



AMERICAN Ductile Iron Mechanical Joint Fittings

The principal standards covering full body mechanical joint fittings are ANSI/AWWA C110/A21.10 and ANSI/AWWA C111/A21.11. Compact ductile iron fittings are covered in ANSI/AWWA C153/A21.53. These and other standards are referenced throughout this Section either by the full ANSI/AWWA designation or by only the AWWA numbering, such as AWWA C110.

AMERICAN supplies a complete line of 4" through 48" mechanical joint fittings meeting the requirements of ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53 with the joint meeting the requirements of ANSI/AWWA C111/A21.11. Also included in this Section are fittings which are unusual as to size combination, joint combination, outlets, and other variations. These fittings are designated as "AMERICAN Standard" and comply with the applicable requirements of the ANSI/AWWA Standards.

Mechanical joint fittings have been used extensively in underground service with Fastite joint pipe as well as mechanical joint pipe. Since 48" is the maximum size mechanical joint, Fastite or Lok-Ring fittings are normally furnished with AMERICAN 54" and larger Fastite or Lok-Ring joint pipe.

While mechanical joint fittings have provided excellent service for decades, their use is currently being supplanted in many cases by Fastite, Flex-Ring, and Lok-Ring fittings. These fittings offer improved and less labor-intensive field assembly and performance, and their use should be considered in lieu of mechanical joint fittings in

most large-diameter applications. See Section 4.

When joint restraint is required underground or aboveground, several types of restrained joints are available from AMERICAN. See Sections 4 and 9.

The design of mechanical joint fittings is based on their use with pipe having outside diameters that are standard for mechanical joint and for Fastite joint pipe. In planning a mechanical joint connection to an old existing pipeline, the outside diameter should be carefully checked where connection is to be made.

Mechanical joint fittings are normally furnished complete with a gland, plain rubber gasket, and tee head alloy steel bolts with heavy hex nuts for each socket.

Ductile iron fittings for pressure ratings of 150, 250 and 350 psi are furnished as shown in the tables in this Section.

Fittings for water service are generally furnished with cement lining in accordance with AWWA C104 and with an outside asphaltic coating. They can also be furnished asphaltic coated or uncoated inside. For special conditions, other types of coatings and linings are available. See Section 11.



Installing a mechanical joint bend in a gravity sewer utilizing field-cut closure pieces to locate the fitting accurately.



General Notes Relating to Mechanical Joints

1. Fittings in the following tables with ANSI/AWWA Standards listed in the heading are as specified in those Standards. Fittings in tables with heading "AMERICAN Standard" are either not included in the ANSI/AWWA Standards or vary therefrom in weights and/or dimensions.

2. Fittings are manufactured of ductile iron grade 70-50-05 (minimum tensile strength: 70,000 psi; minimum yield strength: 50,000 psi; minimum elongation: 5%) as specified in AWWA C110.

3. Weights of accessories are not included in weights of fittings shown in tables unless specifically noted. Where "Assembled Weight" is shown, joint materials are shipped assembled on the fitting. For weights of accessories see Section 2.

4. Weights and dimensions of fittings can vary due to changes in foundry equipment.

5. Orientation of bolt holes in mechanical joint fittings with respect to any centerline* is not fixed. Where bolt holes are required to straddle the centerline of the fitting, this must be specified by the purchaser.

6. For allowable joint deflection of mechanical joints see Section 2.

7. Mechanical joint flanges can normally be furnished tapped for studs when specified by the purchaser. See Section 2, Table No. 2-15.

8. All pressure ratings shown are for water service.

9. The ANSI/AWWA C110/A21.10 thicknesses of most mechanical joint fittings shown in tables in this Section are the same thicknesses as Class "B" or "D" (most of them being Class "B") per the obsolete AWWA C100 Standard; these thicknesses and corresponding outside diameters are shown in Section 12, Table No. 12-1.

10. Some fittings are available with body metal thickness other than as shown in the tables. Some fittings are available in different sizes and with different size combinations than shown. Check AMERICAN regarding special requirements.

11. See Section 7 for AMERICAN specials.

12. Locations of taps in mechanical joint fittings should be designated as shown on page 6-5 for flanged fittings.

13. MJ connecting pieces (MJ-MJ, MJ-PE, MJ-Flg, and Flg-PE) are furnished by AMERICAN as fabricated piping and can be furnished in variable lengths. See Sections 7 and 8.

14. Fittings may be furnished by AMERICAN manufactured by others. Any such fittings will be manufactured in accordance with appropriate ANSI/AWWA or AMERICAN Standards.

