Cast Iron Threaded Drainage Fittings
Cast Iron Threaded Drainage Fittings
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Screw joint drainage fittings were developed in about 1880 by the Durham House Drainage Co. of New York and are often referred to as Durham fittings. At that time, soil pipes and drains in New York had been required to be of plumber's cast iron soil pipe, whereas Chicago's soil pipes were required to be of lead or plumber's cast iron pipe.

To form a continuous passageway with no pockets or obstructions where foreign matter could collect and gradually accumulate, it was necessary to design a special type of screw fitting. Inside diameters of the fittings are about the nominal size of standard weight wrought steel pipe (Schedule 40). The thread chamber is designed so that when the pipe is tightly screwed into the fitting, its end nearly abuts the shoulder of the fitting, thereby making a practically continuous passage. The threading of these fittings required special care, and the threads on the pipe were cut to suit the threads in the fitting.

With the passage of time, manufacturers’ practices began to diverge in regard to center-to-end dimensions and other features. The Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) studied the situation, developed a standard practice for these fittings, and published MSS SP-8, Cast Iron Drainage Fittings, in 1929. Subsequently, for better coordination with other screwed fitting standards under the jurisdiction of the B16 Sectional Committee of the American Standards Association (ASA), the subject was assigned to Subcommittee 2 of B16.

Many drafts of the proposed standard were developed, and printer’s proofs were distributed to industry for criticism and comment in May 1940. A revised proposal dated July 1941 was submitted to the members of the Sectional Committee for letter ballot vote. Following its approval by that body, it was submitted to the sponsors and to ASA with recommendations for approval as an American Standard. This was granted in February 1942, with the designation ASA B16.12-1942.

The MSS Ferrous Screw Fittings Committee made a thorough study of the 1942 Standard and recommended that several changes be made to bring the data in line with current production and usage of this type of fitting. To comply with the recommendations, Subcommittee 2 of the B16 Sectional Committee revised portions of the text and illustrations and added dimensional tables for Tucker connections, roof connections, and Tucker Y-branches, as well as dimensions for P-traps, bath traps, and running traps.

A draft, dated September 1952, was presented to the Sectional Committee for letter ballot vote. After the committee and other sponsor organizations approved the draft, it was presented to ASA, and approval of ASA B16.12-1953 was granted on September 11, 1953.

Subcommittee 2 reviewed the document from 1963 to 1964. The Sectional Committee approved several minor changes in format and wording, changing the title to Cast Iron Threaded Drainage Fittings. ASA B16.12-1965 was approved on November 12, 1965.

In 1970, further review was initiated by Subcommittee 2, now an American National Standards Institute (ANSI) Committee, and ANSI B16.12-1971 was granted approval on November 1, 1971.

The Standard was updated, and metric (SI) dimensions were added in ANSI B16.12-1977, approved on February 4, 1977.

In 1982, American Standards Committee B16 was reorganized as the ASME B16 Standards Committee under procedures accredited by ANSI. Also in 1982, Subcommittee B (formerly Subcommittee 2) updated reference standards, and the revision was approved on July 20, 1983, as ANSI B16.12-1983.

In the 1991 edition of ASME B16.12, reference standards were updated, and the metric dimensions were deleted. Following approval by ASME, ANSI approved the edition on January 4, 1991.

In the 1998 edition of ASME B16.12, reference standards were updated, a quality system program annex was added, and several editorial revisions were made. Following approval by ASME B16 Subcommittee B and the B16 Main Committee, ANSI approved the edition on November 20, 1998.

Work started during 1999 to revise the Standard to include metric units as the primary reference units while maintaining U.S. Customary units in either parenthetical or separate forms.

In the 2009 edition, metric dimensions became the primary units, and inch dimensions were incorporated as secondary units and shown in parentheses. The added inch dimensions constituted an independent but equal standard to the metric units. ANSI approved the edition on April 6, 2009.
In this edition, Mandatory Appendix I has been revised to include updates to the referenced standards. In addition, the U.S. Customary tables formerly in Mandatory Appendix II have been merged with the SI tables in the main text; the tables and figures have been redesignated; Mandatory Appendix II has been deleted; and the cross-references have been updated accordingly.

