



SLOVENSKI STANDARD
SIST EN 1983:2006
01-oktober-2006

Industrijski ventili – Jekleni krogelni ventili

Industrial valves - Steel ball valves

Industriearmaturen - Kugelhähne aus Stahl

Robinetterie industrielle - Robinets a tournant sphérique en acier

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ICS:

23.060.20 Zapirni ventili (kroglasti in Ball and plug valves
pipe)

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ICS 23.060.20

English Version

Industrial valves - Steel ball valves

Robinetterie industrielle - Robinets à tournant sphérique en
acier

Industriearmaturen - Kugelhähne aus Stahl

This European Standard was approved by CEN on 23 March 2006.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 1983:2006) 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of an identical text or by endorsement, at the latest by November 2006, and conflicting national standards shall be withdrawn at the latest by November 2006.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.

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

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1 Scope

This European Standard specifies requirements for industrial steel ball valves having flanged, threaded, socket welding or butt welding ends.

The DN range is:

- DN 4 ; DN 6 ; DN 8 ; DN 10 ; 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 550 ; DN 600 ; DN 650 ; DN 700 ; DN 750 ; DN 800 ; DN 850 ; DN 900.

The PN and Class ranges are:

- PN 6 ; PN 10 ; PN 16 ; PN 25 ; PN 40 ; PN 63 ; PN 100 ;
- Class 150 ; Class 300 ; Class 600 ; Class 900 ; Class 1 500 ; Class 2 500 ; Class 4 500.

This European Standard applies to steel ball valves mainly used for industrial and general purpose applications. However, they can be used for other applications provided the requirements of the relevant performance standard are met.

2 Normative references

The following referenced documents are indispensable for the application 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 19:2002, *Industrial valves — Marking of metallic valves*
- prEN 558¹⁾, *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 736-1:1995, *Valves — Terminology — Part 1: Definition of types of valves*
- EN 736-2:1997, *Valves — Terminology — Part 2: Definition of components of valves*
- EN 736-3:1999, *Valves — Terminology — Part 3: Definition of terms*
- EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN-designated — Part 1: Steel flanges*
- EN 1503-1, *Valves — Materials for bodies, bonnets and covers — Part 1: Steels specified in European Standards*
- EN 1503-2, *Valves — Materials for bodies, bonnets and covers — Part 2: Steels other than those specified in European Standards*
- EN 1515-1, *Flanges and their joints — Bolting — Part 1: Selection of bolting*
- EN 1515-2, *Flanges and their joints — Bolting — Part 2: Classification of bolt materials for steel flanges, PN designated*

1) Under preparation.

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

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

EN 12266-2, *Industrial valves — Testing of valves — Part 2: Tests, test procedures and acceptance criteria – Supplementary requirements*

EN 12516-1:2005, *Industrial valves — Shell design strength — Part 1: Tabulation method for steel valve shells*

EN 12516-2:2004, *Industrial valves — Shell design strength — Part 2: Calculation methods for steel valve shells*

EN 12516-3:2003, *Industrial valves — Shell design strength — Part 3: Experimental method*

EN 12570, *Industrial valves — Method for sizing the operating element*

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

EN 12760, *Valves — Socket welding ends for steel valves*

EN 12982:2000, *Industrial valves — End-to-end and centre-to-end dimensions for butt welding end valves*

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

EN ISO 5211, *Industrial valves — Part-turn valve actuator attachments (ISO 5211:2001)*

EN ISO 10497:2004, *Testing of valves — Fire type-testing requirements (ISO 10497:2004)*

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

ASME B1.20.1, *Pipe Threads, General Purpose*

ASME B16.34, *Valves Flanged Threaded and Welding End*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 736-1:1995, EN 736-2:1997 and EN 736-3:1999 and the following apply.

3.1

Effective diameter

manufactured minimum diameter through the flow passage of the valve in the fully open position

4 Requirements

4.1 Design

4.1.1 General

4.1.1.1 Flow passage

Valves shall be full bore or reduced bore pattern (see Figure 1).

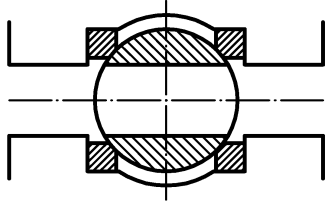


Figure 1a — Full bore pattern

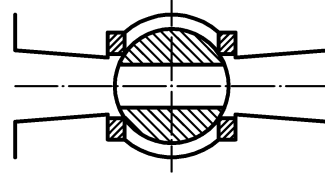


Figure 1b — Reduced bore pattern

Figure 1 — Valve patterns

4.1.1.2 Size and pressure designation

The range of nominal sizes and pressure designations covered by each type of body end connection shall be as specified in Tables 1 to 3.

Table 1 — Ball valves with flanged and butt welding ends

Size	PN	Class
DN 8 to DN 900	PN 10 to PN 100	Class 150 Class 300 Class 600
DN 8 to DN 600	-	Class 900
DN 8 to DN 400	-	Class 1 500
DN 8 to DN 50		Class 2 500
NOTE Sizes DN 8, DN 550, DN 650, DN 750 and DN 850 are not applicable to flanged valves.		

