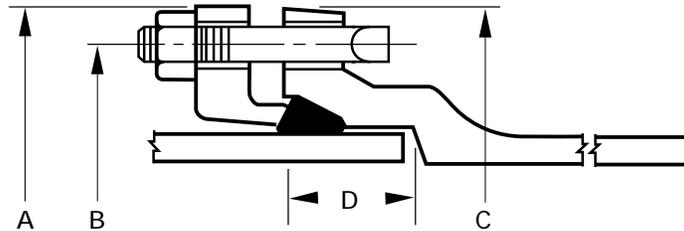




# Mechanical Joint Pipe

## Mechanical Joint Ductile Iron Pipe

The mechanical joint is a bolted joint utilizing a ductile iron gland and mechanical joint gasket. The mechanical joint is recommended for water service using ductile iron pipe particularly where many connections are required. All components of the mechanical joint are interchangeable. The plain end of mechanical joint pipe has the same outside diameter as push-on joint pipe. As a result, it can be fitted into such joints in the field by beveling the plain end. All of the accessories (glands and fasteners) are supplied with each joint.



Nominal Pipe Size (inches)	"A" Gland O.D.	"B" Bolt Circle	"C" Flange O.D.	"D" Socket Depth	Bolt Size and Length (inches)	No. Bolts	Nut Size (inches)	Torque Range	Maximum Joint Deflection Angle (deg-min)	Maximum Deflection per Joint (inches)	
										18 ft. Laying Length	20 ft. Laying Length
3	7.69	6.19	7.62	2.50	5/8 x 3	4	1 <sup>1</sup> / <sub>16</sub>	45-60 ft-lbs	8° - 18'	31	
4	9.12	7.50	9.06	2.50	3/4 x 3-1/2	4	1 <sup>1</sup> / <sub>4</sub>	75-90 ft-lbs	8° - 18'	31	
6	11.12	9.50	11.06	2.50	3/4 x 3-1/2	6	1 <sup>1</sup> / <sub>4</sub>	75-90 ft-lbs	7° - 07'	27	30
8	13.37	11.75	13.31	2.50	3/4 x 4	6	1 <sup>1</sup> / <sub>4</sub>	75-90 ft-lbs	5° - 21'	20	22
10	15.62	14.00	15.62	2.50	3/4 x 4	8	1 <sup>1</sup> / <sub>4</sub>	75-90 ft-lbs	5° - 21'	20	22
12	17.88	16.25	17.88	2.50	3/4 x 4	8	1 <sup>1</sup> / <sub>4</sub>	75-90 ft-lbs	5° - 21'	20	22
14	20.25	18.75	20.25	3.50	3/4 x 4-1/2	10	1 <sup>1</sup> / <sub>4</sub>	75-90 ft-lbs	3° - 35'	13.5	15
16	22.50	21.00	22.50	3.50	3/4 x 4-1/2	12	1 <sup>1</sup> / <sub>4</sub>	75-90 ft-lbs	3° - 35'	13.5	15
18	24.75	23.25	24.75	3.50	3/4 x 4-1/2	12	1 <sup>1</sup> / <sub>4</sub>	45-60 ft-lbs	3° - 00'		12
20	27.00	25.50	27.00	3.50	3/4 x 4-1/2	14	1 <sup>1</sup> / <sub>4</sub>	75-90 ft-lbs	3° - 00'		12
24	31.50	30.00	31.50	3.50	3/4 x 5	16	1 <sup>1</sup> / <sub>4</sub>	75-90 ft-lbs	2° - 23'		10



## Mechanical Joint Pipe

### Mechanical Joint Assembly



1. Clean the socket and the plain end. Lubrication is recommended for proper assembly of all mechanical joints. Lubrication and additional cleaning should be provided by brushing both the gasket and plain end with soapy water or pipe lubricant just prior to slipping the gasket onto the plain end for joint assembly. Place the gland on the plain end with the lip extension toward the plain end followed by the gasket with the narrow edge of the gasket toward the plain end.



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 tip against the gasket. Insert bolts and hand-tighten the nuts. Make deflection after joint assembly but before tightening the bolts.



