



SLOVENSKI STANDARD
SIST EN 593:2000
01-september-2000

Industrijski ventili - Kovinske lopute

Industrial valves - Metallic butterfly valves

Industriearmaturen - Metallische Klappen

Robinetterie industrielle - Robinets métalliques à papillon

Ta slovenski standard je istoveten z: EN 593:1998

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ICS:

23.060.30 Zapirni ventili (zasuni) Gate valves

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en

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EUROPEAN STANDARD

EN 593

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 1998

ICS 23.060.30

Descriptors: industrial valves, butterfly valves, metals, specifications, dimensions, design, operating requirements, characteristics, tests, designation, marking

English version

Industrial valves - Metallic butterfly valves

Robinetterie industrielle - Robinets métalliques à papillon

Industriearmaturen - Metallische Klappen

This European Standard was approved by CEN on 11 December 1997.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard 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 July 1998, and conflicting national standards shall be withdrawn at the latest by July 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This standard specifies requirements for butterfly valves having metallic bodies of designations PN 2,5 to PN 40 and Class 125 to Class 300 inclusive, in the size range DN 40 to DN 2000 for use in flanged or butt welding piping systems and used for isolating, regulating or control applications.

For application as industrial process control valves, see prEN 1349 and EN 60534-2-1.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references the subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 19	Marking of general purpose industrial valves
EN 558-1	Industrial valves - Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems - Part 1: PN-designated valves
EN 558-2	Industrial valves - Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems - Part 2: 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
prEN 736-3	Valves - Terminology Part 3: Definition of terms
prEN 1092-1	Flanges and their joints - Circular flanges for pipes, valves and fittings Part 1: Steel flanges - PN designated
EN 1092-2	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated Part 2: Cast iron flanges

prEN 1092-3	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories Part 3: Copper alloy and composite flanges - PN designated
prEN 1092-4	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated Part 4: Aluminium alloy flanges
prEN 1267	Valves - Test of flow resistance
prEN 1349	Industrial process control valves
prEN 1503-1	Valves - Shell materials Part 1: Steels
prEN 1503-2	Valves - Shell materials Part 2: ISO - steels
prEN 1503-3	Valves - Shell materials Part 3: Cast irons
prEN 1503-4	Valves - Shell materials Part 4: Copper alloys
prEN 1759-3	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, class designated Part 3: Copper alloy and composite flanges
prEN 12116	Industrial valves - Part - turn valve actuator attachment
prEN 12266-3	Industrial valves - Technical conditions of delivery Part 3: Test procedures and acceptance criteria
EN 60534-2-1	Industrial process control valves Part 2: Flow capacity - Section 1: Sizing equations for incompressible fluid flow under installed conditions
prEN ISO 10497	Testing of valves - Fire type-testing requirements (ISO 10497: 1992)

3 Definitions

For the purposes of this European Standard, the definitions given in EN 736-1, EN 736-2, prEN 736-3 and the following definitions shall apply.

3.1 double flanged butterfly valve: A butterfly valve having flanged ends for connection to flanges of adjacent components by individual bolting (see figure 1).

3.2 wafer butterfly valve: A butterfly valve intended for clamping between flanges of adjacent components.

NOTE: Different body shapes are possible (see figures 2, 3 and 4)

3.3 butt weld end butterfly valve: A butterfly valve intended for butt welding into a pipe line (see figure 5).

4 Classification

4.1 DN range

The DN range is:

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 750¹⁾ -
DN 800 - DN 900 - DN 1000 - DN 1200 - DN 1400 - DN 1600 - DN 1800 - DN 2000.

4.2 PN and Class range

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The PN and Class ranges are:

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- PN 2,5, PN 6, PN 10, PN 16, PN 25, PN 40

- Class 125, Class 150, Class 300

4.3 Valve types

Valves are classified according to the body type:

- Double flanged body (figure 1);
- Flangeless wafer body (figure 2);
- Single flange wafer body (figure 3);
- Lugged wafer body (figure 3);
- "U" section wafer body (figure 4);
- Butt weld end body (figure 5).

¹⁾ DN 750 is for class designated valves only.

