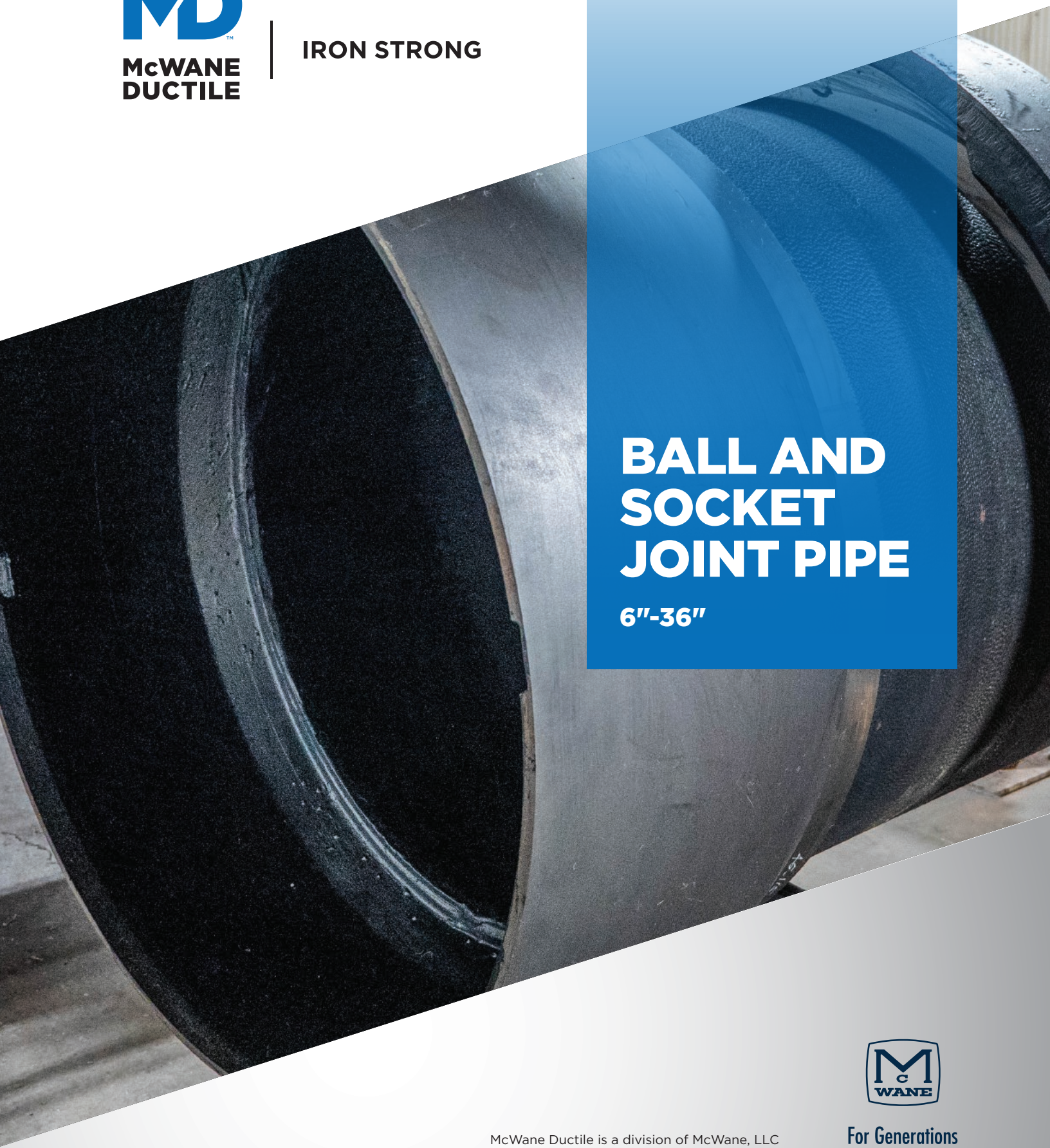
McWane Ductile

IRON STRONG

McWaneDuctile.com



BALL AND SOCKET JOINT PIPE

6"-36"

