

Petroleum and natural gas industries - Pipeline transportation systems - Subsea pipeline valves (ISO 14723:2001)

Petroleum and natural gas industries - Pipeline transportation systems - Subsea pipeline valves (ISO 14723:2001)

Erdöl- und Erdgasindustrie - Rohrleitungs-Transportsysteme - Unterwasser-Rohrleitungssysteme (ISO 14723:2001)

Industries du pétrole et du gaz naturel - Systemes de transport par conduites - Vannes de conduites immergées (ISO 14723:2001)

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Ta slovenski standard je istoveten z: EN ISO 14723:2001

ICS:

23.060.01	Ventili na splošno	Valves in general
75.200	U] ^{ æÁ æÁ \ æá æ ^} b } æ^ Æ æç æç ã ç[å[çÁ : ^{ ^ b \ ^* æ ä æ	Petroleum products and natural gas handling equipment

SIST EN ISO 14723:2004
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 14723

December 2001

ICS 75.200

English version

Petroleum and natural gas industries - Pipeline transportation systems - Subsea pipeline valves (ISO 14723:2001)

Industries du pétrole et du gaz naturel - Systèmes de transport par conduites - Vannes de conduites immergées (ISO 14723:2001)

Erdöl- und Erdgasindustrie - Rohrleitungs-Transportsysteme - Unterwasser-Rohrleitungssysteme (ISO 14723:2001)

This European Standard was approved by CEN on 1 December 2001.

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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 Management Centre has the same status as the official versions.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

EN ISO 14723:2001 (E)

CORRECTED 2002-09-25

Foreword

This document (EN ISO 14723:2001) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum and natural gas industries" in collaboration with Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum and natural gas industries", 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 2002, and conflicting national standards shall be withdrawn at the latest by June 2002.

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.

Endorsement notice

The text of ISO 14723:2001 has been approved by CEN as EN ISO 14723:2001 without any modifications.

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INTERNATIONAL
STANDARD

ISO
14723

First edition
2001-12-01

**Petroleum and natural gas industries —
Pipeline transportation systems — Subsea
pipeline valves**

*Industries du pétrole et du gaz naturel — Systèmes de transport par
conduites — Vannes de conduites immergées*

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Reference number
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Printed in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14723 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum and natural gas industries*, Subcommittee SC 2, *Pipeline transportation systems*.

Annexes C, D and E form a normative part of this International Standard. Annexes A and B are for information only.

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ISO 14723:2001(E)**Introduction**

This International Standard is based on ISO 14313. It has been developed to address special requirements specific to subsea pipeline valves.

Users of this International Standard should be aware that further or differing requirements may be needed for individual applications. This International Standard is not intended to inhibit a contractor from offering, or the company from accepting, alternative engineering solutions for the individual application. This may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the manufacturer should identify any variations from this International Standard and provide details.

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Petroleum and natural gas industries — Pipeline transportation systems — Subsea pipeline valves

1 Scope

This International Standard specifies requirements and gives recommendations for the design, manufacturing, testing and documentation of ball, check and gate valves for subsea application in offshore pipeline systems meeting the requirements of ISO 13623 for the petroleum and natural gas industries.

This International Standard is not applicable to valves for pressure ratings exceeding PN 420 (Class 2500).

Annex A of this International Standard provides guidelines to assist the purchaser with valve type selection and specification of requirements when ordering valves.

Annex B of this International Standard provides a checklist summary of information to be provided by the manufacturer and/or purchaser when ordering valves.

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2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 148, *Steel — Charpy impact test (V-notch)*

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 228-2, *Pipe threads where pressure-tight joints are not made on the threads — Part 2: Verification by means of limit gauges*

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

ISO 7005-1, *Metallic flanges — Part 1: Steel flanges*

ISO 9712, *Non-destructive testing — Qualification and certification of personnel*

ISO 10474, *Steel and steel products — Inspection documents*

ISO 13623, *Petroleum and natural gas industries — Pipeline transportation systems*

ASME¹⁾ B1.1, *Unified inch screw threads (UN and UNR thread form)*

1) American Society of Mechanical Engineers, 345 East 47th Street, NY 10017-2392, USA.

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ASME B1.20.1, *Pipe threads, general purpose (inch)*

ASME B16.5, *Pipe flanges and flanged fittings — NPS 1/2 through NPS 24*

ASME B16.10, *Face-to-face and end-to-end dimensions of valves*

ASME B16.25, *Buttwelding ends*

ASME B16.34, *Valves — Flanged, threaded, and welding end*

ASME B16.47, *Large diameter steel flanges — NPS 26 through NPS 60*

ASME B31.4, *Pipeline transportation systems for liquid hydrocarbons and other liquids*

ASME B31.8, *Gas transmission and distribution systems*

ASME Boiler and Pressure Vessel Code:1998, Section V, *Non destructive examination*

ASME Boiler and Pressure Vessel Code:1998, Section VIII, Division 1, *Rules for construction of pressure vessels*

ASME Boiler and Pressure Vessel Code, Section IX, *Qualification standard for welding and brazing procedures, welders, brazers, and welding and brazing operators*

ASTM²⁾ A 320/A 320M, *Standard specification for alloy steel bolting materials for low-temperature service*

ASTM A 370, *Standard test methods and definitions for mechanical testing of steel products*

ASTM A 388/A 388M, *Standard practice for ultrasonic examination of heavy steel forgings*

