

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 Standard Practice, other standards referred to herein are identified by the date of issue that was applicable to this Standard Practice at the date of issue of this Standard Practice. See Annex A. This Standard Practice shall remain silent on the applicability of those other standards of prior or subsequent dates of issue even though applicable provisions may not have changed. References contained herein which are bibliographic in nature are noted as 'supplemental' in the text."

In this Standard Practice all notes, annexes, tables, and figures are construed to be essential to the understanding of the message of the Standard Practice, and are considered part of the text unless noted as "supplemental". All appendices, if included, that appear in this document are construed as "supplemental". Supplemental information does not include mandatory requirements for this Standard Practice.

U.S. customary units in this Standard Practice are the standard; (SI) metric units are for reference only.

This document has been substantially revised from the previous 1996 and 2003 editions. 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.

Any part of this Standard Practice may be quoted. Credit lines should read 'Extracted from MSS SP-119-2010 with permission of the publisher, Manufacturers Standardization Society of the Valves and Fittings Industry, Inc.'. Reproduction is prohibited under copyright convention unless written permission is granted by Manufacturers Standardization Society of the Valve and Fittings Industry Inc.

Originally Approved: November 1996
Originally Published: January 1997
Current Edition Approved: May 2010
Current Edition Published: September 2010

Copyright ©, 1997, 2003, 2010 by
Manufacturers Standardization Society
of the
Valve and Fittings Industry, Inc.
Printed in U.S.A.

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 standard (Schedule 40) wall and heavier as it was developed for carbon steel and those grades of alloy steel piping that are selected for pressure and temperature considerations. In 1949 ASME approved standard B36.19 for Stainless Steel Pipe in which Schedule 10S was established. Schedule 5S pipe was recognized in the 1952 publication of B36.19. The companion fittings for Schedule 10S pipe used B16.9 shapes and proportions and were standardized by MSS SP-43, which was first published in 1950. In anticipation, the original 1950 edition of MSS SP-43 also standardized Schedule 5S fittings.

Since 1950 the use of lighter than standard wall stainless steel piping in new construction has become predominant. The reasons for this evolution include the rapid expansion of the process industries in the fields of chemicals, plastics, textiles, paper, etc.

Coincident with the greater utilization of light wall pipe and of more capable metal forming machinery, the need to reduce pipe assembly fabrication times brought about by world market competition led to the development of belled end socket welding fittings. As with the development of MSS SP-43, the shapes and proportions for B16.9 were reused for the belled end fitting bodies to the maximum extent possible.

In 1992 first work on belled end fittings for this Standard Practice included defining socket proportions, socket to fitting body transition geometry, fitting thickness, and determining the ability of U.S. industry to support manufacturing. Some of this work only standardized service proven relationships used in belled end fittings made for the pulp and paper industry without standards for over 20 years. In 1994 the U.S. Navy funded burst and fatigue testing prototype fittings in the first of a two-phase program. The second phase was for an increased thickness fitting and was never done. In 1995 mid-way through testing, the Navy directed that these belled end fittings be used on ship systems in new construction followed shortly thereafter by direction to use them on the repair of ship systems. The quality and configuration control of these fittings was done by an interim document, the requirements of which, with some improvements, are contained herein.

In keeping with trends wherein military procurement activities have been using more commercial material standards and because of recognized fabrication economies related to the use of these fittings, the U.S. Navy sponsored the writing of the 1996 edition of this Standard Practice in cooperation with fitting manufacturers.

This Standard Practice established dimensional uniformity for light wall belled end socket welding fitting designs qualified by burst and fatigue testing for Military Service and qualified by burst testing for Commercial Code Practice.

The most significant changes in the 2003 revision included the following: 1) A new definition for allowable pressure ratings for MP fittings (Section 6), which adopts the B16.9 format rating the fitting the same as the connecting pipe of the same schedule; 2) The addition of titanium and aluminum fitting materials; and 3) The addition of the Supplementary Requirements (Section 18, now 17), which supports Navy special requirements.

The most significant changes in this 2010 revision include the following: 1) The extension of the SCOPE to include heavier wall fittings; 2) The relocation of the CR fitting requirements from the body of the Standard Practice to that of a Supplementary Requirement; 3) The addition of all the combinations of reducing fittings included in B16.9; and, 4) The addition of a reference line on the socket end to enable inspectors to measure the installation weld length – as a Supplementary Requirement. The title of this 2010 revised Standard Practice has also been amended.

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1 SCOPE	1
2 REFERENCES.....	1
3 DEFINITIONS.....	1
4 CLASSIFICATIONS	2
5 PRESSURE RATINGS.....	2
6 FITTING DESIGN.....	2
7 MANUFACTURING METHOD PROOF TESTING	3
8 PRODUCTION TESTING	4
9 MATERIALS.....	4
10 WELDING AND WELD INSPECTIONS	5
11 FITTING TOLERANCES, DIMENSIONS AND LAY-OUT DISTANCES	5
12 SOCKET AND COUPLING END FACES.....	6
13 PIPE JOINT FILLET WELD.....	6
14 FINISH.....	6
15 STRESS RELIEVING TREATMENT	7
16 MARKING.....	7
17 SUPPLEMENTARY REQUIREMENTS.....	8

FIGURE

1	Joint Fillet Weld	6
---	-------------------------	---

TABLE

1	Fitting Material Classes	11
2	Tolerances and Minimum Wall Thickness	12
3	Socket Dimensions	13
4	Long (Standard) Radius Elbow Dimensions.....	14
5	Short Radius Elbow Dimensions	15
6	Long (Standard) Radius Street Elbow Dimensions	16
7	Short Radius Street Elbow Dimensions.....	17
8	Straight Tee Dimensions.....	18
9	Reducing Branch Tee Dimensions.....	19
10	Straight Thermo-well Tee Dimensions.....	20
11	Angle Thermo-well Tee Dimensions.....	21
12	Concentric Reducer Dimensions	22
13	Concentric Street Reducer Dimensions	23
14	Eccentric Reducer Dimensions.....	24
15	Cap Dimensions.....	25
16	Standard Coupling Dimensions	26
17	Closure Coupling Dimensions.....	27
18	Closure Repair Coupling Dimensions	28

ANNEX

A	Referenced Standards and Applicable Dates	29
---	---	----