Figures 1 to 5 give examples of body types:

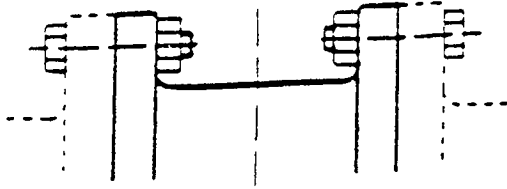


Figure 1: Double flanged body

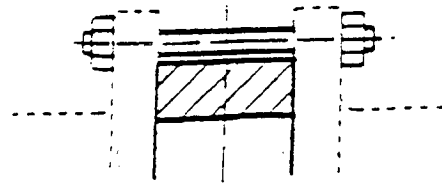


Figure 2: Flangeless wafer body



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NOTE: The outer shape of the flange can be circular or lugged.

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Figure 3: Single flange or lugged wafer body

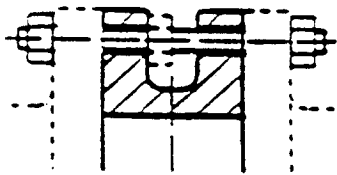


Figure 4: "U" section wafer body

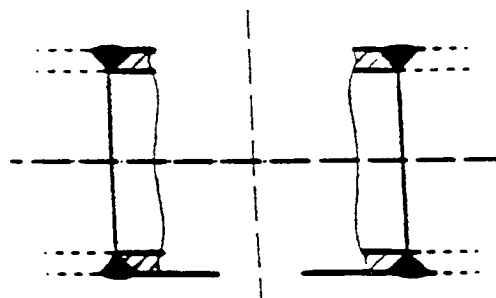


Figure 5: Butt weld end body

5 Requirements

5.1 Design

5.1.1 Construction

5.1.1.1 Body

The body can be cast, forged or fabricated by welding.

Flanges of double flanged valves and single flange wafer valves shall have bolt holes in accordance with prEN 1092-1, EN 1092-2, prEN 1092-3 and prEN 1092-4 for valves designated by PN and prEN 1759-3 for copper Class designated valves. Threaded holes can be provided where the design of the valve precludes through flange bolting.

NOTE: For Class designated valves in steel and aluminium alloy, see annex B.

Flangeless wafer valves (see 4.3 and figure 2) are normally intended for clamping between pipe flanges utilizing through bolts. The shape of wafer valve bodies shall be such that centering of the valves within the appropriate flange bolt circle is ensured. Where through bolting is not practicable due to the valve design, threaded holes can be provided for individual bolting.

Lugged or single flange wafer valves (see 4.3 and figure 3) are supplied with threaded or through holes for individual flange bolting or end of the line assembly.

The manufacturer's literature shall be consulted to determine if through bolting is possible.

Linings or liners can be extended over the flange faces of the body to form a joint for the flange.

5.1.1.2 Obturator (disk)

The manufacturer shall publish dimensions showing the protrusion of the obturator in the open position beyond the faces of the valve.

5.1.1.3 Seat

The seat can be replaceable or non-replaceable.

5.1.1.4 Driving shaft

The visible end of the driving shaft shall be designed or marked to indicate the orientation of the obturator.

The sealing of the shaft shall remain tight to atmosphere when the operating device is removed.

The shaft shall be retained in the body, so it cannot be blown out of the body when the means of actuation or replaceable shaft seals are removed.

5.1.1.5 *Fire-tested design*

Valves designated as fire-tested design shall comply with prEN ISO 10 497.

If valves are required to be a fire-tested design, this shall be specified by the purchaser (see annex A - informative).

5.1.1.6 *Anti-static design*

Valves with anti-static design shall have electrical continuity between shaft, obturator and body.

If valves are required to be an anti-static design, this requirement shall be specified by the purchaser (see annex A - informative).

5.1.2 *Materials*

5.1.2.1 *Body*

The body materials shall be selected from the grades listed in prEN 1503-1, prEN 1503-2, prEN 1503-3 and prEN 1503-4.

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NOTE: Metallic materials can have a corrosion resistant coating.

5.1.2.2 *Obturator*

Materials shall be suitable for the service conditions and fluid to be conveyed: e.g. type of fluid, pressure and temperature.

NOTE: Metallic obturators can have a corrosion resistant coating.

5.1.2.3 *Shaft*

The material should be selected from:

- steel with minimum 12 % of chromium,
- copper alloys,
- nickel alloys,
- nickel-copper alloys.