



SLOVENSKI STANDARD

SIST EN 1074-2:2001

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Ventili za oskrbo z vodo - Zahteve za ustreznost in ustrezni preskusi - 2. del: Zapirni ventili

Valves for water supply - Fitness for purpose requirements and appropriate verification tests - Part 2: Isolating valves

Armaturen für die Wasserversorgung - Anforderungen an die Gebrauchstauglichkeit und deren Prüfung - Teil 2: Absperrarmaturen

Robinetterie pour l'alimentation en eau - Prescriptions d'aptitude à l'emploi et vérifications s'y rapportant - Partie 2: Robinetterie de sectionnement

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1074-2

April 2000

ICS 23.060.01

English version

Valves for water supply - Fitness for purpose requirements and
appropriate verification tests - Part 2: Isolating valves

Robinetterie pour l'alimentation en eau - Prescriptions
d'aptitude à l'emploi et vérifications s'y rapportant - Partie 2:
Robinetterie de sectionnement

Armaturen für die Wasserversorgung - Anforderungen an
die Gebrauchstauglichkeit und deren Prüfung - Teil 2:
Absperrarmaturen

This European Standard was approved by CEN on 26 November 1999.

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 Central Secretariat 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 Central Secretariat 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.

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

Central Secretariat: 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 October 2000, and conflicting national standards shall be withdrawn at the latest by October 2000.

It consists of six parts:

Part 1: General requirements

Part 2: Isolating valves

Part 3: Check valves

Part 4: Air valves

Part 5: Control valves

Part 6: Hydrants.

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Part 1, in conjunction with the subsequent parts, lays down the general requirements and test procedures to be carried out in production and during the assessment of conformity of these valves (type tests). The detailed requirements, which depend on the types of valves, are defined in parts 2 to 6 of this standard.

The annexes A, B, C and D of this European standard are normative.

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.

Introduction

In respect of potential adverse effects on the quality of water intended for human consumption caused by the product covered by this standard :

- 1) this standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- 2) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

1 Scope

This European Standard defines the minimum fitness for purpose requirements for isolating valves to be used in, or connected to, water supply pipe systems, above or below ground (see EN 805), carrying water intended for human consumption.

This standard specifies the design requirements, the performance requirements, and the conformity assessment method for isolating valves, whatever their type and materials.

This standard applies in priority to any other product or test standard: the requirements from other standards apply only when this standard refers to them.

This part of the standard deals with the requirements applicable to isolating valves up to DN 2000 and PFA 6 bar to PFA 25 bar.

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2 Normative references

This European Standard incorporates, by dated or undated references, 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.

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

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

EN 1074-1, *Valves for water supply - Fitness for purpose requirements and appropriate verification tests - Part 1: General requirements.*

EN 1267, *Valves - Test of flow resistance using water as test fluid.*

EN 805, *Water supply - Requirements for systems and components outside buildings.*

prEN 12570:1999, *Industrial Valves - Permissible manual forces for operation of valves.*

3 Definitions

For the purpose of this standard, the definitions of EN 1074-1 apply, together with the following definitions:

3.1 flow coefficient K_V : Coefficient equal to the flow rate, in cubic metres per hour, of water at a temperature between 5°C and 40°C, passing through the valve and causing a loss of static head of 1 bar (EN 736-3).

3.2 isolating valve: Valve intended for use only in the closed or fully open position (EN 736-1).

3.3 full bore valve: Valve with a seat diameter not less than 90% of the internal nominal diameter of the body end port (EN 736-3).

3.4 clear way valve: Valve designed to have an unobstructed flow way which allows the passage of a theoretical sphere with a diameter which is not less than the nominal inside diameter of the body end port (EN 736-3).

4 Design requirements

Isolating valves shall be designed in accordance with the requirements given in clause 4 of EN 1074-1.

5 Performance requirements

5.1 Mechanical strength

5.1.1 Resistance to internal pressure of the shell and of all pressure containing components

Requirement and test shall be in accordance with 5.1.1 of EN 1074-1.

5.1.2 Resistance of the obturator to differential pressure

Requirement and test shall be in accordance with 5.1.2 of EN 1074-1.

Except for valves to be used for a single flow direction, the test shall be performed successively in each flow direction.

5.1.3 Resistance of the valve to bending

Requirement and test shall be in accordance with 5.1.3 of EN 1074-1, for sizes DN 50 up to and including DN 500.

The bending moments M to be applied during the test are given in table 1 as a function of DN.

