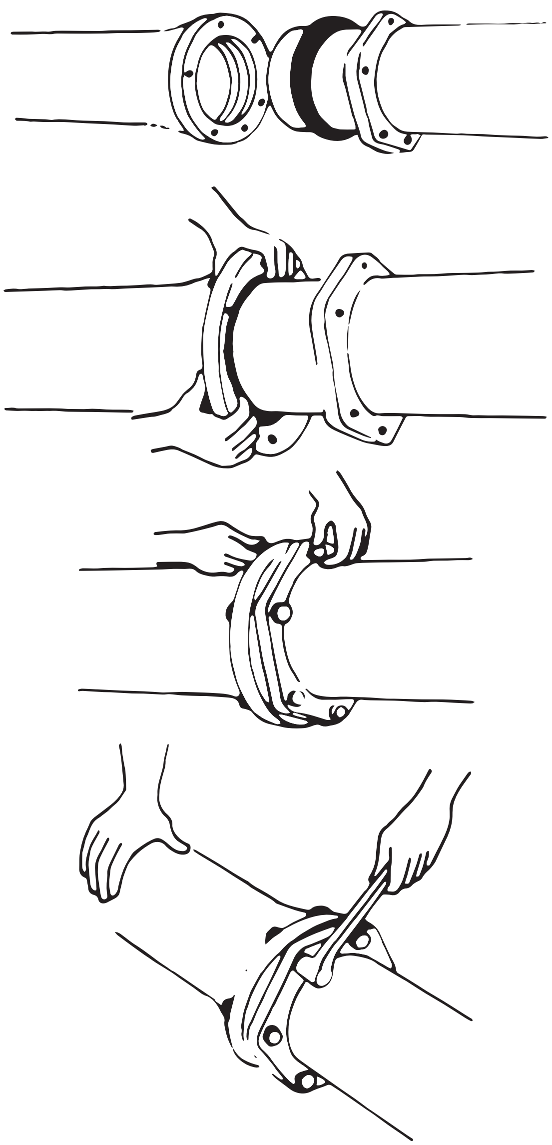
Mechanical Joint Installation

Mechanical Joint Assembly
From AWWA C600-17



1. Clean the socket and the plain end. Lubrication and additional cleaning should be provided by brushing both the gasket and the plain end with soapy water or an approved pipe lubrication meeting the requirement of ANSI/AWWA C111/A21.11.

   Just prior to slipping the gasket onto the plain end for joint assembly. Place the gland on the plain end with lip extension toward the plain end, followed by the gasket with the narrow edge of the gasket toward the plain end. [The gasket provided may have been the EBAA-SEAL® Improved Mechanical Joint Gasket, the EBAA-SEAL does not have a narrow edge and is bi-directional. It's use with certain sizes of MEGALUGS® is required to achieve the rated pressure.]

   NOTE: In cold weather it is preferable to warm the gasket to facilitate assembly of the joint.

2. Insert the pipe into the socket and press the gasket firmly and evenly into the gasket recess. Keep the joint straight during assembly.

3. Push the gland toward the socket and center it around the pipe with the gland lip against the gasket. Insert bolts and hand tighten nuts. Make deflection after joint assembly but before tightening bolts.

4. Tighten the bolts to the normal range of torque as indicated [3-inch 45-60 ft.-lbs., 4 through 24-inch 75-90 ft-lbs., 30 and 36-inch 100-120 ft.-lbs., and 42, 48 and 54-inch 120-150 ft.-lbs.] while at all times maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. This can be accomplished by partially tightening the bottom bolt first, then top bolt, next the bolts at either side, finally the remaining bolts. Repeat the process until all bolts are within the appropriate range of torque. In large sizes (30-64 inch [762-1,600mm]), five or more repetitions may be required. The use of a torque-indicating wrench will facilitate this procedure.

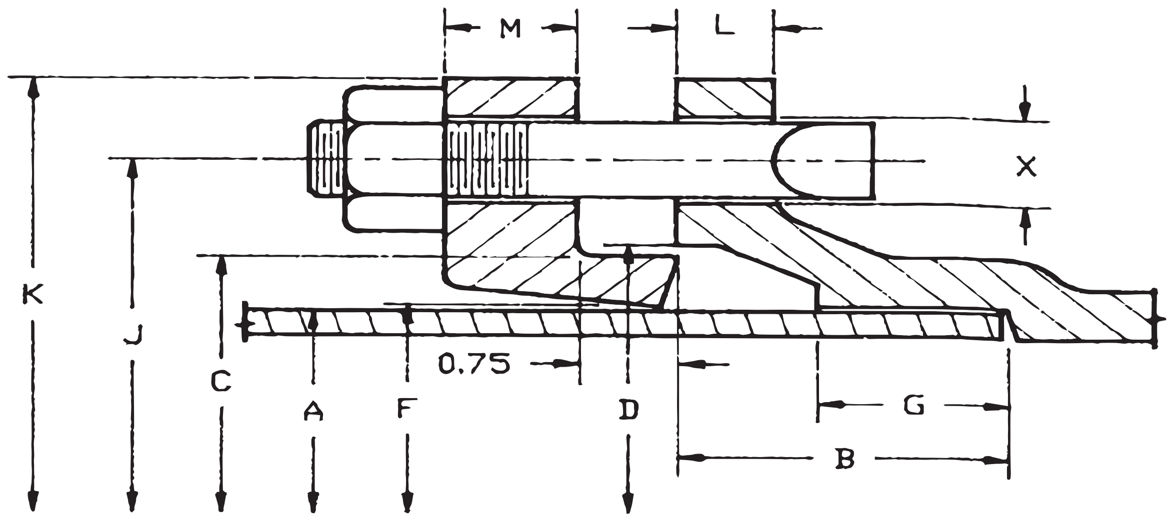
Table 1 - Mechanical Joint Bolt Torques

Pipe Size		Bolt Size		Range of Torque	
in.	mm	in.	mm	ft • lb	N • m
3	76	⅝	16	45 - 60	61 - 81
4 - 24	102 - 610	¾	19	75 - 90	102 - 122
30 - 36	762 - 914	1	25	100 - 120	136 -163
42 - 64	1,067 – 1,600	1¼	32	120 - 150	163 - 203

