SLOVENSKI STANDARD
SIST EN 13774:2003

01-julij-2003

Ventili za plinske razdelilne sisteme z največjim dovoljenim delovnim tlakom, manjšim ali enakim 16 bar - Zahteve glede uporabnosti

Valves for gas distribution systems with maximum operating pressure less than or equal to 16 bar - Performance requirements

Armaturen für Gasverteilungssysteme mit zulässigen Betriebsdrücken kleiner oder gleich als 16 bar - Anforderungen an die Gebrauchstauglichkeit

Appareils de robinetterie pour les systèmes de distribution du gaz avec une pression maximale de service inférieure ou égale a 16 bar - Exigences de performance

Ta slovenski standard je istoveten z: **EN 13774:2003**

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23.060.01	Ventili na splošno	Valves in general
75.200	Oprema za skladiščenje nafte, naftnih proizvodov in zemeljskega plina	Petroleum products and natural gas handling equipment

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EUROPEAN STANDARD

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English version

Valves for gas distribution systems with maximum operating pressure less than or equal to 16 bar - Performance requirements

Appareils de robinetterie pour les systèmes de distribution du gaz avec une pression maximale de service inférieure ou égal à 16 bar - Exigences de performance

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This European Standard was approved by CEN on 2 January 2003.

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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.

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

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Contents

Foreword

This document (EN 13774:2003) 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of an identical text or by endorsement, at the latest by October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

Annexes A and B are normative.

Annexes C, D and E are informative.

This document includes a Bibliography.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard deals with metal isolating valves used for gas distribution systems with maximum operating pressure up to 16 bar, and which operate with fuel gases of the first and the second family, in accordance with EN 437.

It applies to valves DN 25 and larger.

The types of isolating valves to be considered are: plug and ball valves, gate valves, globe valves and butterfly valves.

This standard does not apply to:

— valves for domestic installations ;

— safety type pressure relief valves ;

— wellhead valves.

In the case of power operated valves, the requirements for the power source are not covered by this standard.

The valves covered in this standard operate in the temperature range : - 20 °C to + 60 °C.

This European Standard gives additional requirements to the relevant product standards.

In case of contradictions between the above mentioned standards, this standard will prevail.

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 19, *Industrial valves — Marking of metallic valves.*

EN 377, *Lubricants for applications in appliances and associated controls using combustible gases except those designed for use in industrial processes.*

EN 437, *Test gases — Test pressures — Appliance categories.*

EN 682, *Elastomeric seals — Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids.*

EN 736-1, *Valves — Terminology — Part 1: Definition of types of valves.*

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

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

EN 764, *Pressure equipment – Terminology and symbols – Pressure, temperature, volume.*

EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves ,fittings and accessories, PN designated — Part 1 : Steel flanges.*

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[1)], *Flanges and their joints — Circular flanges for pipes, valves ,fittings and accessories, PN designated — Part 3 : Copper alloy 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 1503-3, *Valves — Materials for bodies, bonnets and covers — Part 3: Cast irons specified in European Standards.*

EN 1503-4, *Valves — Materials for bodies, bonnets and covers — Part 4: Copper alloys specified in European Standards.*

EN 1555-2, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 2: Pipes.*

EN 1555-3, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 3 : Fittings.*

EN 1555-4, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 4 : Valves.*

prEN 1660[1)], *Mechanical fasteners — Hexagon products — Widths across flats.*

EN 12266-1:2003, *Industrial valves — Testing of valves — Part 1: Pressure tests, test procedures and acceptance criteria – Mandatory requirements.*

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

EN 12627, *Industrial valves - Butt welding ends for steel valves.*

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

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

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions of EN 736-1, EN 736-2, EN 736-3 and EN 764 apply together with the following.

