



SLOVENSKI STANDARD
SIST EN 14141:2004
01-junij-2004

Armature za transport zemeljskega plina po cevovodih – Zahteve glede uporabnosti in preskušanje

Valves for natural gas transportation in pipelines - Performance requirements and tests

Armaturen für den Transport von Erdgas in Fernleitungen - Anforderungen an die Gebrauchstauglichkeit und deren Prüfung

Robinetterie pour le transport de gaz naturel par des pipelines - Exigences de performance et essais

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Ta slovenski standard je istoveten z: EN 14141:2003

ICS:

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|-----------|-------------------------------------------------------------------------------------------|-------------------------------------------------------|
| 23.060.01 | Ventili na splošno | Valves in general |
| 75.200 | U] ^ { æ Á æ \ æ ä æ ^ } ð } æ æ Æ æ ç ã Æ ã ç [å [ç Æ : ^ { ^ ð \ ^ * æ ã æ | Petroleum products and natural gas handling equipment |

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 14141

December 2003

ICS 23.060.01; 75.200

English version

Valves for natural gas transportation in pipelines - Performance requirements and tests

Robinetterie pour le transport de gaz naturel par des pipelines - Exigences de performance et essais

Armaturen für den Transport von Erdgas in Fernleitungen - Anforderungen an die Gebrauchstauglichkeit und deren Prüfung

This European Standard was approved by CEN on 14 November 2003.

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

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Foreword

This document (EN 14141:2003) 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of an identical text or by endorsement, at the latest by June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

Annexes A, B, C, D, E and F are normative. Annexes G and H are informative.

This document contains a Bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to: 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.

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EN 14141:2003 (E)

Introduction

CEN/TC 69/WG 9 is charged to develop a proposal for a European performance standard of valves for use in pipelines for transportation of natural gas in accordance with EN 1594.

The significant properties of valves designed for a special application are defined by performance requirements accompanied by the description of tests to be carried out:

- by the manufacturer on the product during the manufacture; and
- by an independent accepted body on test samples for certification purposes;

to give proof that the valve meets the performance requirements of this European Standard.

A type test is included in this standard to satisfy the requirements of EN 1594.

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1 Scope

This European Standard applies to all valves (plug valves, ball valves, gate valves and check valves) used in onshore transmission pipelines for transport of natural gas in accordance with EN 1594. It comprises all valves which are components of the pipeline.

This European Standard specifies valves for pipelines with a maximum operating pressure (MOP) over 16 bar.

Excluded from the scope are control valves, safety valves and all valves \leq DN 50.

This European Standard specifies requirements and appropriate verification tests carried out during production and for certification purposes to verify that the valves conform to the requirements. A summary of the product and type tests is given in annex H.

This European Standard makes reference to ISO 14313. All the requirements of ISO 14313 should be met unless otherwise stated. Paragraphs marked with a dot [•] indicate requirements which are identical to ISO 14313. In the case of conflict between European and International Standard, the European Standard takes precedence.

Additional national requirements and tests in accordance with individual national legal regulations not yet harmonized may be necessary and are to be advised in the purchase order.

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 473, *Non-destructive testing — Qualification and certification of NDT personnel — General principles.*

EN 571-1, *Non-destructive testing — Penetrant testing — Part 1: General principles.*

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 970, *Non-destructive examination of fusion welds — Visual examination.*

EN 1289, *Non-destructive examination of welds — Penetrant testing of welds — Acceptance levels.*

EN 1290, *Non-destructive examination of welds — Magnetic particle examination of welds.*

EN 1291, *Non-destructive examination of welds — Magnetic particle testing of welds — Acceptance levels.*

EN 1369, *Founding — Magnetic particle inspection.*

EN 1371-1, *Founding — Liquid penetrant inspection — Part 1: Sand, gravity die and low pressure die castings.*

EN 1435, *Non-destructive examination of welds — Radiographic examination of welded joints.*

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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 1515-1, *Flanges and their joints — Bolting — Part 1: Selection of bolting.*

EN 1515-2, *Flanges and their joints — Bolting — Part 2: Classification of bolt materials for steel flanges, PN-designated.*

EN 1594, *Gas supply systems — Pipelines for maximum operating pressure over 16 bar — Functional requirements.*

EN 1712, *Non-destructive testing of welds — Ultrasonic testing of welded joints — Acceptance levels.*

EN 1714, *Non-destructive examination of welds — Ultrasonic examination of welded joints.*

EN 10045-1, *Metallic materials — Charpy impact test — Part 1: Test method.*

EN 10204:1991, *Metallic products — Types of inspection documents.*

EN 10228-1, *Non-destructive testing of steel forgings — Part 1: Magnetic particle inspection.*

EN 10228-2, *Non-destructive testing of steel forgings — Part 2: Penetrant testing.*

EN 10228-3, *Non-destructive testing of steel forgings — Part 3: Ultrasonic testing of ferritic or martensitic steel forgings.*

