

Wrought and Fabricated Butt-Welding Fittings for Low Pressure, Corrosion Resistant Applications

Standard Practice
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This MSS Standard Practice was developed under the consensus of the MSS Technical Committee 113 and the MSS Coordinating Committee. The content of this Standard Practice is the result of the efforts of competent and concerned volunteers to provide an effective, clear, and non-exclusive specification that will benefit the industry as a whole. This MSS Standard Practice is intended as a basis for common practice by the manufacturer, the user, and the general public. The existence of an MSS Standard Practice does not in itself preclude the manufacture, sale, or use of products not conforming to the Standard Practice. Mandatory conformance is established only by reference in a code, specification, sales contract, or public law, as applicable.

Unless otherwise specifically noted in this MSS SP, any standard referred to herein is identified by the date of issue that was applicable to the referenced standard(s) at the date of issue of this MSS SP. (See Annex A).

This document has been substantially revised from the previous 1991 (R 2001) edition. It is suggested that if the user is interested in knowing what changes have been made, that direct page-by-page comparison should be made of this document with the previous edition.

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FOREWORD

ASME B16.9 is the American Standard for steel butt-welding fittings and although not so stated, it is implied that its scope deals primarily with the schedules of wall thicknesses which are common to carbon steel and the grades of alloy steel piping that are selected for pressure and temperature considerations.

The rapid expansion of the process industries in the field of chemicals, plastics, textiles, etc., has created a demand for a class of pipe referred to as stainless piping, using this word in its generic sense. This field employs the use of the austenitic stainless steels and also nickel and its related alloys. This stainless piping is used with resistance to corrosion, elimination of product contamination, or combination of the two as the principle reason for material selection. Pressure is seldom, if ever, a critical consideration.

When pressure is a consideration reference is made to ASME B16.9.

Mechanical strength, resistance to vacuum, and economy, are the most usual criteria in the selection of pipe thickness in this field, and for this reason the wall thicknesses employed in the field of corrosion resistant pipe are lighter than those in common usage with carbon steel piping.

In 1949 ANSI approved standard B36.19 Stainless Steel Pipe in which a schedule of wall thickness was established and designated as Schedule 10S. Numerous companies were also using a wall thickness lighter than Schedule 10S for services where contamination rather than corrosion was the prime consideration. These lighter wall thicknesses were designated Schedule 5S and the original 1950 edition of SP-43 established a series of Schedule 5S fittings. The 5S thicknesses were published in SP-43 and were developed in cooperation with representatives of the various principal chemical companies and processing industries. In 1952 the Stainless Steel Pipe Standard B36.19 was revised to recognize the Schedule 5S wall thickness pipe as American Standard.

The purpose of this Standard Practice is to provide industry with a set of dimensional standards for butt-welding fittings that can be used with these light wall pipes of corrosion resisting materials. The center-to-end dimensions of all fittings are identical with those in ASME B16.9 which give to industry the advantage of uniform design room practice and a maximum utilization of existing die equipment. The only departure from this is in the lap-joint stub end where for purposes of economy the face-to-end of the product has been reduced for use with thin wall piping.

The advantage of longer center-to-end dimensions of the size 3/4 elbows resulted in the change in the tables to permit a gradual changeover, providing the manufacturers ample time to deplete existing stocks, re-tool and replenish stocks.

The 1991 revision of the SP was required to delete the metric equivalents.

The 2001 Reaffirmation had no technical changes. There were minor editorial changes. The precedence of the longer dimensions for 3/4 elbows was made in accordance with ASME B16.9. Referenced standards were brought up to date. The title of 180 degree returns was clarified.

In this 2008 edition, a minimal pressure rating is established to correspond with the ASTM CR designation.

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**WROUGHT AND FABRICATED BUTT-WELDING FITTINGS
FOR LOW PRESSURE, CORROSION RESISTANT APPLICATIONS**

1. SCOPE

1.1 This Standard Practice provides dimensions, tolerances, and markings for butt-welding fittings for low pressure, corrosion resistant applications.

1.2 This Standard Practice covers only fittings made for use with Schedule 5S or 10S pipe, for all NPS sizes listed in ASME B36.19M, except that for short pattern stub ends suitable for use with Schedule 40S are also shown.

2. REFERENCES

2.1 Standards and specifications adopted by reference in this Standard Practice are shown in Annex A for convenience of identifying edition number, date, and source of supply.

3. PRESSURE RATINGS

3.1 Fittings covered by this Standard Practice are not pressure rated; however, they must be capable of withstanding 30% of the allowable pressure rating of the pipe with which they are marked.