Table 1 - Bending moments

DN	M Nm
50	1 050
65	1 400
80	1 500
100	2 200
125	3 200
150	4 800
200	7 200
250	11 000
300	15 000
350	19 000
400	24 000
450	28 000
500	33 000

5.1.4 Resistance of valves to operating loads

Requirement shall be in accordance with 5.1.4 of EN 1074-1.

When, in order to verify this requirement, a valve in its delivery state has been subjected to a test in accordance with annex A, with the application of a closing torque and an opening torque equal to mST , it shall pass the operating tests in accordance with 5.2.3 and the seat tightness tests in accordance with 5.2.2.1 and 5.2.2.2.

The minimum strength torque mST shall be equal to twice the maximum operating torque (MOT) given in 5.2.3. In the case of gate valves in accordance with 5.2.3 c), the torque mST to be applied in the test in accordance with annex A shall be equal to 5 times MOT. In the case of valves in accordance with 5.2.3 d), the test is only applicable when there is an additional manual operating element.

5.2 Leak-tightness

5.2.1 Leak-tightness of the shell and of all pressure containing components

5.2.1.1 Leak-tightness to internal pressure

Requirement and test shall be in accordance with 5.2.1.1 of EN 1074-1.

5.2.1.2 Leak-tightness to external pressure

Requirement and test shall be in accordance with 5.2.1.2 of EN 1074-1.

5.2.2 Seat tightness

5.2.2.1 Seat tightness at high differential pressure

Requirement and test shall be in accordance with 5.2.2.1 of EN 1074-1.

After closing the valve by application of MOT (see 5.2.3), the leakage rate shall be rate A for resilient seated valves and shall not exceed rate B for metallic seated valves. For a type test, the test duration shall be not less than 10 min.

Except for valves to be used in a single flow direction, the test shall be performed successively in each flow direction.

5.2.2.2 Seat tightness at low differential pressure

Requirement and test shall be in accordance with 5.2.2.2 of EN 1074-1, with the torque, the leakage rate and the test duration given in 5.2.2.1.

Except for valves to be used in a single flow direction, the test shall be performed successively in each flow direction.

5.2.3 Maximum operating torque (MOT) for operation and leak-tightness

Requirement shall be in accordance with 5.2.3 of EN 1074-1.

When, in order to verify this requirement, an isolating valve in its delivery state is subjected to a test according to annex C, the measured torque shall not exceed the maximum operating torque MOT as defined below:

a) for valves delivered with their operating element:

- $MOT = 0,5 \times F \times D$ in newton metres, in the case of a handwheel, where:

F is the maximum operating manual force (F for operating the valve, F_{max} for seating and unseating the valve, see prEN 12570:1999), in newtons;

D is the diameter of the handwheel, in metres.

- $MOT = F \times L$ in newton metres, in the case of a lever, where:

F is the maximum operating manual force (F for operating the valve, F_{max} for seating and unseating the valve, see prEN 12570:1999), in newtons;

L is the length of the lever, in metres.

b) for valves delivered without an operating element and intended to be operated by a T shaped key:

- for butterfly valves: $MOT = 125 \text{ Nm}$;

- for gate valves: $MOT = 1 \times DN \text{ Nm}$;

- for other types of valves : $MOT = \text{value given by the manufacturer.}$

c) for gate valves delivered without an operating element and intended to be operated by a ring key and bar, see annex B.

d) for valves to be operated electrically, hydraulically or pneumatically:

- $MOT = \text{value given by the manufacturer.}$

5.2.4 Leak-tightness of gearboxes to external pressure

Requirement and test shall be in accordance with 5.2.4 of EN 1074-1.

5.3 Hydraulic characteristics

Requirement shall be in accordance with 5.3 of EN 1074-1; the characteristic given by the manufacturer shall be the flow coefficient K_v .

When measured in accordance with the test method defined in EN 1267, the flow coefficient K_v shall be greater than 0,9 times the value indicated by the manufacturer. Testing is not required for full bore gate valves or clear way valves.

5.4 Resistance to disinfection products

Requirement and test shall be in accordance with 5.4 of EN 1074-1.

5.5 Endurance

The endurance of isolating valves shall be evaluated as follows:

- an isolating valve in its delivery state shall be subjected to an endurance test in accordance with annex D at a differential pressure equal to the PFA across the obturator;

- it shall be tested in accordance with 5.2.1, 5.2.2 and 5.2.3, with the application of a torque not exceeding either 1,2 times MOT (with the same leakage rate) or MOT (with leakage allowed to increase by one rate).

The number of opening/closing cycles to be applied during the endurance test shall be as follows:

- manually operated valves: 250 cycles;

- electrically, hydraulically or pneumatically operated valves: 2 500 cycles.

This test shall be applied to isolating valves of sizes DN 50 up to and including DN 500.