



SLOVENSKI STANDARD

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Industrijski ventili - Protipovratni ventili iz jeklenih litin

Industrial valves - Steel and cast iron check valves

Industriearmaturen - Rückflussverhinderer aus Guss Eisen und Stahl

Robinetterie industrielle - Clapets de non-retour en acier et fonte

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ICS:

23.060.50 Blokirni ventili Check valves

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EUROPEAN STANDARD

EN 16767

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Supersedes EN 12334:2001, EN 14341:2006

English Version

Industrial valves - Steel and cast iron check valves

Robinetterie industrielle - Clapets de non-retour en
acier et en fonteIndustriearmaturen - Rückflussverhinderer aus
Gusseisen und Stahl

This European Standard was approved by CEN on 12 February 2016.

CEN members are bound to comply with 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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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 16767:2016) 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of an identical text or by endorsement, at the latest by October 2016, and conflicting national standards shall be withdrawn at the latest by October 2016.

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 12334:2001 and EN 14341:2006.

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.

The main changes to the previous version of EN 12334:2001 and EN 14341:2006 are the following:

- combined content from previous version of EN 12334:2001 and EN 14341:2006;
- materials referenced to EN 12516-1 and/or to EN 12516-4;
- from EN 12334:2001, removal of informative Annex B “Comparison between EN and ISO cast iron material grades”;
- from EN 14341:2006, removal of Table 1 “Nominal inside diameter of the body end port” and Table 2 “Sizes of auxiliary connections”;
- revision of the normative references;
- the technical content was considerably revised.

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.

EN 16767:2016 (E)

1 Scope

This European Standard specifies the requirements for cast iron or steel 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 European Standard applies to check valves mainly used for industrial and general purpose applications. However, they may be used for other applications provided the requirements of the relevant performance standards are met.

Back flow prevention anti-pollution check valves are outside the scope of this European standard.

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 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 valves only.

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

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 steel bodies:

— PN 40; PN 63; PN 100;

— Class 150; Class 300; Class 600;

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

— PN 40; PN 63; PN 100;

— Class 600; Class 800.

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

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

prEN 558:2015¹⁾, *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, *Valves — Terminology — Part 1: Definition of types of valves*

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

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

EN 1092-1:2007+A1:2013, *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 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 10269:2013, *Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties*

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

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

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 12516-4:2014, *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*

prEN 12760:2015¹⁾, *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 16722, *Industrial valves — End-to-end and centre-to-end dimensions for valves with threaded ends*

¹⁾ Under preparation.

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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 9606-1, *Qualification testing of welders — Fusion welding — Part 1: Steels (ISO 9606-1)*

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

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

ISO 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ANSI/ASME B1.20.1, *Pipe Threads, General Purpose, Inch*

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.

NOTE 1 The terms maximum allowable pressure, PS, and test pressure, PT, defined in Directive 2014/68/EU (PED) are equivalent to the terms allowable pressure, p_s , and test pressure, p_t , defined in EN 736-3.

NOTE 2 EN 736-1 illustrates four basic check valve types:

- 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 check valve types are possible and are considered to be within the scope of this European standard.

4 Requirements**4.1 General**

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

4.2 Design**4.2.1 Materials**

4.2.1.1 The body and cover (if any) materials shall be selected from EN 12516-1:2014 and/or EN 12516-4:2014. 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.

4.2.1.2 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 valve for the application can be determined.

4.2.2 Pressure/temperature ratings

4.2.2.1 Steel body

The pressure/temperature ratings shall be in accordance with EN 12516-1:2014 for the particular body/bonnet material group.

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

4.2.2.2 Cast iron body

The pressure/temperature ratings shall be in accordance with EN 12516-4:2014 for the particular body/bonnet material group.

4.2.2.3 Other parts

Other parts of the valve (cover, bolts etc.) shall have such dimensions, so that they fulfil the body rating.

4.2.2.4 Low temperature applications

4.2.2.4.1 Steel check valves

For temperatures below the lowest temperature given in the pressure/temperature rating tables of EN 12516-1:2014, the maximum allowable pressure shall be not greater than the pressure corresponding to the lowest temperature in the rating tables. The use of valves at lower temperatures than shown in the rating tables is permitted providing the bending rupture energy of the body and cover material measured on three 10 mm × 10 mm specimens in accordance with EN ISO 148-1, shall be not less than an average of 27 J at a temperature no higher than the lowest scheduled operating temperature.

4.2.2.4.2 Cast iron check valves

Temperatures lower than those given in the pressure/temperature ratings tables of EN 12516-4:2014 can be used only if the shells and bonnets are manufactured in spheroidal graphite cast iron of grades EN-GJS-350-22-LT or EN-GJS-400-18-LT (see Table 1).

Table 1 — Allowable material grades for low temperature (LT) design conditions

Symbol	Number	Temperature limits
EN-GJS-350-22-LT	5.3100	-40 °C to 350 °C
EN-GJS-400-18-LT	5.3103	-20 °C to 350 °C

4.2.2.5 Restrictions

Any restrictions of temperature or pressure below those specified in 4.2.2.1 to 4.2.2.4, for example, those imposed by soft seals, special trims, shall be indicated on the valve (see 8.1 a).