

# SVENSK STANDARD

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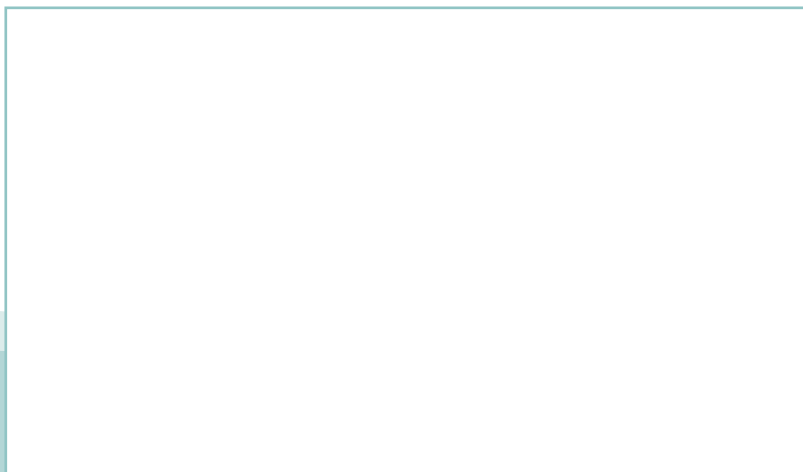
ICS: 23.060.10



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## Rörledningsarmatur – Industriventiler – Kägelventiler av gjutjärn

### Industrial valves – Cast iron globe valves



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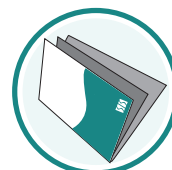
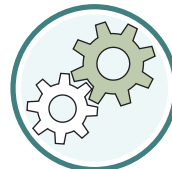
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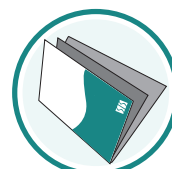
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Europastandarden EN 13789:2010 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 13789:2010.

Denna standard ersätter SS-EN 13789, utgåva 1.

The European Standard EN 13789:2010 has the status of a Swedish Standard. This document contains the official English version of EN 13789:2010.

This standard supersedes the Swedish Standard SS-EN 13789, edition 1.

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 13789**

May 2010

ICS 23.060.10

Supersedes EN 13789:2002

English Version

## Industrial valves - Cast iron globe valves

Robinetterie industrielle - Robinets à soupape en fonte

Industriearmaturen - Ventile aus Gusseisen

This European Standard was approved by CEN on 9 April 2010.

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 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 Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

This document (EN 13789:2010) 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 2010, and conflicting national standards shall be withdrawn at the latest by November 2010.

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 13789:2002.

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 97/23/EC.

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

This document supersedes EN 13789:2002 where the following modifications were made:

- the normative references were updated in Clause 2, in 4.1.3.1, in 4.2.4, in 5.1 and in Table B.1;
- 4.1.1.1 was revised to take into account the publication of EN 12516-4:2008;
- 4.1.2.1, 4.2.1 and Table ZA.1 were revised to be in compliance with EU Directive 97/23/EC (PED);
- Annex B became informative.

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

## 1 Scope

This European Standard specifies the requirements for cast iron globe valves in straight, angle or oblique pattern (see EN 736-2) with flanged or threaded end connections.

This European Standard is applicable to cast iron globe valves mainly used for industrial and general purpose applications. However, they can be used for other applications provided the requirements of the relevant performance standards are met.

The range of nominal sizes covered is:

a) flanged:

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.

b) threaded:

$\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ , 2.

The range of pressure designations covered is:

c) for flanged end valves:

PN 6; PN 10; PN 16; PN 25; PN 40;

d) for threaded end valves:

PN 6; PN 10; PN 16.

## 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, *Industrial valves — Marking of metallic valves*

EN 558, *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 736-3:2008, *Valves — Terminology — Part 3: Definition of terms*

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

EN 1563:1997, *Founding — Spheroidal graphite cast irons*

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



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

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

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

EN ISO 5210, *Industrial valves — Multi-turn valve actuator attachments (ISO 5210:1991)*

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

### 3 Terms and definitions

For the purposes of this document, the terms and definitions of types of valves and components and the terms and definitions given in EN 736-1:1995, EN 736-2:1997 and EN 736-3:2008 apply.

NOTE The terms maximum allowable pressure,  $PS$ , and test pressure,  $PT$ , defined in EU Directive 97/23/EC (PED) are equivalent to the terms allowable pressure,  $p_s$ , and test pressure,  $p_t$ , defined in EN 736-3:2008.

