

MSS SP-95-2000

# Swage(d) Nipples and Bull Plugs

Standard Practice  
Developed and Approved by the  
Manufacturers Standardization Society of the  
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## FOREWORD

This document establishes a Standard for Swage(d) Nipples and Bull Plugs produced for a number of years by various manufacturers to varying dimensions although basically similar in principle. Users should note Swage(d) Nipples, and Bull plugs furnished from existing stocks may have slightly different dimensions than shown herein.

## SWAGE(D) NIPPLES AND BULL PLUGS (a)

### 1. SCOPE

1.1 This standard covers dimensions, finish, tolerances, marking and material for carbon steel and alloy steel Swaged Nipples (male end reducing fittings), NPS 1/4 through NPS 12 and Bull Plugs (hollow or solid male closures) NPS 1/8 through NPS 12. These fittings are made with ends that are threaded, beveled, square cut, grooved, or any combination of these. Both concentric and eccentric swaged nipples are included.

1.2 Partial Compliance Fittings Fittings with special dimensions and fittings made from non-standard materials may be designed and manufactured by agreement between the manufacturer and the purchaser, provided they are marked in accordance with the requirements for partial compliance fittings of 4.1e.

### 2. PRESSURE RATINGS

2.1 The allowable working pressure for fittings designed in accordance with this standard practice shall be calculated as for straight seamless pipe of equal end preparation in accordance with the rules established in the applicable sections of the American National Standard Code for Pressure Piping, B31. The pipe wall thickness and type material shall be that for which the fittings have been ordered. Fittings shall be identified by pipe wall thickness and material grade in lieu of pressure rating.

2.2 The design of fittings may be established by mathematical analyses contained in nationally recognized pressure vessel or piping codes, or at the manufacturer's option, by proof testing in accordance with Section 9. Records of design or successful proof tests shall be available at the manufacturer's facility for inspection by the purchaser. Bull plugs shall meet the additional requirement that the minimum thickness of the head shall be at least 1.5 times the thickness of the corresponding pipe schedule. For bull plugs that are drilled and tapped, the minimum thickness of the head shall be increased to accommodate the minimum L2 thread length as specified in ANSI/ASME B1.20.1 - 1983 (reaffirmed 1992).

### 3. SIZE

3.1 Bull Plug size is identified by the "nominal pipe size" (NPS). Swaged Nipples are identified with the large end size listed first, followed by the small end size. (see Sec 4.1d)

### 4. MARKING

4.1 Each fitting shall have the prescribed information stamped or otherwise suitably marked in accordance with the following.

a) Manufacturer's name or trademark

b) Material Identification

- Fittings shall be marked with the material grade in accordance with the applicable ASTM Fittings Specifications A 234, A 403, A 420 (e.g. WPB)

- The material lot or heat number traceable to the material shall be part of the material identification

c) Schedule number or nominal wall thickness designation

d) Size: Nominal pipe size (NPS) of Bull Plug  
Nominal pipe size (NPS)–Large end X small end of Swage(d) Nipples – Example: 2 X 1

e) Product Conformance

Full compliance fittings shall be marked with the symbol SP95 to denote conformance with this Standard. Partial compliance fittings covered in 1.2 shall not be marked "SP95" and if marked with an ASTM designation, the marking shall include the number of the applicable "Supplementary Requirement" for special or non-standard fittings.

4.2 Where size and shape of fittings do not permit all the above markings they may be omitted in the reverse order given above.

4.3 Minimum permanent marking is manufacturer's name or trademark and material grade. At manufacturer's option, all other marking may be permanent or applied on a pressure sensitive label.

4.4 Where steel stamps are used, care should be taken so that marking is not deep enough to reduce wall thickness of the fitting below minimum allowed.

## 5. MATERIAL

5.1 The steel for Swaged Nipples and Bull Plugs shall consist of forgings, round or hex bars or seamless pipe or tube which conform to the requirements of ASTM A 234, A 403, A 420 or the corresponding ASME Specification. When Swaged Nipples and Bull Plugs made of other materials reference this standard, they should be appropriately marked as agreed upon between manufacturer and purchaser.

## 6. DIMENSIONS

6.1 The dimensions of Swaged Nipples and Bull Plugs are shown in Tables 1, A1 and 2, A2 respectively. Tolerances are shown in Tables 3 and A3.