3.2 For fittings of same pressure rating of matching pipe, refer to ASME B16.9.

4. SIZE

4.1 The size of the fittings in Tables 1 through 6 are identified by the corresponding nominal pipe size.

5. MARKING

5.1 Each fitting shall be marked to show the following:

- a) Manufacturer's name or trademark
- b) "CR" followed by the material identification symbol established for the respective grade in the appropriate ASTM or AISI specifications
- c) Manufacturer's heat identification number
- d) Schedule number or nominal wall thickness designation
- e) Size

5.2 Where the size of the fittings does not permit complete marking, Sections 5.1 a) and c) are mandatory. The other marking and identification marks may be omitted in the sequence specified in MSS SP-25.

5.3 The required markings shall be made by any suitable method that is not injurious to the fitting.

6. MATERIALS

6.1 Fittings made from AISI Types 304, 304L, 347, 316, and 316L are considered standard under this specification. Fittings made from other corrosion resistant material, including nonferrous, materials are acceptable by agreement between the purchaser and the manufacturer provided they meet the requirements of a recognized AISI or ASTM specification.

7. METAL THICKNESS

7.1 As these fittings are to match pipe, the dimensions of the welding ends must conform to established pipe standards as to outside diameters and tolerances. The nominal wall thickness of the fittings shall be the same as the pipe to which it is welded, except that fittings with heavier walls may be butt-welded to lighter wall pipe provided the heavier wall is tapered on the inside or outside to match the dimensions of the lighter pipe.

8. FITTINGS DIMENSIONS

8.1 Inch dimensions for the fittings covered by this Standard Practice are given in Tables 1 through 6.

8.2 One of the principals of this Standard Practice is the maintenance of a fixed position for welding ends with reference to center line of the fittings or the overall dimensions as the case may be.

9. TESTS

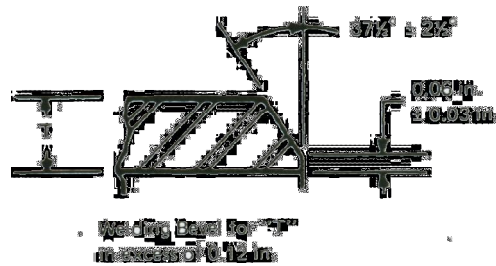
9.1 Hydrostatic testing of fittings is not required in this Standard Practice; however, fittings shall be capable of withstanding a hydrostatic test pressure that is 1.5 times the pressure rating required in Section 3.1.

10. TOLERANCES

10.1 Table 1 lists the tolerances for the fittings covered by this Standard Practice.

11. WELDING BEVEL

11.1 Fittings furnished to this Standard Practice may be finished with ends cut square for wall thickness 0.12 in. or less. For wall thicknesses in excess of 0.12 in., they shall be beveled at $37\frac{1}{2}^\circ$ plus or minus $2\frac{1}{2}^\circ$ with root face (land) 0.06 in. plus or minus 0.03 in.



12. FINISH AND HEAT TREATMENT

12.1 The fittings shall be satisfactorily heat treated by an accepted practice, and adequately cleaned to insure maximum corrosion resistance.

Table 1 Tolerances

Dimensions in inches										
Nominal Pipe Size	All Fittings		90° Elbows 45° Elbows Tees	Reducers Lap-Joint Stub Ends	180° Returns			Caps	Lap-Joint Stub Ends	
	Outside ^(a) Diameter at Welding End	Wall Thick- ness	Center-to End Dimension A-B-C-M	Overall Length F-H	Center-to- Center Dimension O	Back-to- Face Dimension K	Align- ment of Ends U	Overall Length E	Fillet ^(b) R ad i us of Lap A	Outside Diameter of Lap G
1/2 - 1-1/2	± 0.03	Not less than 87½ % of nominal thick- ness	± 0.06	± 0.06	± 0.25	± 0.25	± 0.03	± 0.12	+ 0 - 0.03	+ 0 - 0.03
2 - 3-1/2	± 0.03		± 0.06	± 0.06	± 0.25	± 0.25	± 0.03	± 0.12	+ 0 - 0.03	+ 0 - 0.03
4	± 0.03		± 0.06	± 0.06	± 0.25	± 0.25	± 0.03	± 0.12	+ 0 - 0.03	+ 0 - 0.03
5 - 8	+ 0.06 - 0.03		± 0.06	± 0.06	± 0.06	± 0.25	± 0.25	± 0.03	± 0.25	+ 0 - 0.06
10 - 18	+ 0.09 - 0.03		± 0.09	± 0.09	± 0.38	± 0.25	± 0.06	± 0.25	+ 0 - 0.06	+ 0 - 0.06
20 - 24	+ 0.12 - 0.03		± 0.09	± 0.09	± 0.38	± 0.25	± 0.06	± 0.25	± 0.25	+ 0 - 0.06

NOTES:
Diameter and wall thicknesses as specified in either ASME B 36.10M or ASME B 36.19M
^(a) Out of roundness is the vector sum of plus and minus tolerance.
^(b) Fillet B radius is maximum. (See Table 4).

