

Socket-Welding Reducer Inserts

Standard Practice
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The SI (metric) units and U.S. customary units in this Standard Practice are regarded separately as the standard; each should be used independently of the other. Combining or converting values between the two systems may result in non-conformance with this Standard Practice.

This document has been substantively revised from the previous 2011 edition. It is suggested that if the user is interested in knowing what changes have been made, direct page by page comparison should be made of this document and that of the previous edition.

Non-toleranced dimensions in this Standard Practice are nominal unless otherwise specified.

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FOREWORD

The original 1974 edition established a Standard Practice for Socket-Welding Reducer Inserts that were produced by various manufacturers to varying dimensions, although basically similar in design principle.

The 2011 edition included the addition of Table 3M for SI (metric) dimensioned fittings. Other SI (metric) dimensions and the 2010 Errata Sheet were also incorporated into the 2011 edition.

This 2018 edition includes various formatting and editorial updates, general clarifications to body text, updating of fitting material requirements, expansion of fittings covered by this Standard Practice (Table 1), inclusion of NPS 1/8 (DN 6) values that may be used to determine the nominal wall thickness of the Schedule 160 pipe for rating purposes (Table 2), and revisions to Table 3 and Table 3M, including the addition of all remaining insert reducing sizes down through NPS 1/8 (DN 6).

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Manufacturers Standardization Society of the Valve and Fittings Industry

TABLE OF CONTENTS

SECTION

	PURPOSE	1
1	SCOPE	1
2	GENERAL	1
3	RATINGS	2
4	SIZE	3
5	MARKING.....	3
6	MATERIAL	3
7	DESIGN AND CAPABILITY	4
8	DIMENSIONS AND TOLERANCES	4
9	TESTING	5
10	FINISH	5
11	CORROSION PROTECTION	5
12	CAUTIONARY NOTE REGARDING INSTALLATION OF SOCKET-WELDING JOINTS	5

TABLE

1	Fitting Sizes/Pipe Correlation	1
2	Nominal Wall Thickness of Schedule 160 Pipe: NPS 1/8 (DN 6), NPS 1/4 (DN 8), and NPS 3/8 (DN 10)	2
3	Socket-Welding Reducer Insert Dimensions and Tolerances	6-8
3M	Socket-Welding Reducer Insert Dimensions and Tolerances SI (metric)	9-11

FIGURE

1	Welding Gap and Minimum Socket Wall Thickness	4
2	Gap Recommendations	5

ANNEX

A	Referenced Standards and Applicable Dates	12
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SOCKET-WELDING REDUCER INSERTS

PURPOSE

To provide a Standard Practice establishing requirements for insert type fittings, which effectively, after welded installation, creates a socket-welded reduced end fitting, such as a Tee, 90-degree Elbow (El), Cross, 45-degree Elbow (El), Coupling, etc.

1. SCOPE

1.1 **General** This Standard Practice covers ratings, dimensions, tolerances, finish, marking and material requirements for socket-welding reducer inserts for use with ASME B16.11, Class 3000 and 6000 socket-welding fittings. U.S. customary unit dimensions for these reducer inserts are shown in Table 3 and SI (metric) dimensions are shown in Table 3M.

1.1.1 **Fitting Sizes/Pipe Correlation** Fittings covered by this Standard Practice are shown in Table 1, by class, size range and correlation to the schedule number or wall designation of pipe for calculation of ratings.

TABLE 1
Fitting Sizes/Pipe Correlation

Class Designation	Sizes		Pipe Used For Rating Purposes	Wall Designation
	NPS	DN		
3000	1/8 – 4	6 – 100	Schedule 80	XS
6000	1/8 – 3	6 – 80	Schedule 160	—

GENERAL NOTE: This table is not included to restrict the use of pipe of thinner walls with the Reducer Inserts.

1.1.2 **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 Section 5.1.1(e).

1.1.3 **Welding** Installation welding requirements are not within the scope of this Standard Practice, except for:

- (1) The CAUTIONARY NOTE REGARDING INSTALLATION OF SOCKET-WELDED JOINTS (see Section 12)
- (2) The WELDING GAP AND MINIMUM SOCKET WALL THICKNESS (see Figure 1)
- (3) The GAP RECOMMENDATIONS (see Figure 2). Installation welding shall be done in accordance with the applicable piping system into which the fittings are to be installed.

2. GENERAL

2.1 **Referenced Standards** The standards and specifications referenced in this Standard Practice are shown in Annex A, which is a normative part of this Standard Practice. 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 Annex A. A fitting made in conformance and conforming to this Standard Practice in all other respects will be considered to be in conformance with this Standard Practice, even though the edition reference may have changed in a subsequent addendum to or revision of the standard.

2.2 **Codes or Regulations** A fitting used under the jurisdiction of the applicable and appropriate ASME Boiler and Pressure Vessel Code (BPVC), the ASME B31 Codes for Pressure Piping, or a governmental regulation, is subject to any limitation of that code(s) or regulation(s). This includes any maximum temperature limitation, or rule governing the use of material at low temperature, or provisions for operation at a pressure exceeding the pressure ratings in this Standard Practice.

2.3 **Service Conditions** Criteria for selection of fitting type and materials suitable for particular fluid service are not within the scope of this Standard Practice.

2.4 **Standard Units** The values stated in either U.S. customary units or SI (metric) units are to be regarded separately as standard. Within the text, the metric units are shown in parentheses. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in non-conformance with this Standard Practice.

3. RATINGS

3.1 **General** These fittings shall be designated as Class 3000 and Class 6000.