## 7. END PREPARATION

7.1 Pipe ends may be threaded, beveled for butt-welding, square cut (plain) for socket welding, grooved, or any combination of these.

7.2 Threaded ends shall be in accordance with ASME B1.20.1. Threads shall be chamfered at the ends of the fitting to protect the first thread. The reference point for gaging threads is the last thread scratch on the chamfer cone.

7.3 Butt-welding ends shall be in accordance with ASME B16.25.

7.4 Grooved ends shall be by agreement between manufacturer and purchaser.

## 8. SURFACE QUALITY

8.1 Fittings supplied under this specification shall be in accord with surface quality requirements of ASTM A 234, A 403, A 420.

## 9. DESIGN PROOF TEST

9.1 Proof tests shall be made as set forth herein, when the manufacturer chooses proof testing to qualify the fitting design.

### 9.2 Test Assembly

9.2.1 Fittings selected for test shall be representative of production and shall meet all the requirements of this standard practice and the applicable material specification. The fittings shall be inspected for dimensional compliance to this standard. Full material specification test reports, including chemical analysis, tensile and hardness property results shall be included in the records of the proof tests.

9.2.2 Straight seamless or welded pipe sections, whose calculated bursting strength is at least as great as the computed proof test pressure as calculated in Para. 9.3 shall be welded to each end of the fitting to be tested. Any internal misalignment greater than 0.06 inch (1.6 mm) shall be reduced by taper boring at a slope not over 1:3. Length of pipe sections for closures shall be at least twice the pipe OD.

### 9.3 Test Procedure

9.3.1 The test fluid shall be water or other fluid used for hydrostatic testing.

9.3.2 Hydrostatic pressure shall be applied to the test assembly. The test is successful if the assembly withstands, without rupture 105% of the computed test pressure defined below:

$$P = \frac{2St}{D}$$

where:

P = computed test pressure, psig

S = minimum tensile strength of the test fitting

t = minimum wall thickness of the pipe that the fitting marking identifies, inches

D = specified outside diameter of the pipe, inches

9.3.3 As an alternative, if the pipe ruptures, or if sufficient pressure to rupture any part of the assembly cannot be attained, the test pressure is acceptable if a final test pressure is at least 105 percent of the computed proof test pressure.

9.4 Applicability of Test Results It is not necessary to conduct an individual test of fittings with all combinations of sizes, wall thickness, end connections, and grade of steel. A successful proof test on one prototype fitting may represent others to the extent described herein.

9.4.1 One test fitting may be used to qualify similar ones no smaller than one-half nor larger than two times the size of the test fittings.

9.4.2 The untested fittings must have a t/D ratio not less than one-half nor more than three times the t/D ratio of the test fitting.

9.4.3 The pressure retaining capacity of a fitting made of various grades of steel will be essentially

directly proportional to the tensile properties of the various grades. Hence, it is necessary to test a prototype in only a single grade to prove the geometric design of the fittings.

10. TESTING

10.1 Hydrostatic testing of fittings is not required in this standard. All fittings shall be capable of withstanding without leakage a test pressure equal to that prescribed in the specification, for the pipe of equal end preparation, with which the fitting's marking identifies.