McWane Ductile is a division of McWane, LLC

For Generations

CONNECTING PIECES



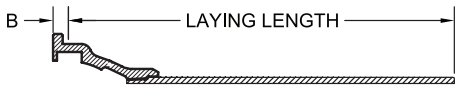
RC Ball x Plain End



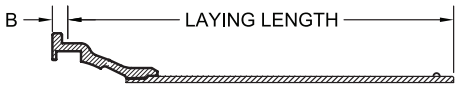
RC Ball x TR Flex Plain End



RC Ball x TR Flex Bell



RC Bell x Plain End



RC Bell x TR Flex Plain End



RC Bell x TR Flex Bell

DIMENSIONS & WEIGHTS

DIMENSIONS IN INCHES						APPROXIMATE WEIGHT POUNDS*					
NOM. PIPE SIZE	THICKNESS		PLAIN END O.D.	A	B	R/C BALL X PE	R/C BELL X PE	R/C BALL X TR FLEX PE	R/C BELL X TR FLEX PE	R/C BALL X TR FLEX BELL	R/C BELL X TR FLEX BELL
	A21.51 CLASS	WALL T									
6	55	0.4	6.90	2-1/4	1	510	480	511	481	538	508
8	55	0.42	9.05	2-5/8	1-1/8	720	675	721	676	766	721
10	55	0.44	11.10	2-7/8	1-1/8	940	880	941	881	1000	940
12	55	0.46	13.20	3-1/4	1-1/8	1185	1100	1187	1102	1291	1206
14	56	0.51	15.30	3-1/2	1-1/4	1545	1420	1547	1422	1663	1538
16	56	0.52	17.40	3-3/4	1-1/4	1835	1680	1837	1682	1965	1805
18	56	0.53	19.50	4-1/4	1-1/4	2185	1930	2187	1932	2355	2100
18	58	0.59	19.50	4-1/4	1-1/4	2375	2115	2377	2117	2540	2280
20	56	0.54	21.60	4-1/2	1-1/4	2585	2190	2588	2193	2792	2397
20	59	0.63	21.60	4-1/2	1-1/4	2900	2495	2903	2498	3107	2702
24	56	0.56	25.80	5-1/4	1-1/4	3365	2780	3368	2783	3650	3095
24	62	0.74	25.80	5-1/4	1-1/4	4115	3510	4118	3513	4430	3730
30	58	0.71	32.00	6-1/4	1-1/4	5350	4365	5354	4369	5603	4618
30	61	0.83	32.00	6-1/4	1-1/4	5965	4965	5969	4969	6218	5218
36	57	0.78	38.30	7-1/4	1-1/4	7450	5815	7455	5820	8004	6369
36	59	0.88	38.30	7-1/4	1-1/4	8065	6415	8070	6420	8619	6969

*** Weights shown are for 18′ laying lengths. Weights of shorter pieces can be determined by subtracting the appropriate barrel weight. Maximum laying length is 18′. Minimum laying length is 3′. Pipe can also be furnished Ball and MJ Bell, Bell and MJ Bell, Ball and Push-On Bell, Bell and Push-On Bell, Ball and Flange or Bell and Flange. Order must specify laying length of connecting pieces.**

STANDARD PRACTICES

While the McWane Ductile Ball and Socket Pipe is regularly furnished in 18′ nominal laying lengths, we reserve the right to furnish a limited percentage of shorter lengths. We will always ship a footage of pipe not less than the total ordered. We also reserve the right to furnish a total footage greater than the footage ordered to allow the use of full length pipe without cutting. Any exceptions to this standard practice must be clearly specified at the time of order.

Exact laying lengths: If any piece of pipe or length of piping must be furnished with an exact laying length, this must be specified. Random lengths will be used in making up exact laying lengths greater than 18 feet.

End connections: McWane Ductile Ball and Socket Pipe can be furnished with the end connections listed above. The type of end connection and length of connecting piece must be specified.

Accessories: McWane Ductile Ball and Socket Pipe is shipped with the retainer assembled on the pipe and secured to the ball end by hook bolts. Gaskets, lubricant, retainer locks and retainer lock pins are shipped in a separate container.

BALL AND SOCKET JOINT PIPE FROM MCWANE DUCTILE

Ball and Socket Joint Pipe is manufactured by McWane Ductile in 6″ through 36″ diameters. It is ideal for subaqueous installations through bays and across rivers and lakes.

McWane Ductile's Ball and Socket River Crossing Ductile Iron Pipe is made with a specially machined Ductile iron ball and bell that offers 15 degrees of deflection per joint. This design allows it to traverse irregular slopes, inclines and subaqueous surfaces easily.

This pipe is manufactured with extra thick walls to withstand the rugged treatment required for critical installations. The joint is boltless to allow quick, easy assembly without wrenches or special tools. Because of the joint's inherent strength and flexibility, various installation methods are possible without damaging the pipe.