3.1.1 **Rating Basis** The schedule of pipe corresponding to each Class of fitting for rating purposes is shown in Table 1. Design temperature and other service conditions shall be limited as provided by the applicable piping code of regulation for the material of construction of the fitting. Within these limits the maximum allowable pressure of a fitting shall be that computed for straight seamless pipe of equivalent material (as shown by comparison of composition and mechanical properties in the respective material specifications). The wall thickness used in such computation shall be that tabulated in ASME B36.10M for the size and applicable manufacturing tolerances and other allowances.

Any corrosion allowance and any variation in allowable stress due to temperature or other design shall be applied to the pipe and the fitting alike.

3.1.2 **Non-Standard Pipe Wall Thickness** Since ASME B36.10M does not include Schedule 160 thickness for NPS 1/8 (DN 6), NPS 1/4 (DN 8), and NPS 3/8 (DN 10), the values in Table 2 may be used as the nominal wall thickness of the pipe for rating purposes.

TABLE 2

Nominal Wall Thickness of Schedule 160 Pipe: NPS 1/8 (DN 6), NPS 1/4 (DN 8), and NPS 3/8 (DN 10)

Sizes		Nom. Wall (in.)	Nom. Wall (mm)
NPS	DN		
1/8	6	0.124	3.15
1/4	8	0.145	3.68
3/8	10	0.158	4.01

3.2 **Pressure Test Capability** Pressure testing is not required by this Standard Practice; however, the fitting shall be capable of withstanding hydrostatic test pressure required by the applicable piping code for the seamless pipe material equivalent to the fitting and of the schedule or wall thickness correlated with fitting class.

4. SIZE

4.1 **General** The reducer insert size is identified by its nominal pipe size (NPS) or Nominal Diameter (DN), within the tables contained in this Standard Practice. The largest pipe size of the reducer insert shall be listed first, followed by the smaller pipe size. NPS is related to DN sizing, which is used in international standards. The relationship is as shown in the chart below:

NPS	1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	4
DN	6	8	10	15	20	25	32	40	50	65	80	100

5. MARKING

5.1 **General** Each fitting shall be permanently marked with the required identification by stamping, electro-etching, or vibro-tool marking. Fittings shall be marked on the Outside Diameter (O.D.), at the reduced opening end of the fitting, in a location such that the marking will not be obliterated as a result of welding installation.

5.1.1 **Specific Marking** The marking shall include (but not limited to) the following:

- a) Manufacturer's Name Trademark, or Logo
- b) Material Identification

Fittings shall be marked in accordance with requirements of either of the applicable ASTM Fitting Specification A234/A234M, A403/A403M, A420/A420M, A815/A815M or B366/B366M, or the appropriate ASTM Forging Specification(s) A105/A105M, A182/A182M, A350/A350M, B462, or B564.

The material log or heat number traceable to the material shall be part of the material identification.

- c) Class Designation 3000 or 6000 as applicable

Alternatively, the designation 3M or 6M, as applicable, may be used where "M" indicates 1000.

- d) Size

The nominal pipe size(s), (NPS or DN), related to the end connections.

- e) Product Conformance

Full compliance fittings shall be marked with the symbol "SP79" to denote conformance with this Standard Practice.

Partial compliance fittings covered in Section 1.1.2 shall not be marked "SP79" and if marked with an ASTM designation, the marking shall include the number of the applicable "Supplementary Requirement" (S58) for special or non-standard fittings, as per ASTM A960-S58.

5.2 **Omission of Markings** Where size and type of fitting do not permit all of the above markings, they may be omitted in the reverse order given above.

6. MATERIAL

6.1 The material for fittings shall consist of forgings, bar, seamless pipe, or tubular products, which conform to the requirements of WP seamless construction materials of the ASTM Fitting Specification A234/A234M, A403/A403M, A420/A420M, A815/A815M and/or B366/B366M, or the ASTM Forging Specification(s) A105/A105M, A182/A182M, A350/A350M, B462 or B564.

6.2 **Non-Standard Materials** When fittings of other materials reference this Standard Practice for Non-Standard coverage, they shall be marked as agreed between the manufacturer and purchaser and shall not include the identification specified in Section 5.1.1(b) and (c) of this Standard Practice.

7. DESIGN AND CAPABILITY

These reducers are to be used as a reducing adapter between a straight size socket-weld fitting and a smaller size pipe. By the nature of the part configuration, the minimum body wall thickness at the shank end will always be greater than the nominal wall thickness of the pipe, as established by ASME B36.10M with which they are used.

8. DIMENSIONS AND TOLERANCES

8.1 **General** The dimensions and tolerances for reducer inserts capable of meeting these requirements are shown in Table 3, U.S. customary units or Table 3M SI (metric) units.

8.1.1 Reducer ends shall be at right angles to the axis and provide adequate surface against which to weld (see Figure 1).

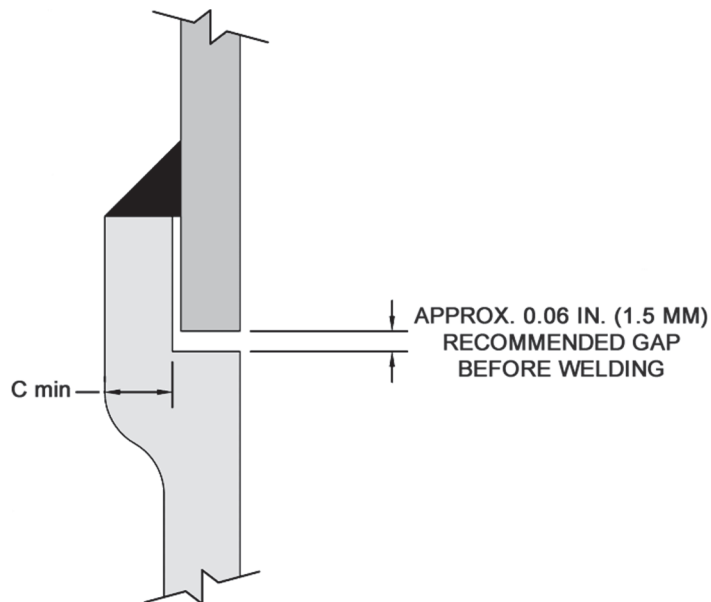


FIGURE 1

Welding Gap and Minimum Socket Wall Thickness

8.1.2 **Socket Depth** The socket depth shall be no less than the minimum values shown in Table 3 or Table 3M.

