt welding end valves*

EN 13547:2013, *Industrial valves — Copper alloy ball valves*

EN 16722:2015, *Industrial valves — End-to-end and centre-to-end dimensions for valves with threaded ends*

EN ISO 228-1:2003, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

EN ISO 9606-1:2017, *Qualification testing of welders — Fusion welding — Part 1: Steels (ISO 9606-1:2012 including Cor 1:2012 and Cor 2:2013)*

EN ISO 14732:2013, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials (ISO 14732:2013)*

EN ISO 15607:2019, *Specification and qualification of welding procedures for metallic materials — General rules (ISO 15607:2019)*

ISO 4200:1991, *Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 736-1, EN 736-2 and EN 736-3 apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

Note 1 to entry: EN 736-1 illustrates four basic types of check valves:

— the axial and lift types are based on the globe valve;

— the swing type is based on the butterfly valve and

— the diaphragm type is based on the diaphragm valve.

Other types of check valves are possible and are considered to be within the scope of this document.

4 Requirements

4.1 General

For information to be supplied by the purchaser, see Annex A.

4.2 Design

4.2.1 Shell design strength

The minimum body and bonnet wall thickness, the body/bonnet joint and bonnet bolting shall be determined as follows:

a) for steel check valves designed by the tabulation method, it shall be according to EN 12516-1:2014+A1:2018;

b) for steel check valves designed by the calculation method, it shall be according to EN 12516-2:2014;

c) for cast iron and copper alloy check valves designed by the calculation method, it shall be according to EN 12516-4:2014+A1:2018;

d) for PS × DN < 3 000 a validation by an experimental method according to EN 12516-3 is possible, otherwise the experimental method shall only be applied in addition to the tabulation or calculation method.

4.2.2 Materials

4.2.2.1 The body and cover (if any) materials shall be selected from EN 12516-1:2014+A1:2018 and/or EN 12516-4:2014+A1:2018. Bolting (if any) materials shall be selected from EN 10269:2013. A selection of bolts and nuts for flange connections, which may be used for the body and cover connection, is indicated in EN 1515-4.

4.2.2.2 All copper alloy materials listed in Table A.2 of EN 13547:2013 are also possible.

4.2.2.3 All the internal parts in contact with the fluid shall be made of a material or coated with a material whose corrosion resistance to the fluid being carried is at least equal to the body and bonnet material. The manufacturer shall declare the materials of construction and any coatings of components in contact with the line fluid from which the suitability of the check valve for the application can be determined.

4.2.3 Pressure/temperature ratings

4.2.3.1 Steel body

The pressure/temperature ratings shall be as specified in EN 12516-1:2014+A1:2018 for the particular body material group.

The pressure/temperature ratings applicable to Class 800 socket welding and threaded end check valves shall be the Class 600 rating for the applicable material group multiplied by the ratio of 800/600.

4.2.3.2 Cast iron body

a) The pressure/temperature ratings shall be as specified in EN 1092-2:1997 for PN-designated check valves.

b) Alternatively the pressure/temperature ratings may be as specified in ASME B16.1:2015 for Class designated check valves.