NOTES:

Diameter and wall thicknesses as specified in either ASME B 36.10M or ASME B 36.19M

(a) Out of roundness is the vector sum of plus and minus tolerance.

(b) Fillet B radius is maximum. (See Table 4).

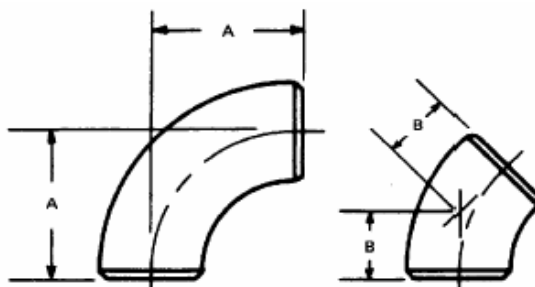


TABLE 2
Dimensions of Long Radius Elbows

Dimensions in inches

Nominal Pipe Size	Outside Diameter At Bevel	Center-to-End	
		90-Deg Elbows A	45-Deg Elbows B
1/2	0.84	1.50	0.62
3/4	1.05	1.50	0.75
1	1.32	1.50	0.88
1-1/4	1.66	1.88	1.00
1-1/2	1.90	2.25	1.12
2	2.38	3.00	1.38
2-1/2	2.88	3.75	1.75
3	3.50	4.50	2.00
3-1/2	4.00	5.25	2.25
4	4.50	6.00	2.50
5	5.56	7.50	3.12
6	6.62	9.00	3.75
8	8.62	12.00	5.00
10	10.75	15.00	6.25
12	12.75	18.00	7.50
14	14.00	21.00	8.75
16	16.00	24.00	10.00
18	18.00	27.00	11.25
20	20.00	30.00	12.50
22	22.00	33.00	13.50
24	24.00	36.00	15.00

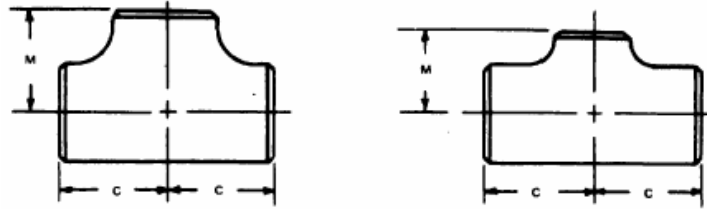


TABLE 3
Dimensions of Straight and Reducing-on-the-Outlet Tees
 Dimensions in inches