8.1.3 **Socket Bore** The inside surface of the socket bore shall present a workmanlike finish that is free of burrs.

8.1.4 **Minimum Wall** In order to provide the required shoulder for the fillet weld, the socket wall thickness at the welding end shall be at least 1.25 times the nominal thickness of the corresponding pipe shown in Table 3 or Table 3M, under column heading “Wall (Min.) C”.

U.S. customary inch tolerances are shown at the bottom of Table 3 and SI (metric) tolerances at the bottom of Table 3M.

8.2 **Additional Tolerances** Tolerances that are in addition to those listed in Table 3 or Table 3M are as follows:

- (a) **Concentricity of Bores** The socket and fitting bores shall be concentric within a tolerance of 0.03 inches (0.8 mm).
- (b) **Concentricity of Axes** The maximum allowable variation in the alignment of the fitting bore and socket bore axes shall be 0.06 inches in 1 foot (1.5 mm in 300 mm).

9. TESTING

9.1 **Proof Testing** Proof testing for fittings made from standard materials are not required by this Standard Practice.

10. FINISH

10.1 Surfaces must be free of sharp burrs and have a workmanship like finish.

11. CORROSION PROTECTION

11.1 Fittings shall be effectively protected against corrosion. Excess oils shall be considered unacceptable as corrosion protective media. Specialty protection shall be a matter of agreement between the manufacturer and purchaser.

12. CAUTIONARY NOTE REGARDING INSTALLATION OF SOCKET-WELDED JOINTS

12.1 To minimize the possibility of cracking of the fillet welds, it is recommended that the shank portion of the reducer insert be withdrawn approximately 0.06 inches (1.5 mm) away from contact with the bottom of the socket before starting the weld. Likewise, the pipe is to be kept away from contacting the bottom of the reducer insert socket before welding (see Figure 1).

12.2 To facilitate effective penetration in the fillet weld, it is further recommended that the Type 1 reducer insert be positioned to provide a root standoff of a minimum of 0.12 inches (3.0 mm). See Figure 2 below.

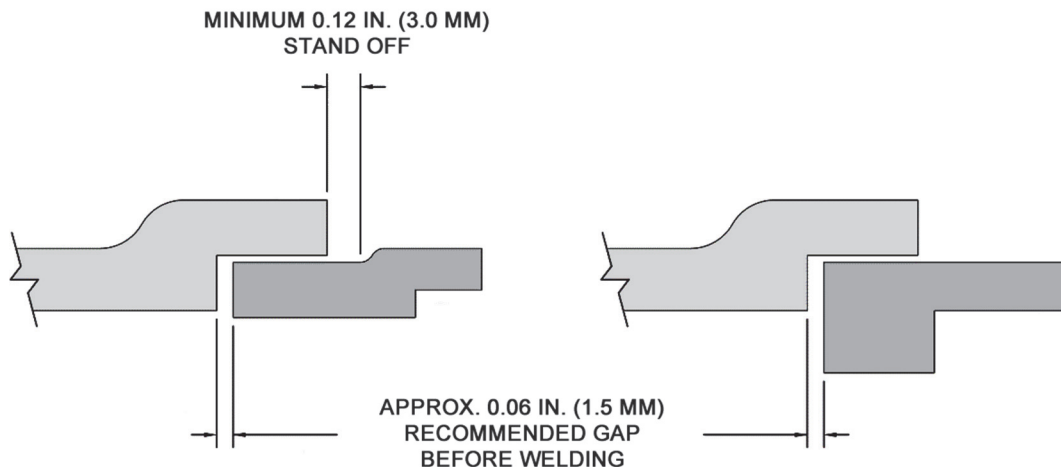
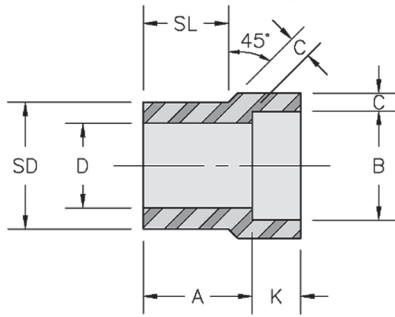
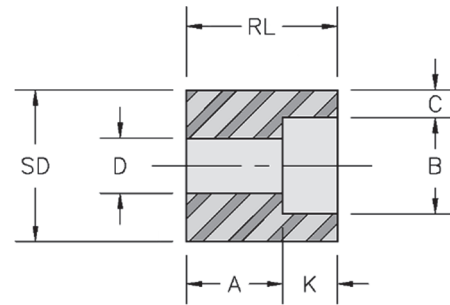


FIGURE 2
Gap Recommendations



TYPE 1



TYPE 2 (a)

