ASME B16.39-2019
(Revision of ASME B16.39-2014)

Malleable Iron Threaded Pipe Unions

Classes 150, 250, and 300

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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The American Society of Mechanical Engineers
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.

Errata to codes and standards may be posted on the ASME website under the Committee Pages to provide corrections to incorrectly published items, or to correct typographical or grammatical errors in codes and standards. Such errata shall be used on the date posted.

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

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FOREWORD

In 1921, the American Engineering Standards Committee, later the American Standards Association (ASA), now the American National Standards Institute (ANSI), authorized the organization of a Sectional Committee on the Standardization of Pipe Flanges and Flanged Fittings, with the following organizations as joint sponsors: Heating, Piping, and Air Conditioning Contractors National Association, later the Mechanical Contractors Association of America (MCAA); Manufacturers Standardization Society of the Valve and Fittings Industry (MSS); and the American Society of Mechanical Engineers (ASME).

Threaded fittings were added to the scope of the B16 Committee, and Subcommittee No. 2 (now Subcommittee B) was made responsible for threaded fittings other than steel. Standards for cast and malleable iron fittings were approved by ASA as early as 1927.

For many years, the need for standardization of threaded malleable iron unions was met by Federal Specifications (published by the General Services Administration) and other documents published by the Association of American Railroads (AAR) and the Underwriters Laboratories (UL). As these standards continued to diverge, however, manufacturers concluded that a common practice would be desirable. Accordingly, beginning in 1967, MSS developed a standard practice embodying features of the existing standards and published it as MSS SP-76-1970.

During the next few years, ANSI recognition of the AAR and UL standards was withdrawn in favor of SP-76, and in 1975 MSS submitted its standards to Subcommittee B of American National Standards Committee B16 for consideration as an American National Standard. After several modifications and the addition of metric equivalents, the Standard was approved by the Committee, co-secretariat organizations, and ANSI. It was then published with the designation ANSI B16.39-1977.

In 1982 American National Standards Committee B16 was reorganized as an ASME Committee operating under procedures accredited by ANSI. The 1986 edition of B16.39 updated the referenced standards and specifications, established U.S. Customary units as the standard, and provided for electrodeposition as an alternative to hot dipping for any application of zinc coating. Following approval by the Standards Committee and ASME, approval as an American National Standard was given by ANSI on December 31, 1986, with the designation ASME/ANSI B16.39-1986.

In the 1998 edition of ASME B16.39, 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 Standards Committee, ANSI approved this American National Standard on November 20, 1998.

In the 2009 edition, metric units became the primary units in the body text and tables, with U.S. Customary units shown in parentheses or in separate tables or in an Appendix. The *D* min. values in Table 3 were replaced with the L_2 values (external thread length) from ASME B1.20.2M- 2006, Pipe Threads, 60 deg, General Purpose, and the *D* min. values in Table I-3 were replaced with the L_2 values from ASME B1.20.1-1983, Pipe Threads, General Purpose (Inch).

In the 2014 edition, para. 8.2 was revised to standardize the verbiage for internal threads and safety, and to harmonize language with other B16 Standards as it relates to defining thread lengths and gage points. Following approval by the ASME B16 Standards Committee, approval as an American National Standard was given by ANSI on June 24, 2014, with the designation ASME B16.39-2014.

In this 2019 edition, the U.S. Customary tables formerly in Mandatory Appendix I have been merged with the SI tables in the main text; the tables 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 have been 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 December 23, 2019, with the new designation ASME B16.39-2019.

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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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 B16.39-2019
SUMMARY OF CHANGES

Following approval by the ASME B16 Standards Committee and ASME, and after public review, ASME B16.39-2019 was approved by the American National Standards Institute on December 23, 2019.

In ASME B16.39-2019, the U.S. Customary tables formerly in Mandatory Appendix I have been merged with the SI tables in the main text; the tables have been redesignated, Mandatory Appendix I 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.