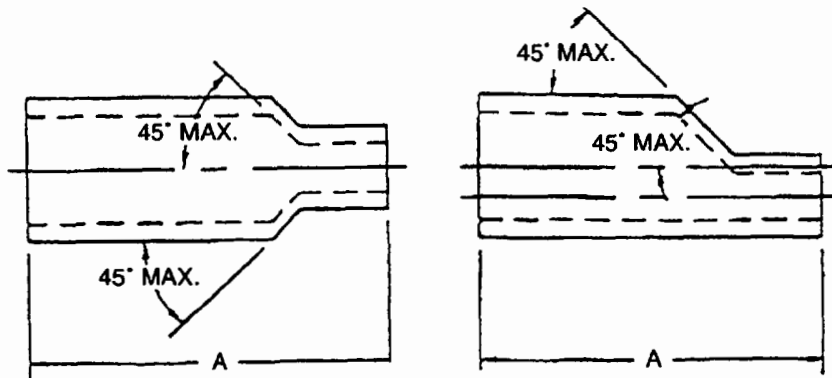


TABLE 1 — SWAGED NIPPLES

Nominal Pipe Size (NPS)	Outside Diameter		End To End "A"
	Large End	Small End	
1/4 x 1/8	0.540	0.405	2.25
3/8 x 1/8	0.675	0.405	2.50
3/8 x 1/4	0.675	0.540	2.50
1/2 x 1/8	0.840	0.405	2.75
1/2 x 1/4	0.840	0.540	2.75
1/2 x 3/8	0.840	0.675	2.75
3/4 x 1/8	1.050	0.405	3.00
3/4 x 1/4	1.050	0.540	3.00
3/4 x 3/8	1.050	0.675	3.00
3/4 x 1/2	1.050	0.840	3.00
1 x 1/8	1.315	0.405	3.50
1 x 1/4	1.315	0.540	3.50
1 x 3/8	1.315	0.675	3.50
1 x 1/2	1.315	0.840	3.50
1 x 3/4	1.315	1.050	3.50

Nominal Pipe Size (NPS)	Outside Diameter		End To End "A"
	Large End	Small End	
1 1/4 x 1/8	1.660	0.405	4.00
1 1/4 x 1/4	1.660	0.540	4.00
1 1/4 x 3/8	1.660	0.675	4.00
1 1/4 x 1/2	1.660	0.840	4.00
1 1/4 x 3/4	1.660	1.050	4.00
1 1/4 x 1	1.660	1.315	4.00
1 1/2 x 1/8	1.900	0.405	4.50
1 1/2 x 1/4	1.900	0.540	4.50
1 1/2 x 3/8	1.900	0.675	4.50
1 1/2 x 1/2	1.900	0.840	4.50
1 1/2 x 3/4	1.900	1.050	4.50
1 1/2 x 1	1.900	1.315	4.50
1 1/2 x 1 1/4	1.900	1.660	4.50

TABLE 1 — SWAGED NIPPLES (Continued)

Nominal Pipe Size (NPS)	Outside Diameter		End To End "A"	Dimensions in inches			
	Large End	Small End		Nominal Pipe Size (NPS)	Large End	Small End	End To End "A"
2 x 1/8	2.375	0.405	6.50	3 1/2 x 1/8	4.000	0.405	8.00
2 x 1/4	2.375	0.540	6.50	3 1/2 x 1/4	4.000	0.540	8.00
2 x 3/8	2.375	0.675	6.50	3 1/2 x 3/8	4.000	0.675	8.00
2 x 1/2	2.375	0.840	6.50	3 1/2 x 1/2	4.000	0.840	8.00
2 x 3/4	2.375	1.050	6.50	3 1/2 x 3/4	4.000	1.050	8.00
2 x 1	2.375	1.315	6.50	3 1/2 x 1	4.000	1.315	8.00
2 x 1 1/4	2.375	1.660	6.50	3 1/2 x 1 1/4	4.000	1.660	8.00
2 x 1 1/2	2.375	1.900	6.50	3 1/2 x 1 1/2	4.000	1.900	8.00
2 1/2 x 1/8	2.875	0.405	7.00	3 1/2 x 2	4.000	2.375	8.00
2 1/2 x 1/4	2.875	0.540	7.00	3 1/2 x 2 1/2	4.000	2.875	8.00
2 1/2 x 3/8	2.875	0.675	7.00	3 1/2 x 3	4.000	3.500	8.00
2 1/2 x 1/2	2.875	0.840	7.00	4 x 1/4	4.500	0.540	9.00
2 1/2 x 3/4	2.875	1.050	7.00	4 x 3/8	4.500	0.675	9.00
2 1/2 x 1	2.875	1.315	7.00	4 x 1/2	4.500	0.840	9.00
2 1/2 x 1 1/4	2.875	1.660	7.00	4 x 3/4	4.500	1.050	9.00
2 1/2 x 1 1/2	2.875	1.900	7.00	4 x 1	4.500	1.315	9.00
2 1/2 x 2	2.875	2.375	7.00	4 x 1 1/4	4.500	1.660	9.00
3 x 1/8	3.500	0.405	8.00	4 x 1 1/2	4.500	1.900	9.00
3 x 1/4	3.500	0.540	8.00	4 x 2	4.500	2.375	9.00
3 x 3/8	3.500	0.675	8.00	4 x 2 1/2	4.500	2.875	9.00
3 x 1/2	3.500	0.840	8.00	4 x 3	4.500	3.500	9.00
3 x 3/4	3.500	1.050	8.00	4 x 3 1/2	4.500	4.000	9.00
3 x 1	3.500	1.315	8.00				
3 x 1 1/4	3.500	1.660	8.00				
3 x 1 1/2	3.500	1.900	8.00				
3 x 2	3.500	2.375	8.00				
3 x 2 1/2	3.500	2.875	8.00				