3.1
gas distribution system
pipeline system including piping above and below ground and all other equipment necessary to convey the gas to the consumers

3.2
external leak tightness
shell tightness
tightness of the gas-containing envelope with respect to the atmosphere

3.3
internal leak tightness
seat tightness
tightness ensured between the valve inlet and outlet by the obturator in the closed position

3.4
volume rate of flow
volume of fluid discharged by the valve per time unit

3.5
reference flow rate
rate of the air flow in normal cubic metres per hour, as measured at 0°C at the absolute pressure of 1013 mbar, discharged by the valve and creating therein a specified pressure drop, at a specified air pressure upstream of the valve

3.6
maximum allowable pressure (p_{max})
maximum pressure at which any part of a valve will continuously operate at a specified operating temperature range

3.7
maximum operating pressure (MOP)
maximum pressure in a system operated continuously under normal operating conditions

NOTE "Normal operating conditions" means no malfunctioning of the equipment or disruption to the gas flow.

3.8
maximum strength torque
maximum torque applied to the stem or the shaft, with the obturator either totally open or totally closed, which causes no alteration to the functional capability of the valve

3.9
maximum operating torque
maximum torque applied on the stem or shaft of a valve to ensure its operation under the maximal allowable pressure (p_{max}) and at any operating temperature

3.10
operating cycle
full operating from the closed position to the opened position and back to the closed position

3.11
block and bleed facility
equipment put together with the valve as to assume two functions, isolation and bleed

4 Symbols and abbreviations

t_a : mean ambient temperature (+ 20 °C ± 5°C) ;

t_{max} : maximum value of ambient temperature (+ 60 °C) ;

t_{min} : minimum value of ambient temperature (- 20 °C) ;

p_{max} : maximum allowable pressure ;

M : bending moment.

5 Requirements and testing

5.1 Type testing

5.1.1 Test samples

For valves up to DN 500, qualification of the range shall be achieved by testing the smallest and the largest valves and one chosen in the middle of the range. This applies only where the materials, design and construction does not change within the range.

For resistance to wear, qualification shall be achieved by testing only the smallest valve of the range.

For valves greater than DN 500, qualification shall be achieved by agreement between manufacturer and purchaser on the size(s) of the valve(s) to be tested.

For each valve to be tested, three samples should be provided, and tested in accordance with the qualification test programme given in Table 1 :

Table 1 — Qualification test programme

Requirement	Sample reference		
	A	B	C
Materials (see 5.2)	x	x	x
Design (see 5.3)	x	x	x
Dimensions (see 5.4)	x	x	x
Shell strength (see 5.9)	-	x	-
Operability and endurance (see 5.5)	x	x	x
Strength of stops (see 5.6)	x	-	-
External leak tightness (see 5.10)	x	x	x
Internal leak tightness (see 5.11)	x	x	x
Reference flow rate (see 5.14)	-	x	-
Bending resistance (see 5.8)	-	x	-
Resistance of the obturator to static differential pressure (see 5.7)	-	x	-
Resistance to liquid agents (see 5.12)		-	x
Resistance to wear (see 5.13)	-	x	-

5.1.2 Test documents

The manufacturer shall produce a technical file containing the following documents:

a) detailed drawings, including dimensions, tolerances, surface conditions and relevant calculations for pressure containing parts and principle parts ;

b) detailed drawings of the isolating valve with sectional drawings of all important parts ;

c) general arrangement drawings showing relative positions and sizes of vents/drains, gearboxes, and other external parts, together with overall dimensions ;

d) manufacturing details including welding and test procedures ;

e) installation, operating and maintenance procedures ;

f) description of the isolating valve with details on type, construction, materials, surface treatment and marking. Detailed sectional arrangement drawings showing all parts with reference numbers and materials identified to published standards including reference to the elastomers and their suppliers ;

g) details of technical characteristics including performance details. The manufacturer shall state the reference flow rate at full opening.

All these documents are to be analysed in accordance with A.1.