Page	*Location*	*Change (Record Number)*
6	Mandatory Appendix I	Updated *(19-597)*

LIST OF CHANGES IN RECORD NUMBER ORDER

Record Number	Change
19-597	Updated Mandatory Appendix I.

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MALLEABLE IRON THREADED PIPE UNIONS
Classes 150, 250, and 300

1 SCOPE

1.1 General

This Standard covers threaded malleable iron unions, Classes 150, 250, and 300. It also contains provisions for using steel for NPS $^1/_8$ unions. This Standard includes

(a) design
(b) pressure–temperature ratings
(c) size
(d) marking
(e) materials
(f) joints and seats
(g) threads
(h) hydrostatic strength
(i) tensile strength
(j) air pressure test
(k) sampling
(l) coatings
(m) dimensions

1.2 References

Standards and specifications adopted by reference in this Standard are shown in Mandatory Appendix I. 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.

1.3 Quality Systems

Nonmandatory requirements relating to the fitting manufacturer's quality system programs are described in Nonmandatory Appendix A.

1.4 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.

1.5 Service Conditions

Criteria for selection of materials suitable for particular fluid service are not within the scope of this Standard.

1.6 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.

1.7 Denotation

1.7.1 Pressure Rating Designation. Class followed by a dimensionless number is the designation for pressure–temperature ratings as follows:

Class	150	250	300

1.7.1 Size. 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:

NPS	DN
$^1/_4$	8
$^1/_2$	15
1	25
$1^1/_4$	32
$1^1/_2$	40
2	50
$2^1/_2$	65
3	80
4	100

2 DESIGN

The complete union shall consist of a tail or male part, a head or female part, and a union nut. The type of joint may be ball-to-cone, ball-to-ball, or ball-and-socket with metal-to-metal seating surfaces of iron, copper, or copper alloy.

Table 3-1 Pressure–Temperature Ratings

Temperature, °C	Pressure, bar		
	Class 150 Unions	Class 250 Unions	Class 300 Unions
SI			
−29 to 66	20.7	34.5	41.4
100	17.5	30.6	37.5
125	15.2	27.7	34.6
150	12.9	24.8	31.7
175	10.6	22.0	28.9
200	8.2	19.1	26.0
225	5.9	16.2	23.1
232	5.2	...	...
250	...	13.4	20.3
275	...	10.5	17.4
288	...	9.0	15.9
U.S. Customary			
Temperature, °F	Pressure, psi		
	Class 150 Unions	Class 250 Unions	Class 300 Unions
−20 to 150	300	500	600
200	265	455	550
250	225	405	505
300	185	360	460
350	150	315	415
400	110	270	370
450	75	225	325
500	...	180	280
550	...	130	230

GENERAL NOTES:
(a) 1 bar = 14.5 psi = 100 kPa
(b) $°C = \frac{°F - 32}{1.8}$

The threaded ends shall be male or female pipe threads. The head or female part may be furnished as a coupling, an elbow, or a tee.

3 PRESSURE–TEMPERATURE RATINGS

(a) Pressure–temperature ratings are shown in Table 3-1.

(b) Unions with copper or copper-alloy seats are not intended for use where temperature exceeds 232°C (450°F).

(c) All ratings are independent of the contained fluid and are the maximum pressures at the tabulated temperatures. Intermediate ratings may be obtained by linear interpolation between the temperatures shown.

(d) The temperatures shown for the corresponding pressure rating shall be the material temperature of the pressure-retaining structure. It may be assumed that the material temperature is the same as the fluid temperature. Use of a pressure rating at a material temperature other than that of the contained fluid is the responsibility of the user and subject to the requirements of any applicable code.

4 SIZE

4.1 Nominal Pipe Size

As applied in this Standard, the use of the phrase “nominal pipe size” or the designation NPS followed by a dimensionless number is for identifying the end connection of unions. The number is not necessarily the same as the fitting inside diameter. The connecting pipe dimension can be found in ASME B36.10M.

