



SLOVENSKI STANDARD SIST EN ISO 10434:2020

01-november-2020

Nadomešča:
SIST EN ISO 10434:2004

Jekleni zasuni s prirobničnim zgornjim delom za naftno industrijo, petrokemijo in podobno industrijo (ISO 10434:2020)

Bolted bonnet steel gate valves for the petroleum, petrochemical and allied industries (ISO 10434:2020)

Schieber aus Stahl mit geflanschem Oberteil für die Erdöl-, petrochemische und verwandte Industrien (ISO 10434:2020)

Robinets-vannes en acier à chapeau boulonné pour les industries du pétrole, de la pétrochimie et les industries connexes (ISO 10434:2020)

Ta slovenski standard je istoveten z: EN ISO 10434:2020

ICS:

23.060.30	Zapirni ventili (zasuni)	Gate valves
75.180.01	Oprema za industrijo nafte in zemeljskega plina na splošno	Equipment for petroleum and natural gas industries in general

SIST EN ISO 10434:2020 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 10434:2020](#)

<https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020>

EUROPEAN STANDARD

EN ISO 10434

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2020

ICS 75.180.20

Supersedes EN ISO 10434:2004

English Version

Bolted bonnet steel gate valves for the petroleum, petrochemical and allied industries (ISO 10434:2020)

Robinets-vannes en acier à chapeau boulonné pour les
industries du pétrole, de la pétrochimie et les
industries connexes (ISO 10434:2020)

Schieber aus Stahl mit geflanschtem Oberteil für die
Erdöl-, petrochemische und verwandte Industrien (ISO
10434:2020)

This European Standard was approved by CEN on 21 August 2020.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 10434:2020](https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020)
<https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020>

European foreword

This document (EN ISO 10434:2020) has been prepared by Technical Committee ISO/TC 153 "Valves" in collaboration with 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 March 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

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

This document supersedes EN ISO 10434:2004.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

iTeh STANDARD PREVIEW
Endorsement notice
(standards.iteh.ai)

The text of ISO 10434:2020 has been approved by CEN as EN ISO 10434:2020 without any modification.

[SIST EN ISO 10434:2020
https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020](https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 10434:2020](#)

<https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020>

INTERNATIONAL
STANDARD

ISO
10434

Third edition
2020-08

**Bolted bonnet steel gate valves for the
petroleum, petrochemical and allied
industries**

*Robinets-vannes en acier à chapeau boulonné pour les industries du
pétrole, de la pétrochimie et les industries connexes*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 10434:2020](https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020)

[https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-
31f378298d20/sist-en-iso-10434-2020](https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020)



Reference number
ISO 10434:2020(E)

© ISO 2020

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN ISO 10434:2020](https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020)

<https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Pressure/temperature ratings	3
5 Design	4
5.1 Body wall thickness.....	4
5.2 Bonnet wall thickness.....	5
5.3 Body dimensions.....	6
5.3.1 Flanged ends.....	6
5.3.2 Butt-welding ends.....	7
5.3.3 Body seats.....	9
5.4 Bonnet dimensions.....	10
5.5 Bonnet-to-body joint.....	11
5.6 Gate.....	12
5.7 Yoke.....	13
5.8 Stem and stem nut.....	13
5.9 Packing and packing box.....	15
5.10 Bolting.....	16
5.11 Operation.....	16
5.12 Auxiliary connections.....	17
6 Materials	19
6.1 Materials other than trim materials.....	19
6.2 Trim materials.....	20
6.3 Welding for fabrication and repair.....	22
7 Testing, inspection and examination	23
7.1 Pressure tests.....	23
7.1.1 General.....	23
7.1.2 Shell test.....	23
7.1.3 Closure tightness test.....	23
7.1.4 Optional backseat tightness test.....	25
7.1.5 Optional closure tightness test.....	25
7.1.6 Fugitive emission testing.....	25
7.2 Inspection.....	26
7.2.1 Extent of inspection.....	26
7.2.2 Site inspection.....	26
7.3 Examination.....	26
7.4 Supplementary examination.....	26
8 Marking	26
8.1 Legibility.....	26
8.2 Body marking.....	27
8.3 Ring joint marking.....	27
8.4 Identification plate marking.....	27
8.5 Special marking for unidirectional valves.....	27
9 Preparation for despatch	28
Annex A (informative) Information to be specified by the purchaser	29
Annex B (informative) Identification of valve terms	31
Annex C (informative) Valve material combinations	34

Bibliography **38**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 10434:2020

<https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020>

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html (standards.iteh.ai).

This document was prepared by Technical Committee ISO/TC 153, *Valves*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 69, *Industrial valves*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 10434:2004), which has been technically revised.

The main changes compared to the previous edition are as follows:

- [Clause 2](#) “Normative references” was updated;
- higher PN and Class designations have been added, including PN 63, 160, 250 and 400;
- design and manufacturing requirements for the stem to wedge connection have been added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

ISO 10434:2020(E)**Introduction**

The purpose of this document is to establish the basic requirements and practices for flanged and butt-welding end steel gate valves of bolted bonnet construction that is parallel to those given in American Petroleum Institute API Standard 600, eleventh edition.

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[SIST EN ISO 10434:2020](https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020)

<https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020>

Bolted bonnet steel gate valves for the petroleum, petrochemical and allied industries

1 Scope

This document specifies the requirements for a heavy-duty series of bolted bonnet steel gate valves for petroleum refinery and related applications where corrosion, erosion and other service conditions can indicate a need for full port openings, heavy wall sections and large stem diameters.

