

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

This document is a preview generated by EVS

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 14723:2009 sisaldab Euroopa standardi EN ISO 14723:2009 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 30.11.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 15.06.2009.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 14723:2009 consists of the English text of the European standard EN ISO 14723:2009.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 30.11.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 15.06.2009.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

ICS 75.200

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

Right to reproduce and distribute Estonian Standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:
Aru str 10 Tallinn 10317 Estonia; www.evs.ee; Phone: +372 605 5050; E-mail: info@evs.ee

EUROPEAN STANDARD

EN ISO 14723

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2009

ICS 75.200

Supersedes EN ISO 14723:2001

English Version

Petroleum and natural gas industries - Pipeline transportation systems - Subsea pipeline valves (ISO 14723:2009)

Industries du pétrole et du gaz naturel - Systèmes de transport par conduites - Vannes de conduites immergées (ISO 14723:2009)

Erdöl- und Erdgasindustrie - Rohrleitungstransportsysteme - Unterwasserarmaturen (ISO 14723:2009)

This European Standard was approved by CEN on 20 May 2009.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 14723:2009) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" in collaboration with Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum, petrochemical 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 December 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 14723:2001.

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

Endorsement notice

The text of ISO 14723:2009 has been approved by CEN as a EN ISO 14723:2009 without any modification.

Contents

Page

Foreword.....	v
Introduction.....	vi
1 Scope.....	1
2 Conformance.....	1
2.1 Rounding.....	1
2.2 Compliance to standard.....	1
3 Normative references.....	1
4 Terms and definitions.....	3
5 Symbols and abbreviated terms.....	8
5.1 Symbols.....	8
5.2 Abbreviated terms.....	8
6 Valve types and configurations.....	9
6.1 Valve types.....	9
6.2 Valve configurations.....	10
7 Design.....	25
7.1 Design codes and calculations.....	25
7.2 Pressure and temperature ratings.....	25
7.3 Cavity relief.....	26
7.4 External pressure and loads.....	26
7.5 Sizes.....	26
7.6 Face-to-face and end-to-end dimensions.....	26
7.7 Valve operation.....	36
7.8 Pigging.....	36
7.9 Valve ends.....	37
7.10 Bypasses, drains and vents.....	38
7.11 Manual actuator-manual operator — Handwheels and wrenches.....	38
7.12 Locking devices.....	39
7.13 Position of the obturator.....	39
7.14 Position indicators.....	39
7.15 Travel stops.....	39
7.16 ROV interface.....	39
7.17 Sealant injection.....	39
7.18 Lifting points and supports.....	40
7.19 Valve operator interface.....	40
7.20 Drive trains.....	41
7.21 Stem retention.....	41
7.22 Stem/shaft protector.....	41
7.23 Hydraulic lock.....	42
7.24 Corrosion/erosion.....	42
7.25 Hyperbaric performance.....	42
7.26 Design documents.....	42
7.27 Design document review.....	42
8 Materials.....	42
8.1 Material specification.....	42
8.2 Service compatibility.....	43
8.3 Forged parts.....	43
8.4 Composition limits.....	43
8.5 Impact test requirements of steels.....	44

8.6	Bolting	45
8.7	Sour service	45
9	Welding	45
9.1	Qualifications	45
9.2	Impact testing requirements of weldments	46
9.3	Hardness testing	47
9.4	Repair	47
10	Quality control	48
10.1	NDE requirements	48
10.2	Measuring and test equipment	48
10.3	Qualification of inspection and test personnel	49
10.4	NDE	49
10.5	NDE of repairs	49
10.6	Visual inspection of castings	50
11	Testing	50
11.1	General	50
11.2	Hydrostatic shell test	50
11.3	Operational/functional test	51
11.4	Hydrostatic seat test	51
11.5	Cavity-relief test	52
11.6	Low-pressure-gas seat test	52
11.7	Draining	53
11.8	Installation of body connections after testing	53
12	Coating	53
13	Marking	53
14	Preparation for shipment	55
15	Documentation	55
15.1	Documentation retained by manufacturer	55
15.2	Documentation shipped with valve	56
Annex A (normative) Requirements for non-destructive examination		57
Annex B (normative) Supplementary test requirements		60
Annex C (informative) Supplementary documentation requirements		65
Annex D (informative) Purchasing guidelines		66
Annex E (informative) Marking example		71
Bibliography		72

Introduction

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

It is necessary that users of this International Standard be aware that further or differing requirements can be required 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 can be particularly applicable where there is innovative or developing technology. Where an alternative is offered, it is the responsibility of the manufacturer to identify any variations from this International Standard and provide details.

