

**ASME B16.40-2013**  
(Revision of ASME B16.40-2008)

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

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**AN AMERICAN NATIONAL STANDARD**



**The American Society of  
Mechanical Engineers**

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Mechanical Engineers**

Two Park Avenue • New York, NY • 10016 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, 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 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 B16.33. The 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 Systems Program Annex.

Following approval by the B16 Standards Committee and the ASME Supervisory Board, the last version of this Standard was approved as an American National Standard by ANSI on March 18, 2008.

The 2013 Edition of B16.40 has updated certain material specifications and includes other editorial revisions to the text.

This edition of the Standard was approved as an American National Standard by ANSI on August 6, 2013.

All requests for interpretations or suggestions for revisions should be sent to the Secretary, B16 Committee, The American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

# 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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## CORRESPONDENCE WITH THE B16 COMMITTEE

**General.** ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by requesting interpretations, proposing revisions, and attending Committee meetings. Correspondence should be addressed to:

Secretary, B16 Standards Committee  
The American Society of Mechanical Engineers  
Two Park Avenue  
New York, NY 10016-5990

As an alternative, inquiries may be submitted via e-mail to: [SecretaryB16@asme.org](mailto:SecretaryB16@asme.org).

**Proposing Revisions.** Revisions are made periodically to the Standard 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 periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

**Proposing a Case.** Cases may be issued for the purpose of providing alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee Web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the Standard, the paragraph, figure or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the Standard to which the proposed Case applies.

**Interpretations.** Upon request, the B16 Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the B16 Standards Committee.

The request for interpretation should be clear and unambiguous. It is further recommended that the inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry.
Edition:	Cite the applicable edition of the Standard for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings, which are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in this format will be rewritten in this format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

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.

**Attending Committee Meetings.** The B16 Standards Committee regularly holds meetings, which are open to the public. Persons wishing to attend any meeting should contact the Secretary of the B16 Standards Committee.

# 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  $\frac{1}{2}$  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 the Code of Federal Regulations (CFR) Title 49, Part 192, Transportation of Natural and Other Gas by Pipeline; Minimum Safety Standards, for temperature ranges of  $-20^{\circ}\text{F}$  to  $140^{\circ}\text{F}$  ( $-29^{\circ}\text{C}$  to  $60^{\circ}\text{C}$ ).

(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 referenced under this Standard are shown in Mandatory Appendix II.

### 1.3 Conversion

For the purpose of determining conformance with this Standard, the convention for fixing significant digits, where limits maximum or minimum values are specified, shall be "rounded off" as defined in ASTM Practice E29. This requires that an observed or calculated value shall 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

The values stated in either inch or metric units are to be regarded separately as standard. Within the text, the values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the Standard.

### 1.5 Definitions

*basic valve design*: for a given valve design, each variation in material, size, or configuration of molded pressure-containing parts shall constitute a different basic valve design, except where minor design variations are produced by differences in machining of the same molded piece(s) 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,  $t$ .  
 $DR = \text{O.D.}/t$ .

*DR<sub>v</sub>*: the valve DR equivalent is the designated valve DR based on the lowest DR of the ASTM D2513 pipe ends used in long-term hydrostatic testing under this Standard.

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

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

*NVS*: nominal valve size.

*pressure*: unless otherwise stated, pressure is gage pressure.

*production pressure tests*: pressure 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, such as 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  $73^{\circ}\text{F}$  ( $23^{\circ}\text{C}$ ).

### 1.6 Quality Systems

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