15. Some configurations shown for both AWWA C110 and C153 may not be available both ways.

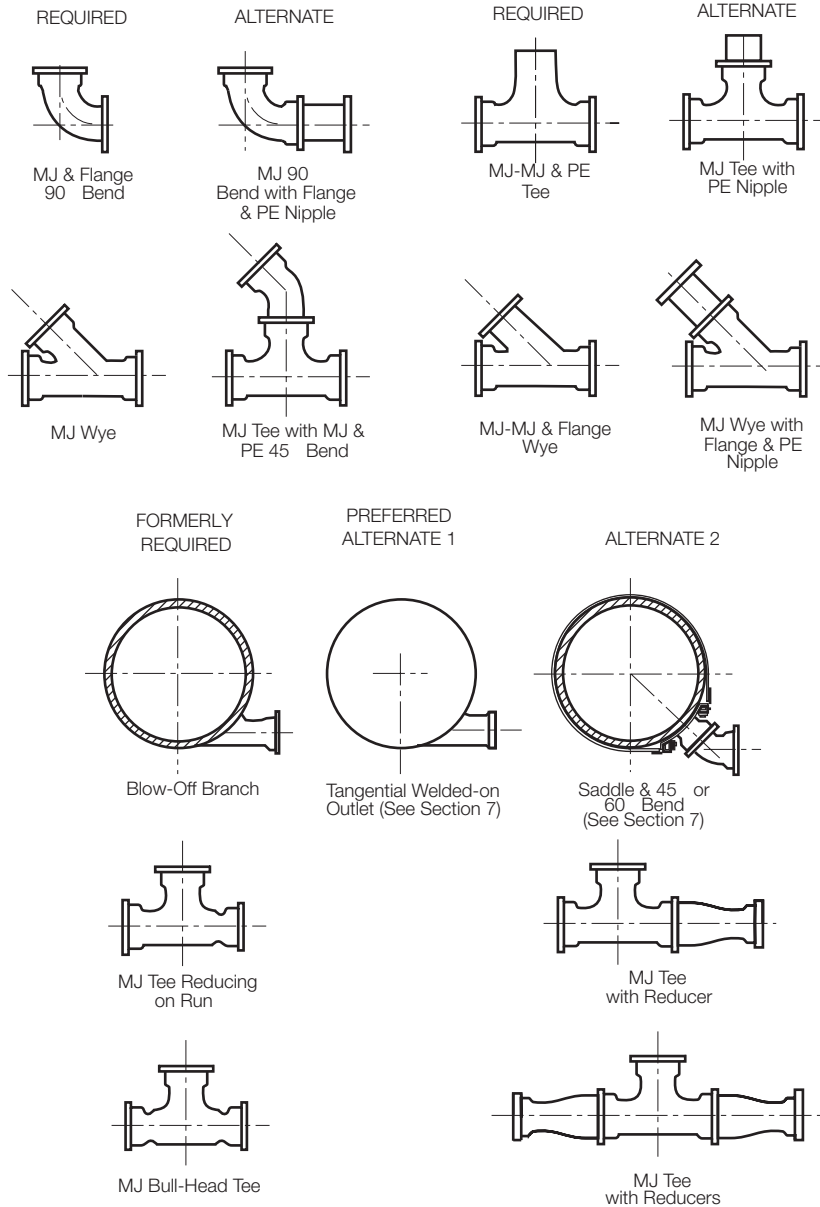
16. The thicknesses shown for C153 standard fittings are the nominal thicknesses shown in this standard. The shown lengths and center-to-socket dimensions of these fittings are minimum dimensions also in accordance with the C153 standard. Actual thicknesses of fittings will vary as allowed by the standard, and actual lengths and center-to-socket dimensions will generally be equal to or greater than those shown in the tables, all depending on foundry equipment.

17. AMERICAN manufactures 4" through 12" Mechanical Joint Ductile Iron pipe in accordance with AWWA C151 and AWWA C111 and Mechanical Joint fittings up through 48" in accordance with AWWA C153, AWWA C110, and AWWA C111, as described therein. However, AMERICAN does not warrant the performance of third-party mechanical retainer glands or joints using third-party retainer glands, since the design, manufacturing, and installation methods are beyond our control. AMERICAN does manufacture a number of restrained joints such as Fast-Grip®, Flex-Ring®, Field Flex-Ring®, Lok-Ring®, Flex-Lok®, and other devices, where we warrant the joint as well as the associated pipe and fittings of our manufacture.

*The normal but not universal practice is to have the bolt holes straddle the vertical centerline of a fitting, which is determined when the fitting is in the position to change the direction of fluid flowing in a horizontal plane. With standard base bends and standard base tees, the determination is made when the fitting is in position to change the direction of fluid flowing in a vertical plane.



