ASME B16.40-2024

(Revision of ASME B16.40-2019)

# Manually Operated Thermoplastic Gas Shutoffs and Valves in Gas Distribution Systems

AN AMERICAN NATIONAL STANDARD



The American Society of Mechanical Engineers

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The American Society of Mechanical Engineers
150 Clove Road • Little Falls, NJ • 07424 USA

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# FOREWORD

The B16 Standards Committee was organized in the spring of 1920 and held its organizational meeting on November 21 of that year. The group operated as a Sectional Committee (later redesignated as a Standards Committee) under the authorization of the American Engineering Standards Committee [subsequently named American Standards Association, United States of America Standards Institute, and now American National Standards Institute (ANSI)]. Sponsors for the group were the American Society of Mechanical Engineers (ASME), Manufacturers Standardization Society of the Valve and Fittings Industry, and the Heating and Piping Contractors National Association (later the Mechanical Contractors Association of America).

The American Gas Association (A.G.A.) determined that standardization of gas valves used in distribution systems was desirable and needed. The A.G.A. Task Committee on Standards for Valves and Shutoffs was formed, and development work commenced in 1958. In 1968, it was determined that a more acceptable document would result if approval were gained from ANSI, and to facilitate such action, the A.G.A. Committee became Subcommittee No. 13 of the B16 activity. This B16 group was later renamed Subcommittee L, which is its current designation.

The first standard developed by Subcommittee L was ANSI B16.33. The ANSI B16.38 standard was subsequently developed to cover larger sizes of gas valves and shutoffs.

Since about 1965, the increased use of plastic piping in gas distribution systems brought with it the need for valves and shutoffs of compatible material. To fill this need, the present standard was developed and initially appeared as ANSI B16.40-1977. Subcommittee L began review of this document in 1982.

In ANSI/ASME B16.40-1985, editorial changes were made throughout the text to bring the format in line with the rest of the B16 series of standards and to clarify the intent of this Standard. Revisions included the addition of rules for allowable pressure at temperatures above 74°F for valves of certain materials, updating of reference standards, and editorial changes to text and tables.

In 2001, after several years and iterations, B16 Subcommittee L produced a fully revised document. Among the many revisions were a new Definitions section, a new Impact Resistance section, and a nonmandatory Quality System Program Annex.

Following approval by the B16 Standards Committee and the ASME Supervisory Board, an updated edition of this Standard was approved as an American National Standard by ANSI on March 18, 2008, with the designation ASME B16.40-2008. Five years later, the B16 Subcommittee L updated certain material specifications and included other editorial revisions to the text. That version of the Standard was approved as an American National Standard by ANSI on August 6, 2013, as ASME B16.40-2013.

In 2018, B16 Subcommittee L updated document and material references and made several editorial revisions to the text. The revised edition was approved as an American National Standard by ANSI on January 15, 2019, as ASME B16.40-2019.

This 2024 edition updates the references in Mandatory Appendix II. Following approval by the ASME B16 Standards Committee, ASME B16.40-2024 was approved by ANSI on June 24, 2024.

# ASME B16 COMMITTEE
# Standardization of Valves, Flanges, Fittings, and Gaskets

(The following is the roster of the committee at the time of approval of this Standard.)

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**General.** ASME codes and standards are developed and maintained by committees with the intent to represent the consensus of concerned interests. Users of ASME codes and standards may correspond with the committees to propose revisions or cases, report errata, or request interpretations. Correspondence for this Standard should be sent to the staff secretary noted on the committee's web page, accessible at https://go.asme.org/B16committee.

**Revisions and Errata.** The committee processes revisions to this Standard on a continuous basis to incorporate changes that appear necessary or desirable as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published in the next edition of the Standard.

In addition, the committee may post errata on the committee web page. Errata become effective on the date posted. Users can register on the committee web page to receive email notifications of posted errata.

This Standard is always open for comment, and the committee welcomes proposals for revisions. Such proposals should be as specific as possible, citing the paragraph number, the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent background information and supporting documentation.

**Cases**

*(a)* The most common applications for cases are

*(1)* to permit early implementation of a revision based on an urgent need

*(2)* to provide alternative requirements

*(3)* to allow users to gain experience with alternative or potential additional requirements prior to incorporation directly into the Standard

*(4)* to permit the use of a new material or process

*(b)* Users are cautioned that not all jurisdictions or owners automatically accept cases. Cases are not to be considered as approving, recommending, certifying, or endorsing any proprietary or specific design, or as limiting in any way the freedom of manufacturers, constructors, or owners to choose any method of design or any form of construction that conforms to the Standard.

*(c)* A proposed case shall be written as a question and reply in the same format as existing cases. The proposal shall also include the following information:

*(1)* a statement of need and background information

*(2)* the urgency of the case (e.g., the case concerns a project that is underway or imminent)

*(3)* the Standard and the paragraph, figure, or table number

*(4)* the editions of the Standard to which the proposed case applies

*(d)* A case is effective for use when the public review process has been completed and it is approved by the cognizant supervisory board. Approved cases are posted on the committee web page.

