
**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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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 2.

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 document 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, petrochemical and natural gas industries*, Subcommittee SC 2, *Pipeline transportation systems*.

This second edition cancels and replaces the first edition (ISO 14723:2001), which has been technically revised.

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.

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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, 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.