4. Tighten the bolts to the normal range of bolt torque as indicated in the adjacent table while 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 the top bolt, next the bolts at either side, finally the remaining bolts. Repeat the process until all bolts are within the approximate range of torque. In large (30" - 48") sizes, five or more repetitions may be required. The use of a torque wrench will facilitate this procedure.

### Installation Tips for Mechanical Joint Pipe

#### Lubrication

This is very important with mechanical joints (pipe and fittings) to ensure a leak-free assembly. Once the gasket is placed over the plain end of the pipe and prior to assembly, the gasket must be lubricated. This step is sometimes omitted because the mechanical joint appears to assemble easily without lubricant. After tightening of the bolts with no gasket lubrication, the gasket will tend to slowly flow into place with time, resulting in loosening of the bolts from their proper torque. This happens because the gasket has not properly seated due to friction from lack of lubrication. The lubricant allows the gasket to easily and fully "flow" into the wedge shaped gasket seat under compression from the gland during the initial assembly. When the bolts are then properly tightened, the gasket will be fully seated in the proper position and the bolts will remain tight.

#### Joint Deflection

Mechanical joint pipe should be assembled with little or no deflection of the joint. Following assembly, the joint can be deflected as necessary. If the joint is assembled in the deflected condition, the gasket may not be evenly seated and can also be damaged during assembly.

#### Restraint

A common misconception is that mechanical joint pipe are sometimes thought to be restrained joint pipe because bolts and nuts are involved in their installation. However, the mechanical joint does not provide any restraint. The mechanical joint can only be properly restrained by using it in conjunction with a restraining type connection such as a Griffin BOLT-LOK or MECH-LOK assembly, or with restraining glands.



# Mechanical Joint Pipe

## Mechanical Joint Pipe Pressure & Special Thickness Classes

Pipe Dimensions					Pipe Weights				
Nominal Pipe Size (in.)	Pressure Class	Thickness Class	Pipe Thickness (in.)	Pipe O.D. (in.)	Weight of pipe barrel per foot (lbs.)	18-foot Laying Lengths		20-foot Laying Lengths	
						Weight per length (lbs.)	Average weight per foot** (lbs.)	Weight per length (lbs.)	Average weight per foot** (lbs.)
3	350	51	0.25	3.96	8.9	171	9.5		
		52	0.28		9.9	189	10.5		
		53	0.31		10.9	207	11.5		
		54	0.34		11.8	224	12.4		
		55	0.37		12.8	242	13.4		
		56	0.40		13.7	258	14.3		
4	350	51	0.26	4.80	10.9	211	11.7		
		52	0.29		11.3	218	12.1		
		53	0.32		12.6	241	13.4		
		54	0.35		13.8	263	14.6		
		55	0.38		15.0	284	15.8		
		56	0.41		16.1	304	16.9		
6	350	50	0.25	6.90	16.0	309	17.2	341	17.1
		51	0.28		17.8	342	19.0	377	18.9
		52	0.31		19.6	374	20.8	413	20.7
		53	0.34		21.4	406	22.6	449	22.5
		54	0.37		23.2	439	24.4	485	24.2
		55	0.40		25.0	471	26.2	521	26.1
8	350	50	0.25	9.05	21.1	408	22.7	451	22.6
		51	0.27		22.8	439	24.4	485	24.3
		52	0.30		25.2	482	26.8	533	26.7
		53	0.33		27.7	527	29.3	583	29.2
		54	0.36		30.1	570	31.7	631	31.6
		55	0.39		32.5	614	34.1	679	34.0
10	350	50	0.26	11.10	27.1	524	29.1	578	28.9
		51	0.29		30.1	578	32.1	638	31.9
		52	0.32		33.2	634	35.2	700	35.0
		53	0.35		36.2	688	38.2	760	38.0
		54	0.38		39.2	742	41.2	820	41.0
		55	0.41		42.1	794	44.1	878	43.9
12	350	50	0.28	13.20	34.8	672	37.3	741	37.1
		51	0.31		38.4	736	40.9	813	40.7
		52	0.34		42.0	801	44.5	885	44.3
		53	0.37		45.6	866	48.1	957	47.8
		54	0.40		49.2	931	51.7	1029	51.5
		55	0.43		52.8	996	55.3	1101	55.1
12	350	55	0.46	13.20	56.3	1059	58.8	1171	58.6
		56	0.49		59.9	1123	62.4	1243	62.2

