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Designation: ~~F682 – 82a (Reapproved 2014)~~ F682 – 82a (Reapproved 2018)ε1 American National Standard

Standard Specification for Wrought Carbon Steel Sleeve-Type Pipe Couplings[1]

This standard is issued under the fixed designation F682; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers wrought carbon steel sleeve-type pipe couplings suitable for joining carbon steel pipes.

1.2 Type I couplings are intended for use on all schedules of pipe in which the pipe wall thickness does not exceed the wall thickness of standard weight pipe. Type II couplings are intended for use on all schedules of pipe in which the pipe wall thickness does not exceed the wall thickness of extra strong pipe.

1.3 This specification does not cover cast steel couplings.

NOTE 1—See Appendix X1 for rationale used to develop this specification.

1.4 ~~This specification does not cover cast steel couplings.~~ The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

~~NOTE 1—The values stated in inch-pound units are to be regarded as the standard.~~
~~NOTE 2—See Appendix X1 for rationale used to develop this specification.~~

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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2. Referenced Documents

2.1 *ASTM Standards:*[2]
A53/A53M Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
A106/A106M Specification for Seamless Carbon Steel Pipe for High-Temperature Service
A234/A234M Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service
A370 Test Methods and Definitions for Mechanical Testing of Steel Products
E59 Practice for Sampling Steel and Iron for Determination of Chemical Composition (Withdrawn 1996)[3]

2.2 *MMS Standards:*[4]
~~MSS-SP-25~~MSS-SP-25 Standard Marking System for Valves, Fittings, Flanges, and Unions

2.3 *ASME Boiler and Pressure Vessel Codes:*[5]
Section VIII Unfired Pressure Vessels
Section IX Welding Qualifications

2.4 *ASME Standards:*[5]
B16.5 Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard

[1] This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.11 on Machinery and Piping Systems.

Current edition approved ~~Aug. 1, 2014~~Sept. 1, 2018. Published ~~September 2014~~October 2018. Originally approved in 1980. Last previous edition approved in ~~2008~~2014 as F682 – 82a (~~2008~~)(2014). DOI: ~~10.1520/F0682-82AR14~~.10.1520/F0682-82AR18.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] The last approved version of this historical standard is referenced on www.astm.org.

[4] Available from Manufacturers Standardization Society of the Valve and Fittings Industry (MSS), 127 Park St., NE, Vienna, VA 22180-4602, http://www.mss-hq.org.

[5] Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, http://www.asme.org.

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2.5 *Federal Regulations:*[6]
Title 46 Code of Federal Regulations (CFR), Shipping, Parts 41 to 69
~~2.5 ANSI Standards:~~[7]
~~B16.5 Pipe Flanges and Flange Fittings~~

3. Classification

3.1 Couplings are furnished in two types as follows:
3.1.1 *Type I*—Couplings (see 1.2).
3.1.2 *Type II*—Couplings (see 1.2).

NOTE 2—Type II couplings may be used in place of Type I couplings for all schedules of pipe in which the pipe wall thickness does not exceed the wall thickness of standard weight piping through 18 in. or Schedule 40 piping through 16 in.

4. Ordering Information

4.1 Orders for material under this specification shall include the following information:
4.1.1 Quantity (number of couplings of each size and type),
4.1.2 Name of material (sleeve-type pipe couplings),
4.1.3 Size (nominal, see Table 1 and Table 2 and Fig. 1),
4.1.4 Type (see 3.1),
4.1.5 ASTM designation and date of issue.

5. Materials and Manufacture

5.1 *Materials*—The couplings shall be manufactured from material having a chemical composition conforming to the requirements of 7.1 and with the mechanical properties of Section 9.

5.2 *Manufacture*—The initial form of the raw material shall be at the discretion of the manufacturer except couplings shall not be machined from unformed plate. The material shall be such that the finished couplings conform to all of the specified requirements (see Appendix X2).