5 MARKING

Unions shall be marked on the nut with the manufacturer’s name or trademark and nominal pressure class except on bar stock unions, where marking is impractical. Additional markings permitted by MSS SP-25 may be used.

6 MATERIALS

(a) The mechanical properties of the malleable iron castings shall be at least equal to those specified in ASTM A197/A197M.

(b) Steel bar stock having a yield strength not less than 207 MPa (30 ksi) may be substituted for malleable iron in NPS $\frac{1}{8}$ unions.

(c) Insert rings may be of suitable copper or copper alloy. Where copper-alloy seats are furnished, either the head or tail part of unions produced from bar stock may be solid copper alloy. Such parts must meet the tensile strength requirements listed in Table 6-1.

7 JOINTS AND SEATS

Inserts shall be secured into the ends permanently with no signs of cracking. Inserted seat rings shall be of sufficient width to allow ample bearing for the seating of the male end.

8 THREADING OF PIPE ENDS

8.1 Types of Threads

Pipe ends of head and tail parts shall be threaded with taper pipe threads (ASME B1.20.1) except that NPS $\frac{1}{8}$ unions made from bar stock may have National Pipe Straight Coupling (NPSC) internal straight pipe threads.

Table 6-1 Tensile Strength of Unions

NPS	Ultimate Load, kN (lbf)		
	Class 150	Class 250	Class 300
1/8	11 (2,500)	11 (2,500)	18 (4,000)
1/4	17 (3,800)	17 (3,800)	27 (6,000)
3/8	24 (5,300)	24 (5,300)	36 (8,000)
1/2	34 (7,700)	34 (7,700)	45 (10,000)
3/4	47 (10,600)	47 (10,600)	62 (14,000)
1	69 (15,500)	69 (15,000)	80 (18,000)
1 1/4	95 (21,300)	95 (21,300)	100 (23,000)
1 1/2	115 (25,800)	115 (25,800)	125 (28,000)
2	135 (30,000)	135 (30,000)	180 (40,000)
2 1/2	155 (35,000)	155 (35,000)	245 (55,000)
3	180 (40,000)	180 (40,000)	335 (75,000)
4	220 (50,000)	220 (50,000)	490 (110,000)

8.2 Types of Threads

All fittings with internal threads shall be threaded with taper pipe threads per ASME B1.20.1. Variations in threading shall be limited to one turn large or one turn small from the gaging notch when using working gages. The reference point for gaging is the starting end of the fitting, provided the chamfer does not exceed the major diameter of the internal thread. When a chamfer on the internal thread exceeds this limit, the reference point becomes the last thread scratch on the chamfer cone.

9 HYDROSTATIC STRENGTH

Assembled unions shall be capable of withstanding, without rupture or leakage through the shell or at the union joint, an internal hydrostatic pressure of five times the cold 66°C (150°F) pressure rating for 1 min.

10 TENSILE STRENGTH

(a) Assembled unions shall be capable of withstanding without rupture the tensile loads shown in Table 6-1.

(b) Tests shall be conducted by attaching threaded steel bars or pipe to each end of the union using the pipe threads. Bars or pipe are to be secured in a tensile testing machine. Load shall be increased at a uniform rate until the tensile load is attained.

11 AIR-PRESSURE TEST

Assembled unions selected in accordance with section 12 shall be tested with air at a minimum pressure of 2.8 bar (40 psi).

12 SAMPLING FOR AIR-PRESSURE TEST

A random sample of unions representative of the production lot shall be submitted for testing in accordance with section 11. The average outgoing quality level (AOQL), as defined in ANSI/ASQ Z1.4, of the established acceptable sampling plans used shall not exceed 2%. A *lot*, for purposes of this Standard, is defined as the number of unions of the same size, design, and pressure rating submitted for testing at any one time.