TABLE 1 — SWAGED NIPPLES (Continued)

Dimensions in inches

Nominal Pipe Size (NPS)	Outside Diameter		End To End "A"	Nominal Pipe Size (NPS)	Outside Diameter		End To End "A"
	Large End	Small End			Large End	Small End	
5 x ¼	5.563	0.540	11.00	8 x 1	8.625	1.315	13.00
5 x ⅜	5.563	0.675	11.00	8 x 1¼	8.625	1.660	13.00
5 x ½	5.563	0.840	11.00	8 x 1½	8.625	1.900	13.00
5 x ¾	5.563	1.050	11.00	8 x 2	8.625	2.375	13.00
5 x 1	5.563	1.315	11.00	8 x 2½	8.625	2.875	13.00
5 x 1¼	5.563	1.660	11.00	8 x 3	8.625	3.500	13.00
5 x 1½	5.563	1.900	11.00	8 x 3½	8.625	4.000	13.00
5 x 2	5.563	2.375	11.00	8 x 4	8.625	4.500	13.00
5 x 2½	5.563	2.875	11.00	8 x 5	8.625	5.563	13.00
5 x 3	5.563	3.500	11.00	8 x 6	8.625	6.625	13.00
5 x 3½	5.563	4.000	11.00	10 x 2	10.750	2.375	15.00
5 x 4	5.563	4.500	11.00	10 x 2½	10.750	2.875	15.00
6 x ½	6.625	0.840	12.00	10 x 3	10.750	3.500	15.00
6 x ¾	6.625	1.050	12.00	10 x 3½	10.750	4.000	15.00
6 x 1	6.625	1.315	12.00	10 x 4	10.750	4.500	15.00
6 x 1¼	6.625	1.660	12.00	10 x 5	10.750	5.563	15.00
6 x 1½	6.625	1.900	12.00	10 x 6	10.750	6.625	15.00
6 x 2	6.625	2.375	12.00	10 x 8	10.750	8.625	15.00
6 x 2½	6.625	2.875	12.00	12 x 2	12.750	2.375	16.00
6 x 3	6.625	3.500	12.00	12 x 2½	12.750	2.875	16.00
6 x 3½	6.625	4.000	12.00	12 x 3	12.750	3.500	16.00
6 x 4	6.625	4.500	12.00	12 x 3½	12.750	4.000	16.00
6 x 5	6.625	5.563	12.00	12 x 4	12.750	4.500	16.00
				12 x 5	12.750	5.563	16.00
				12 x 6	12.750	6.625	16.00
				12 x 8	12.750	8.625	16.00
				12 x 10	12.750	10.750	16.00

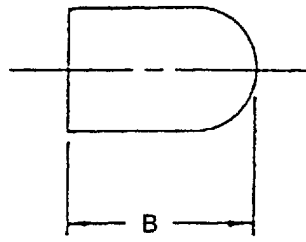


TABLE 2—BULL PLUGS

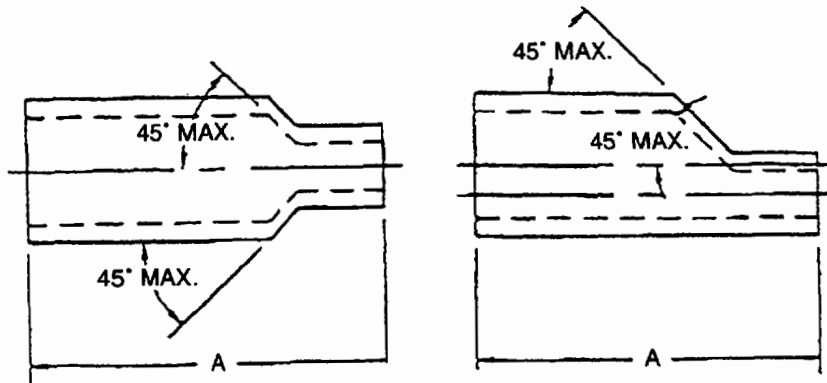
Dimensions in inches

Nominal Pipe Size (NPS)	Outside Diameter	End To End "B"	Nominal Pipe Size (NPS)	Outside Diameter	End To End "B"
1/8	0.405	2.00	2 1/2	2.875	5.00
1/4	0.540	2.00	3	3.500	6.00
3/8	0.675	2.25	3 1/2	4.000	6.50
1/2	0.840	2.50	4	4.500	7.00
3/4	1.050	2.75	5	5.563	8.50
1	1.315	3.00	6	6.625	10.00
1 1/4	1.660	3.25	8	8.625	11.00
1 1/2	1.900	3.50	10	10.750	13.00
2	2.375	4.00	12	12.750	14.00