5.3 Couplings fabricated by welding shall be (*a*) made by welders, welding operators, and welding procedures qualified under the provisions of ASME Boiler and Pressure Vessel Code, Section IX; (*b*) heat treated in accordance with Section 6 of this specification; and (*c*) nondestructively tested as follows:

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TABLE 1 Dimensions for Type I Couplings (See Fig. 1)

Nominal Size, in.	Dimension A, ~~Inside~~ Inside Diameter, in. (mm)[A]	Dimension B, ~~Outside~~ Outside Diameter, in. (mm)[B]	Dimension C, ~~Thick-ness,~~Thickness, min, in. (mm)	Dimension D, Length, in. (mm)[C]
¼	0.589 (15.0)	0.875 (22.2)	0.143 (3.6)	1 (25)
⅜	0.724 (18.4)	0.992 (25.2)	0.134 (3.4)	1¼ (32)
½	0.889 (22.6)	1.201 (30.5)	0.156 (4.0)	1¼ (32)
¾	1.099 (27.9)	1.401 (35.6)	0.151 (3.8)	1½ (38)
1	1.364 (34.6)	1.710 (43.4)	0.173 (4.4)	1½ (38)
1¼	1.709 (43.4)	2.057 (52.2)	0.174 (4.4)	1½ (38)
1½	1.949 (49.5)	2.306 (58.6)	0.179 (4.5)	1½ (38)
2	2.424 (61.6)	2.807 (71.3)	0.192 (4.9)	1½ (38)
2½	2.924 (74.3)	3.444 (87.5)	0.260 (6.6)	1½ (38)
3	3.545 (90.0)	4.105 (104.3)	0.280 (7.1)	1½ (38)
3½	4.070 (103.4)	4.633 (117.7)	0.282 (7.2)	2 (51)
4	4.570 (116.1)	5.164 (131.2)	0.297 (7.5)	2 (51)
5	5.660 (143.8)	6.286 (159.7)	0.313 (8.0)	2 (51)
6	6.720 (170.7)	7.409 (188.2)	0.345 (8.8)	2 (51)
8	8.720 (221.5)	9.527 (242.0)	0.404 (10.3)	2½ (64)
10	10.880 (276.4)	11.875 (301.6)	0.498 (12.6)	2½ (64)
12	12.880 (327.2)	13.800 (350.5)	0.460 (11.7)	2½ (64)
14	14.140 (359.2)	15.050 (382.3)	0.455 (11.6)	2½ (64)
16	16.160 (410.5)	17.050 (433.1)	0.445 (11.3)	2½ (64)
18	18.180 (461.8)	19.050 (483.9)	0.435 (11.0)	2½ (64)

[A] Tolerances shall be (*1*) Sizes through 3 in. incl: +0.000, –0.010 in. (+0.000, –0.254 mm); (*2*) Sizes 3½ through 10 in. incl: +0.030, –0.000 in. (+0.762, –0.000 mm); and (*3*) Sizes above 10 in.: +0.060, –0.000 in. (+1.524, –0.000 mm).
[B] Tolerances shall be (*1*) Sizes through 10 in. incl: +0.125, –0.000 in. (+3.175, –0.000 mm) and (*2*) Sizes above 10 in.: +1.000, –0.000 in. (+25.4, –0.000 mm).
[C] Tolerances for all sizes shall be +0.250, –0.000 in. (+6.4, –0.000 mm).

[6] Available from ~~Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D,~~ DLA Document Services, Building 4/D, 700 Robbins Ave., Philadelphia, PA ~~19111-5098, http://dodssp.daps.dla.mil.~~19111-5094, http://quicksearch.dla.mil.