Table 2 — Ball valves with socket weld ends

Size	PN	Class
DN 8 to DN 100	PN 10	-
DN 8 to DN 50	PN 16 to PN 100	-

Table 3 — Ball valves with threaded ends

Size	PN	Class
DN 4 to DN 100	PN 6 to PN 25	Class 150
DN 4 to DN 50	PN 40 to PN 100	Class 300 to Class 2 500
DN 4 to DN 10	-	Class 4 500

Typical ball valve construction variants are illustrated in Figure 2.



Figure 2a — Type of ball



Figure 2b — Type of body

Key

- 1 Seat support
- 2 Trunnion support
- 3 Sealed
- 4 One piece body - Axial entry (insert)
- 5 Top entry
- 6 Split body in two pieces
- 7 Split body in three pieces

NOTE The end connections are only examples.

Figure 2 — Typical ball valve construction

4.1.1.3 Body

Valves shall be designed in accordance with EN 12516-1, EN 12516-2 or EN 12516-3.

4.1.1.4 Ball

The ball port shall be circular with minimum effective diameters as specified in Table 4. Where a specific ball construction is required, this shall be specified by the purchaser (see Figure 3 for examples).

Table 4 — Minimum effective diameter

Size	Minimum effective diameter							
	mm							
	Reduced bore				Full bore			
	PN 10 to PN 100	Class 900	Class 1 500	Class 2 500	PN 10 to PN 100	Class 900	Class 1 500	Class 2 500
	Class 150 to Class 600				Class 150 to Class 600			
DN 4	-	-	-	-	4	4	4	4
DN 6	4	4	4	4	5,5	5,5	5,5	5,5
DN 8	5,5	5,5	5,5	5,5	6	6	6	6
DN 10	6	6	6	6	9	9	9	9
DN 15	9	9	9	9	12,5	11	11	11
DN 20	12,5	11	11	11	17	17	17	17
DN 25	17	17	17	17	24	22	22	22
DN 32	24	22	22	22	30	28	28	28
DN 40	28	28	28	28	37	35	35	35
DN 50	36	35	35	35	47	47	47	42
DN 65	47	47	47	42	62	57	57	52
DN 80	57	57	57	52	74	73	73	62
DN 100	74	74	74	62	98	98	98	87
DN 125	88	-	-	-	119	-	-	-
DN 150	98	98	98	87	142	142	142	131
DN 200	142	142	142	131	190	190	190	179
DN 250	187	187	187	179	237	238	238	223
DN 300	237	237	237	223	285	282	282	265
DN 350	266	266	266	265	332	311	311	-
DN 400	305	305	305	-	375	355	355	-
DN 450	332	311	311	-	430	400	-	-
DN 500	375	355	-	-	475	445	-	-
DN 550	430	400	-	-	538	522	-	-
DN 600	475	445	-	-	588	569	-	-
DN 650	538	522	-	-	633	617	-	-
DN 700	588	569	-	-	684	665	-	-
DN 750	633	617	-	-	735	712	-	-
DN 800	684	665	-	-	779	760	-	-
DN 850	735	712	-	-	830	808	-	-
DN 900	779	760	-	-	874	855	-	-

NOTE 1 Sizes DN 4, DN 6, DN 8, DN 550, DN 650, DN 750 and DN 850 are not applicable to flanged valves.

NOTE 2 These dimensions are not identical to those used for copper alloy ball valves.

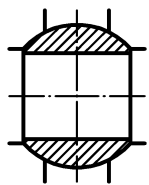


Figure 3a — Solid ball

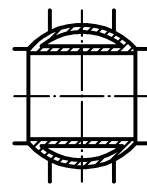


Figure 3b — Sealed cavity ball

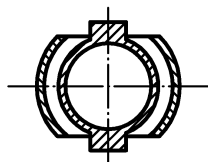


Figure 3c — Cored cavity ball

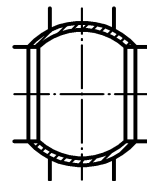


Figure 3d — Hollow ball

NOTE Solid and cored cavity balls may be of one or two piece construction.

Figure 3 — Examples of ball construction

4.1.1.5 Shaft

The shaft shall be anti-blow out as defined in EN 736-3.

4.1.1.6 Anti-static design requirements

Valves shall have an anti-static feature incorporating the requirements of Annex A.

4.1.1.7 Fire safe design requirements

When specified, valves shall be type tested in accordance with the requirements of EN ISO 10497.

4.1.1.8 Drain tapplings

The body design of valves of DN 50 and larger shall be such that, when specified, the valve body may have a drain tapping. The position is at the manufacturer's discretion, unless otherwise specified by the purchaser. Tapping threads shall be in accordance with ISO 7-1, EN ISO 228-1, ASME B16.34 or ASME B1.20.1 and shall be of the size specified in Table 5.

Table 5 — Drain tapplings

Size	Thread size
DN 50 to DN 100	½" (DN 15)
DN 125 and DN 200	¾" (DN 20)
DN 250 to DN 600	1" (DN 25)
DN 650 to DN 900	1½" (DN 40)