TABLE 3—TOLERANCES

Nominal Pipe Size (NPS)	Outside Diameter at End			Fitting Wall Thickness (see (a))	ID and OD Swage-Down Angles (degrees)
	Overall Length (inches)	Square Cut Ends (inches)	Other End Connections (inches)		
1/8 - 3/8	±0.060	+0.015 -0.030	±0.030	Not less than 87.5% nominal wall thickness	45° Maximum (see diagram)
1/2 - 1 1/2	±0.060	+0.015 -0.030	+0.060 -0.030		
2 - 2 1/2	±0.120	±0.030	+0.060 -0.030		
3 - 4	±0.120	±0.030	±0.060		
5 - 6	±0.190	+0.090 -0.060	+0.090 -0.060		
8 - 12	±0.250	+0.160 -0.120	+0.160 -0.120		

(a) Prior to threading or grooving  
Dimensions are in inches



ID and OD maximum swage-down angles

TABLE A1— SWAGED NIPPLES

Nominal Pipe Size (NPS)	Outside Diameter		End To End "A" (mm)	Nominal Pipe Size (NPS)	Outside Diameter		End To End "A" (mm)
	Large End (mm)	Small End (mm)			Large End (mm)	Small End (mm)	
¼ x ⅛	13.7	10.3	57	2 x 1½	60.3	48.3	165
⅜ x ⅛	17.1	10.3	64	2½ x ⅛	73.0	10.3	178
⅜ x ¼	17.1	13.7	64	2 x ¼	73.0	13.7	178
½ x ⅛	21.3	10.3	70	2½ x ⅜	73.0	17.1	178
½ x ¼	21.3	13.7	70	2½ x ½	73.0	21.3	178
½ x ⅜	21.3	17.1	70	2½ x ¾	73.0	26.7	178
¾ x ⅛	26.7	10.3	76	2½ x 1	73.0	33.4	178
¾ x ¼	26.7	13.7	76	2½ x 1¼	73.0	42.2	178
¾ x ⅜	26.7	17.1	76	2½ x 1½	73.0	48.3	178
¾ x ½	26.7	21.3	76	2½ x 2	73.0	60.3	178
1 x ⅛	33.4	10.3	89	3 x ⅛	88.9	10.3	203
1 x ¼	33.4	13.7	89	3 x ¼	88.9	13.7	203
1 x ⅜	33.4	17.1	89	3 x ⅜	88.9	17.1	203
1 x ½	33.4	21.3	89	3 x ½	88.9	21.3	203
1 x ¾	33.4	26.7	89	3 x ¾	88.9	26.7	203
1¼ x ⅛	42.2	10.3	102	3 x 1	88.9	33.4	203
1¼ x ¼	42.2	13.7	102	3 x 1¼	88.9	42.2	203
1¼ x ⅜	42.2	17.1	102	3 x 1½	88.9	48.3	203
1¼ x ½	42.2	21.3	102	3 x 2	88.9	60.3	203
1¼ x ¾	42.2	26.7	102	3 x 2½	88.9	73.0	203
1¼ x 1	42.2	33.4	102	3½ x ⅛	101.6	10.3	203
1½ x ⅛	48.3	10.3	114	3½ x ¼	101.6	13.7	203
1½ x ¼	48.3	13.7	114	3½ x ⅜	101.6	17.1	203
1½ x ⅜	48.3	17.1	114	3½ x ½	101.6	21.3	203
1½ x ½	48.3	21.3	114	3½ x ¾	101.6	26.7	203
1½ x ¾	48.3	26.7	114	3½ x 1	101.6	33.4	203
1½ x 1	48.3	33.4	114	3½ x 1¼	101.6	42.2	203
1½ x 1¼	48.3	42.2	114	3½ x 1½	101.6	48.3	203
2 x ⅛	60.3	10.3	165	3½ x 2	101.6	60.3	203
2 x ¼	60.3	13.7	165	3½ x 2½	101.6	73.0	203
2 x ⅜	60.3	17.1	165	3½ x 3	101.6	88.9	203
2 x ½	60.3	21.3	165	4 x ¼	114.3	13.7	229
2 x ¾	60.3	26.7	165	4 x ⅜	114.3	17.1	229
2 x 1	60.3	33.4	165	4 x ½	114.3	21.3	229
2 x 1¼	60.3	42.2	165	4 x ¾	114.3	26.7	229