13 COATINGS

13.1 Malleable Iron Unions

When malleable iron unions are zinc coated, they shall be hot dipped in accordance with ASTM A153/A153M or have an electrodeposited zinc coating conforming to ASTM B633, Type 1, Service Condition 4. Hot-dipped coatings shall be a minimum thickness of 86 m (0.0034 in.) and applied prior to threading. Electrodeposited zinc shall be a minimum thickness of 25 μm (0.001 in.) and may be applied either before or after threading.

13.2 Steel Unions

NPS 1/8 unions made from steel bar, per para. 6(b), may be either uncoated or have an electrodeposited zinc coating conforming to ASTM B633, Type 1, Service Condition 4. The electrodeposited zinc coatings may be applied either before or after threading.

13.3 Union Seating Surfaces

Union seating surfaces shall not be coated.

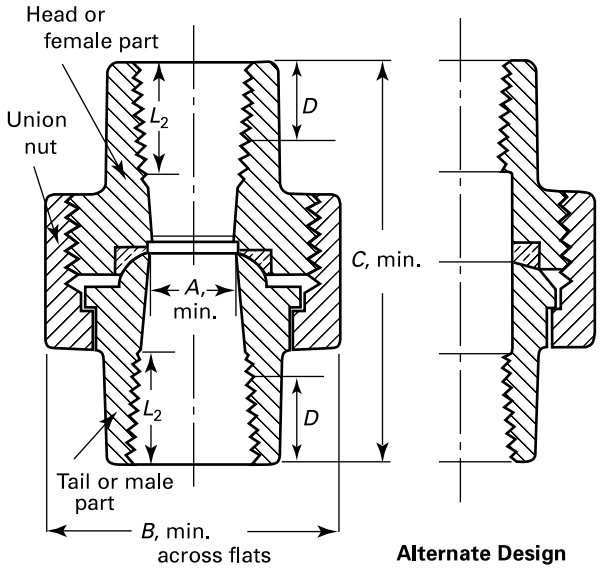
13.4 Other Coatings

Other coatings, specified by the purchaser, shall be furnished meeting the agreed requirements. Copper or copper-alloy seats shall not have a zinc coating.

14 DIMENSIONS

Dimensions are given in Tables 14-1 through 14-3.

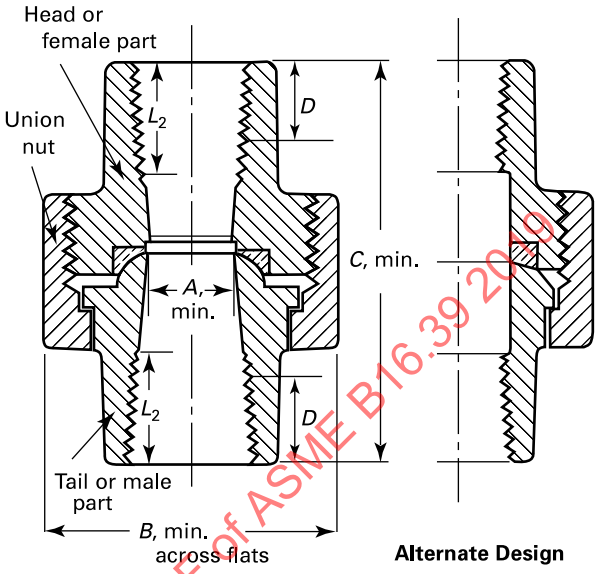
Table 14-1 Dimensions of Class 150 Malleable Iron Threaded Unions