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, gate and plug 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).

2 Conformance

2.1 Rounding

Except as otherwise required by this International Standard, to determine conformance with the specified requirements, observed or calculated values shall be rounded to the nearest unit in the last right-hand place of figures used in expressing the limiting value, in accordance with the rounding method of ISO 31-0:1992, Annex B, Rule A.

2.2 Compliance to standard

A quality system should be applied to assist compliance with the requirements of this International Standard.

NOTE ISO/TS 29001 gives sector-specific guidance on quality management systems.

The manufacturer shall be responsible for complying with all of the applicable requirements of this International Standard. It shall be permissible for the purchaser to make any investigation necessary in order to be assured of compliance by the manufacturer and to reject any material that does not comply.

3 Normative references

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

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

ISO 31-0:1992, *Quantities and Units — Part 0: General Principles*

ISO 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method*

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

ISO 5208:2008, *Industrial valves — Pressure testing of metallic valves*

ISO 9606 (all parts), *Qualification test of welders — Fusion welding*

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

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

ISO 15156 (all parts), *Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production*

ISO 15607, *Specification and qualification of welding procedures for metallic materials — General rules*

ISO 15609 (all parts), *Specification and qualification of welding procedures for metallic materials — Welding procedure specification*

ISO 15614-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel alloys*

ASME¹⁾ B1.20.1, *Pipe Threads, General Purpose (Inch)*

ASME B16.5, *Pipe Flanges and Flanged Fittings*

ASME B16.10, *Face-to-Face and End-to-End Dimensions of Valves*

ASME B16.34-2004, *Valves Flanged, Threaded, and Welding End*

ASME B16.47-2006, *Large Diameter Steel Flanges: NPS 26 Through NPS 60*

ASME B31.4-2006, *Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids*

ANSI/ASME B31.8-2007, *Gas Transmission and Distribution Piping Systems*

ASME Boiler and Pressure Vessel Code, BPVC Section V:2007, *Nondestructive Examination (BPVC)*

ASME Boiler and Pressure Vessel Code, BPVC Section VIII, Division 1:2007, *Rules for Construction of Pressure Vessels (BPVC)*

ASME Boiler and Pressure Vessel Code, BPVC Section VIII, Division 2 :2004, *Alternative Rules (BPVC)*

ASME Boiler and Pressure Vessel Code, BPVC Section IX, *Welding and Brazing — Qualifications (BPVC)*

ASNT SNT-TC-1A²⁾, *Recommended Practice No. SNT-TC-1A — Non-Destructive Testing*

ASTM³⁾ A320/A320M, *Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for Low-Temperature Service*

ASTM A370, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

ASTM A578/A578M-07, *Standard Specification for Straight-Beam Ultrasonic Examination of Rolled Steel Plates for Special Applications*

ASTM A609/A609M-02, *Standard Practice for Castings, Carbon, Low-Alloy, and Martensitic Stainless Steel Ultrasonic Examination Thereof*

ASTM E562, *Standard Test Method for Determining Volume Fraction by Systematic Manual Point Count*

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

2) American Society of Non-Destructive Testing, PO box 28518, 1711 Arlingate Lane, Columbus, OH 43228-0518, USA.

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

AWS QC 1⁴⁾, *Standard for AWS Certification of Welding Inspectors*

EN 287 (all parts), *Qualification test of welders — Fusion welding*

EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 10204:2004, *Metallic materials — Types of inspection documents*

MSS⁵⁾ SP-44, *Steel Pipeline Flanges*

MSS SP-55, *Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components — Visual Method for Evaluation of Surface Irregularities*

NACE TM0284, *Standard Test Method — Evaluation of Pipeline and Pressure Vessel Steels for Resistance to Hydrogen-Induced Cracking*

4 Terms and definitions

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

4.1

ASME rating class

numerical pressure design class defined in ASME B16.34 and used for reference purposes

NOTE The ASME rating class is designated by the word “Class” followed by a number.

[ISO 14313:2007, 4.1]

4.2

bi-directional valve

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

[ISO 14313:2007, 4.2]

4.3

bleed

drain or vent

[ISO 14313:2007, 4.3]

4.4

block valve

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

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

[ISO 14313:2007, 4.4]

4.5

breakaway thrust

breakaway torque

maximum thrust or torque required to operate a valve at maximum pressure differential

[ISO 14313:2007, 4.5]

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

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