Nominal Pipe Size	Nominal Outside Diameter at Bevel		Center-to-End	
	Run C	Outlet M	Run C	Outlet M
1/2 Straight	0.84	0.84	1.00	1.00
3/4 Straight	1.05	1.05	1.12	1.12
3/4 x 3/4 x 1/2	1.05	0.84	1.12	1.12
1 Straight	1.32	1.32	1.50	1.50
1 x 1 x 3/4	1.32	1.05	1.50	1.50
1 x 1 x 1/2	1.32	0.84	1.50	1.50
1-1/4 Straight	1.66	1.66	1.88	1.88
1-1/4 x 1-1/4 x 1	1.66	1.32	1.88	1.88
1-1/4 x 1-1/4 x 3/4	1.66	1.05	1.88	1.88
1-1/4 x 1-1/4 x 1/2	1.66	0.84	1.88	1.88
1-1/2 Straight	1.90	1.90	2.25	2.25
1-1/2 x 1-1/2 x 1-1/4	1.90	1.66	2.25	2.25
1-1/2 x 1-1/2 x 1	1.90	1.32	2.25	2.25
1-1/2 x 1-1/2 x 3/4	1.90	1.05	2.25	2.25
2 Straight	2.38	2.38	2.50	2.50
2 x 2 x 1-1/2	2.38	1.90	2.50	2.38
2 x 2 x 1-1/4	2.38	1.66	2.50	2.25
2 x 2 x 1	2.38	1.32	2.50	2.00
2 x 2 x 3/4	2.38	1.05	2.50	1.75
2-1/2 Straight	2.88	2.88	3.00	3.00
2-1/2 x 2-1/2 x 2	2.88	2.38	3.00	2.75
2-1/2 x 2-1/2 x 1-1/2	2.88	1.90	3.00	2.62
2-1/2 x 2-1/2 x 1-1/4	2.88	1.66	3.00	2.50
2-1/2 x 2-1/2 x 1	2.88	1.32	3.00	2.25
3 Straight	3.50	3.50	3.38	3.38
3 x 3 x 2-1/2	3.50	2.88	3.38	3.25
3 x 3 x 2	3.50	2.38	3.38	3.00
3 x 3 x 1-1/2	3.50	1.90	3.38	2.88
3-1/2 Straight	4.00	4.00	3.75	3.75
3-1/2 x 3-1/2 x 3	4.00	3.50	3.75	3.62
3-1/2 x 3-1/2 x 2-1/2	4.00	2.88	3.75	3.50
3-1/2 x 3-1/2 x 2	4.00	2.38	3.75	3.25
3-1/2 x 3-1/2 x 1-1/2	4.00	1.90	3.75	3.12
4 Straight	4.50	4.50	4.12	4.12
4 x 4 x 3-1/2	4.50	4.00	4.12	4.00
4 x 4 x 3	4.50	3.50	4.12	3.88
4 x 4 x 2-1/2	4.50	2.88	4.12	3.75
4 x 4 x 2	4.50	2.38	4.12	3.50
4 x 4 x 1-1/2	4.50	1.90	4.12	3.38
5 Straight	5.56	5.56	4.88	4.88
5 x 5 x 4	5.56	4.50	4.88	4.62
5 x 5 x 3-1/2	5.56	4.00	4.88	4.50
5 x 5 x 3	5.56	3.50	4.88	4.38
5 x 5 x 2-1/2	5.56	2.88	4.88	4.25
5 x 5 x 2	5.56	2.38	4.88	4.12

TABLE 3
Dimensions of Straight and Reducing-on-the-Outlet Tees
 (Continued)

Nominal Pipe Size	Dimensions in inches			
	Nominal Outside Diameter at Bevel		Center-to-End	
	Run	Outlet	Run C	Outlet M
6 Straight	6.62	6.62	5.62	5.62
6 x 6 x 5	6.62	5.56	5.62	5.38
6 x 6 x 4	6.62	4.50	5.62	5.12
6 x 6 x 3-1/2	6.62	4.00	5.62	5.00
6 x 6 x 3	6.62	3.50	5.62	4.88
6 x 6 x 2-1/2	6.62	2.88	5.62	4.75
8 Straight	8.62	8.62	7.00	7.00
8 x 8 x 6	8.62	6.62	7.00	6.62
8 x 8 x 5	8.62	5.56	7.00	6.38
8 x 8 x 4	8.62	4.50	7.00	6.12
8 x 8 x 3-1/2	8.62	4.00	7.00	6.00
10 Straight	10.75	10.75	8.50	8.50
10 x 10 x 8	10.75	8.62	8.50	8.00
10 x 10 x 6	10.75	6.62	8.50	7.62
10 x 10 x 5	10.75	5.56	8.50	7.50
10 x 10 x 4	10.75	4.50	8.50	7.25
12 Straight	12.75	12.75	10.00	10.00
12 x 12 x 10	12.75	10.75	10.00	9.50
12 x 12 x 8	12.75	8.62	10.00	9.00
12 x 12 x 6	12.75	6.62	10.00	8.62
12 x 12 x 5	12.75	5.56	10.00	8.50
14 Straight	14.00	14.00	11.00	11.00
14 x 14 x 12	14.00	12.75	11.00	10.62
14 x 14 x 10	14.00	10.75	11.00	10.12
14 x 14 x 8	14.00	8.62	11.00	9.75
14 x 14 x 6	14.00	6.62	11.00	9.38
16 Straight	16.00	16.00	12.00	12.00
16 x 16 x 14	16.00	14.00	12.00	12.00
16 x 16 x 12	16.00	12.75	12.00	11.62
16 x 16 x 10	16.00	10.75	12.00	11.12
16 x 16 x 8	16.00	8.62	12.00	10.75
16 x 16 x 6	16.00	6.62	12.00	10.38
18 Straight	18.00	18.00	13.50	13.50
18 x 18 x 16	18.00	16.00	13.50	13.00
18 x 18 x 14	18.00	14.00	13.50	13.00
18 x 18 x 12	18.00	12.75	13.50	12.62
18 x 18 x 10	18.00	10.75	13.50	12.12
18 x 18 x 8	18.00	8.62	13.50	11.75
20 Straight	20.00	20.00	15.00	15.00
20 x 20 x 18	20.00	18.00	15.00	14.50
20 x 20 x 16	20.00	16.00	15.00	14.00
20 x 20 x 14	20.00	14.00	15.00	14.00
20 x 20 x 12	20.00	12.75	15.00	13.62
20 x 20 x 10	20.00	10.75	15.00	13.12
20 x 20 x 8	20.00	8.62	15.00	12.75
24 Straight	24.00	24.00	17.00	17.00
24 x 24 x 20	24.00	20.00	17.00	17.00
24 x 24 x 18	24.00	18.00	17.00	16.50
24 x 24 x 16	24.00	16.00	17.00	16.00
24 x 24 x 14	24.00	14.00	17.00	16.00
24 x 24 x 12	24.00	12.75	17.00	15.62
24 x 24 x 10	24.00	10.75	17.00	15.12