TABLE 3
Socket-Welding Reducer Insert Dimensions and Tolerances

Dimensions in inches

NPS	Type (a)		Socket		Shank Dia. SD	Laying Length A		Bore D		Wall (Min.) C		Length			
			Dia. B	Depth (Min.) K		3M	6M	3M	6M	3M	6M	SL		RL (Min.)	
												3M	6M	3M	6M
1/4 x 1/8	1	1	0.430	0.38	0.540	0.75	0.81	0.269	0.157	0.125	0.156	0.56	0.62	-	-
3/8 x 1/4	1	1	0.565	0.38	0.675	0.75	0.84	0.364	0.250	0.149	0.181	0.56	0.62	-	-
3/8 x 1/8	1	1	0.430	0.38	0.675	0.75	0.84	0.269	0.157	0.125	0.156	0.56	0.62	-	-
1/2 x 3/8	1	1	0.700	0.38	0.840	0.81	0.91	0.493	0.359	0.158	0.198	0.62	0.62	-	-
1/2 x 1/4	1	1	0.565	0.38	0.840	0.81	0.81	0.364	0.250	0.149	0.181	0.62	0.62	-	-
1/2 x 1/8	1	1	0.430	0.38	0.840	0.81	0.81	0.269	0.157	0.125	0.156	0.62	0.62	-	-
3/4 x 1/2	1	1	0.865	0.38	1.050	0.88	1.00	0.622	0.464	0.184	0.235	0.69	0.75	-	-
3/4 x 3/8	2	1	0.700	0.38	1.050	0.62	0.88	0.493	0.359	0.158	0.198	-	0.75	1.06	-
3/4 x 1/4	2	2	0.565	0.38	1.050	0.69	0.88	0.364	0.250	0.149	0.181	-	-	1.06	1.26
3/4 x 1/8	2	2	0.430	0.38	1.050	0.69	0.88	0.269	0.157	0.125	0.156	-	-	1.06	1.26
1 x 3/4	1	1	1.075	0.50	1.315	0.94	1.12	0.824	0.612	0.193	0.274	0.75	0.81	-	-
1 x 1/2	2	1	0.865	0.38	1.315	0.62	1.12	0.622	0.464	0.184	0.235	-	0.81	1.12	-
1 x 3/8	2	2	0.700	0.38	1.315	0.69	0.88	0.493	0.359	0.158	0.198	-	-	1.12	1.31
1 x 1/4	2	2	0.565	0.38	1.315	0.75	0.94	0.364	0.250	0.149	0.181	-	-	1.12	1.31
1 x 1/8	2	2	0.430	0.38	1.315	0.75	0.94	0.269	0.157	0.125	0.156	-	-	1.12	1.31
1 1/4 x 1	1	1	1.340	0.50	1.660	1.00	1.19	1.049	0.815	0.224	0.312	0.81	0.88	-	-
1 1/4 x 3/4	2	2	1.075	0.50	1.660	0.69	0.81	0.824	0.612	0.193	0.274	-	-	1.25	1.37
1 1/4 x 1/2	2	2	0.865	0.38	1.660	0.75	0.88	0.622	0.464	0.184	0.235	-	-	1.25	1.37
1 1/4 x 3/8	2	2	0.700	0.38	1.660	0.81	0.94	0.493	0.359	0.158	0.198	-	-	1.25	1.37
1 1/4 x 1/4	2	2	0.565	0.38	1.660	0.88	1.00	0.364	0.250	0.149	0.181	-	-	1.25	1.37
1 1/4 x 1/8	2	2	0.430	0.38	1.660	0.88	1.00	0.269	0.157	0.125	0.156	-	-	1.25	1.37

(continued on next page)

TABLE 3
(continued)
Socket-Welding Reducer Insert Dimensions and Tolerances

Dimensions in inches

NPS	Type ^(a)		Socket		Shank Dia. SD	Laying Length A		Bore D		Wall (Min.) C		Length			
			Dia. B	Depth (Min.) K		3M	6M	3M	6M	3M	6M	SL		RL (Min.)	
	3M	6M										3M	6M	3M	6M
1½ x 1¼	1	1	1.685	0.50	1.900	1.12	1.38	1.380	1.160	0.239	0.312	0.88	1.00	–	–
1½ x 1	2	2	1.340	0.50	1.900	0.69	1.15	1.049	0.815	0.224	0.312	–	1.00	1.31	–
1½ x ¾	2	2	1.075	0.50	1.900	0.75	1.00	0.824	0.612	0.193	0.274	–	–	1.31	1.56
1½ x ½	2	2	0.865	0.38	1.900	0.81	1.06	0.622	0.464	0.184	0.235	–	–	1.31	1.56
1½ x 3/8	2	2	0.700	0.38	1.900	0.88	1.12	0.493	0.359	0.158	0.198	–	–	1.31	1.56
1½ x 1/4	2	2	0.565	0.38	1.900	0.88	1.12	0.364	0.250	0.145	0.181	–	–	1.31	1.56
1½ x 1/8	2	2	0.430	0.38	1.900	0.88	1.12	0.269	0.157	0.125	0.156	–	–	1.31	1.56

2 x 1½	1	1	1.925	0.50	2.375	1.25	1.53	1.610	1.338	0.250	0.351	1.00	1.13	–	–
2 x 1¼	2	2	1.685	0.50	2.375	0.81	0.94	1.380	1.160	0.239	0.312	–	–	1.50	1.62
2 x 1	2	2	1.340	0.50	2.375	0.88	1.00	1.049	0.815	0.224	0.312	–	–	1.50	1.62
2 x ¾	2	2	1.075	0.50	2.375	0.94	1.06	0.824	0.612	0.193	0.274	–	–	1.50	1.62
2 x ½	2	2	0.865	0.38	2.375	1.00	1.12	0.622	0.464	0.184	0.235	–	–	1.50	1.62
2 x 3/8	2	2	0.700	0.38	2.375	1.06	1.19	0.493	0.359	0.158	0.198	–	–	1.50	1.62
2 x 1/4	2	2	0.565	0.38	2.375	1.06	1.19	0.364	0.250	0.145	0.181	–	–	1.50	1.62
2 x 1/8	2	2	0.430	0.38	2.375	1.06	1.19	0.269	0.157	0.125	0.156	–	–	1.50	1.62