5.2 Materials

5.2.1 Shell

Requirements	Type tests	Production tests
Materials in accordance with EN 1503-1, EN 1503-2, EN 1503-3 or EN 1503-4 shall be used, taking into account the relevant standards for shell design strength. Other metallic materials may only be used if their mechanical characteristics, temperature stability and resistance to corrosion are at least equal to those specified in the above cited standards.	The technical data concerning the materials used shall be available from the valve manufacturer.	—

5.2.2 Obturator

Requirements	Type tests	Production tests
Materials in accordance with EN 1503-1, EN 1503-2, EN 1503-3 or EN 1503-4 shall be used.	The technical data concerning the materials used shall be available from the valve manufacturer.	—

5.2.3 Stem or shaft

Requirements	Type tests	Production tests
Stem or shaft shall be made from metallic materials and shall be corrosion resistant or permanently protected against corrosion.	The technical data concerning the materials used shall be available from the valve manufacturer.	—

5.2.4 Springs

Requirements	Type tests	Production tests
Springs necessary for operation and leak tightness shall be made of corrosion resistant materials or their permanent resistance to corrosion shall be made by means of design. Protection of the surface is not permissible.	The technical data concerning the materials used shall be available from the valve manufacturer.	—

5.2.5 Seals

Requirements	Type tests	Production tests
Seals made of elastomers shall meet the requirements of EN 682. When seals made of PTFE are used, the part in contact with the flow shall be of virgin PTFE.	The technical data concerning the materials used shall be available from the valve manufacturer.	—

5.2.6 Lubricants

Requirements	Type tests	Production tests
Lubricants used in gas containing parts shall meet the requirements of EN 377. When seals made of PTFE are used, the sealing system shall be designed in such a way to compensate a possible creep of the seal.	The technical data concerning the lubricants used shall be available from the valve manufacturer.	—

5.3 Design

5.3.1 General

Requirements	Type tests	Production tests
Isolating valves shall be free from sharp edges.	A visual inspection shall be carried out to verify conformance to the requirements.	The requirement is to be verified through a visual inspection of each valve.

5.3.2 Stem or shaft

Requirements	Type tests	Production tests
Stems and shafts shall be of anti-blow out design. The stem seal fasteners shall not be considered as being the sole anti-blow out method. The stem shall be protected against water and dust ingress.	A visual inspection shall be carried out to verify conformance to the requirements.	The requirement is to be verified through a visual inspection of each valve.

5.3.3 Position of the obturator

Requirements	Type tests	Production tests
The position of the obturator shall not be altered by the flow of the fluid.	A visual inspection shall be carried out to verify conformance to the requirements.	—

5.3.4 Shell tappings

Requirements	Type tests	Production tests
Shell tappings on pressurised cavities for direct ventilation shall have : — cylindrical threads in accordance with ISO 228-1 ; or — metric fine thread made tight by metallic or metal reinforced seals or seals with metallic thrust rings. They shall be provided with a relief bore and shall be able to be safely loosened for at least two revolutions under MOP. The materials used for the connections to the shell tappings shall be of a similar material as the shell.	A visual inspection shall be carried out to verify conformance to the requirements.	—

5.3.5 Bolt holes for assembly purposes

Requirements	Type tests	Production tests
Bolt holes for bolts and studs used for valve assembly purposes shall not intrude into gas containing cavities.	A visual inspection shall be carried out to verify conformance to the requirements.	—

5.3.6 Manufacturing apertures

Requirements	Type tests	Production tests
Apertures for manufacturing purposes shall be made gas tight and permanently sealed.	The requirement shall be met by an external leak tightness test as in 5.10.	—

5.3.7 Sealing systems

Requirements	Type tests	Production tests
Sealing systems for obturators and stems or shafts shall be maintenance free. Particularly, there shall be no sealing systems at the shafts that would be adjustable by hand or commercial tools.	A visual inspection shall be carried out to verify conformance to the requirements.	—