## 4 Requirements

### 4.1 Design

#### 4.1.1 Materials

4.1.1.1 The body and bonnet materials shall be selected from EN 12516-4.

For PN 40 rated valves, spheroidal graphite cast iron only shall be used.

4.1.1.2 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.

4.1.1.3 Welding of grey cast iron and impregnation of castings of all materials is not permitted.

#### 4.1.2 Pressure/temperature ratings

4.1.2.1 The pressure/temperature ratings shall be in accordance with EN 1092-2.

NOTE Annex B may be used to determine the equivalent ISO material grade for the EN material grades specified in 4.1.1.1.

4.1.2.2 Any restrictions of temperature and/or pressure below those specified in EN 1092-2, for example, those imposed by soft seals, special trims, shall be indicated on the valve (see 8.1.2).

4.1.2.3 The use of valves at lower temperatures than shown in the pressure/temperature rating tables in EN 1092-2 is permitted providing that the body and bonnet is manufactured from spheroidal graphite cast iron material grades EN-GJS-350-22-LT or EN-GJS-400-18-LT. For temperatures below the lowest temperature shown in the rating tables the maximum allowable pressure shall be no greater than the pressure corresponding to the lowest temperature in the rating tables. The lowest scheduled operating temperature shall be not less than the temperature specified in EN 1563 for the Charpy impact tests.

#### 4.1.3 Dimensions

##### 4.1.3.1 Face-to-face, centre-to-face and end-to-end dimensions

Face to face and centre-to-face dimensions of flanged valves shall be in accordance with EN 558 and specified by the purchaser (see Annex A).

The end-to-end dimensions of threaded end valves are at the choice of the manufacturer.

#### **4.1.3.2 Body ends**

Flanged ends shall be in accordance with the requirements of EN 1092-2.

Threaded ends shall be of the internal form in accordance with Type  $R_c$  or  $R_p$  to ISO 7-1:1994.

#### **4.1.3.3 Body end port inside diameter**

The body end port shall be circular. For unlined valves, the body end port inside diameter shall be not less than the nominal inside diameter specified in Table 1.

### **4.1.4 Operation**

#### **4.1.4.1 Operating device**

Unless otherwise specified by the purchaser, the valve shall be supplied with a handwheel. If the valve is to be operated by an actuator, then the valve/actuator attachment shall be in accordance with EN ISO 5210 for multi-turn actuators. For linear actuators, the valve/actuator attachment is the choice of the manufacturer.

#### **4.1.4.2 Operating direction**

The valve shall be closed by turning the handwheel in a clockwise direction when viewed from above the handwheel. Marking of the handwheel shall be in accordance with EN 19.

**Table 1 — Nominal inside diameter of the body end port**

Dimensions in millimetres

Size	PN 6	PN 10	PN 16	PN 25	PN 40
DN 10	10	10	10	10	10
DN 15	15	15	15	13	13
DN 20	20	20	20	19	19
DN 25	25	25	25	25	25
DN 32	31	31	31	31	31
DN 40	40	40	40	38	38
DN 50	50	50	50	50	50
DN 65	63	63	63	63	63
DN 80	76	76	76	76	76
DN 100	100	100	100	100	100
DN 125	125	125	125	125	125
DN 150	150	150	150	150	150
DN 200	200	200	200	200	200
DN 250	250	250	250	250	250
DN 300	300	300	300	300	300
DN 350	343	343	343	336	336
DN 400	394	394	394	387	387

#### 4.1.5 Auxiliary connections

When auxiliary connections are required, they shall be specified by the purchaser and shall be of the internal threaded form in accordance with Type  $R_c$  or  $R_p$  to ISO 7-1:1994.

## 4.2 Functional characteristics

### 4.2.1 Shell design strength

The shell design strength shall be:

- a) based on a calculation design method supplemented if necessary by an experimental design method in accordance with EN 12516-3; or
- b) verified by an experimental design test in accordance with EN 12516-3, but limited to a maximum of 3 000 bar x DN.

### 4.2.2 Flow characteristics

**4.2.2.1** The seat bore shall be either full bore or reduced bore. It is permissible for any disc guides and/or lugs required to facilitate the fitting of seat rings to intrude into the bore of the valve.

**4.2.2.2** Globe valves shall be suitable for flow in either direction or in one direction.