Standard Dimensions and Weights per ANSI/AWWA C151

\*\* "Average weight per foot" shown in tables includes the weight of the bell



# Mechanical Joint Pipe

## Pressure & Special Thickness Classes (continued)

Pipe Dimensions					Pipe Weights				
Nominal Pipe Size (in.)	Pressure Class	Thickness Class	Pipe Thickness (in.)	Pipe O.D. (in.)	Weight of pipe barrel per foot (lbs.)	18-foot Laying Lengths		20-foot Laying Lengths	
						Weight per length (lbs.)	Average weight per foot** (lbs.)	Weight per length (lbs.)	Average weight per foot** (lbs.)
14	250		0.28	15.30	40.4	798	44.3	879	48.8
	300		0.30		43.3	850	47.2	937	46.9
	350		0.31		44.7	875	48.6	965	48.3
		50	0.33		47.5	926	51.4	1021	51.0
		51	0.36		51.7	1001	55.6	1105	55.3
		52	0.39		55.9	1077	59.8	1189	59.5
		53	0.42		60.1	1153	64.0	1273	63.7
		54	0.45		64.2	1226	68.1	1355	67.8
		55	0.48		68.4	1302	72.3	1439	72.0
		56	0.51		72.5	1376	76.4	1521	76.0
16	250		0.30	17.40	49.3	973	54.0	1071	53.6
	300		0.32		52.5	1030	57.2	1135	56.8
	350	50	0.34		55.8	1090	60.6	1201	60.1
		51	0.37		60.6	1176	65.3	1297	64.9
		52	0.40		65.4	1263	70.2	1393	69.7
		53	0.43		70.1	1347	74.8	1487	74.3
		54	0.46		74.9	1434	79.7	1583	79.2
		55	0.49		79.7	1520	84.4	1679	84.0
		56	0.52		84.4	1605	89.2	1773	88.7
	18	250			0.31	19.50	57.2	1129	62.7
300			0.34	62.6	1226		68.1	1351	67.6
350			0.36	66.2	1291		71.1	1423	71.2
		50	0.35	64.4	1256		69.8	1387	69.4
		51	0.38	69.8	1356		75.3	1495	74.8
		52	0.41	75.2	1453		80.7	1603	80.2
		53	0.44	80.6	1550		86.1	1711	85.6
		54	0.47	86.0	1647		91.5	1819	91.0
		55	0.50	91.3	1743		96.8	1925	96.3
		56	0.53	96.7	1840		102.2	2033	101.7
20	250		0.33	21.60	67.5	1328	73.8	1463	73.1
	300	50	0.36		73.5	1436	79.7	1583	79.2
	350		0.38		77.5	1508	83.8	1663	83.1
		51	0.39		79.5	1544	85.8	1703	85.2
		52	0.42		85.5	1652	91.8	1823	91.2
		53	0.45		91.5	1760	97.7	1943	97.2
		54	0.48		97.5	1868	103.7	2063	103.2
		55	0.51		103.4	1974	109.7	2181	109.1
		56	0.54		109.3	2081	115.6	2299	115.0
	24	200			0.33	25.80	80.8	1597	88.7
250			0.37	90.5	1771		98.4	1952	97.6
300			0.40	97.7	1901		105.6	2096	104.8
350			0.43	104.9	2031		112.8	2240	112.0
		50	0.38	92.9	1815		100.8	2000	100.0
		51	0.41	100.1	1944		108.0	2144	107.2
		52	0.44	107.3	2074		115.2	2288	114.4
		53	0.47	114.4	2202		122.3	2430	121.5
		54	0.50	121.6	2331		129.5	2574	128.7
		55	0.53	128.8	2461		136.7	2716	135.8
	56	0.56	135.9	2589	143.8	2860	143.0		

Standard Dimensions and Weights per ANSI/AWWA C151

\*\* "Average weight per foot" shown in tables includes the weight of the bell