ASME B16.23-~~2011~~ 20XX

[Revision of ASME B16.23-2002 (~~R2006~~)] 2011

PROPOSED REVISION OF:

Cast Copper Alloy Solder Joint Drainage Fittings: DWV

Draft Date 07/2016

CAST COPPER ALLOY SOLDER JOINT DRAINAGE FITTINGS: DWV

1 SCOPE

This Standard establishes specifications for cast copper alloy solder joint drainage fittings, designed for use in drain, waste, and vent (DWV) systems. These fittings are designed for use with seamless copper tube conforming to ASTM B306, Copper Drainage Tube (DWV), as well as fittings intended to be assembled with soldering materials conforming to ASTM B32, or tapered pipe thread conforming to ~~ANSI~~/ASME B1.20.1.

This Standard is allied with ASME B16.29, Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings — DWV.

It provides requirements for fitting ends suitable for soldering. This Standard covers

(a) description
(b) pitch (slope)
(c) abbreviations for end connections
(d) sizes and methods for designing openings for reducing fittings
(e) marking
(f) material
(g) dimensions and tolerances

2 GENERAL

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 or in separate tables that appear in Mandatory Appendix I. 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 II, 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 II.

2.3 Quality Systems

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

3 DESCRIPTION

(a) These fittings are designed for drainage and vent systems using the solder joint method of connection. The fitting cups, *C*, are provided with stops so that the ends of the tube, when assembled, meet the stops, thereby forming essentially smooth passageways.

(b) The sketches and designs of fittings are illustrative only. The dimensions specified herein shall govern in all cases.

4 PITCH (SLOPE)

All nominal 90-deg fittings shall be pitched to result in a slope of 21 mm/m (0.25 in./ft) (2.1%) of length of horizontal tube with reference to a horizontal plane (see Fig. 1).

5 ABBREVIATIONS

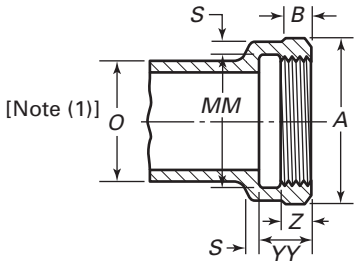
The following symbols are used to designate the type of fitting end:

C = solder-joint fitting end made to receive copper tube diameter (female)
F = internal ANSI Standard taper pipe thread (female) NPT
FTG = solder-joint fitting end made to copper tube diameter (male)
M = external ANSI Standard taper pipe thread (male) NPT
NPSM = standard straight mechanical pipe thread
SJ = end of fitting made to receive O.D. tube size

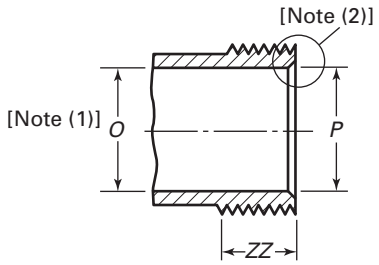
6 SIZE

(a) The size of the fittings scheduled in Tables 1 through 56 and Tables I-1 through I-56 corresponds to the drainage tube size shown in ASTM B306. The size of the threaded ends (except slip joints) corresponds to the nominal pipe size.

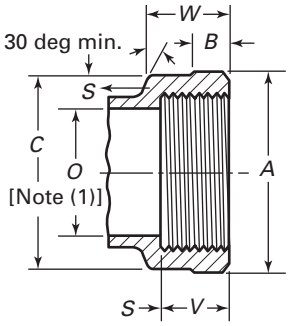
Table 3 Dimensions of Threaded Ends — DWV



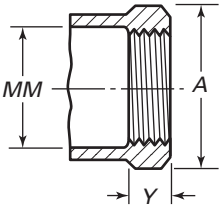
Female Threaded End (F)



Male Threaded End (M)



Female Threaded End (F)



Male Threaded End (M)