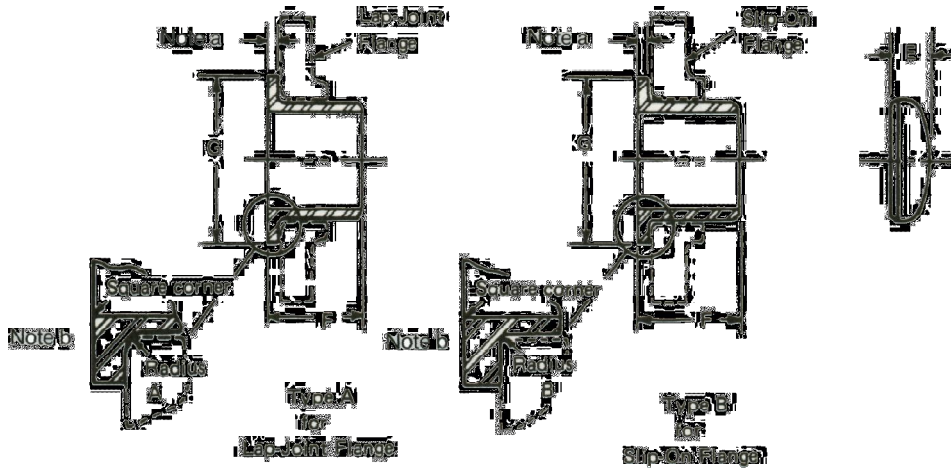


TABLE 4
Dimensions of Lap-Joint Stub Ends and Caps

Dimensions in inches

Nominal Pipe Size	Nominal O. D. at Bevel	Caps Length E	Lap-Joint Stub Ends ^(c)			
			Length F	Dia. of Lap-G Nominal & Maximum	Radius of Fillet	
					A Nominal & Max	B Max
1/2	0.84	1.00	2.00	1.38	0.12	0.03
3/4	1.05	1.00	2.00	1.69	0.12	0.03
1	1.32	1.50	2.00	2.00	0.12	0.03
1-1/4	1.66	1.50	2.00	2.50	0.19	0.03
1-1/2	1.90	1.50	2.00	2.88	0.25	0.03
2	2.38	1.50	2.50	3.62	0.31	0.03
2-1/2	2.88	1.50	2.50	4.12	0.31	0.03
3	3.50	2.00	2.50	5.00	0.38	0.03
3-1/2	4.00	2.50	3.00	5.50	0.38	0.03
4	4.50	2.50	3.00	5.50	0.38	0.03
5	5.56	3.00	3.00	7.31	0.44	0.06
6	6.62	3.50	3.50	8.50	0.50	0.06
8	8.62	4.00	4.00	10.62	0.50	0.06
10	10.75	5.00	5.00	12.75	0.50	0.06
12	12.75	6.00	6.00	15.00	0.50	0.06
14	14.00	6.50	6.00	16.25	0.50	0.06
16	16.00	7.00	6.00	18.50	0.50	0.06
18	18.00	8.00	6.00	21.00	0.50	0.06
20	20.00	9.00	6.00	23.00	0.50	0.06
24	24.00	10.50	6.00	27.25	0.50	0.06

NOTES:

- (a) Minimum lap thickness shall not be less than nominal wall thickness.
 (b) Connect faces of stub ends shall have a modified spiral or concentric serration.
 (c) These lengths and radii for use with Schedule 40S or thinner pipe.