Each pipe consists of a bell, ball and retainer assembled on a centrifugally cast barrel. All pipe components are rugged, high-strength Ductile iron. The barrel is cast of 60-42-10 Ductile iron in accordance with the American National Standard A21.51. The bell, ball and retainer are cast of 70-50-05 Ductile iron in accordance with the applicable requirements of American National Standard A21.10.

Pipe components are machined to precise tolerances to ensure premium performance and ease of assembly. Each pipe is hydrostatically tested at the factory.

The gasket is made of high-quality rubber and is symmetrical in shape so that it cannot be installed backward.

The Ball and Socket Pipe is manufactured in 6″ though 36″ sizes to the dimensions and weights shown on the following pages. The connecting pieces can be furnished to meet the most demanding job requirements and exacting specifications. Two thickness classes are offered in the 18″ through 36″ sizes, one of which is buoyant and will float when filled with air.



A RUGGED, EASY-TO-ASSEMBLE JOINT

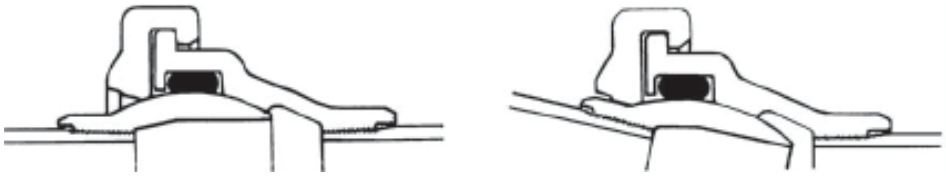
McWane Ductile's Ball and Socket Joint is a boltless, push-on type joint designed to simplify assembly and speed up installation. The gasket is inserted in the bell and compressed by entering the ball as the joint is made up.

The joint is restrained by locking the bayonet-type retainer over the lugs on the bell. To prevent rotation of the retainer after assembly, a Ductile iron retainer lock is inserted between the lugs and held in place by a corrosion-resistant roll pin. The roll pin and retainer lock may be removed to permit disassembly of the joint.

The absence of any bolts and split parts save confusion and nuisance during assembly. Joint construction and the symmetrical shape of the gasket ensures the joint can be assembled properly under adverse conditions, even by a diver under water.

Full 18′ laying lengths mean fewer joints, and the speed of assembly saves time as well as dredging, diving or other installation costs sometimes encountered in laying pipe in river bottom trenches.



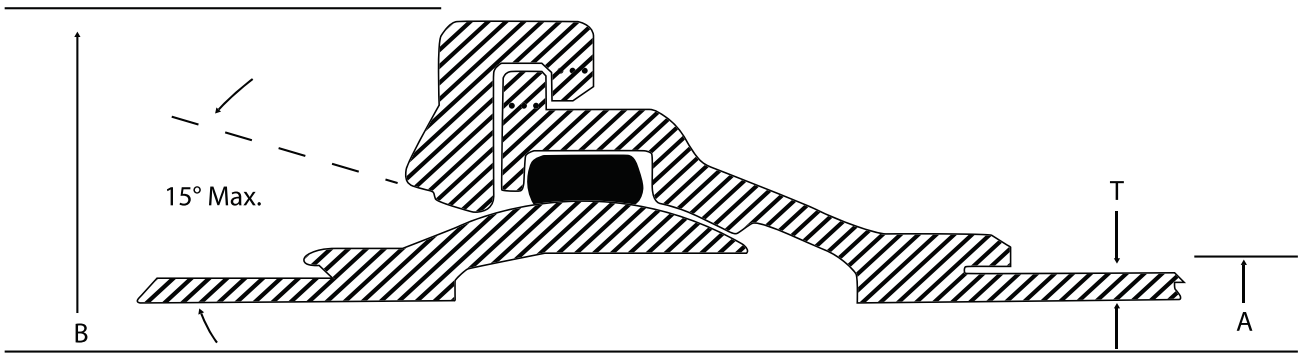


FULL 15 DEGREE FREE TURNING DEFLECTION WITH NO DEDUCTION IN THE WATERWAY

No restriction of the pipe waterway takes place in this joint when set to its maximum. Do not exceed 15 degrees at any time. However, it is recommended when laying out ball joint pipelines that the "design" deflection is limited to 12 degrees per joint because of field conditions that may be encountered. When laying the pipe from a barge, a laying chute is recommended to keep the joints from over deflection.

For more information, refer to the DIPRA publication "Ductile Iron Pipe Subaqueous Crossings," which can be obtained at www.DIPRA.org.