**Interpretations.** Upon request, the committee will issue an interpretation of any requirement of this Standard. An interpretation can be issued only in response to a request submitted through the online Inquiry Submittal Form at https://go.asme.org/InterpretationRequest. Upon submitting the form, the inquirer will receive an automatic email confirming receipt.

ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Standard requirements. If, based on the information submitted, it is the opinion of the committee that the inquirer should seek assistance, the request will be returned with the recommendation that such assistance be obtained. Inquirers can track the status of their requests at https://go.asme.org/Interpretations.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME committee or subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Interpretations are published in the ASME Interpretations Database at https://go.asme.org/Interpretations as they are issued.

**Committee Meetings.** The B16 Standards Committee regularly holds meetings that are open to the public. Persons wishing to attend any meeting should contact the secretary of the committee. Information on future committee meetings can be found on the committee web page at https://go.asme.org/B16committee.

# ASME B16.40-2024
# SUMMARY OF CHANGES

Following approval by the ASME B16 Standards Committee and ASME, and after public review, ASME B16.40-2024 was approved by the American National Standards Institute on June 24, 2024.

ASME B16.40-2024 includes the following changes identified by a margin note, **(24)**. The Record Number listed below is explained in more detail in the "List of Changes in Record Number Order" following this Summary of Changes.

| *Page* | *Location* | *Change (Record Number)* |
|---|---|---|
| 8 | Mandatory Appendix II | Updated *(23-649)* |

# LIST OF CHANGES IN RECORD NUMBER ORDER

| Record Number | Change |
|---|---|
| 23-649 | Updated references in Mandatory Appendix II. |

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# MANUALLY OPERATED THERMOPLASTIC GAS SHUTOFFS AND VALVES IN GAS DISTRIBUTION SYSTEMS

## 1 SCOPE

### 1.1 General

*(a)* This Standard covers manually operated thermoplastic valves in nominal valve sizes ½ through 12. These valves are intended for use below ground in thermoplastic fuel gas distribution mains and service lines. The maximum operating pressure (MOP) at which such distribution piping systems may be operated is in accordance with 49 C.F.R. §192 (2017) for temperature ranges of −20°F to 140°F (−29°C to 60°C).

*(b)* This Standard sets qualification requirements for each basic valve design as a necessary condition for demonstrating conformance to this Standard.

*(c)* This Standard sets requirements for newly manufactured valves for use in below-ground piping systems for fuel gas [includes synthetic natural gas (SNG)] and liquefied petroleum (LP) gases (distributed as a vapor, with or without the admixture of air) or mixtures thereof.

### 1.2 References

Standards and specifications adopted by reference are shown in Mandatory Appendix II. It is not considered practical to identify the specific edition of each standard and specification in the text. Instead, the specific edition referenced is identified in Mandatory Appendix II.

### 1.3 Convention

For determining conformance with this Standard, the convention for fixing significant digits where limits (maximum and minimum values) are specified shall be as defined in ASTM E29. This requires that an observed or calculated value be rounded off to the nearest unit in the last right-hand digit used for expressing the limit. Decimal values and tolerances do not imply a particular method of measurement.

### 1.4 Relevant Units

This Standard states values in both U.S. Customary and SI (metric) units. These systems of units are to be regarded separately as standard. Within the text, the SI units are shown in parentheses. The values stated in each system are not exact equivalents; therefore, it is required that each system of units be used independently of the other. Combining values from the two systems constitutes nonconformance with the Standard.

### 1.5 Definitions

*basic valve design:* each variation in material, size, or configuration of molded pressure-containing parts that constitutes a given valve design, except where minor design variations are produced by differences in machining of the same molded piece or pieces to produce different end sizes or dimensional ratios (DRs).

*DR:* the dimensional ratio defined as the pipe outside diameter (O.D.) divided by the pipe wall thickness, $t$. DR = O.D./$t$.

*DRv:* the valve DR equivalent is the designated valve DR based on the lowest DR of the pipe ends used in long-term hydrostatic testing under this Standard. ASTM D2513 shall be the standard used for polyethylene (PE) and ASTM F2945 shall be the standard for polyamide 11 (PA-11).

*fasteners:* nuts, bolts, washers, clip rings, and other devices used in the assembly of valves.

*lubricated valves:* valves that require pressure lubrication (by the insertion through fittings of lubricant to the sealing surfaces of the valve) to effect a leak-tight seal.

*NVS:* nominal valve size.

*pressure:* unless otherwise stated, gage pressure.

*production pressure tests:* tests that include seat and closure-member and shell tests.

*seat and closure-member test:* an internal pressure test of closure-sealing elements (seats, seals, and closure members, e.g., gate, disc, ball, or plug).

*shell test:* an internal pressure test of the pressure-containing envelope.

*valve design pressure:* the pressure calculated by the method described in Mandatory Appendix I using the valve shell material's hydrostatic design basis (HDB) at 73°F (23°C).

### 1.6 Quality Systems

Nonmandatory requirements relating to the product manufacturer's Quality System Program are described in Nonmandatory Appendix A.