2½ x 2	1	1	2.416	0.62	2.875	1.81	1.68	2.067	1.687	0.273	0.430	1.50	1.25	–	–
2½ x 1½	2	2	1.925	0.50	2.875	1.38	1.38	1.610	1.338	0.250	0.351	–	–	2.12	2.12
2½ x 1¼	2	2	1.685	0.50	2.875	1.44	1.44	1.380	1.160	0.239	0.312	–	–	2.12	2.12
2½ x 1	2	2	1.340	0.50	2.875	1.50	1.50	1.049	0.815	0.224	0.312	–	–	2.12	2.12
2½ x ¾	2	2	1.075	0.50	2.875	1.56	1.50	0.824	0.612	0.193	0.274	–	–	2.12	2.12
2½ x ½	2	2	0.865	0.38	2.875	1.63	1.50	0.622	0.464	0.184	0.235	–	–	2.12	2.12
2½ x 3/8	2	2	0.700	0.38	2.875	1.69	1.56	0.493	0.359	0.158	0.198	–	–	2.12	2.12
2½ x 1/4	2	2	0.565	0.38	2.875	1.69	1.56	0.364	0.250	0.145	0.181	–	–	2.12	2.12
2½ x 1/8	2	2	0.430	0.38	2.875	1.69	1.56	0.269	0.157	0.125	0.156	–	–	2.12	2.12

3 x 2½	1	1	2.916	0.62	3.500	1.50	2.25	2.469	2.125	0.345	0.469	1.25	1.75	–	–
3 x 2	2	2	2.416	0.62	3.500	1.00	1.25	2.067	1.687	0.273	0.430	–	–	1.87	2.12
3 x 1½	2	2	1.925	0.50	3.500	1.12	1.25	1.610	1.338	0.250	0.351	–	–	1.87	2.12
3 x 1¼	2	2	1.685	0.50	3.500	1.19	1.25	1.380	1.160	0.239	0.312	–	–	1.87	2.12
3 x 1	2	2	1.340	0.50	3.500	1.25	1.25	1.049	0.815	0.224	0.312	–	–	1.87	2.12
3 x ¾	2	2	1.075	0.50	3.500	1.31	1.69	0.824	0.612	0.193	0.274	–	–	1.87	2.12
3 x ½	2	2	0.865	0.38	3.500	1.38	1.75	0.622	0.464	0.184	0.235	–	–	1.87	2.12
3 x 3/8	2	2	0.700	0.38	3.500	1.44	1.81	0.493	0.359	0.158	0.198	–	–	1.87	2.12
3 x 1/4	2	2	0.565	0.38	3.500	1.44	1.81	0.364	0.250	0.145	0.181	–	–	1.87	2.12
3 x 1/8	2	2	0.430	0.38	3.500	1.44	1.81	0.269	0.157	0.125	0.156	–	–	1.87	2.12

(continued on next page)

TABLE 3
(continued)
Socket-Welding Reducer Insert Dimensions and Tolerances

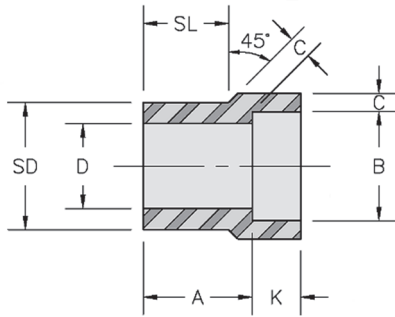
Dimensions in inches

NPS	Type ^(a)		Socket		Shank Dia. SD	Laying Length A		Bore D		Wall (Min.) C		Length			
			Dia. B	Depth (Min.) K		3M	6M	3M	6M	3M	6M	SL		RL (Min.)	
	3M	6M										3M	6M	3M	6M
4 x 3	2	1	3.545	0.62	4.500	1.31	2.56	3.068	2.625	0.375	0.548	-	1.75	2.38	-
4 x 2½	2	2	2.916	0.62	4.500	1.50	2.00	2.469	2.125	0.345	0.469	-	-	2.38	2.88
4 x 2	2	2	2.416	0.62	4.500	1.50	2.00	2.067	1.687	2.730	0.430	-	-	2.38	2.88
4 x 1½	2	2	1.925	0.50	4.500	1.62	2.13	1.610	1.338	0.250	0.351	-	-	2.38	2.88
4 x 1¼	2	2	1.685	0.50	4.500	1.69	2.19	1.380	1.160	0.239	0.312	-	-	2.38	2.88
4 x 1	2	2	1.340	0.50	4.500	1.75	2.25	1.049	0.815	0.224	0.312	-	-	2.38	2.88
4 x ¾	2	2	1.075	0.50	4.500	1.81	2.31	0.824	0.612	0.193	0.274	-	-	2.38	2.88
4 x ½	2	2	0.865	0.38	4.500	1.88	2.38	0.622	0.464	0.184	0.235	-	-	2.38	2.88
4 x 3/8	2	2	0.700	0.38	4.500	1.94	2.44	0.493	0.359	0.158	0.198	-	-	2.38	2.88
4 x ¼	2	2	0.565	0.38	4.500	1.94	2.44	0.364	0.250	0.145	0.181	-	-	2.38	2.88
4 x 1/8	2	2	0.430	0.38	4.500	1.94	2.44	0.269	0.157	0.125	0.156	-	-	2.38	2.88

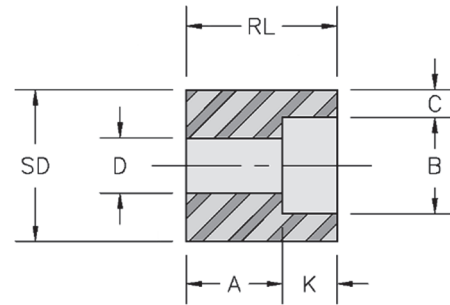
NOTE: (a) At the option of the manufacturer, Type 2 Reducers may be furnished in Type 1 configurations.