CROSS SECTION OF BALL AND SOCKET



DETAILS & DIMENSIONS

NOMINAL PIPE SIZE IN.	A21.51 THICKNESS CLASS NUMBER	PRESSURE RATING PSI	DIMENSIONS IN INCHES			PIPE BARREL LBS./FOOT	WEIGHT OF FULL LENGTH PIPE* AS SHIPPED IN LBS.
			T THICKNESS	A PIPE O.D.	B RETAINER O.D.		
6	55	350	.40	6.90	13.88	25.0	545
8	55	350	.42	9.05	16.63	34.8	770
10	55	350	.44	11.10	19.13	45.1	1005
12	55	350	.46	13.20	22.00	56.3	1270
14	56	350	.51	15.30	24.50	72.5	1655
16	56	350	.52	17.40	27.00	84.4	1990
18	56	350	.53	19.50	30.00	96.7	2375
18	58	350	.59	19.50	30.00	107.3	2560
20	56	350	.54	21.60	32.75	109.3	2810
20	59	350	.63	21.60	32.75	127.0	3110
24	56	350	.56	25.80	38.25	135.9	3700
24	62	350	.74	25.80	38.25	178.3	4415
30	58	250	.71	32.00	46.25	213.6	5855
30	61	250	.83	32.00	46.25	248.7	6435
36	57	250	.78	38.30	54.25	281.3	8145
36	59	250	.88	38.30	54.25	316.6	8725

*** Weight is based on 18′ nominal laying length. Minimum laying length is 2′ for the 6–12 in. sizes, 3′ for the 14–20 in. sizes and 4′ for the 24–36″ in. sizes. Weights above do not include cement lining.**

BUOYANCY FOR BALL AND SOCKET PIPE

NOMINAL PIPE SIZE IN.	A21.51 THICKNESS CLASS NUMBER	WALL THICKNESS IN INCHES	WEIGHT OF PIPE AS SHIPPED	WEIGHT OF FULL LENGTH PIPE UNDER WATER		MAXIMUM SAFE TENSION IN LBS.††
				FULL OF AIR	FULL OF WATER	
6	55	.40	545	240	465	50,000
8	55	.42	770	240	655	70,000
10	55	.44	1005	220	860	95,000
12	55	.46	1270	155	1080	120,000
14	56	.51	1655	160	1410	145,000
16	56	.52	1990	45	1685	165,000
18	56†	.53	2375	-70	2015	195,000
18	58	.59	2560	110	2170	
20	56	.54	2810	-200	2375	210,000
20	59	.63	3110	100	2635	
24	56†	.56	3700	-620	3110	260,000
24	62	.74	4415	95	3715	
30	58†	.71	5855	-900	4920	335,000
30	61	.83	6435	-180	5360	
36	57†	.78	8145	-1300	6880	400,000
36	59†	.88	8725	-725	7330	

† When full of air, pipe of this thickness will float unless weight is added. †† Maximum tension that can safely be applied to a single joint when pulling pipe into position or laying it from a barge. Weights above do not include cement lining.

BALL AND SOCKET ASSEMBLY INSTRUCTIONS

STEP 1. Carefully remove protective coating from the inside of the bell using a suitable solvent. Inspect gasket groove to be certain that it is free of all foreign matter. Apply lubricant to gasket groove. **Note:** Use only lube as supplied and/or approved by the manufacturer. *Currently approved lubricant provided by McWane Ductile for subaqueous installation is NO-OX-ID.*



STEP 1

STEP 2. Insert gasket into bell. Use one hand to hold a loop in gasket, and the other to tuck the remaining portion into its groove.



STEP 2

STEP 3. Release gasket and press remaining loop into groove. Inspect installed gasket to be certain it is in its proper position.



STEP 3

STEP 4. Apply lubricant to exposed gasket surface.



STEP 4

STEP 5. Remove hook bolts securing retainer to ball. Carefully remove protective coating from ball OD using a suitable solvent. Clean out any dirt behind retainer lugs.



STEP 5

STEP 6. Apply lubricant to the outside surface of the ball.



STEP 6

STEP 7. Guide ball into bell opening so that it rests against installed gaskets.



STEP 7

STEP 8. "Make" joint by using come along to pull pipe together, or by other mechanical means to push the ball into the bell.



STEP 8

STEP 9. Position retainer so that the recesses line up with the lugs on the bell. Slide retainer over the bell and rotate until the lugs on the bell and retainer line up.



STEP 9

STEP 10. At the drilled hole on the retainer OD, insert cast iron retainer lock in recess formed by lugs on bell and retainer. Insert roll pin in drilled hole and drive flush with retainer OD.



STEP 10

POCKET ENGINEER
Available for **iOS + Android**
or online at **pe.mcwane.com**

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