SIST

SLOVENSKI STANDARD
SIST EN 13774:2014

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Nadomešča:
SIST EN 13774:2003

Ventili za plinske razdelilne sisteme z največjim 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 à 16 bar - Exigences de performance

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

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 13774:2013) 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of an identical text or by endorsement, at the latest by August 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.

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 13774:2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

The following is a list of the main changes compared to the previous edition:

a) the Scope has been modified;

b) the Normative References (Clause 2) have been updated;

c) requirements of type tests and production tests (Clause 5) have been completely revised, in particular:

   1) requirements for “strength design” (5.3.2), for “extended drain, vent and sealant lines” (5.3.8), for “end-to-end dimensions” (5.4.3), for “mechanical resistance against excessive actuating forces” (5.7) have been added;

   2) requirements for “resistance to wear” (5.12) and for “reference flow rate” (5.13) became optional;

   3) requirements for “bending resistance” and for “resistance to liquid agents” have been deleted;

d) the annex on analysis of the technical file and recording of the initial conditions has been deleted;

e) the annex on test methods for valves (Annex A) has been updated;

f) the annex on additional characteristics on request from the purchaser has been deleted;

g) the annex on resistance to bending moment applied via the stem or the shaft has been deleted;

h) the annex providing the European Standards for valves (Annex B) has been updated;

i) the annex giving a summary of tests on product and type tests (Annex C) has been added;

j) the Bibliography has been updated.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey 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, the second and the third family, in accordance with EN 437.

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 European Standard.

The valves covered in this European Standard operate in the following classes of temperature:

— - 10 °C to 60 °C;

— - 20 °C to 60 °C;

— the range is stated by the purchaser for special design.

This European Standard gives additional requirements to the relevant products standards. (See Annex B.)

In case of contradictions between the standards mentioned in Annex B and this European Standard, EN 13774 prevails.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 377, *Lubricants for applications in appliances and associated controls using combustible gases except those designed for use in industrial processes*

EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

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

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 764-1:2004, *Pressure equipment — Part 1: Terminology — Pressure, temperature, volume, nominal size*

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*

EN 1092-3, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 3: Copper alloy flanges*

EN 1555-1, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 1: General*

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 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 1759-3, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 3: Copper alloy flanges*

EN 10204, *Metallic products — Types of inspection documents*

EN 10226-1, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*

EN 12117, *Plastics piping systems — Fittings, valves and ancillaries — Determination of gaseous flow rate/pressure drop relationships*

EN 12266-1:2012, *Industrial valves — Testing of metallic valves — Part 1: Pressure tests, test procedures and acceptance criteria — Mandatory requirements*

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

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

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

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

EN 13942, *Petroleum and natural gas industries — Pipeline transportation systems — Pipeline valves (ISO 14313:2007 modified)*

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)*

EN ISO 8434-1, *Metallic tube connections for fluid power and general use — Part 1: 24 degree cone connectors (ISO 8434-1)*

ISO 272, *Fasteners — Hexagon products — Widths across flats*

ASME B1.20.1, *Pipe Threads, General Purpose (Inch)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 736-1:1995, EN 736-2:1997, EN 736-3:2008 and EN 764-1:2004 and the following apply.

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

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

3.3
internal tightness
seat tightness
tightness ensured between the valve inlet and outlet by the closure device 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 cubic metres per hour, as measured at 0 °C at the absolute pressure of 1 013 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 continuously operates at a specified operating temperature

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

Note 1 to entry: "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

3.12
double-isolation-and-bleed valve
DIB
single valve with two seating surfaces, each of which, in the closed position, provides a seal against pressure from a single source, with a means of venting/bleeding the cavity between the seating surfaces

Note 1 to entry: This feature can be provided in one direction or in both directions.

4 Symbols and abbreviations

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

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

t_{min} : minimum value of use temperature;

p_{max} : maximum allowable pressure.

5 Requirements, type tests and production tests

5.1 Type testing

5.1.1 Test samples

Qualification of the range shall be achieved by testing the smallest valve, the largest valve limited by DN 500 and one chosen in the middle of the range. For valves greater than DN 500, the DN 500 qualifies the range up to DN 1 000. 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 of the range.

For each valve to be tested, one sample should be provided, and tested in accordance with the qualification test program.

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 testing 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 to the suppliers;

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

h) material certificates in accordance with EN 10204 shall be supplied with the samples:

1) Type 3.1 for the body and obturator,

2) Type 2.2 for the stem or shaft.

5.1.3 Certification body

All tests shall be certified by an independent accepted body.

5.2 Materials

5.2.1 Shell

Requirements	Type tests	Production tests
5.2.1.1 General Materials in accordance with EN 12516-1, EN 12516-2 or EN 12516-4 shall be used, except grey cast iron, 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. **5.2.1.2 Steel weldings ends** For welding ends of valves, the maximum carbon equivalent CEV_{max} shall not exceed: CEV_{max} = 0,45 for grades with specified minimum yield strength not exceeding 360 N/mm^2; CEV_{max} = 0,48 for grades with specified minimum yield strength above 360 N/mm^2; unless otherwise agreed between purchaser and manufacturer. $CEV_{max} = C\% + \frac{Mn\%}{6} + \frac{Cr\% + Mo\% + V\%}{5}$	The technical data concerning the materials used shall be available from the valve manufacturer.	–

Requirements	Type tests	Production tests
$+\frac{Cu\%+Ni\%}{15}$ where % is the percentage by weight of the ladle content of: C Carbon; Mn Manganese; Cr Chromium; Mo Molybdenum; V Vanadium; Cu Copper; Ni Nickel. Unless otherwise agreed between manufacturer and purchaser, the carbon content shall not exceed 0,21 %. The sulphur content shall not exceed 0,030 %, and the phosphorus content shall not exceed 0,035 %. The sum of sulphur and phosphorus as a total of the ladle analysis shall be smaller than or equal to 0,050 %.		
5.2.1.3 PE ends Materials in accordance with EN 1555-1 shall be used.		

5.2.2 Obturator

Requirements	Type tests	Production tests
Materials in accordance with EN 12516-1, EN 12516-2 or EN 12516-4 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.	–