TABLE A1— SWAGED NIPPLES (Continued)

Nominal Pipe Size (NPS)	Outside Diameter		End To End "A" (mm)	Nominal Pipe Size (NPS)	Outside Diameter		End To End "A" (mm)
	Large End (mm)	Small End (mm)			Large End (mm)	Small End (mm)	
4 x 1	114.3	33.4	229	6 x 5	168.3	141.3	304
4 x 1¼	114.3	42.2	229	8 x 1	219.1	33.4	330
4 x 1½	114.3	48.3	229	8 x 1¼	219.1	42.2	330
4 x 2	114.3	60.3	229	8 x 1½	219.1	48.3	330
4 x 2½	114.3	73.0	229	8 x 2	219.1	60.3	330
4 x 3	114.3	88.9	229	8 x 2½	219.1	73.0	330
4 x 3½	114.3	101.6	229	8 x 3	219.1	88.9	330
5 x ¼	141.3	13.7	279	8 x 3½	219.1	101.6	330
5 x ⅜	141.3	17.1	279	8 x 4	219.1	114.3	330
5 x ½	141.3	21.3	279	8 x 5	219.1	141.3	330
5 x ¾	141.3	26.7	279	8 x 6	219.1	168.3	330
5 x 1	141.3	33.4	279	10 x 2	273.0	60.3	381
5 x 1¼	141.3	42.2	279	10 x 2½	273.0	73.0	381
5 x 1½	141.3	48.3	279	10 x 3	273.0	88.9	381
5 x 2	141.3	60.3	279	10 x 3½	273.0	101.6	381
5 x 2½	141.3	73.0	279	10 x 4	273.0	114.3	381
5 x 3	141.3	88.9	279	10 x 5	273.0	141.3	381
5 x 3½	141.3	101.6	279	10 x 6	273.0	168.3	381
5 x 4	141.3	114.3	279	10 x 8	273.0	219.1	381
6 x ½	168.3	21.3	304	12 x 2	323.8	60.3	406
6 x ¾	168.3	26.7	304	12 x 2½	323.8	73.0	406
6 x 1	168.3	33.4	304	12 x 3	323.8	88.9	406
6 x 1¼	168.3	42.2	304	12 x 3½	323.8	101.6	406
6 x 1½	168.3	48.3	304	12 x 4	323.8	114.3	406
6 x 2	168.3	60.3	304	12 x 5	323.8	141.3	406
6 x 2½	168.3	73.0	304	12 x 6	323.8	168.3	406
6 x 3	168.3	88.9	304	12 x 8	323.8	219.1	406
6 x 3½	168.3	101.6	304	12 x 10	323.8	273.0	406
6 x 4	168.3	114.3	304				

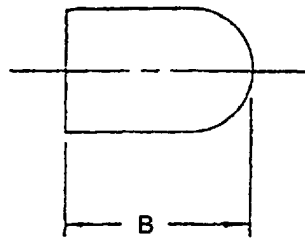


TABLE A2— BULL PLUGS

Nominal Pipe Size (NPS)	Outside Diameter (mm)	End To End "B" (mm)	Nominal Pipe Size (NPS)	Outside Diameter (mm)	End To End "B" (mm)
1/8	10.3	34	2 1/2	73.0	127
1/4	13.7	34	3	88.9	152
3/8	17.1	57	3 1/2	101.6	165
1/2	21.3	64	4	114.3	178
3/4	26.7	70	5	141.3	216
1	33.4	76	6	168.3	254
1 1/4	42.2	83	8	219.1	279
1 1/2	48.3	89	10	273.0	330
2	60.3	102	12	328.8	356

TABLE A3— TOLERANCES

Nominal Pipe Size (NPS)	Outside Diameter at End			Fitting Wall Thickness (see b)
	Overall Length (mm)	Square Cut Ends (mm)	Other End Connections (mm)	
1/8 - 3/8	±2	+0.40 -0.80	±0.80	Not less than 87.5% nominal wall thickness
1/2 - 1 1/2	±2	+0.40 -0.80	+1.50 -0.80	
2 - 2 1/2	±3	±0.80	+1.50 -0.80	
3 - 4	±3	±0.80	±1.50	
5 - 6	±5	+2.30 -1.50	+2.30 -1.50	
8 - 12	±7	+4.00 -3.00	+4.00 -3.00	

(b) Prior to threading or grooving

## ANNEX

## Referred Standards and Applicable Dates

Thus annex is an integral part of this Standard Practice which is placed after the main text for convenience.