GENERAL NOTE: 3M and 6M symbols denote 3000 and 6000 Classes respectively.

TOLERANCES						
	NPS	in.		NPS	in.	
Laying Length "A"	1/4 – 3/4	+0.06/-0.00	Shank Dia. "SD"	1/4 – 3/4	+0.010/-0.010	
	1 – 2	+0.08/-0.00		2 – 3	+0.020/-0.020	
	2½ – 4	+0.10/-0.00		4	+0.030/-0.030	
Socket Dia. "B"	1/8 – 2	+0.010/-0.010		Shank Length "SL"	1/4 – 3/4	+0.00/-0.06
	2½ – 3	+0.015/-0.010			1 – 2	+0.00/-0.08
Bore "D"	1/8 – 2	+0.030/-0.030			2½ – 4	+0.00/-0.10
	2½ – 3	+0.060/-0.060				



TYPE 1



TYPE 2 (a)

TABLE 3M
Socket-Welding Reducer Insert Dimensions and Tolerances – SI (metric)

Dimensions in millimeters

DN	Type (a)		Socket		Shank Dia. SD	Laying Length A		Bore D		Wall (Min.) C		Length			
			Dia. B	Depth (Min.) K								SL		RL (Min.)	
	3M	6M				3M	6M	3M	6M	3M	6M				
8 x 6	1	1	11.0	9.5	13.7	19.0	21.3	6.9	4.0	3.18	3.96	14.2	15.7	–	–
10 x 8	1	1	14.4	9.5	17.1	19.0	21.3	9.2	6.3	3.78	4.60	14.2	15.7	–	–
10 x 6	1	1	11.0	9.5	17.1	19.0	21.3	6.9	4.0	3.18	3.96	14.2	15.7	–	–
15 x 10	1	1	17.8	9.5	21.3	20.6	23.0	12.5	9.1	4.01	5.03	15.7	15.7	–	–
15 x 8	1	1	14.4	9.5	21.3	20.6	20.6	9.2	6.3	3.78	4.60	15.7	15.7	–	–
15 x 6	1	1	11.0	9.5	21.3	20.6	20.6	6.9	4.0	3.18	3.96	15.7	15.7	–	–
20 x 15	1	1	22.0	9.5	26.7	22.4	25.4	15.8	11.7	4.67	5.97	17.5	19.0	–	–
20 x 10	2	1	17.8	9.5	26.7	15.7	22.4	12.5	9.1	4.01	5.03	–	19.0	26.9	–
20 x 8	2	2	14.4	9.5	26.7	17.5	22.4	9.2	6.3	3.78	4.60	–	–	26.9	32.0
20 x 6	2	2	11.0	9.5	26.7	17.5	22.4	6.9	4.0	3.18	3.96	–	–	26.9	32.0
25 x 20	1	1	27.4	12.5	33.4	23.9	28.4	20.9	15.5	4.90	6.96	19.0	20.6	–	–
25 x 15	2	1	22.0	9.5	33.4	15.7	28.4	15.8	11.7	4.67	5.97	–	20.6	28.4	–
25 x 10	2	2	17.8	9.5	33.4	17.5	22.4	12.5	9.1	4.01	5.03	–	–	28.4	33.2
25 x 8	2	2	14.4	9.5	33.4	19.0	23.9	9.2	6.3	3.78	4.60	–	–	28.4	33.2
25 x 6	2	2	11.0	9.5	33.4	19.0	23.9	6.9	4.0	3.18	3.96	–	–	28.4	33.2
32 x 25	1	1	34.1	12.5	42.2	25.4	30.2	26.6	20.7	5.69	7.92	20.6	22.4	–	–
32 x 20	2	2	27.4	12.5	42.2	17.5	20.6	20.9	15.5	4.90	6.96	–	–	31.7	34.7
32 x 15	2	2	22.0	9.5	42.2	19.0	22.4	15.8	11.7	4.67	5.97	–	–	31.7	34.7
32 x 10	2	2	17.8	9.5	42.2	20.6	23.9	12.5	9.1	4.01	5.03	–	–	31.7	34.7
32 x 8	2	2	14.4	9.5	42.2	22.4	25.4	9.2	6.3	3.78	4.60	–	–	31.7	34.7
32 x 6	2	2	11.0	9.5	42.2	22.4	25.4	6.9	4.0	3.18	3.96	–	–	31.7	34.7

(continued on next page)

TABLE 3M

(continued)

Socket-Welding Reducer Insert Dimensions and Tolerances – SI (metric)

