SLOVENSKI STANDARD

SIST EN 14433:2006

01-oktober-2006

Posode za prevoz nevarnih snovi ï Oprema posode za transport tekoļ ih kemikalij ï Izpustni ventili

Tanks for the transport of dangerous goods - Tank equipment for the transport of liquid chemicals - Foot valves

Tanks für die Beförderung gefährlicher Güter - Ausrüstung für Tanks für die Beförderung flüssiger Chemieprodukte - Bodenventile

Citernes de transport de matieres dangereuses - Equipements de la citerne pour le transport de produits chimiques liquides - Clapets de fond

Ta slovenski standard je istoveten z: EN 14433:2006

ICS:

13.300	Varstvo pred nevarnimi izdelki	Protection against dangerous goods
23.020.20	Posode in vsebniki, montirani na vozila	Vessels and containers mounted on vehicles

SIST EN 14433:2006 **en**

EUROPEAN STANDARD

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English Version

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This European Standard was approved by CEN on 9 March 2006.

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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 Central Secretariat 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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Foreword

This European Standard (EN 14433:2006) has been prepared by Technical Committee CEN/TC 296 “Tanks for transport of dangerous goods”, 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of an identical text or by endorsement, at the latest by October 2006, and conflicting national standards shall be withdrawn at the latest by October 2006.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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 United Kingdom.

1 Scope

This European Standard specifies the requirements for footvalves for use on transportable tanks with a minimum working pressure greater than 50 kPa for the transport of dangerous goods by road and rail.

It is applicable to equipment for use on tanks with gravity and/or pressure bottom loading and discharge.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN 12266-2:2002, *Industrial valves - Testing of valves - Part 2: Tests, test procedures and acceptance criteria - Supplementary requirements*

EN ISO 6708, *Pipework components - Definition and selection of DN (nominal size) (ISO 6708:1995)*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1
maximum working pressure
MWP
maximum pressure up to which the valve can be operated

3.2
nominal size
designated size of valve as defined in EN ISO 6708

4 Function

The footvalve is a primary valve located in the lower part of the tank to ensure that escape of product from the tank is prevented.

5 Design and materials

5.1 General

The footvalve shall be designed for a working pressure of at least 300 kPa. The footvalve shall normally be a non-pressure balanced design. If the valve is a pressure balanced design, a surge pressure of 5 times the MWP shall not jeopardize the tightness of the housing or the function of the valve. The manufacturer shall specify in drawings and other papers, the design and the materials of the footvalve. The valve specification shall include information regarding mating tank flange details.

5.2 Design

5.2.1 The valve shall provide a closure located within the envelope of the tank.

5.2.2 The valve closure shall be positioned so that the pressure in the tank acts to increase the force on the valve seat, and shall be so designed as to prevent self-opening of the valve.

5.2.3 The opening of the valve shall be such as to give a minimum flow path through the valve of a diameter equal to the DN designation of the valve.

5.2.4 The operating mechanism shall be protected from inadvertent operation in transit either by a latching device or by locating within an enclosure.

5.2.5 As a minimum, each valve shall be marked with the direction of opening of the operating mechanism.

5.2.6 The external valve casing shall have a weakened section (e.g. a shear groove in the external casing or other appropriate means) so positioned that should the valve casing be removed by a severe impact, the sealing capability of the valve shall not be affected. This requires that, in the case of a bottom-operated valve, the operating mechanism of the valve be not directly connected to the valve closure.

5.3 Materials

5.3.1 The manufacturer shall provide, with the equipment, the material specification for those parts that may come into contact with the product.

5.3.2 The material elongation at fracture of the pressure-loaded components of the valve shall be a minimum of 12 %.

6 Test media

6.1 Hydraulic tests

Hydraulic tests shall be carried out using a fluid in accordance with EN 12266-2:2002, A.1.5.

6.2 Pneumatic tests

Pneumatic tests shall be carried out using a gas in accordance with EN 12266-2:2002, A.1.5.

7 Type tests

7.1 General

Each valve used for testing shall conform to the drawings and dimensions specified and specification provided by the manufacturer. Each design of valve, as verified in Annex B, shall be subjected to a type test. Type testing according to 7.2 to 7.6 shall be carried out under ambient conditions. If the valve is required to operate outside the temperature range –20 °C to +50 °C, the design shall be taken into account either in the type testing or by a validated calculation method.

The tests shall be carried out with the casing/valve attached to a flange equivalent to that for which its use is intended.