Mechanical Joint Sizes and Specifications

Dimensions for the Standardized Mechanical Joint

ANSI/AWWA A21.11/C111 and A21.53/C153



Nominal Pipe Size		Cross Sectional Area of Pipe† (sq. in.)	Gland				Bolt Holes			Bell			C110 Fittings (Thick Wall)				C153 Fittings (Thin Wall)			
														Bolts				Bolts		
	A		K	M	C	F	J	X	№	D	B	G	L	№	Dia.	Length	L	№	Dia.	Length
3	3.96	12.3	7.69	0.62	4.84	4.06	6.19	¾	4	4.94	2.50	1.56	0.94	4	⅝	3	0.58	4	⅝	3
4	4.80	18.1	9.12	0.75	5.92	4.90	7.50	⅞	4	6.02	2.50	1.44	1.00	4	¾	3½	0.60	4	¾	3½
6	6.90	37.4	11.12	0.88	8.02	7.00	9.50	⅞	6	8.12	2.50	1.44	1.06	6	¾	3½	0.63	6	¾	3½
8	9.05	64.3	13.37	1.00	10.17	9.15	11.75	⅞	6	10.27	2.50	1.44	1.12	6	¾	4	0.66	6	¾	3½
10	11.10	96.8	15.62	1.00	12.22	11.20	14.00	⅞	8	12.34	2.50	1.44	1.19	8	¾	4	0.70	8	¾	3½
12	13.20	136.9	17.88	1.00	14.32	13.30	16.25	⅞	8	14.44	2.50	1.44	1.25	8	¾	4	0.73	8	¾	3½
14	15.30	183.9	20.25	1.25	16.40	15.44	18.75	⅞	10	16.54	3.50	2.44	1.31	10	¾	4½	0.79	10	¾	4
16	17.40	237.8	22.50	1.31	18.50	17.54	21.00	⅞	12	18.64	3.50	2.44	1.38	12	¾	4½	0.85	12	¾	4
18	19.50	298.6	24.75	1.38	20.60	19.64	23.25	⅞	12	20.74	3.50	2.44	1.44	12	¾	4½	1.00	12	¾	4
20	21.60	366.4	27.00	1.44	22.70	21.74	25.50	⅞	14	22.84	3.50	2.44	1.50	14	¾	4½	1.02	14	¾	4
24	25.80	522.8	31.50	1.56	26.90	25.94	30.00	⅞	16	27.04	3.50	2.44	1.62	16	¾	5	1.02	16	¾	4½
30	32.00	804.3	39.12	2.00	33.29	32.17	36.88	1⅛	20	33.46	4.00	2.62	1.81	20	1	6	1.31	20	1	5½
36	38.30	1,152.1	46.00	2.00	39.59	38.47	43.75	1⅛	24	39.76	4.00	2.62	2.00	24	1	6	1.45	24	1	5½
42	44.50	1,555.3	53.12	2.00	45.79	44.67	50.62	1⅜	28	45.96	4.00	2.62	2.00	28	1¼	6½‡	1.45	28	1¼	6‡
48	50.80	2,026.8	60.00	2.00	52.09	50.97	57.50	1⅜	32	52.26	4.00	2.62	2.00	32	1¼	6½‡	1.45	32	1¼	6‡
54	57.58	2602.1	65.70	2.00	58.82	57.73	63.20	1⅜	36	59.02	4.00	2.62	–	36	1¼	–	1.55	36	1¼	6½*
60	61.61	2981.2	70.22	2.00	62.87	61.78	67.72	1⅜	36	63.87	4.00	2.62	–	36	1¼	–	1.75	36	1¼	6½§
64	65.67	3387.0	74.36	2.00	66.96	65.13	71.86	1⅜	38	67.13	4.00	2.62	–	38	1¼	–	1.75	38	1¼	6½

†The Cross Sectional Area of the pipe is based on the outside diameter of the pipe.

‡The MEGALUG® Series 1142 and 1148 requires and are supplied with 8½ inch t-Bolts

*The MEGALUG® Series 1154 requires and are supplied with 9½ inch t-Bolts

§The MEGALUG® Series 1160 requires and are supplied with 11 inch t-Bolts

At EBAA Iron, all of our products are tested with a minimum safety factor of 2:1. Therefore, all of our products have been tested to at least twice the rated pressure of the restraint device. To determine the amount of force held by a joint restraint device at a certain pressure, obtain the cross sectional area of the pipe size from the table above and multiply that number by the desired pressure. The result will be the equivalent dead end thrust load resisted by the restraint at the chosen pressure.

For Example - The dead end thrust of a 12 inch joint at 350 PSI would be:
Thrust = 136.9 x 350 = 47,915 pounds of force
Area = $\pi D^2/4$
Where π = 3.1416 and D = Pipe O.D.

Note: Dimensions are in inches and are subject to change without notice.