TABLE 2 Dimensions for Type II Couplings (See Fig. 1)

Nominal Size, in.	Dimension A, ~~Inside~~ Inside Diameter, in. (mm)[A]	Dimension B, ~~Outside~~ Outside Diameter, in. (mm)[B]	Dimension C, ~~Thick-ness,~~Thickness, min, in. (mm)	Dimension D, Length, in. (mm)[C]
¼	0.589 (15.0)	1.055 (26.8)	0.233 (5.9)	1 (25)
⅜	0.724 (18.4)	1.156 (29.4)	0.216 (5.5)	1¼ (32)
½	0.889 (22.6)	1.369 (34.8)	0.240 (6.1)	1¼ (32)
¾	1.099 (27.9)	1.557 (39.5)	0.229 (5.8)	1½ (38)
1	1.364 (34.6)	1.876 (47.7)	0.256 (6.5)	1½ (38)
1¼	1.709 (43.4)	2.221 (56.4)	0.256 (6.5)	1½ (38)
1½	1.949 (49.5)	2.469 (62.7)	0.260 (6.6)	1½ (38)
2	2.424 61.6)	2.986 (75.8)	0.281 (7.1)	1½ (38)
2½	2.924 (74.3)	3.648 (92.7)	0.362 (9.2)	1½ (38)
3	3.545 (90.0)	4.340 (110.2)	0.398 (10.1)	1½ (38)
3½	4.070 (103.4)	4.891 (124.2)	0.411 (10.4)	2 (51)
4	4.570 (116.1)	5.444 (138.3)	0.437 (11.1)	2 (51)
5	5.660 (143.8)	6.613 (168.0)	0.477 (12.1)	2 (51)
6	6.720 (170.7)	7.875 (200.0)	0.578 (14.7)	2 (51)
8	8.720 (221.5)	10.125 (257.2)	0.703 (17.8)	2½ (64)
10	10.880 (276.4)	12.150 (308.6)	0.635 (16.1)	2½ (64)
12	12.880 (327.2)	14.150 (359.4)	0.635 (16.1)	2½ (64)
14	14.140 (359.2)	15.400 (391.2)	0.630 (16.0)	2½ (64)
16	16.160 (410.5)	17.400 (442.0)	0.620 (15.7)	2½ (64)
18	18.180 (461.8)	19.400 (492.8)	0.610 (15.5)	2½ (64)

[A] Tolerances shall be (*1*) Sizes through 3 in. incl: +0.000, –0.010 in. (+0.000, –0.254 mm); (*2*) Sizes 3½ through 10 in. incl: +0.030, –0.000 in. (+0.762, –0.000 mm); and (*3*) Sizes above 10 in.: +0.060, –0.000 in. (+1.524, –0.000 mm).
[B] Tolerances shall be (*1*) Sizes through 10 in. incl: +0.125, –0.000 in. (+3.175, –0.000 mm) and (*2*) Sizes above 10 in.: +1.000, –0.000 in. (+25.4, –0.000 mm).
[C] Tolerances for all sizes shall be +0.250, –0.000 in. (+6.4, –0.000 mm).

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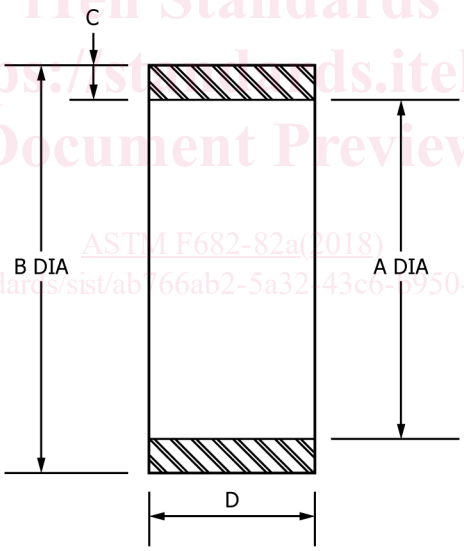

FIG. 1 Sleeve-Type Pipe Coupling

TABLE 3 Chemical Requirements

	Composition, max, %
Carbon	0.30
Manganese	1.20
Phosphorus	0.05
Sulfur	0.06

5.3.1 *Sizes 3-in. NPS and Below*—Radiographically examined throughout the entire length of each fabricated weld in accordance with Paragraph UW-51 of ASME Code, Section VIII.

5.3.2 *Sizes 3½-in. NPS Through 16-in. NPS*—No nondestructive tests required, and

5.3.3 *Sizes 18-in. NPS and Above*—Any method of nondestructive testing may be used provided the tests are conducted in accordance with the applicable parts of ASME Code, Section VIII.