Nominal Thread Size [Note (3)]	Minimum Dia. of Band or Across Flats of Polygon, *A*	Minimum Band Length, *B*	Minimum Dia. of Body Over Thread, *C*	Minimum Dia. of Recess, *MM* [Note (4)]	Minimum Depth of Full Thread, *V*	Minimum, *W*	Minimum Length of Thread, *Y*	Minimum End To Shoulder, *YY* ±1.5 [Note (4)]	Minimum Thread End Wall, *S* [Note (5)]	Maximum Thread End Bore, *P* [Note (4)]	Minimum Length of Effective Thread, *ZZ*
1¼	48.5	7.9	48.3	42.2	18.0	25.4	10.7	17.8	3.05	33.27	18.034
1½	55.1	8.6	55.1	48.5	18.3	25.4	10.7	18.3	3.30	39.37	18.3
2	68.3	10.4	68.1	60.5	19.3	26.2	11.2	19.1	3.81	51.56	19.3
3	98.6	14.0	98.6	88.9	30.5	37.1	19.6	30.5	4.83	77.47	30.5
4	125.5	16.8	125.5	114.3	33.0	38.9	21.3	33.0	5.59	102.87	33.0
5	155.4	19.8	155.4	141.2	35.8	42.2	23.9	35.8	7.11	126.49	35.8
6	185.4	22.4	185.4	168.1	38.4	42.7	24.4	38.1	8.64	153.16	38.4
8	238.3	28.4	238.0	218.9	43.4	44.5	26.9	43.2	9.53	201.93	43.4

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b) For threads of threaded ends, see section 11.

NOTES:

(1) For inside diameter of fitting, see Table 2.

(2) 1¼, 1½, and 2 male threaded ends may have inside chamfer for slip nut connections.

(3) Thread size is American National Standard Pipe Threads, General Purpose (Inch), ~~ANSI~~/ASME B1.20.1.

(4) Dimensions computed using formula $E_1 - h - 2T$.

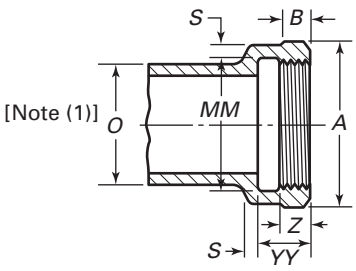
E_1 = thread pitch diameter from ~~ANSI~~/ASME B1.20.1

h = height of thread from ~~ANSI~~/ASME B1.20.1

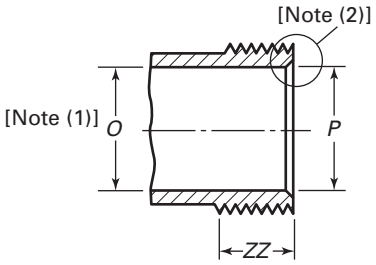
T = metal thickness from Table 2

(5) For initial thickness tolerance, see section 9.

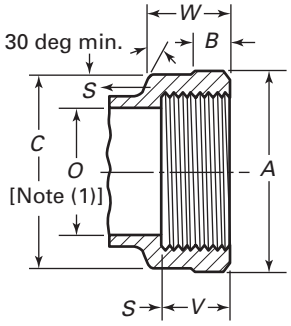
Table I-3 Dimensions of Threaded Ends — DWV



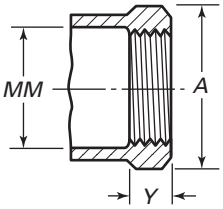
Female Threaded End (F)



Male Threaded End (M)



Female Threaded End (F)



Male Threaded End (M)

Nominal Thread Size [Note (3)]	Minimum Dia. of Band or Across Flats of Polygon, *A*	Minimum Band Length, *B*	Minimum Dia. of Body Over Thread, *C*	Minimum Dia. of Recess, *MM* [Note (4)]	Minimum Depth of Full Thread, *V*	Minimum, *W*	Minimum Length of Thread, *Y*	Minimum End To Shoulder, *YY* ±0.06 [Note (4)]	Minimum Thread End Wall, *S* [Note (5)]	Maximum Thread End Bore, *P* [Note (4)]	Minimum Length of Effective Thread, *ZZ*
1¼	1.91	0.31	1.90	1.66	0.71	1.00	0.42	0.70	0.120	1.31	0.71
1½	2.17	0.34	2.17	1.91	0.72	1.00	0.42	0.72	0.130	1.55	0.72
2	2.69	0.41	2.68	2.38	0.76	1.03	0.44	0.75	0.150	2.03	0.76
3	3.88	0.55	3.88	3.50	1.20	1.46	0.77	1.20	0.190	3.05	1.20
4	4.94	0.66	4.94	4.50	1.30	1.53	0.84	1.30	0.220	4.05	1.30
5	6.12	0.78	6.12	5.56	1.41	1.65	0.94	1.41	0.280	4.98	1.41
6	7.30	0.88	7.30	6.62	1.51	1.68	0.96	1.50	0.340	6.03	1.51
8	9.38	1.12	9.37	8.62	1.71	1.75	1.06	1.70	0.375	7.95	1.71