List of standards and specifications referenced in this Standard Practice show the year of approval.

ANSI/ASME

B1.20.1-1993 (R1992)*	Pipe Threads General Purpose (Inch)
B16.9	Factory-Made Wrought Steel Buttwelding Fittings
B16.25	Buttwelding Ends
B31.1	Power Piping
B31.3	Chemical Plant and Petroleum Refinery Piping
B31.4	Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohol
B31.8 - 1995	Gas Transmission and Distribution Piping Systems

ASTM

A 234	Pipe Fittings of Wrought Carbon and Alloy Steel for Moderate and Elevated Temperatures
A 403	Wrought Austenitic Stainless Steel Piping Fittings
A 420	Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Low Temperature Service

\*Reaffirmed

Publications of the following organizations appear on the above list:

ANSI —	American National Standards Institute, 11 West 42nd Street, 13th floor, New York, NY 10036
ASME —	American Society of Mechanical Engineers, 3 Park Avenue, New York, NY 10016-5990
ASTM —	American Society for Testing and Materials, 100 Barr Harbor Drive, Conshohocken, PA 19428-2959
MSS —	Manufacturers Standardization Society of the Valves and Fittings Industry, 127 Park Street, NE, Vienna, Virginia 22180-4602

**List of MSS Standard Practices  
(Price List Available Upon Request)**

Number	
SP-6-1996	Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings
SP-9-1997	Spot Facing for Bronze, Iron and Steel Flanges
SP-25-1998	Standard Marking System For Valves, Fittings, Flanges and Unions
SP-42-1999	(R 95) Class 150 Corrosion Resistant Gate, Globe, Angle and Check Valves with Flanged and Butt Weld Ends
SP-43-1991	(R 96) Wrought Stainless Steel Butt-Welding Fittings
SP-44-1996	Steel Pipeline Flanges
SP-45-1998	Bypass and Drain Connections
SP-51-2000	(R 95) Class 150LW Corrosion Resistant Cast Flanges and Flanged Fittings
SP-53-1999	Quality Standard for Steel Castings and Forgings for Valves, Flanges and Fittings and Other Piping Components - Magnetic Particle Examination Method
SP-54-1999	Quality Standard for Steel Castings for Valves, Flanges, and Fittings and Other Piping Components - Radiographic Examination Method
SP-55-1996	Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components - Visual Method for Eval. of Surface Irregularities
SP-58-1993	Pipe Hangers and Supports - Materials, Design and Manufacture
SP-60-1999	Connecting Flange Joint Between Tapping Sleeves and Tapping Valves
SP-61-1999	Pressure Testing of Steel Valves
SP-65-1999	High Pressure Chemical Industry Flanges and Threaded Stubs for Use with Lens Gaskets
SP-67-1995	Butterfly Valves
SP-68-1997	High Pressure Butterfly Valves with Offset Design
SP-69-1996	Pipe Hangers and Supports - Selection and Application
SP-70-1998	Cast Iron Gate Valves, Flanged and Threaded Ends
SP-71-1997	Gray Iron Swing Check Valves, Flanged and Threaded Ends
SP-72-1992	Ball Valves with Flanged or Butt-Welding Ends for General Service
SP-73-1991	(R 96) Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings
SP-75-1998	Specification for High Test Wrought Butt Welding Fittings
SP-77-1995	Guidelines for Pipe Support Contractual Relationships
SP-78-1998	(R 92) Cast Iron Plug Valves, Flanged and Threaded Ends
SP-79-1999a	Socket-Welding Reducer Inserts
SP-80-1997	Bronze Gate, Globe, Angle and Check Valves
SP-81-1995	Stainless Steel, Bonnetless, Flanged, Knife Gate Valves
SP-82-1992	Valve Pressure Testing Methods
SP-83-1995	Class 3000 Steel Pipe Unions, Socket-Welding and Threaded
SP-85-1994	Cast Iron Globe & Angle Valves, Flanged and Threaded Ends
SP-86-1997	Guidelines for Metric Data in Standards for Valves, Flanges, Fittings and Actuators