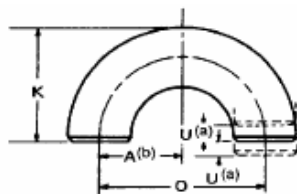


TABLE 5
Dimensions of Long Radius 180 Degree Returns

Dimensions in inches

Nominal Pipe Size	Outside Diameter At Bevel	Center- to-Center O	Back-to- Face K
1/2	0.84	3.00	1.88
3/4	1.05	2.25	1.69
1	1.32	3.00	2.19
1-1/4	1.66	3.75	2.75
1-1/2	1.90	4.50	3.25
2	2.38	6.00	4.19
2-1/2	2.88	7.50	5.19
3	3.50	9.00	6.25
3-1/2	4.00	10.50	7.25
4	4.50	12.00	8.25
5	5.56	15.00	10.31
6	6.62	18.00	12.31
8	8.62	24.00	16.31
10	10.75	30.00	20.38
12	12.75	36.00	24.38
14	14.00	42.00	28.00
16	16.00	48.00	32.00
18	18.00	54.00	36.00
20	20.00	60.00	40.00
24	24.00	72.00	48.00

NOTES:

^(a) Alignment of ends -U - for nom pipe size 8 and smaller
± 0.03 in. and for size 10 and larger ± 0.06 in.

^(b) "A" dimension is equal to 1/2 "O" dimension.

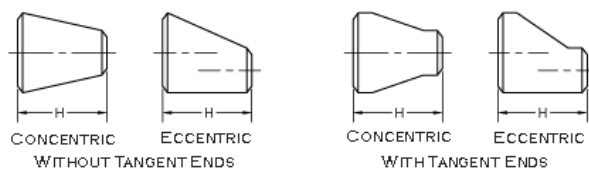


TABLE 6
Dimensions of Concentric and Eccentric Reducers

Dimensions in inches				Dimensions in inches			
Nominal Pipe Size	Outside Diameter at Bevel		Length H	Nominal Pipe Size	Outside Diameter at Bevel		Length H
	Large End	Small End			Large End	Small End	
3/4 x 1/2	1.05	0.84	1.50	6 x 5	6.62	5.56	5.50
1 x 3/4	1.32	1.05	2.00	6 x 4	6.62	4.50	5.50
1 x 1/2	1.32	0.84	2.00	6 x 3-1/2	6.62	4.00	5.50
1 x 3/8	1.32	0.68	2.00	6 x 3	6.62	3.50	5.50
1-1/4 x 1	1.66	1.32	2.00	6 x 2-1/2	6.62	2.88	5.50
1-1/4 x 3/4	1.66	1.05	2.00	8 x 6	8.62	6.62	6.00
1-1/4 x 1/2	1.66	0.84	2.00	8 x 5	8.62	5.56	6.00
1-1/2 x 1-1/4	1.90	1.66	2.50	8 x 4	8.62	4.50	6.00
1-1/2 x 1	1.90	1.32	2.50	8 x 3-1/2	8.62	4.00	6.00
1-1/2 x 3/4	1.90	1.05	2.50	10 x 8	10.75	8.62	7.00
1-1/2 x 1/2	1.90	0.84	2.50	10 x 6	10.75	6.62	7.00
2 x 1-1/2	2.38	1.90	3.00	10 x 5	10.75	5.56	7.00
2 x 1-1/4	2.38	1.66	3.00	10 x 4	10.75	4.50	7.00
2 x 1	2.38	1.32	3.00	12 x 10	12.75	10.75	8.00
2 x 3/4	2.38	1.05	3.00	12 x 8	12.75	8.62	8.00
2-1/2 x 2	2.88	2.38	3.50	12 x 6	12.75	6.62	8.00
2-1/2 x 1-1/2	2.88	1.90	3.50	12 x 5	12.75	5.56	8.00
2-1/2 x 1-1/4	2.88	1.66	3.50	14 x 12	14.00	12.75	13.00
2-1/2 x 1	2.88	1.32	3.50	14 x 10	14.00	10.75	13.00
3 x 2-1/2	3.50	2.88	3.50	14 x 8	14.00	8.62	13.00
3 x 2	3.50	2.88	3.50	14 x 6	14.00	6.62	13.00
3 x 1-1/2	3.50	1.90	3.50	16 x 14	16.00	14.00	14.00
3 x 1-1/4	3.50	1.66	3.50	16 x 12	16.00	12.75	14.00
3 x 1/2 x 3	4.00	3.50	4.00	16 x 10	16.00	10.75	14.00
3 x 1/2 x 2-1/2	4.00	2.88	4.00	16 x 8	16.00	8.62	14.00
3-1/2 x 2	4.00	2.38	4.00	18 x 16	18.00	16.00	15.00
3-1/2 x 1-1/2	4.00	1.90	4.00	18 x 14	18.00	14.00	15.00
3-1/2 x 1-1/4	4.00	1.66	4.00	18 x 12	18.00	12.75	15.00
4 x 3-1/2	4.50	4.00	4.00	18 x 10	18.00	10.75	15.00
4 x 3	4.50	3.50	4.00	20 x 18	20.00	18.00	20.00
4 x 2-1/2	4.50	2.88	4.00	20 x 16	20.00	16.00	20.00
4 x 2	4.50	2.38	4.00	20 x 14	20.00	14.00	20.00
4 x 1-1/2	4.50	1.90	4.00	20 x 12	20.00	12.75	20.00
5 x 4	5.56	4.50	5.00	24 x 20	24.00	20.00	20.00
5 x 3-1/2	5.56	4.00	5.00	24 x 18	24.00	18.00	20.00
5 x 3	5.56	3.50	5.00	24 x 16	24.00	16.00	20.00
5 x 2-1/2	5.56	2.88	5.00				
5 x 2	5.56	2.38	5.00				