GENERAL NOTES:

(a) Dimensions are in inches.

(b) For threads of threaded ends, see section 11.

NOTES:

(1) For inside diameter of fitting, see Table I-2.

(2) 1¼, 1½, and 2 male threaded ends may have inside chamfer for slip nut connections.

(3) Thread size is American National Standard Pipe Threads, General Purpose (Inch), ~~ANSI~~/ASME B1.20.1.

(4) Dimensions computed using formula $E_1 - h - 2T$.

E_1 = thread pitch diameter from ~~ANSI~~/ASME B1.20.1

h = height of thread from ~~ANSI~~/ASME B1.20.1

T = metal thickness from Table I-2

(5) For initial thickness tolerance, see section 9.

(11)

MANDATORY APPENDIX II
REFERENCES

~~The following is a list of publications referenced in this Standard. Unless otherwise stated, the latest edition of ASME publications shall apply.~~

~~ANSI/~~ ASME B1.20.1, Pipe Threads, General Purpose (Inch)

ASME B16.12, Iron Threaded Drainage Fittings

ASME B16.18, Cast Copper Alloy Solder Joint Pressure Fittings

ASME B16.29, Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings — DWV

Publisher: The American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016-5990; Order Department: 22 Law Drive, P.O. Box 2900, Fairfield, NJ 07007-2900 (www.asme.org)

ASTM A74~~-2009~~, Standard Specification for Cast Iron Soil Pipe and Fittings

ASTM B32-2008, Standard Specification for Solder Metal

ASTM B62~~-2009~~, Standard Specification for Composition Bronze or Ounce Metal Castings

ASTM B306~~-2009~~, Standard Specification for Copper Drainage Tube (DWV)

ASTM B584~~-2009a,~~ Standard Specification for Copper Alloy Sand Castings for General Applications

ASTM E29~~-08,~~ Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

Publisher: ASTM International (ASTM), 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959 (www.astm.org)

ISO 9000~~:2005~~, Quality management systems — Fundamentals and vocabulary[1]

ISO 9001~~:2008~~, Quality management systems — Requirements[1]

Publisher: International Organization for Standardization (ISO), Central Secretariat, 1, ch. de la Voie-Creuse, Case postale 56, CH-1211 Genève 20, Switzerland/Suisse (www.iso.org)

MSS SP-25~~-2008,~~ Standard Marking System for Valves, Fittings, Flanges and Unions

Publisher: Manufacturers Standardization Society of the Valve and Fittings Industry (MSS), 127 Park Street, NE, Vienna, VA 22180 (www.mss-hq.org)

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

2016
08(R2014)
2015
2013
2014
2013
2015
2015
2013

The following is a list of standards and specifications referenced in this Standard. Products covered by each ASTM specification are listed for convenience. For ASME Codes and Standards referenced hereunder, up to and including the latest published edition in effect at the time this edition of this Standard is specified, may be used. (See specifications for exact titles and detailed contents.) Materials manufactured to other editions of the referenced ASTM specifications may be used to manufacture fittings meeting the requirements of this Standard as long as the fitting manufacturer verifies that the material meets the requirements of the referenced edition of the ASTM specification.

ISO documents are available from the American National Standards Institute (ANSI), 25 West 43rd Street, New York, NY 10036.
Publications appearing above, which have been approved as American National Standards, may also be obtained from ANSI.