SLOVENSKI STANDARD

SIST EN 13397:2002

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Industrijski ventili - Ventili z opnami iz kovinskih materialov

Industrial valves - Diaphragm valves made of metallic materials

Industriearmaturen - Membranarmaturen aus Metall

Robinetterie industrielle - Robinets métalliques a membrane

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EUROPEAN STANDARD

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Industrial valves - Diaphragm valves made of metallic materials

Robinetterie industrielle - Robinets métalliques à membrane

Industriearmaturen - Membranarmaturen aus Metall

This European Standard was approved by CEN on 29 September 2001.

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 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 Management Centre 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.

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 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of an identical text or by endorsement, at the latest by May 2002, and conflicting national standards shall be withdrawn at the latest by May 2002.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(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this standard.

This standard contains an annex A that is normative and an annex B that is 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies requirements for diaphragm valves with metallic shell materials.

The range of nominal sizes covered is :

— for flanged valves : sizes 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 and DN 300 ;

— for screwed valves : sizes ¼, 3/8, ½, ¾, 1, 1¼, 1½, 2, 2½ and 3 ;

— for weld end valves : sizes 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 and DN 300.

The range of PN and Class designations covered is :

— PN 6, PN 10, PN 16 and PN 25 ;

— Class 150.

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, 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 (including amendments).

EN 545, *Ductile iron pipes, fittings, accessories and their joints for water pipelines – Requirements and test methods.*

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: Definitions of types of valves.*

EN 736-2, *Valves -Terminology - Part 2: Definitions of components of valves.*

EN 736-3, *Valves -Terminology - Part 3: Definitions 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 1515-1, *Flanges and their joints - Bolting – Part 1: Selection of bolting.*

EN 1561, *Founding – Grey cast irons.*

EN 1562, *Founding – Malleable cast irons.*

EN 1563, *Founding – Spheroidal graphite cast irons.*

EN 1982, *Copper and copper alloys – Ingots and castings.*

EN 12420, *Copper and copper alloys – Forgings.*

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

EN 12627, *Industrial valves - Butt welding end profile.*

EN 12760, *Valves - Socket welding ends for steel valves.*

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

prEN 19[1)], *Industrial valves - Marking of metallic valves.*

prEN 1092-1[1)], *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 1: Steel flanges.*

prEN 1092-3[1)], *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 3: Copper alloy flanges.*

prEN 1759-1[1)], *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, Class designated - Part 1: Steel flanges, NPS ½ to 24.*

prEN 1759-3[1)], *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, Class designated - Part 3: Copper alloy and composite flanges.*

prEN 10226-1[1)], *Pipe threads where pressure tight joints are made on the threads - Part 1: Designation, dimensions and tolerances.*

prEN 12266-1[1)], *Industrial valves - Testing of valves - Part 1: Pressure tests, test procedures and acceptance criteria - Mandatory requirements.*

prEN 12516-1[1)], *Industrial valves - Shell design strength - Part 1: Tabulation method for steel valve shells.*

prEN 12516-2[1)], *Industrial valves - Shell design strength - Part 2: Calculation methods for steel valve shells.*

prEN 12516-3[1)], *Valves - Shell design strength - Part 3: Experimental method.*

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

ISO 7-1, *Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation.*

ISO 228-1, *Pipe threads where pressure-tight joints are made on the threads - Part 1: Dimensions, tolerances and designation.*

ISO 1043-1, *Plastics - Symbols - Part 1: Basic polymers and their basic characteristics.*

ISO 1629, *Rubbers and lattices – Nomenclature.*

ISO 10422, *Petroleum and natural gas industries - Threading, gaging and thread inspection of casing, tubing and line pipe threads – Specifications.*

ANSI/ASME B1.20.1, *Pipe threads, General purpose.*

NOTE This European Standard supports some of the Essential Requirements of the Pressure Equipment Directive 97/32/EC. The essential requirements covered are listed in annex ZA (informative). It should be noted that this standard is not self sufficient and should be used with the normative references listed herein. Reference should also be made to the annex ZA in the relevant normative reference.

[1)] To be published.

3 Terms and definitions

For the purpose of this European Standard the terms and definitions listed in EN 736-1, EN 736-2 and EN 736-3 apply, together with the following :

3.1
weir type diaphragm valve
diaphragm valve in which closure is attained by compression of the diaphragm onto a raised weir formed in the body shape

3.2
straight through type diaphragm valve
diaphragm valve in which closure is attained by compression of the diaphragm onto the valve body wall, the body maintaining a largely straight-through bore configuration

3.3
diaphragm
flexible component, generally of either elastomeric or polymeric material, which does not form part of the pressure bearing shell but acts as the valve obturator, whilst also isolating the valve mechanism from the line fluid

3.4
compressor
component of the diaphragm valve assembly which affords compression to the diaphragm to effect closure against the valve body

4 Requirements

4.1 Design

4.1.1 Materials

4.1.1.1 Shell

Shell materials shall be selected from the following :

— steels : in accordance with prEN 12516-1 ;

— cast irons : in accordance with Table A.1 ;

— copper alloys : in accordance with Table A.2.

4.1.1.2 Diaphragm

Diaphragm materials shall be agreed between the manufacturer and the purchaser.

4.1.1.3 **Body lining** (if applicable)

The body lining shall cover the wetted surface and any sealing areas necessary for the functioning of the valve.

Body lining materials shall be agreed between the manufacturer and the purchaser.

4.1.2 Pressure/temperature ratings

The pressure temperature rating of the body and bonnet shall be as specified for flanges in prEN 1092-1, EN 1092-2, prEN 1092-3, prEN 1759-1, prEN 1759-3, for the respective materials and pressure designations.

The pressure temperature rating of the valve may be restricted due to the body lining material and/or the diaphragm material (see manufacturer's recommendations). However, all valves shall be suitable for use within a temperature range of -5 °C to +50 °C, at the allowable pressure of the valve.

4.1.3 Dimensions

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

Face-to-face dimensions for straight pattern flanged valves shall be in accordance with EN 558-1 or EN 558-2 series 1 or series 7.

NOTE In accordance with EN 558-1 and EN 558-2 the dimensions of lined valves to series 7 can exclude the thickness of the lining.

Centre-to-face dimensions for angle pattern flanged valves shall be in accordance with EN 558-1 or EN 558-2 series 8.

End-to-end dimensions for weld end valves of sizes DN 65 and above shall be in accordance with EN 12982 series 1 or series 7.

4.1.3.2 Body flange dimensions

Body end flanges shall be in accordance with prEN 1092-1, EN 1092-2 or prEN 1092-3 for PN designated flanges or to prEN 1759-1 or prEN 1759-3 for Class designated flanges.

4.1.3.3 Threaded body ends

Threaded body ends shall have internal threads selected from:

- parallel threads :
  - in accordance with prEN 10226-1 ;
  - in accordance with ISO 228-1.
- taper threads :
  - type Rc in accordance with ISO 7-1 ;
  - in accordance with ANSI/ASME B1.20.1 ;
  - in accordance with ISO 10422.

4.1.3.4 Welding ends

Welding ends shall be either butt weld or socket weld in accordance with EN 12627 and EN 12760 respectively.

4.1.3.5 Other types of ends

Other types of ends, different to those specified in the preceding sub-clauses, may be used provided their suitability for the purpose is proven.

4.1.4 Operation

4.1.4.1 Operating device

All valves shall be capable of being operated by either a handwheel, a lever or an actuator.