
**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*



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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
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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.

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.

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.

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.

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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 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/>