7.2 Valve casing hydraulic pressure test

The valve casing shall be hydraulically tested, using a test medium conforming to 6.1 at a pressure equal to a minimum of 2,25 times the MWP or 400 kPa whichever is the greater. The test pressure shall be maintained for a minimum of 5 min on the valve casing without permanent deformation occurring.

7.3 Valve assembly pressure test

The valve assembly shall be hydraulically or pneumatically tested, using a test medium conforming to 6.1 or 6.2 at a pressure equal to 1,3 times the MWP, or 400 kPa, whichever is the greater. The test pressure shall be maintained for a minimum of 5 min on the valve assembly. The leakage shall not exceed Rate A as defined in EN 12266-1:2003, Table A.5. Each assembly pressure test shall be carried out:

a) with the valve in the closed position and the outlet open to test for leakage from the seats;

b) with the valve in the open position and the outlet closed off to test for leakage from gland seals and body joints.

7.4 Closure, casing and valve assembly pneumatic tightness tests

For each design of the valve, as defined in Annex B, the closure, the casing and the valve assembly shall be pneumatically tested, using a test medium conforming to 6.2, at pressures equal to 20 kPa and 1,0 times the MWP.

The valve closure, casing and valve assembly shall be totally immersed in a water bath, or, where total immersion of the valve closure, casing and valve assembly is not possible, a suitable leak detection fluid shall be applied. The test pressure shall be maintained for a minimum of 5 min on the valve closure, casing and valve assembly. The leakage shall not exceed Rate A as specified in EN 12266-1. Each pneumatic tightness test shall be carried out:

a) with the valve in the closed position and the outlet open to test for leakage from the valve seats;

b) with the valve in the open position and the outlet closed off to test for leakage from gland seals or body joints.

If the tests defined above do not cover all seals to the environment, these seals of the valve assembly shall also be tested.

7.5 Cyclic test

The valve assembly shall be subjected to a mechanical cycle test to a minimum of 1 000 full cycles (“open” to “closed”) without pressure being applied. After completion of the cyclic test, the valve shall be tested in accordance with 7.4 and the leakage shall not exceed Rate A as defined in EN 12266-1:2003, Table A.5.

7.6 Breakaway test

7.6.1 General

The footvalve shall be attached with a suitable gasket to a flange of minimum dimensions as defined in 5.1. All bolts intended for tank attaching of the valve shall be tightened. Following the breakaway of the valve body, the valve shall be tested as defined in 7.4 and the leakage shall not exceed Rate B as defined in EN 12266-1:2003, Table A.5.

7.6.2 Test apparatus

Straight pipe, of DN (nominal size) equivalent to that of the valve 1 000 mm long, rigidly attached to the foot valve outlet.

7.6.3 Test procedure

Apply, at the pipe end, a force, perpendicular to the pipe and in the same plane as the foot valve tank flange, until the valve body breaks away at the shear groove.

8 Production tests

8.1 General

Each footvalve produced shall conform to the drawings and other papers in which the design and the materials were specified by the manufacturer. The production testing according to 8.2 to 8.4 shall be carried out under ambient conditions.

8.2 Function test

Each valve shall be opened and closed once.

8.3 Valve casing pressure test

Each valve casing shall be hydraulically or pneumatically tested, using a test medium conforming to 6.1 or 6.2, at a pressure equal to 1,3 times the MWP. The casing shall be held in a position in which the valve will be used. The test pressure shall be maintained for a minimum of 1 min on the valve casing and the leakage shall not exceed Rate A as defined in EN 12266-1:2003, Table A.5.

8.4 Closure, casing and valve assembly pneumatic tests

Each closure, valve casing and valve assembly shall be pneumatically tested using a test medium conforming to 6.2, at pressures equal to 20 kPa and 1,0 times the MWP. The closure, casing and valve assembly shall be totally immersed in a water bath, or where total immersion of the valve closure, casing and valve assembly is not possible, a suitable leak detection fluid shall be applied. The test pressure shall be maintained for a minimum of 1 min on the valve closure, casing and valve assembly and the leakage shall not exceed Rate A as defined in EN 12266-1:2003, Table A.5. Each pneumatic tightness test shall be carried out:

a) with the valve in the closed position and the outlet open to test for leakage from the valve seats;

b) with the valve in the open position and the outlet closed off to test for leakage from gland seals or body joints. For this test all parts of the valve casing shall be attached to a flange equivalent to that for which its use is intended.

9 Marking

The valve shall be permanently marked with the following information:

a) DN (nominal size) of the valve;

b) manufacturer's name or symbol;

c) material of the valve casing (see Annex A);

d) maximum working pressure (MWP);

e) year of manufacture;

f) unique serial number;