ASTM A 435/A 435M, *Standard specification for straight-beam ultrasonic examination of steel plates*

ASTM A 577/A 577M, *Standard specification for ultrasonic angle-beam examination of steel plates*

ASTM A 578/A 578M, *Standard specification for straight-beam ultrasonic examination of plain and clad steel plates for special applications*

ASTM A 609/A 609M:1997, *Standard practice for castings, carbon low-alloy, and martensitic stainless steel, ultrasonic examination thereof*

AWS³⁾ QC1, *Standard for AWS certification of welding inspectors*

EN 287-1, *Approval testing of welders — Fusion welding — Part 1: Steels*

EN 288-3, *Specification and approval of welding procedures for metallic materials — Part 3: Welding procedure tests for the arc welding of steels*

MSS⁴⁾ SP-44, *Steel pipeline flanges*

MSS SP-55, *Quality standard for steel castings, flanges, fittings and other piping components — Visual method for evaluation of surface irregularities*

NACE⁵⁾ MR 0175, *Sulfide stress cracking resistant metallic materials for oilfield equipment*

NACE TM 0284, *Evaluation of pipeline and pressure vessel steels for resistance to hydrogen-induced cracking*

2) American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA.

3) The American Welding Society, 550 NW LeJeune Road, Miami, FL 33126, USA.

4) Manufacturers Standardization Society of the Valve & Fittings Industry Inc., 127 Park Street N.E., Vienna, VA 22180, USA.

5) National Association of Corrosion Engineers, P.O. Box 218340, Houston, TX 77218, USA.

3 Terms and definitions

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

3.1

ANSI rating class

numerical pressure design class defined in ASME B16.5 and used for reference purposes

NOTE The ANSI rating class is designated by the word "Class" followed by a number.

[ISO 14313:1999]

3.2

bi-directional valve

valve designed for blocking the fluid in both downstream and upstream directions

[ISO 14313:1999]

3.3

bleed

drain or vent

[ISO 14313:1999]

3.4

block valve

ball or gate valve that blocks flow into the downstream conduit when in the closed position

NOTE 1 Valves are either single- or double-seated, bi-directional or uni-directional.

NOTE 2 Adapted from ISO 14313:1999.

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3.5

breakaway thrust [torque]

thrust [torque] required for opening a valve with maximum pressure differential

NOTE Adapted from ISO 14313:1999.

3.6

by agreement

agreed between manufacturer and purchaser

[ISO 14313:1999]

3.7

double-block-and-bleed valve

valve with two seating surfaces which, in the closed position, blocks flow from both valve ends when the cavity between the seating surfaces is vented through a bleed connection provided on the body cavity

[ISO 14313:1999]

3.8

drive train

all parts of a valve drive between the operator and the obturator, including the obturator but excluding the operator

[ISO 14313:1999]

ISO 14723:2001(E)**3.9****flow coefficient** q_v

volumetric flowrate of water at a temperature between 5 °C (40 °F) and 40 °C (104 °F) passing through a valve and resulting in a pressure loss of 100 kPa (14,7 psi)

NOTE 1 It is expressed in cubic metres per hour.

NOTE 2 q_v relates to the flowrate coefficient C_v in US gallons per minute at 15,6 °C (60 °F) resulting in 1 psi pressure drop as follows:

$$q_v = \frac{C_v}{1,156}$$

NOTE 3 Adapted from ISO 14313:1999.

3.10**full-opening valve**

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

[ISO 14313:1999]

3.11**handwheel**

wheel consisting of a rim connected to a hub, for example by spokes, and used to operate manually a valve requiring multiple turns

[ISO 14313:1999]

3.12**locking device**

part or an arrangement of parts for securing a valve in the open and/or closed position

[ISO 14313:1999]

3.13**manual operator**

wrench (lever) or handwheel with or without a gearbox

[ISO 14313:1999]

3.14**maximum pressure differential****MPD**

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

NOTE Adapted from ISO 14313:1999.

3.15**nominal pipe size****NPS**

numerical inches designation of size which is common to components in piping systems of any one size

NOTE The nominal pipe size is designated by the letters NPS followed by a number

[ISO 14313:1999]

3.16**nominal pressure class****PN class**

numerical pressure design class as defined in ISO 7005-1 and used for reference purposes

NOTE The nominal pressure class is designated by the letters PN followed by a number.

[ISO 14313:1999]

3.17**nominal size****DN**

numerical metric designation of size which is common to components in piping systems of any one size

NOTE Nominal size is designated by the letters DN followed by a number.

[ISO 14313:1999]

3.18**obturator****closure member**

part of a valve which is positioned in the flow stream to permit or block flow

EXAMPLE Ball, clapper, disc, gate or plug.

NOTE Adapted from ISO 14313:1999.

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3.19**operator**

device (or assembly) for opening or closing a valve

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3.20**pipe pup**

short piece of pipe with length typically equivalent to one or two times its diameter, welded directly to the valve to prevent valve seal damage from girth welding, for transition of valve material to pipeline strength properties, or to provide a valve end mating the pipeline dimensions

3.21**position indicator**

device to show the position of the valve obturator

[ISO 14313:1999]

3.22**powered operator****powered actuator**

electric, hydraulic or pneumatic device bolted or otherwise attached to the valve for powered opening and closing of the valve

[ISO 14313:1999]

3.23**pressure cap**

cap designed to contain internal pressure in the event of seal leakage or to prevent ingress due to hyperbaric pressure