EN 10228-4, *Non-destructive testing of steel forgings — Part 4: Ultrasonic testing of austenitic and austenitic-ferritic stainless steel forgings.*

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

EN 12517, *Non-destructive examination of welds — Radiographic examination of welded joints — Acceptance levels.*

EN 12627:1999, *Industrial valves — Butt welding ends for steel valves.*

EN 12681, *Founding — Radiographic inspection.*

EN 45004, *General criteria for the operation of various types of bodies performing inspection.*

EN 45011, *General requirements for bodies operating product certification systems (ISO/IEC Guide 65:1996).*

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

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

ISO 5208, *Industrial valves — Pressure testing of valves.*

ISO 10497, *Testing of valves — Fire type-testing requirements.*

ISO 14313:1999, *Petroleum and natural gas industries — Pipeline transportation systems — Pipeline valves.*

MSS-SP-55¹⁾, *Quality standard for steel castings for valves, flanges and fittings and other piping components (visual method for evaluation of surface irregularities).*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 736-1, EN 736-2, EN 736-3 and ISO 14313 and the following apply.

3.1

full opening valve [•]

valve with an unobstructed opening capable of allowing a sphere or other internal devices of the same nominal size as the valve to pass

3.2

maximum pressure differential (MPD) [•]

maximum difference between the upstream and downstream pressure across the obturator at which the obturator may be operated

3.3

reduced-opening valve [•]

valve with the opening through the obturator smaller than at the end connection(s)

3.4

seating surfaces [•]

contact surfaces of the obturator and seat which ensure valve sealing

3.5

stem [•]

part that connects the obturator to the operator and which may consist of one or more components

NOTE This definition applies also for shafts.

3.6

test report

written statement comprising the results of the particular tests for the evaluation of the conformity of a range of valves with this standard

3.7

type test

as generally mentioned in EN 736-3, a specified group of tests to provide proof of the conformity of a range of valves with this standard

NOTE A range may include valves of the same design, the same material group and the same manufacturing method but with different size designations and different allowable pressures.

3.8

type test certification

granting of a certificate by an independent accepted body to prove the conformity of a range of valves with a standard

¹⁾ Developed and approved by the Manufacturers Standardization Society of the Valve and Fittings Industrie, Inc. 127 Park Street, NE, Vienna, Virginia 22180.

EN 14141:2003 (E)**3.9****piggability**

valves having in the open position a cylindrical bore which permits the unhampered passage of a pig (cleaning or measuring appliance) through the flow area

4 Functional requirements**4.1 Travel stops**

Travel stops shall be provided on the valve or gearbox or actuator. They shall positively fix the position of the obturator in the open and closed position. They shall not shift unintentionally. In case of lever operated valves, the travel stop shall be independent from the lever.

4.2 Position of the obturator

Except for check valves the position of the obturator shall not be altered by the dynamic forces of the passing flow or in the case of screw operated gate valves by forces generated from internal pressure.

4.3 Protection of exposed stems and shafts

Extended and exposed stems and shafts of valves shall be protected against dust by a stem extension casing.

4.4 Piggability

Valves for transmission pipelines shall be piggable unless otherwise agreed and shall conform to the definition of the full opening valve.

4.5 Lifting lugs

[•] Valves of size DN 200 (NPS 8) and larger shall be provided with lifting lugs.

The safe working load of lifting lugs shall exceed the weight of the valve and the actuator.

4.6 Additional requirements

For special conditions the purchaser may require additional requirements, see annex G.

5 Requirements and tests

5.1 Design

5.1.1 Shell

| Requirement | Verification on product | Type test |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| The design and dimensions of the valves shall be such as to withstand safely all stresses occurring under operating conditions. The shell design shall meet the requirements of prEN 12516-1 or prEN 12516-2. Alternatively the requirements of ISO 14313 shall be met. Welded valves of non-spherical or non-cylindrical shape shall meet the requirements of an accepted pressure vessel code. | The manufacturer shall document the design validation of the valve and shall make it available for evaluation and approval on request. | Design approval in accordance with A.4.3 and annex F. |

5.1.2 End-to-end dimensions

| Requirement | Test on product | Type test |
|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| [•] End-to-end dimensions of flanged and butt welding valves shall conform to ISO 14313 unless otherwise agreed by the purchaser. | Dimensional check. SIST EN 14141:2004 https://standards.iteh.ai/catalog/standards/sist/8ad41afb-8a69-4de0-bcbc-82c5b1601bf2/sist-en-14141-2004 | Test in accordance with A.4.3. |

5.1.3 Butt welding ends

| Requirement | Test on product | Type test |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------|
| Weld end details and thickness shall be in accordance with EN 12627:1999, Figures 2, 3, 4 and 5. The length of the butt end shall be sufficient to allow welding without damage of the internal parts of the valve. The valve supplier shall specify the maximum acceptable welding temperature. Where this cannot be achieved, pipe pup extensions may be used by agreement with the purchaser. | Dimensional check on drawing and product. | Drawing examination in accordance with A.4.3. |