NPS	*A* Min., mm (in.)	*B* Min., mm (in.)	*C* Min., mm (in.)	*D* Min., mm (in.)
⅛	5.5 (0.21)	23.5 (0.93)	32.0 (1.26)	6.7 (0.26)
¼	9.0 (0.36)	28.0 (1.10)	36.5 (1.44)	10.2 (0.40)
⅜	13.0 (0.52)	32.0 (1.26)	41.0 (1.61)	10.4 (0.41)
½	15.5 (0.61)	37.0 (1.45)	43.5 (1.72)	13.6 (0.53)
¾	20.5 (0.80)	43.5 (1.71)	49.5 (1.94)	13.9 (0.55)
1	25.5 (1.00)	52.5 (2.07)	52.5 (2.06)	17.3 (0.68)
1¼	33.5 (1.31)	63.5 (2.50)	57.5 (2.26)	18.0 (0.71)
1½	39.5 (1.55)	71.5 (2.82)	61.0 (2.41)	18.4 (0.72)
2	51.5 (2.03)	86.5 (3.41)	70.0 (2.75)	19.2 (0.76)
2½	60.5 (2.38)	104.5 (4.12)	82.0 (3.22)	28.9 (1.14)
3	76.0 (3.00)	120.5 (4.75)	89.0 (3.50)	30.5 (1.20)
4	102.5 (4.03)	152.5 (6.00)	98.0 (3.85)	33.0 (1.30)

GENERAL NOTE: Dimension *D* is minimum length of perfect thread. The length of useful thread (*D* plus threads with fully formed roots and flat crests) shall be not less than L_2 (effective length of external thread) required by ASME B1.20.1.

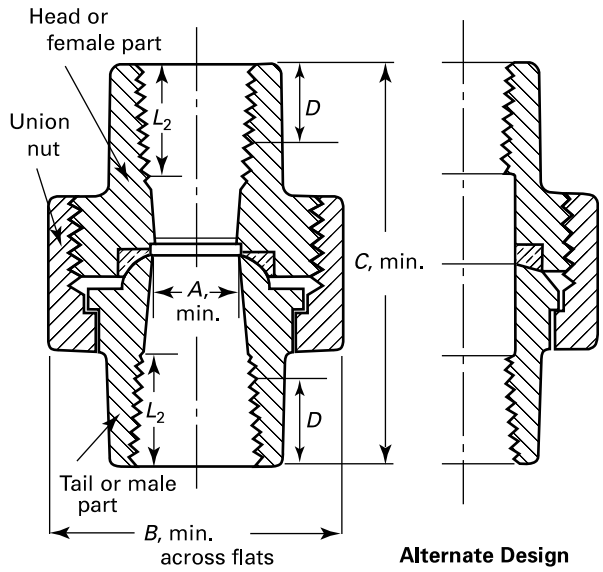
Table 14-2 Dimensions of Class 250 Malleable Iron Threaded Unions



NPS	*A* Min., mm (in.)	*B* Min., mm (in.)	*C* Min., mm (in.)	*D* Min., mm (in.)
⅛	5.5 (0.21)	23.5 (0.93)	32.0 (1.26)	7.5 (0.30)
¼	7.5 (0.30)	28.5 (1.11)	39.5 (1.55)	11.0 (0.43)
⅜	10.5 (0.42)	32.0 (1.26)	43.5 (1.71)	12.0 (0.47)
½	13.5 (0.54)	37.0 (1.45)	46.0 (1.81)	14.5 (0.57)
¾	19.0 (0.74)	43.5 (1.71)	52.5 (2.07)	16.5 (0.64)
1	24.0 (0.95)	52.5 (2.07)	58.5 (2.31)	19.0 (0.75)
1¼	32.5 (1.27)	65.5 (2.57)	66.5 (2.62)	21.5 (0.84)
1½	38.0 (1.50)	73.5 (2.89)	70.5 (2.78)	22.0 (0.87)
2	49.0 (1.93)	88.5 (3.48)	79.5 (3.13)	25.5 (1.00)
2½	59.0 (2.32)	102.5 (4.15)	89.5 (3.52)	29.5 (1.17)
3	79.5 (2.90)	126.0 (4.96)	97.5 (3.84)	31.0 (1.23)
4	97.0 (3.82)	164.5 (6.47)	111.5 (4.39)	34.0 (1.33)

GENERAL NOTE: Dimension *D* is minimum length of perfect thread. The length of useful thread (*D* plus threads with fully formed roots and flat crests) shall be not less than L_2 (effective length of external thread) required by ASME B1.20.1.