SP-87-1991	(R 96) Factory-Made Butt-Welding Fittings for Class 1 Nuclear Piping Applications
SP-88-1993	Diaphragm Type Valves
SP-89-1998	Pipe Hangers and Supports - Fabrication and Installation Practices
SP-90-1986	(R 91) Guidelines on Terminology for Pipe Hangers and Supports
SP-91-1992	(R 96) Guidelines for Manual Operation of Valves
SP-92-1999	(R 92) MSS Valve User Guide
SP-93-1999	(R 92) Quality Standard for Steel Castings and Forgings for Valves, Flanges, and Fittings and Other Piping Components - Liquid Penetrant Examination Method
SP-94-1999	Quality Std for Ferritic and Martensitic Steel Castings for Valves, Flanges, and Fittings and Other Piping Components - Ultrasonic Examination Method
SP-95-2000	(R 91) Swage (d) Nipples and Bull Plugs
SP-96-1996	Guidelines on Terminology for Valves and Fittings
SP-97-1995	Integrally Reinforced Forged Branch Outlet Fittings - Socket Welding, Threaded and Butt-welding Ends
SP-98-1996	Protective Coatings for the Interior of Valves, Hydrants, and Fittings
SP-99-1994	Instrument Valves
SP-100-1997	Qualification Requirements for Elastomer Diaphragms for Nuclear Service Diaphragm Type Valves
SP-101-1989	Part-Turn Valve Actuator Attachment - Flange and Driving Component Dimensions and Performance Characteristics
SP-102-1989	Multi-Turn Valve Actuator Attachment - Flange and Driving Component Dimensions and Performance Characteristics
SP-103-1995	Wrought Copper and Copper Alloy Insert Fittings for Polybutylene Systems
SP-104-1995	Wrought Copper Solder Joint Pressure Fittings
SP-105-1996	Instrument Valves for Code Applications
SP-106-1990	(R 96) Cast Copper Alloy Flanges and Flanged Fittings, Class 125, 150 and 300
SP-107-1991	Transition Union Fittings for Joining Metal and Plastic Products
SP-108-1996	Resilient-Seated Cast Iron-Eccentric Plug Valves
SP-109-1996	Welded Fabricated Copper Solder Joint Pressure Fittings
SP-110-1996	Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends
SP-111-1996	Gray-Iron and Ductile-Iron Tapping Sleeves
SP-112-1999	Quality Standard for Evaluation of Cast Surface Finishes - Visual and Tactile Method. This SP must be sold with a 10-surface, three-dimensional Cast Surface Comparator, which is a necessary part of the Standard. Price for both is \$43.00. Standards or Comparators may be sold separately at \$25.00 each. Same quantity discounts apply on total order.
SP-113-1999	Connecting Joint between Tapping Machines and Tapping Valves
SP-114-1995	Corrosion Resistant Pipe Fittings Threaded and Socket Welding, Class 150 and 1000
SP-115-1999	Excess Flow Valves for Natural Gas Service
SP-116-1996	Service Line Valves and Fittings for Drinking Water Systems
SP-117-1996	Bellows Seals for Globe and Gate Valves
SP-118-1996	Compact Steel Globe & Check Valves - Flanged, Flangeless, Threaded & Welding Ends (Chemical & Petroleum Refinery Service)
SP-119-1996	Belled End Socket Welding Fittings, Stainless Steel and Copper Nickel
SP-120-1997	Flexible Graphite Packing System for Rising Stem Steel Valves (Design Requirements)
SP-121-1997	Qualification Testing Methods for Stem Packing for Rising Stem Steel Valves
SP-122-1997	Plastic Industrial Ball Valves
SP-123-1998	Non-Ferrous Threaded and Solder-Joint Unions for Use With Copper Water Tube
SP-124-2000	Fabricated Tapping Sleeves

(R-YEAR) Indicates year standard reaffirmed without substantive changes

A large number of former MSS Practices have been approved by the ANSI or ANSI Standards, published by others. In order to maintain a single source of authoritative information, the MSS withdraws its Standard Practices in such cases.

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