Dimensions in millimeters

DN	Type ^(a)		Socket		Shank Dia. SD	Laying Length A		Bore D		Wall (Min.) C		Length			
			Dia. B	Depth (Min.) K		3M	6M	3M	6M	3M	6M	SL		RL (Min.)	
	3M	6M										3M	6M	3M	6M
40 x 32	1	1	42.9	12.5	48.2	28.4	35.0	35.0	29.4	6.07	7.92	22.4	25.4	–	–
40 x 25	2	2	34.1	12.5	48.2	17.5	29.2	26.6	20.7	5.69	7.92	–	25.4	33.2	–
40 x 20	2	2	27.4	12.5	48.2	19.0	25.4	20.9	15.5	4.90	6.96	–	–	33.2	39.6
40 x 15	2	2	22.0	9.5	48.2	20.6	26.9	15.8	11.7	4.67	5.97	–	–	33.2	39.6
40 x 10	2	2	17.8	9.5	48.2	22.4	28.4	12.5	9.1	4.01	5.03	–	–	33.2	39.6
40 x 8	2	2	14.4	9.5	48.2	22.4	28.4	9.2	6.3	3.78	4.60	–	–	33.2	39.6
40 x 6	2	2	11.0	9.5	48.2	22.4	28.4	6.9	4.0	3.18	3.96	–	–	33.2	39.6
50 x 40	1	1	49.0	12.5	60.3	31.8	38.9	40.8	33.9	6.35	8.92	25.4	28.7	–	–
50 x 32	2	2	42.9	12.5	60.3	20.6	23.9	35.0	29.4	6.07	7.92	–	–	38.1	41.1
50 x 25	2	2	34.1	12.5	60.3	22.4	25.4	26.6	20.7	5.69	7.92	–	–	38.1	41.1
50 x 20	2	2	27.4	12.5	60.3	23.9	26.9	20.9	15.5	4.90	6.96	–	–	38.1	41.1
50 x 15	2	2	22.0	9.5	60.3	25.4	28.4	15.8	11.7	4.67	5.97	–	–	38.1	41.1
50 x 10	2	2	17.8	9.5	60.3	26.9	30.2	12.5	9.1	4.01	5.03	–	–	38.1	41.1
50 x 8	2	2	14.4	9.5	60.3	26.9	30.2	9.2	6.3	3.78	4.60	–	–	38.1	41.1
50 x 6	2	2	11.0	9.5	60.3	26.9	30.2	6.9	4.0	3.18	3.96	–	–	38.1	41.1
65 x 50	1	1	61.4	16.0	73.0	46.0	42.7	52.4	42.8	6.93	10.92	38.1	31.8	–	–
65 x 40	2	2	49.0	12.5	73.0	35.0	35.0	40.8	33.9	6.35	8.92	–	–	53.8	53.8
65 x 32	2	2	42.9	12.5	73.0	36.6	36.6	35.0	29.4	6.07	7.92	–	–	53.8	53.8
65 x 25	2	2	34.1	12.5	73.0	38.1	38.1	26.6	20.7	5.69	7.92	–	–	53.8	53.8
65 x 20	2	2	27.4	12.5	73.0	39.6	38.1	20.9	15.5	4.90	6.96	–	–	53.8	53.8
65 x 15	2	2	22.0	9.5	73.0	41.4	38.1	15.8	11.7	4.67	5.97	–	–	53.8	53.8
65 x 10	2	2	17.8	9.5	73.0	42.9	39.6	12.5	9.1	4.01	5.03	–	–	53.8	53.8
65 x 8	2	2	14.4	9.5	73.0	42.9	39.6	9.2	6.3	3.78	4.60	–	–	53.8	53.8
65 x 6	2	2	11.0	9.5	73.0	42.9	39.6	6.9	4.0	3.18	3.96	–	–	53.8	53.8

(continued on next page)

TABLE 3M

(continued)

Socket-Welding Reducer Insert Dimensions and Tolerances – SI (metric)

Dimensions in millimeters

DN	Type ^(a)		Socket		Shank Dia. SD	Laying Length A		Bore D		Wall (Min.) C		Length			
			Dia. B	Depth (Min.) K		3M	6M	3M	6M	3M	6M	SL		RL (Min.)	
	3M	6M										3M	6M	3M	6M
80 x 65	1	1	74.1	16.0	88.9	38.1	57.2	62.7	54.0	8.76	11.91	31.8	44.4	–	–
80 x 50	2	2	61.4	16.0	88.9	25.4	31.8	52.4	42.8	6.93	10.92	–	–	47.4	53.8
80 x 40	2	2	49.0	12.5	88.9	28.4	31.8	40.8	33.9	6.35	8.92	–	–	47.4	53.8
80 x 32	2	2	42.9	12.5	88.9	30.2	31.8	35.0	29.4	6.07	7.92	–	–	47.4	53.8
80 x 25	2	2	34.1	12.5	88.9	31.8	31.8	26.6	20.7	5.69	7.92	–	–	47.4	53.8
80 x 20	2	2	27.4	12.5	88.9	33.3	42.9	20.9	15.5	4.90	6.96	–	–	47.4	53.8
80 x 15	2	2	22.0	9.5	88.9	35.1	44.5	15.8	11.7	4.67	5.97	–	–	47.4	53.8
80 x 10	2	2	17.8	9.5	88.9	36.6	46.0	12.5	9.1	4.01	5.03	–	–	47.4	53.8
80 x 8	2	2	14.4	9.5	88.9	36.6	46.0	9.2	6.3	3.78	4.60	–	–	47.4	53.8
80 x 6	2	2	11.0	9.5	88.9	36.6	46.0	6.9	4.0	3.18	3.96	–	–	47.4	53.8

