

SLOVENSKI STANDARD
oSIST prEN 14432:2013
01-julij-2013

Posode za prevoz nevarnih snovi - Oprema posode za prevoz tekočih kemikalij in utekočinjenih plinov - Vakuumski oddušniki in ventili za vstop zraka

Tanks for the transport of dangerous goods - Tank equipment for the transport of liquid chemicals and liquefied gases - Product discharge and air inlet valves

Tanks für die Beförderung gefährlicher Güter - Ausrüstung für Tanks für die Beförderung von flüssigen Chemieprodukten und Flüssiggasen - Produktabsper- und Gaswechselventile

Citernes de transport de matières dangereuses - Équipements de la citerne pour le transport de produits chimiques liquides et de gaz liquéfiés - Vannes de mise en pression de la citerne ou de déchargement du produit

Ta slovenski standard je istoveten z: prEN 14432

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

oSIST prEN 14432:2013

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 14432

February 2013

ICS 13.300; 23.020.20

Will supersede EN 14432:2006

English Version

**Tanks for the transport of dangerous goods - Tank equipment
for the transport of liquid chemicals and liquefied gases -
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Citernes de transport de matières dangereuses -
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für Tanks für die Beförderung von flüssigen
Chemieprodukten und Flüssiggasen - Produktabsper- und
Gaswechselventile

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 296.

If this draft becomes a European Standard, 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.

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COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Page

Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Functions	5
5 Design and materials	5
6 Test media	6
7 Type tests	6
8 Production tests.....	7
9 Marking	7
10 Supply requirements	8
Annex A (normative) Verification of valve design type	9

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Foreword

This document (prEN 14432:2013) has been prepared by Technical Committee CEN/TC 296 “Tanks for transport of dangerous goods”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 14432:2006.

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

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1 Scope

This European Standard specifies the requirements for product discharge and air inlet valves 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 discharge for liquid chemicals and liquefied gases. It includes carbon dioxide while excluding cryogenic gases.

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

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

EN 12266-2:2008, *Industrial valves — Testing of valves — Part 2: Tests, test procedures and acceptance criteria — Supplementary 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 12516-3:2002, *Valves — Shell design strength — Part 3: Experimental method*

EN 13445-1, *Unfired pressure vessels — Part 1: General*

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

3 Terms and definitions

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

3.1

maximum working pressure

MWP

maximum pressure up to which the valve can be operated, at least the test pressure divided by 1,3

[SOURCE: ADR/RID chapter 6.8]

3.2

maximum allowable working pressure

MAWP

maximum pressure up to which the valve can be operated, at least the test pressure divided by 1,3 (liquefied gases) respectively 1,5 (liquids)

[SOURCE: ADR/RID chapter 6.7]

3.3

test pressure

the pressure used for the pressure tests

3.4

nominal size

designated size of valve as defined in EN ISO 6708

4 Functions

4.1 The product discharge valve is a secondary stop valve for tank bottom discharge and a primary stop valve for tank top discharge. For tanks intended for transportation of dangerous goods, it is used for the unloading and loading of the product.

4.2 The air inlet valve is a primary stop valve according to EN 736-1, it provides a closure on the tank to which a pressurising or vapour recovery line may be attached.

5 Design and materials

5.1 General

The manufacturer shall specify, in drawings and other papers, the design and the materials of the product discharge or air inlet valve. Where non-standard flange attachments are used, the valve specification shall include information regarding mating details of the tank flange.

5.2 Design

5.2.1 The valve shall be a stop valve as defined in EN 736-1.

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

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

5.2.4 Regarding the calculation of flanges and body wall thickness the requirements given in EN 12516-1 to EN 12516-3 or EN 13445-1 apply.

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 %.

5.3.3 The relevant EN reference, where possible, for the valve casing material shall be permanently marked on the valve casing. Should no EN exist then the appropriate national standard designation may be used.

EXAMPLE 1.4404: indicates ASTM 316L type stainless steel in accordance with EN 10216-5 for unwelded pipes.

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 A shall be subjected to a type test. Type testing according to 7.2 to 7.5 shall be carried out under ambient conditions. If the valve is required to operate outside the temperature range $-40\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$, the design shall be taken into account either by the type testing or a validated calculation method. For the calculation of the test pressure, EN 12516-3:2002, 6.3 and 6.4, apply.

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 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 1,5 times the MWP (MAWP) or 400 kPa, whichever is the greater. The test pressure shall be maintained for a minimum of 10 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 or body joints.

7.4 Valve assembly pneumatic tightness test

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 (MAWP). The assembly shall be totally immersed in a water bath, or, where total immersion of the valve assembly is not possible, a suitable leak detection fluid shall be applied. The test pressure shall be maintained for a minimum of 10 min on the assembly during which test period 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 seats;
- b) with the valve in the open position and the outlet closed off to test for leakage from gland seals or body joints.

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 and 10 full cycles ("open" to "closed") at MWP (MAWP) or maximum rating coupling pressure at ambient temperature 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.

8 Production tests

8.1 General

Each product discharge or air inlet valve produced shall conform to the drawings and other papers in which the design and the materials were specified by the manufacturer. The production tests 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 1,5 times the MWP (MAWP), or 400 kPa, whichever is the greater. The test pressure shall be maintained as given in EN 12266-1:2003, Table A.1 on the casing and the leakage shall not exceed Rate A as defined in EN 12266-1:2003, Table A.5.

8.4 Valve assembly pneumatic tightness test

Each valve assembly shall be pneumatically tested as a finally assembled device, using a test medium conforming to 6.2, at pressures equal to 20 kPa and at least 25 % of the test pressure. The assembly shall be totally immersed in a water bath, or where total immersion of the valve assembly is not possible, a suitable leak detection fluid shall be applied. The test pressure shall be maintained as given in EN 12266-1:2003, Table A.1 on the 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 seats;
- b) with the valve in the open position and the outlet closed off to test for leakage from gland seals or body joints.

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:

The relevant EN reference, where possible, for the valve casing material shall be permanently marked on the valve casing. Should no EN exist then the appropriate national standard designation may be used;

- d) maximum working pressure (MWP) or maximum allowable working pressure (MAWP);

prEN 14432:2013 (E)

- e) year of manufacture;
- f) unique serial number;
- g) reference number of this standard (i.e. prEN 14432:2013);
- h) temperature range (if not within the range -20 °C to $+50\text{ °C}$).

10 Supply requirements**10.1 Order information**

Information such as, product characteristics to be carried in the tank, nominal size of the valve, MWP (MAWP) of the valve, connection type and size of the valve, and maximum and minimum operating temperatures shall be provided by the customer at the time of ordering.

10.2 Installation and operation

The manufacturer shall provide with each valve installation, operating and maintenance instructions for correct use of the equipment in accordance with the manufacturer's recommendations.

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