This document sets forth the requirements for the following gate valve features:

- bolted bonnet;
- outside screw and yoke;
- rising stems;
- non-rising handwheels;
- single or double gate;
- wedge or parallel seating;
- metallic seating surfaces;
- flanged or butt-welding ends.

It covers valves of the nominal sizes DN:

- 25; 32; 40; 50; 65; 80; 100; 150; 200; 250; 300; 350; 400; 450; 500; 600;

corresponding to nominal pipe sizes NPS:

- 1; 1¼; 1½; 2; 2½; 3; 4; 6; 8; 10; 12; 14; 16; 18; 20; 24;

applies for pressure Class designations:

- 150; 300; 600; 900; 1 500; 2 500;

and applies for pressure PN designations:

- 16, 25, 40, 63, 100, 160, 250 and 400.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 5208, *Industrial valves — Pressure testing of metallic valves*

ISO 5209, *General purpose industrial valves — Marking*

ISO 5210, *Industrial valves — Multi-turn valve actuator attachments*

ISO 10434:2020(E)

ISO 5752, *Metal valves for use in flanged pipe systems — Face-to-face and centre-to-face dimensions*

ISO 9606-1, *Qualification testing of welders — Fusion welding — Part 1: Steels*

ISO 15848-1, *Industrial valves — Measurement, test and qualification procedures for fugitive emissions — Part 1: Classification system and qualification procedures for type testing of valves*

ISO 15848-2, *Industrial valves — Measurement, test and qualification procedures for fugitive emissions — Part 2: Production acceptance test of valves*

ASME B1.1, *Unified Inch Screw Threads (UN and UNR Thread Form)*

ASME B1.5, *Acme Screw Threads*

ASME B1.8, *Stub Acme Screw Threads*

ASME B1.12, *Class 5 Interference-Fit Thread*

ASME B1.20.1, *Pipe Threads, General Purpose, Inch*

ASME B16.5, *Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard*

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

ASME B16.11, *Forged Fittings, Socket-Welding and Threaded*

ASME B16.25, *Buttwelding Ends*

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

ASME B18.2.2, *Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)*

ASME BPVC-IX, *Boiler and Pressure Vessel Code — Section IX — Welding, Brazing, and Fusing Qualifications*

ASTM A307, *Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength*

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

EN 12516-1:2014+A1:2018, *Industrial valves — Shell design strength — Part 1: Tabulation method for steel valve shells*

MSS-SP-55, *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 document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1**PN****Class**

alphanumeric designation for pressure-temperature rating that is common for components used in a piping system, used for reference purposes, comprising the letters “PN” or “Class” followed by a dimensionless number indirectly related to the pressure retaining capability as a function of temperature of the component

Note 1 to entry: The number following the letters PN or Class does not represent a measurable value and is not used for calculation purposes except where specified in the relevant standard. There is no definitive correlation that links PN designations to Class designations.

Note 2 to entry: The allowable pressure for a valve having a PN or Class number depends on the valve material and its application temperature and is to be found in tables of pressure/temperature ratings. PN or Class usage is applicable to steel valves bearing DN or NPS *nominal size* (3.2) designations.

Note 3 to entry: See ISO 7268 and ASME B16.34.

3.2**nominal size****DN****NPS**

alphanumeric designation of size for components of a pipework system, which is used for reference purposes, comprising the letters DN or NPS followed by a dimensionless number indirectly related to the physical size, in millimetres, of the bore or outside diameter of the end connections

Note 1 to entry: The number following the letters DN or NPS does not represent a measurable value and is not used for calculation purposes except where specified in the relevant standard. Prefix DN or NPS usage is applicable to steel valves bearing *PN* or *Class* (3.1) designations.

Note 2 to entry: See ISO 6708 and ASME B16.34.

<https://standards.iteh.ai/catalog/standards/sist/44bfc49-0981-4cfe-b462-31f378298d20/sist-en-iso-10434-2020>

4 Pressure/temperature ratings

4.1 For Class designated valves the applicable pressure/temperature ratings shall be in accordance with those specified in the tables of ASME B16.34 for standard Class for the applicable material specification and the applicable Class.

4.2 For PN designated valves the applicable pressure/temperature ratings shall be in accordance with those specified in the tables of EN 12516-1:2014+A1:2018 for the applicable material specification and the applicable PN number.

4.3 Restrictions of temperature or pressure, for example those imposed by valve special soft seals or special trim materials, shall be marked on the valve identification plate, see 8.4.

4.4 The temperature for a corresponding pressure rating is the maximum temperature of the pressure-containing shell of the valve. In general, this temperature is the same as that of the contained fluid. The use of a pressure rating corresponding to a temperature other than that of the contained fluid is the responsibility of the user.

4.5 For temperatures below the lowest temperature listed in the pressure/temperature tables (see 4.1, 4.2 and 4.3), the service pressure shall be no greater than the pressure for the lowest listed temperature. The use of valves at lower temperatures is the responsibility of the user. Consideration should be given to the loss of ductility and impact strength of many materials at low temperature.

4.6 Double seated valves, in some design configurations, may be capable of trapping liquid in the centre cavity of the valve when in the closed position. If subjected to an increase in temperature, an excessive build-up of pressure may occur leading to a pressure boundary failure. Where such condition is possible,