100 x 80	2	1	90.0	16.0	114.3	33.3	65.0	77.9	66.7	9.52	13.92	–	44.5	60.4	–
100 x 65	2	2	74.1	16.0	114.3	38.1	50.8	62.7	54.0	8.76	11.91	–	–	60.4	73.2
100 x 50	2	2	61.4	16.0	114.3	38.1	50.8	52.4	42.8	6.93	10.92	–	–	60.4	73.2
100 x 40	2	2	49.0	12.5	114.3	41.1	54.1	40.8	33.9	6.35	8.92	–	–	60.4	73.2
100 x 32	2	2	42.9	12.5	114.3	42.9	55.6	35.0	29.4	6.07	7.92	–	–	60.4	73.2
100 x 25	2	2	34.1	12.5	114.3	44.5	57.2	26.6	20.7	5.69	7.92	–	–	60.4	73.2
100 x 20	2	2	27.4	12.5	114.3	46.0	58.7	20.9	15.5	4.90	6.96	–	–	60.4	73.2
100 x 15	2	2	22.0	9.5	114.3	47.8	60.5	15.8	11.7	4.67	5.97	–	–	60.4	73.2
100 x 10	2	2	17.8	9.5	114.3	49.3	62.0	12.5	9.1	4.01	5.03	–	–	60.4	73.2
100 x 8	2	2	14.4	9.5	114.3	49.3	62.0	9.2	6.3	3.78	4.60	–	–	60.4	73.2
100 x 6	2	2	11.0	9.5	114.3	49.3	62.0	6.9	4.0	3.18	3.96	–	–	60.4	73.2

NOTE: (a) At the option of the manufacturer, Type 2 Reducers may be furnished in Type 1 configurations.

GENERAL NOTE: 3M and 6M symbols denote 3000 and 6000 Classes respectively.

TOLERANCES						
	DN	mm		DN	mm	
Laying Length "A"	8 – 20	+1.5/-0.0		Shank Dia. "SD"	8 – 40	+0.3/-0.3
	25 – 50	+2.0/-0.0			50 – 80	+0.5/-0.5
	65 – 100	+2.5/-0.0			100	+0.8/-0.8
Socket Dia. "B"	6 – 50	+0.2/-0.2		Shank Length "SL"	8 – 20	+0.0/-1.5
	65 – 80	+0.3/-0.2			25 – 50	+0.0/-2.0
Bore "D"	6 – 50	+0.8/-0.8			65 – 100	+0.0/-2.5
	65 – 80	+1.5/-1.5				

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	Description
<u>ASME; ANSI/ASME</u>	
B31	Codes for Pressure Piping (including Sectional Code Standards)
B36.10M-2015	Welded and Seamless Wrought Steel Pipe
B16.11-2016	Forged Fittings, Socket-Welding and Threaded; includes Errata (2017)
BPVC	Boiler and Pressure Vessel Code
<u>ASTM</u>	
	Standard Specification for:
A105/A105M-14	Carbon Steel Forgings for Piping Applications
A182/A182M-18	Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High Temperature Service
A234/A234M-18	Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service
A350/A350M-18	Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components
A403/A403M-18	Wrought Austenitic Stainless Steel Piping Fittings
A420/A420M-16	Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service
A815/A815M-18	Wrought Ferritic, Ferritic/Austenitic, and Martensitic Stainless Steel Piping Fittings
A960/A960M-16a	Common Requirements for Wrought Steel Piping Fittings
B366/B366M-17	Factory-Made Wrought Nickel and Nickel Alloy Fittings
B462-15	Forged or Rolled UNS N06030, UNS N06022, UNS N06035, UNS N06200, UNS N06059, UNS N10362, UNS N06686, UNS N08020, UNS N08367, UNS N10276, UNS N10665, UNS N10675, UNS N10629, UNS N08031, UNS N06045, UNS N06025, UNS R20033 Alloy Pipe Flanges, Forged Fittings, and Valves and Parts for Corrosive High-Temperature Service
B564-17a	Nickel Alloy Forgings

The following organizations appear in the above list:

ANSI	American National Standards Institute 25 West 43 rd Street, Fourth Floor New York, NY 10036-7406
ASME	American Society of Mechanical Engineers (ASME International) Two Park Avenue New York, NY 10016-5990
ASTM	ASTM International 100 Barr Harbor Drive, P.O. Box C700 West Conshohocken, PA 19428-2959

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MSS Standard Practices (SPs) related to or referenced in this publication:

- ANSI/MSS SP-25 *Standard Marking System for Valves, Fittings, Flanges, and Unions*
ANSI/MSS SP-96 *Terminology for Valves, Fittings, and Their Related Components*

American National Standards Published by MSS, an ANSI-accredited Standards Developer:

- ANSI/MSS SP-25 *Standard Marking System for Valves, Fittings, Flanges, and Unions*
ANSI/MSS SP-44 *Steel Pipeline Flanges*
ANSI/MSS SP-55 *Quality Standard for Steel Castings for Valves, Flanges, Fittings, and Other Piping Components*
 – *Visual Method for Evaluation of Surface Irregularities*
ANSI/MSS SP-58 *Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation*
ANSI/MSS SP-96 *Terminology for Valves, Fittings, and Their Related Components*
ANSI/MSS SP-114 *Corrosion Resistant Pipe Fittings Threaded and Socket Welding Class 150 and 1000*
ANSI/MSS SP-122 *Plastic Industrial Ball Valves*
ANSI/MSS SP-134 *Valves for Cryogenic Service, including Requirements for Body/Bonnet Extensions*
ANSI/MSS SP-135 *High Pressure Knife Gate Valves*
ANSI/MSS SP-138 *Quality Standard Practice for Oxygen Cleaning of Valves and Fittings*
ANSI/MSS SP-144 *Pressure Seal Bonnet Valves*

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