Table 14-3 Dimensions of Class 300 Malleable Iron Threaded Unions



Alternate Design

NPS	*A* Min., mm (in.)	*B* Min., mm (in.)	*C* Min., mm (in.)	*D* Min., mm (in.)
1/8	5.5 (0.21)	23.5 (0.93)	32.0 (1.26)	7.5 (0.30)
1/4	7.5 (0.30)	34.0 (1.33)	39.5 (1.55)	11.0 (0.43)
3/8	10.5 (0.42)	38.0 (1.50)	43.5 (1.71)	12.0 (0.47)
1/2	13.5 (0.54)	44.5 (1.76)	46.0 (1.81)	14.5 (0.57)
3/4	19.0 (0.74)	54.5 (2.15)	54.0 (2.12)	16.5 (0.64)
1	24.0 (0.95)	63.0 (2.48)	58.5 (2.31)	19.0 (0.75)
1 1/4	32.5 (1.27)	76.5 (3.02)	67.5 (2.66)	21.5 (0.84)
1 1/2	38.0 (1.50)	83.5 (3.28)	72.5 (2.85)	22.0 (0.87)
2	49.0 (1.93)	100.5 (3.96)	82.0 (3.23)	25.5 (1.00)
2 1/2	59.0 (2.32)	120.0 (4.72)	84.5 (3.33)	29.5 (1.17)
3	73.5 (2.90)	136.5 (5.37)	104.0 (4.09)	31.0 (1.23)
4	97.0 (3.82)	178.0 (7.00)	113.5 (4.47)	34.0 (1.33)

GENERAL NOTE: Dimension *D* is minimum length of perfect thread. The length of useful thread (*D* plus threads with fully formed roots and flat crests) shall be not less than L_2 (effective length of external thread) required by ASME B1.20.1.

MANDATORY APPENDIX I
REFERENCES

(19)

The following is a list of publications referenced in this Standard. Unless otherwise stated, the latest edition of ASME publications shall apply. Materials manufactured to other editions of the referenced ASTM standards may be used to manufacture fittings meeting the requirements of this Standard as long as the fitting manufacturer verifies the material meets the requirements of the referenced edition.

ANSI/ASQ Z1.4-2003 (R2013), Sampling Procedures and Tables for Inspection by Attributes
Publisher: American Society for Quality (ASQ), P.O. Box 3005, Milwaukee, WI 53201-3005 (www.asq.org)

ASME B1.20.1, Pipe Threads, General Purpose (Inch)
ASME B36.10M, Welded and Seamless Wrought Steel Pipe
Publisher: The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)

ASTM A153/A153M-16a, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A197/A197M-00(2015), Standard Specification for Cupola Malleable Iron
ASTM B633-19, Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
Publisher: American Society for Testing and Materials (ASTM International), 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959 (www.astm.org)

ISO 9000:2015, Quality management systems — Fundamentals and vocabulary[1]
ISO 9001:2015, Quality management systems — Requirements[1]
ISO 9004:2018, Quality management — Quality of an organization — Guidance to achieve sustained success[1]
Publisher: International Organization for Standardization (ISO), Central Secretariat, Chemin de Blandonnet 8, Case Postale 401, 1214 Vernier, Geneva, Switzerland (www.iso.org)

MSS SP-25-2018, Standard Marking System for Valves, Fittings, Flanges, and Unions
Publisher: Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS), 127 Park Street, NE, Vienna, VA 22180 (www.msshq.org)

[1] May also be obtained from the American National Standards Institute (ANSI), 25 West 43rd Street, New York, NY 10036.