

Steel Gate Valves—Flanged and Butt-welding Ends, Bolted Bonnets

Downstream Segment

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Steel Gate Valves—Flanged and Butt-welding Ends, Bolted Bonnets

1 Scope

This International standard 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 would indicate a need for full port openings, heavy wall sections and large stem diameters.

This International standard 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 pipe sizes NPS:

- 1; 1 1/4; 1 1/2; 2; 2 1/2; 3; 4; 6; 8; 10; 12; 14; 16; 18; 20; 24,

corresponding to nominal pipe sizes DN:

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

applies for pressure class designations:

- 150; 300; 600; 900; 1500; 2500.

2 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.

API Standard 598, *Valve Inspection and Testing*

ASME B1.1¹, *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*

¹ ASME International, 3 Park Avenue, New York, New York 10016-5990, www.asme.org.

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*

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

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

ASME B16.25, *Buttwelding Ends*

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

ASME B18.2.2, *Square and Hex Nuts (Inch Series)*

ASME B18.2.4.6M, *Metric Heavy Hex Nuts*

ASME B36.10M, *Welded and Seamless Wrought Steel Pipe*

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

ASTM A193², *Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature of High Pressure Service and Other Special Purpose Applications*

ASTM A194, *Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both*

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

EN 1092-1³, *Flanges and their joints—Circular flanges for pipes, valves, fittings and accessories, PN designated—Part 1: Steel flanges*

ISO 7-1⁴, *Pipe threads where pressure-tight joints are made on the threads—Part 1: Dimensions, tolerances and designation*

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 6708, *Pipework components—Definition and selection of DN (nominal size)*

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

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

ISO 15649, *Petroleum and natural gas industries—Piping*

MSS SP-55⁵, *Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components—Visual Method for Evaluation of Surface Irregularities*

NACE MR 0103⁶, *Materials Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments*

² ASTM International, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, www.astm.org.

³ European Committee for Standardization, Avenue Marnix 17, B-1000, Brussels, Belgium, www.cen.eu.

⁴ International Organization for Standardization, 1, ch. de la Voie-Creuse, Case postale 56, CH-1211, Geneva 20, Switzerland, www.iso.org.

⁵ Manufacturers Standard Society of the Valve and Fittings Industry, Inc., 127 Park Street, N.E., Vienna, Virginia 22180-4602, www.mss-hq.com.

⁶ NACE International (formerly the National Association of Corrosion Engineers), 1440 South Creek Drive, Houston, Texas 77218-8340, www.nace.org.