ASME B16.50-2018
(Revision of ASME B16.50-2013)

Wrought Copper and Copper Alloy Braze-Joint Pressure Fittings

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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Two Park Avenue • New York, NY • 10016 USA

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ASME issues written replies to inquiries concerning interpretations of technical aspects of this Standard. Periodically certain actions of the ASME B16 Committee may be published as Cases. Cases and interpretations are published on the ASME website under the Committee Pages at http://cstools.asme.org/ as they are issued.

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FOREWORD

In 1994, the ASME B16 Standards Committee authorized Subcommittee J, Standardization, to develop a standard for wrought copper and copper alloy braze-joint pressure fittings. These fittings are intended for use with seamless copper tube conforming to the standard specifications ASTM B88 (for water and general plumbing systems), ASTM B280 (for air conditioning and refrigeration service), and ASTM B819 (for medical gas systems). Following approval by the Standards Committee and ASME, this Standard was approved as an American National Standard on October 11, 2001, with the designation ASME B16.50-2001.

In the 2013 edition, references to ASME standards were revised to no longer list specific edition years; the latest edition of ASME publication applies, unless stated otherwise. Also in the 2013 edition, Tables 3 and I-3 included a maximum cup length under the column heading shown as "Depth, *G*." Following approval by the B16 Standards Committee and the ASME supervisory board, and after public review, the 2013 edition of the Standard was approved as an American National Standard by the American National Standards Institute (ANSI) on May 28, 2013.

In this 2018 edition, the U.S. Customary tables formerly in Mandatory Appendix I have been merged with the SI tables in the main text; the tables and figures have been redesignated, Mandatory Appendix I has been deleted, and the cross-references have been updated accordingly. In addition, all reference standards in what was formerly Mandatory Appendix II were updated; no additional/technical changes were made to the Standard. Following approval by the ASME B16 Standards Committee, approval as an American National Standard was given by ANSI on July 27, 2018, with the new designation ASME B16.50-2018.

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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 or a case, 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
http://go.asme.org/Inquiry

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 to provide 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 and 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 Standards 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.

Requests for interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at http://go.asme.org/InterpretationRequest. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt.

If the Inquirer is unable to use the online form, he/she may e-mail the request to the Secretary of the B16 Standards Committee at SecretaryB16@asme.org, or mail it to the above address. The request for an 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 in one or two words.
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. Please provide a condensed and precise question, composed in such a way that a "yes" or "no" reply is acceptable.
Proposed Reply(ies):	Provide a proposed reply(ies) in the form of "Yes" or "No," with explanation as needed. If entering replies to more than one question, please number the questions and replies.
Background Information:	Provide the Committee with any background information that will assist the Committee in understanding the inquiry. The Inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

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

Moreover, 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 inquiry information submitted, it is the opinion of the Committee that the Inquirer should seek assistance, the inquiry will be returned with the recommendation that such assistance be obtained.

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 and/or telephone conferences that are open to the public. Persons wishing to attend any meeting and/or telephone conference should contact the Secretary of the B16 Standards Committee.

ASME B16.50-2018
SUMMARY OF CHANGES

Following approval by the ASME B16 Standards Committee and ASME, and after public review, ASME B16.50-2018 was approved by the American National Standards Institute on July 27, 2018.

In ASME B16.50-2018, the U.S. Customary tables formerly in Mandatory Appendix I have been merged with the SI tables in the main text; the tables and figures have been redesignated, Mandatory Appendix I has been deleted, and the cross-references have been updated accordingly. In addition, this edition includes the following changes identified by a margin note, **(18)**. 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)*
1	2.1	Title updated editorially for consistency with other B16 standards
2	6	Editorially revised
4	Table 3.1-1	Under "Internal End" column, SI value for minimum "Inside Diameter, *F*" revised
10	Mandatory Appendix I	Formerly Mandatory Appendix II, updated *(18-801)*
11	Nonmandatory Appendix A	In the nomenclature, definition of *t* editorially revised

LIST OF CHANGES IN RECORD NUMBER ORDER

Record Number	Change
18-801	Updated references in Mandatory Appendix I, formerly Mandatory Appendix II.

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WROUGHT COPPER AND COPPER ALLOY BRAZE-JOINT PRESSURE FITTINGS

1 SCOPE

This Standard establishes requirements for wrought copper and wrought copper alloy braze-joint seamless fittings designed for use with seamless copper tube conforming to ASTM B88 (for water and general plumbing systems), ASTM B280 (for air conditioning and refrigeration service), and ASTM B819 (for medical gas systems).

This Standard covers joints assembled with brazing materials conforming to AWS A5.8M/A5.8.

This Standard is allied to ASME B16.18 and ASME B16.22. It provides requirements for fitting ends suitable for brazing. This Standard covers

(a) pressure–temperature ratings
(b) abbreviations for end connections
(c) size and method of designating openings of fittings
(d) marking
(e) material
(f) dimensions and tolerances
(g) testing

2 GENERAL

(18) 2.1 Relevant Units

This Standard states values in both SI (metric) and U.S. Customary units. These systems of units are to be regarded separately as standard. Within the text, the U.S. Customary 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.

2.2 References

Standards and specifications adopted by reference in this Standard are shown in Mandatory Appendix I, which is part of this Standard. It is not considered practical to identify the specific edition of each standard and specification in the individual references. Instead, the specific edition reference is identified in Mandatory Appendix I.

2.3 Quality Systems

Requirements relating to the product manufacturer's Quality System Programs are described in Nonmandatory Appendix B.

3 PRESSURE–TEMPERATURE RATINGS

3.1 Rating of System

The internal pressure–temperature rating for a braze joint system is dependent on not only fitting and tube strength but also selection of valves and appurtenances. Pressure–temperature ratings for fittings and braze joints to the dimensions of Table 3.1-1, made with typical commercial brazing materials, shall be considered equal to the values given in Table 3.1-2.

The internal pressure–temperature rating of the system shall be the lowest of the values shown in Table 3.1-2 and those of the tube, valves, or appurtenances.

3.2 Fitting Bursting Strength

Fittings manufactured to this Standard shall have an ambient-temperature bursting strength of at least 4 times the 38°C (100°F) internal pressure rating as shown in Table 3.1-2.

4 SCOPE

4.1 Size

The size of the fittings shown in Table 3.1-1 corresponds to standard water tube size as shown in ASTM B88. The size of the threaded ends corresponds to nominal pipe size as shown in ASME B1.20.1. Fittings are designated by the size of the openings in the sequence illustrated in Figure 4.1-1.

4.2 Abbreviations

The following symbols are used to designate the type of fitting end:

C*:* braze-joint fitting end made to receive copper tube diameter (female)

F*:* internal ANSI standard taper pipe-thread end (female) NPTI FT

FTG*:* braze-joint fitting end made to copper tube diameter (male)

M*:* external ANSI standard taper pipe-thread end (male) NPTE

4.3 Definitions

out-of-roundness: the maximum measured diameter minus the minimum measured diameter.