Following approval by the ASME B16 Standards Committee, ANSI approved this edition as an American National Standard, with the designation ASME B16.12-2019, on July 29, 2019.
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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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 B16.12-2019
SUMMARY OF CHANGES

Following approval by the ASME B16 Committee and ASME, and after public review, ASME B16.12-2019 was approved by
the American National Standards Institute on July 29, 2019.

In ASME B16.12-2019, the U.S. Customary tables formerly in Mandatory Appendix II have been merged with the SI tables
in the main text; the tables and figures have been redesignated; Mandatory Appendix II has been deleted; and the cross-
references have been updated accordingly. In addition, this edition includes the following change identified by a margin
note, (19). The Record Number listed below is explained in more detail in the “List of Changes in Record Number Order”
following this Summary of Changes.

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<thead>
<tr>
<th>Page</th>
<th>Location</th>
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<tbody>
<tr>
<td>14</td>
<td>Mandatory Appendix I</td>
<td>Updated (19-596)</td>
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# LIST OF CHANGES IN RECORD NUMBER ORDER

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<tr>
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<tbody>
<tr>
<td>19-596</td>
<td>Updated Mandatory Appendix I.</td>
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</table>
**1 SCOPE AND GENERAL**

**1.1 Scope**

This Standard for cast iron threaded drainage fittings covers:
- (a) sizes and method of designating openings in reducing fittings
- (b) marking
- (c) material
- (d) dimensions and tolerances
- (e) threading
- (f) ribs
- (g) coatings
- (h) face bevel

**1.2 Applicability**

This Standard covers fittings intended for use in gravity drainage systems subject only to the gravity head of waste liquids at temperatures from ambient to approximately 100°C (212°F). The use of this Standard for pressurized waste handling systems is the responsibility of the user and is subject to the requirements of any applicable code.

**1.3 Quality Systems**

Requirements relating to the product manufacturers' Quality System Programs are described in Nonmandatory Appendix A.

**1.4 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 referenced standard and specification in the text, when referenced. Instead, the specific editions of the referenced standards and specifications are listed in Mandatory Appendix I.

**2 SIZE**

**2.1 Nominal Pipe Size**

The size of the fittings scheduled in Tables 2.1-1 and 2.1-2 is identified by the corresponding nominal pipe size (NPS). For reducing tees, Y-branches, or crosses, the largest run opening shall be given first. The straight-line sketches (Figure 2.1-1) illustrate how the reducing fittings are read.

**2.2 Denotation**

NPS, followed by a dimensionless number, is the designation for nominal fitting size. NPS is related to the reference nominal diameter, DN, used in international standards. The relationship is, typically, as follows:

<table>
<thead>
<tr>
<th>NPS</th>
<th>DN</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>1 1/4</td>
<td>32</td>
</tr>
<tr>
<td>1 1/2</td>
<td>40</td>
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</tr>
<tr>
<td>3 1/2</td>
<td>–</td>
</tr>
<tr>
<td>4</td>
<td>100</td>
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</table>

GENERAL NOTE: For NPS ≥ 4, the related DN ≥ 25 × (NPS).

**3 MARKING**

Each fitting shall be marked with the manufacturer's name or trademark in accordance with the requirements of MSS Standard Practice No. SP-25.

**4 MATERIALS**

**4.1 Castings**

The dimensions prescribed in this Standard (Tables 4.1-1 through 4.1-11) are based on gray iron castings of high quality produced under regular control of chemical and physical properties by a recognized process. The manufacturer shall be prepared to certify that the product has been so produced and that its chemical and physical properties, as proved by test specimens, are equal to the requirements specified in ASTM A126.

**4.2 Optional Material**

Drainage fittings are regularly made of cast iron. At the option of the manufacturer, drainage fittings may be furnished of malleable iron complying with the minimum physical requirements of ASTM A197.

**5 DIMENSIONS AND TOLERANCES**

**5.1 Dimensions**

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