AMERICAN Ductile Iron Mechanical Joint Fittings Applications of Standard Fittings



In many cases special fittings for various conditions are required; some of these are shown above in columns headed "Formerly Required." Under the columns headed "Preferred Alternate" are shown combinations of standard fittings which in some situations will provide the desired connection. For economy and availability it is often advantageous to use the standard fittings.



AMERICAN Ductile Iron Mechanical Joint Fittings

ANSI/AWWA C110 and C153 Mechanical Joint Dimensions

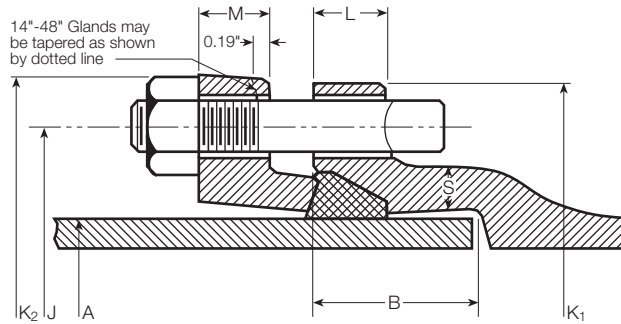


Table No. 5-1

Size in.	Dimensions in Inches									Bolts	
	A Plain End	B	J	K ₁	K ₂	L		M	S	No. per Joint	Size in.
						C110	C153				
4	4.80	2.50	7.50	9.38	9.12	1.00	.60	.75	.65	4	¾ x 3½
6	6.90	2.50	9.50	11.31	11.12	1.06	.63	.88	.70	6	¾ x 3½
8	9.05	2.50	11.75	13.63	13.37	1.12	.66	1.00	.75	6	¾ x 4
10	11.10	2.50	14.00	15.81	15.62	1.19	.70	1.00	.80	8	¾ x 4
12	13.20	2.50	16.25	18.06	18.00	1.25	.73	1.00	.85	8	¾ x 4
14	15.30	3.50	18.75	20.69	20.25	1.31	.79	1.25	.89	10	¾ x 4½
16	17.40	3.50	21.00	22.94	22.50	1.38	.85	1.31	.97	12	¾ x 4½
18	19.50	3.50	23.25	25.28	24.75	1.44	1.00	1.38	1.05	12	¾ x 4½
20	21.60	3.50	25.50	27.08	27.00	1.50	1.02	1.44	1.12	14	¾ x 4½
24	25.80	3.50	30.00	31.75	31.50	1.62	1.02	1.56	1.22	16	¾ x 5
30	32.00	4.00	36.88	39.12	39.12	1.81	-	2.00	1.50	20	1 x 6
36	38.30	4.00	43.75	46.00	46.00	2.00	-	2.00	1.80	24	1 x 6
42	44.50	4.00	50.62	53.12	53.12	2.00	-	2.00	1.95	28	1¼ x 6½
48	50.80	4.00	57.50	60.00	60.00	2.00	-	2.00	2.20	32	1¼ x 6½

For mechanical joints for pipe see Section 2.

For tolerances and additional dimensions see AWWA C111.

Bolt holes are 1/8" larger than the bolt diameters.

Mechanical Joint Retainer Gland designs (by others) often require longer than above standard bolting. See Sections 9 and 12 regarding alternative restrained joints, and also retainer gland applications.



AMERICAN Ductile Iron Mechanical Joint Fittings

ANSI/AWWA C110/A21.10 Mechanical Joint Plain End Standard Dimensions

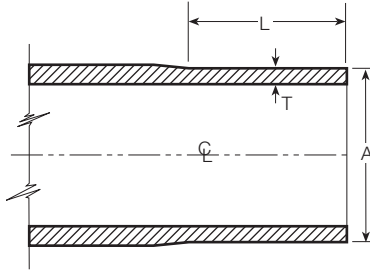


Table No. 5-2

Size in.	Dimensions in Inches			Weight of (8" long) Plain End lb
	A	T	L	
4	4.80	.47	5.5	13
6	6.90	.50	5.5	21
8	9.05	.54	5.5	30
10	11.10	.60	5.5	41
12	13.20	.68	5.5	56
14	15.30	.66	8.0	63
16	17.40	.70	8.0	76
18	19.50	.75	8.0	92
20	21.60	.80	8.0	109
24	25.80	.89	8.0	145
30	32.00	1.03	8.0	208
36	38.30	1.15	8.0	279
42	44.50	1.28	8.0	362
48	50.80	1.42	8.0	458

The "L" dimension is minimum length of the plain end which must be gauged to ensure the outside diameter is within the dimensions and tolerances required.
 The laying length of a plain end of an MJ fitting is 8" longer than the laying length of a bell end.
 Plain ends of fittings may be furnished with beveled ends for assembly with either Fastite or mechanical joints. However, if beveled ends are required they must be specified.