

**MSS SP-43-2008**

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

**Standard Practice**

**Developed and Approved by the  
Manufacturers Standardization Society of the  
Valve and Fittings Industry, Inc.**

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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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## **ERRATA SHEET FOR MSS SP-43-2008**

February 25, 2010

**Note the following corrections:**

1. Page 7, Table 4, Dimensions of Lap-Joint Stub Ends and Caps. Under Nominal Pipe Size (NPS) 4, the "G" Dimension should read 6.19 instead of existing 5.50.
2. Page 7, Table 4, Dimensions of Lap-Joint Stub Ends and Caps. Under NPS 4, the "A" *Nominal and Max* Dimension should read 0.44 instead of existing 0.38.
3. Page 8, Table 5, Dimensions of Long Radius 180 Degree Returns. Under NPS 3/4, the "O" Dimension should read 3.00 instead of existing 2.25.
4. Page 8, Table 5, Dimensions of Long Radius 180 Degree Returns. Under NPS 3/4, the "K" Dimension should read 2.00 instead of existing 1.69.
5. Page 9, Table 6, Dimensions of Concentric and Eccentric Reducers. Under NPS 3 x 2, the "Small End" Dimension should read 2.38 instead of existing 2.88.
6. Page 9, Table 6, Dimensions of Concentric and Eccentric Reducers. The NPS type should read "3-1/2 x 3" instead of existing "3 x 1/2 x 3".
7. Page 9, Table 6, Dimensions of Concentric and Eccentric Reducers. The NPS type should read "3-1/2 x 2-1/2" instead of existing "3 x 1/2 x 2-1/2".

Inserted Errata Sheet for this Standard Practice.

Future printing of this Standard Practice will include this Errata Sheet until the next revision and then the data will be incorporated into the content of this Standard Practice.

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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.