SLOVENSKI STANDARD
oSIST prEN 593:2020

01-januar-2020

Industrijski ventili - Kovinske zaporne lopute

Industrial valves - Metallic butterfly valves

Industriearmaturen - Metallische Klappen

Robinetterie industrielle - Robinets métalliques à papillon

Ta slovenski standard je istoveten z: **prEN 593**

ICS:

23.060.30 Zapirni ventili (zasuni) Gate valves

oSIST prEN 593:2020 **en,fr,de**

EUROPEAN STANDARD

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English Version

Industrial valves - Metallic butterfly valves

Robinetterie industrielle - Robinets métalliques à papillon

Industriearmaturen - Metallische Klappen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 69.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 593:2019) has been prepared by Technical Committee CEN/TC 69 “Industrial valves”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 593:2017.

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 2014/68/EU.

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

The main technical changes compared to the previous edition are:

a) inclusion of an introduction to explain the reason of this revision;

b) the inclusion of a sentence in the scope to clarify that this document applies to all industrial applications;

c) addition of new 4.15 and 5.3 on the design requirements and final assessment for pressure equipment European legislation;

d) addition of a new Clause 8 for the documentation;

e) update of Annex ZA.

Introduction

This document was revised to refer to EN 16668:2016+A1:2018 for all requirements related to pressure equipment European legislation.

Annex ZA of this document is identical to Annex ZA of EN 16668:2016+A1:2018, for those requirements applicable to butterfly valves.

1 Scope

This document specifies minimum general requirements for butterfly valves having metallic bodies for use with all type of pipe end connections (e.g. wafer, lug, flange, butt welding) and used for isolating, regulating or control applications.

The PN and Class ranges are:

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

— Class 150; Class 300; Class 600; Class 900.

The size range is:

— 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 1 050; DN 1 100; DN 1 200; DN 1 400; DN 1 500; DN 1 600; DN 1 800; DN 2 000; DN 2 200; DN 2 400; DN 2 600; DN 2 800; DN 3 000; DN 3 200; DN 3 400; DN 3 600; DN 3 800; DN 4 000.

DN 750 and DN 1 050 are used only for Class 150 and Class 300.

Intermediate DNs are allowed upon agreement between manufacturer and customer.

This document applies to metallic butterfly valves used for all industrial applications. Additional requirements given in the relevant application standards may apply to butterfly valves used for more specific applications (e.g. for the water industry, the chemical and petrochemical process industry, the gas distribution industry).

NOTE 1 Industrial applications cover water applications.

For valves subject to European legislation on pressure equipment, EN 16668 applies together with this document.

For industrial process control valves, EN 1349 and EN 60534-2-1 apply together with this document.

For water supply application, EN 1074-1 and EN 1074-2 apply together with this document.

NOTE 2 Butterfly valves for water supply application do not comply with Annex ZA and are not CE marked because they are excluded from the pressure equipment European legislation.

NOTE 3 The range of DN, applicable to each PN, for wafer and wafer lug valve types is as given in the appropriate part of EN 1092 for Type 11 flanges for the applicable material. The range of DN, applicable to each PN, for flanged valve types is as given in the appropriate part of EN 1092 for Type 21 flanges for the applicable material.

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

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 1074-2:2000, *Valves for water supply - Fitness for purpose requirements and appropriate verification tests - Part 2: Isolating valves*

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 1092-4:2002, *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 4: Aluminium alloy flanges*

EN 1267:2012, *Industrial valves - Test of flow resistance using water as test fluid*

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 1759-4:2003, *Flanges and their joint - Circular flanges for pipes, valves, fittings and accessories, class designated - Part 4: Aluminium 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 12266-2:2012, *Industrial valves - Testing of metallic valves - Part 2: Tests, test procedures and acceptance criteria - Supplementary requirements*

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

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 12570:2000, *Industrial valves - Method for sizing the operating element*

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

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

EN 16668:2016+A1:2018, *Industrial valves - Requirements and testing for metallic valves as pressure accessories*

EN 60534-2-3:2016, *Industrial-process control valves - Part 2-3: Flow capacity - Test procedures*

EN ISO 1043-1:2011, *Plastics - Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics (ISO 1043-1:2011)*

EN ISO 5211:2017, *Industrial valves - Part-turn actuator attachments (ISO 5211:2017)*

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 10497:2010, *Testing of valves - Fire type-testing requirements (ISO 10497:2010)*

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 15607:2003, *Specification and qualification of welding procedures for metallic materials - General rules (ISO 15607:2003)*

ISO 1629:2013, *Rubber and latices — Nomenclature*

3 Terms and definitions

For the purposes of this document the terms and definitions given in EN 736-1, EN 736-2, EN 736-3, EN 16668 and the following 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/

3.1
maximum allowable pressure
PS
maximum pressure for which the pressure equipment is designed as specified by the manufacturer

[SOURCE: EN 764-1:2015+A1:2016, 3.2.87]

3.2
maximum allowable temperature
TS_{max}
maximum temperature for which the pressure equipment is designed as specified by the manufacturer

[SOURCE: EN 764-1:2015+A1:2016, 3.1.9]

3.3
end of line service
condition that occurs when the downstream side of the valve is opened to atmosphere

3.4
driving shaft
shaft connected to the obturator to operate the valve in the case of a multi-shaft valve

3.5
trim
parts in contact with the fluid

3.6
eccentration
offset
deviation of the operating axes in respect to the reference axes of the pipe/valve

4 Design requirements

4.1 General

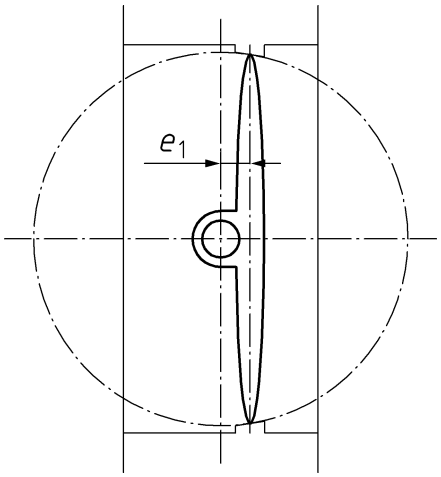
The valve shall be of either concentric design (see Figure 1) or eccentric design (see Figures 2 to 4). The offset may be single, double or triple.

A first offset is an axial offset of the shaft to the seat contact.

A second offset is an offset from the pipe centreline to the valve obturator centerline.

In the triple offset design, the seat and seal contact surface centreline is inclined in respect to the pipe / valve centreline, whatever the form of the contact.

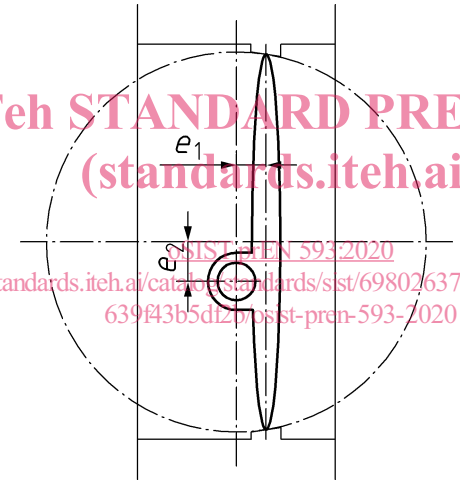
Figure 1 — Concentric design



Key

e_1 eccentricity 1

Figure 2 — Single eccentric design (single offset)



Key

e_1 eccentricity 1

e_2 eccentricity 2

Figure 3 — Double eccentric design (double offset)