ANNEX A

Referenced Standards and Applicable Dates

This Annex is an integral part of this Standard Practice and is placed after the main text for convenience.

Standard Name or Description

ASME, ANSI/ASME, ANSI, ASME/ANSI

ASME B16.9 – 2003 Factory-Made Wrought Steel Butt welding Fittings
ASME B36.10M – 2004 Welded and Seamless Wrought Steel Pipe
ASME B36.19M – 2004 Stainless Steel Pipe

MSS

SP-25-1998 – Standard Marking System for Valves, Fittings, Flanges and Unions

Publications of the following organizations appear in the above list:

AISI	American Iron and Steel Institute 1101 17th Street, N.W. Washington, D.C. 20036-4700
ANSI	American National Standards Institute 25 West 43rd Street New York, NY 10036
ASME	ASME International Three Park Avenue New York, NY 10016-5990
ASTM	ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. 127 Park Street, N.E. Vienna, VA 22180-4602

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

Number	
SP-6-2007	Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings
SP-9-2008	Spot Facing for Bronze, Iron and Steel Flanges
SP-25-2008	Standard Marking System for Valves, Fittings, Flanges and Unions
SP-42-2004	Class 150 Corrosion Resistant Gate, Globe, Angle and Check Valves with Flanged and Butt Weld Ends
SP-43-2008	Wrought and Fabricated Butt-Welding Fittings for Low Pressure, Corrosion Resistant Applications
SP-44-2006	Steel Pipeline Flanges
SP-45-2003	(R 08) Bypass and Drain Connections
SP-51-2007	Class 150LW Corrosion Resistant Flanges and Cast Flanged Fittings
SP-53-1999	(R 07) Quality Standard for Steel Castings and Forgings for Valves, Flanges and Fittings and Other Piping Components - Magnetic Particle Examination Method
SP-54-1999	(R 07) Quality Standard for Steel Castings for Valves, Flanges, and Fittings and Other Piping Components - Radiographic Examination Method
SP-55-2006	Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components - Visual Method for Evaluation of Surface Irregularities
SP-58-2002	Pipe Hangers and Supports - Materials, Design and Manufacture
SP-60-2004	Connecting Flange Joint Between Tapping Sleeves and Tapping Valves
SP-61-2003	Pressure Testing of Steel Valves
SP-65-2008	High Pressure Chemical Industry Flanges and Threaded Stubs for Use with Lens Gaskets
SP-67-2002a	Butterfly Valves
SP-68-1997	(R 04) High Pressure Butterfly Valves with Offset Design
SP-69-2003	Pipe Hangers and Supports - Selection and Application (ANSI/MSS Edition)
SP-70-2006	Gray Iron Gate Valves, Flanged and Threaded Ends
SP-71-2005	Gray Iron Swing Check Valves, Flanged and Threaded Ends
SP-72-1999	Ball Valves with Flanged or Butt-welding Ends for General Service
SP-75-2004	Specification for High Test Wrought Butt Welding Fittings
SP-77-1995	(R 00) Guidelines for Pipe Support Contractual Relationships
SP-78-2005a	Gray Iron Plug Valves, Flanged and Threaded Ends
SP-79-2004	Socket-Welding Reducer Inserts
SP-80-2008	Bronze Gate, Globe, Angle and Check Valves
SP-81-2006a	Stainless Steel, Bonnetless, Flanged, Knife Gate Valves
SP-83-2006	Class 3000 Steel Pipe Unions, Socket-Welding and Threaded
SP-85-2002	Gray Iron Globe & Angle Valves, Flanged and Threaded Ends
SP-86-2002	Guidelines for Metric Data in Standards for Valves, Flanges, Fittings and Actuators
SP-88-1993	(R 01) Diaphragm Valves
SP-89-2003	Pipe Hangers and Supports - Fabrication and Installation Practices
SP-90-2000	Guidelines on Terminology for Pipe Hangers and Supports
SP-91-1992	(R 96) Guidelines for Manual Operation of Valves
SP-92-1999	MSS Valve User Guide
SP-93-1999	(R 04) Quality Standard for Steel Castings and Forgings for Valves, Flanges, and Fittings and Other Piping Components - Liquid Penetrant Examination Method
SP-94-1999	(R 04) Quality Std for Ferritic and Martensitic Steel Castings for Valves, Flanges, and Fittings and Other Piping Components - Ultrasonic Examination Method
SP-95-2006	Swage(d) Nipples and Bull Plugs
SP-96-2001	(R 05) Guidelines on Terminology for Valves and Fittings
SP-97-2006	Integrally Reinforced Forged Branch Outlet Fittings - Socket Welding, Threaded and Buttwelding Ends
SP-98-2001	(R 05) Protective Coatings for the Interior of Valves, Hydrants, and Fittings
SP-99-1994	(R 05) Instrument Valves
SP-100-2002	Qualification Requirements for Elastomer Diaphragms for Nuclear Service Diaphragm Valves
SP-101-1989	(R 01) Part-Turn Valve Actuator Attachment - Flange and Driving Component Dimensions and Performance Characteristics
SP-102-1989	(R 01) Multi-Turn Valve Actuator Attachment - Flange and Driving Component Dimensions and Performance Characteristics
SP-104-2003	Wrought Copper Solder Joint Pressure Fittings
SP-105-1996	(R 05) Instrument Valves for Code Applications
SP-106-2003	Cast Copper Alloy Flanges and Flanged Fittings, Class 125, 150 and 300
SP-108-2002	Resilient-Seated Cast-Iron Eccentric Plug Valves
SP-109-1997	(R 06) Welded Fabricated Copper Solder Joint Pressure Fittings
SP-110-1996	Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends
SP-111-2001	(R 05) Gray-Iron and Ductile-Iron Tapping Sleeves
SP-112-1999	(R 04) 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. Additional Comparators may be sold separately.
SP-113-2001	(R 07) Connecting Joint between Tapping Machines and Tapping Valves
SP-114-2007	Corrosion Resistant Pipe Fittings Threaded and Socket Welding, Class 150 and 1000
SP-115-2006	Excess Flow Valves, 1 1/4 NPS and Smaller, for Fuel Gas Service
SP-116-2003	Service Line Valves and Fittings for Drinking Water Systems
SP-117-2006	Bellows Seals for Globe and Gate Valves
SP-118-2007	Compact Steel Globe & Check Valves - Flanged, Flangeless, Threaded & Welding Ends (Chemical & Petroleum Refinery Service)
SP-119-2003	Factory-Made Belled End Socket Welding Fittings
SP-120-2006	Flexible Graphite Packing System for Rising Stem Steel Valves (Design Requirements)
SP-121-2006	Qualification Testing Methods for Stem Packing for Rising Stem Steel Valves
SP-122-2005	Plastic Industrial Ball Valves
SP-123-1998	(R 06) Non-Ferrous Threaded and Solder-Joint Unions for Use with Copper Water Tube
SP-124-2001	Fabricated Tapping Sleeves
SP-125-2000	Gray Iron and Ductile Iron In-Line, Spring-Loaded, Center-Guided Check Valves
SP-126-2007	Steel In-Line Spring-Assisted Center Guided Check Valves
SP-127-2001	Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection, Application
SP-128-2006	Ductile Iron Gate Valves
SP-129-2003	(R 07) Copper-Nickel Socket-Welding Fittings and Unions
SP-130-2003	Bellows Seals for Instrument Valves
SP-131-2004	Metallic Manually Operated Gas Distribution Valves
SP-132-2004	Compression Packing Systems for Instrument Valves
SP-133-2005	Excess Flow Valves for Low Pressure Fuel Gas Appliances
SP-134-2006a	Valves for Cryogenic Service Including Requirements for Body/Bonnet Extensions
SP-135-2006	High Pressure Steel Knife Gate Valves
SP-136-2007	Ductile Iron Swing Check Valves
SP-137-2007	Quality Standard for Positive Material Identification of Metal Valves, Flanges, Fittings, and Other Piping Components
(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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