



AMERICAN Ductile Iron Specials Ductile Iron Trenchless Pipe

By its nature, ductile iron pipe possesses tremendous columnar and tensile strength, which makes it a superior material for trenchless applications. AMERICAN offers two joints designed for use in direct jacking, trenchless pipeline replacement, pipe bursting, and microtunneling installation. Fastite joint push-bar pipe allows the Fastite Joint to be used in trenchless applications using direct jacking or pushing. Flex-Ring® joint pipe with its positive, flexible joint restraint has been used extensively in pipe pulling applications using horizontal directional drilling and some pipe bursting installation methods. With spigots ahead, the low profile Flex-Ring® assembles quickly and offers a smooth transition during pipe pull-back. AMERICAN offers a Flex-Ring® pulling bell assembly specifically designed for this installation method.



Pulling Bell

Push-Bar pipe employs an economical adaptation of the premier AMERICAN Fastite joint to transfer jacking loads from the pipe barrel directly to the face of the bell. It consists of a high-strength, alloy steel ring, the "push-bar," shop welded to the standard Fastite pipe spigot. This ring is made of the same material that has been used successfully in AMERICAN's Lok-Ring and other restrained joints for more than 40 years. A cushioning compression ring, made of compressible wood products, fits between the push-bar and the pipe bell for added assurance of load distribution. The pipe comes in standard 20' or less standard nominal laying lengths and carries the standard Fastite joint pressure ratings. During installation, Fastite joint push-bar pipe is jacked or pushed with the spigots ahead. This allows for any debris remaining from the pipe bursting or pipe jacking operation to flow smoothly over the bell of the Fastite joint.

Flex-Ring joint pipe and allowable pulling loads are covered in Tables 7-13 and 7-1. See above picture of Flex-Ring pulling bell assembly at left.

Cement-mortar lining per ANSI/AWWA C104/A21.4 and asphalt exterior coating per ANSI/AWWA C151/A21.51 are standard for Flex-Ring and push-bar pipe. Other linings and coatings are available for specific service conditions.



AMERICAN Ductile Iron Flex-Ring® Joint Pipe
Standard Dimensions and Pressure Ratings

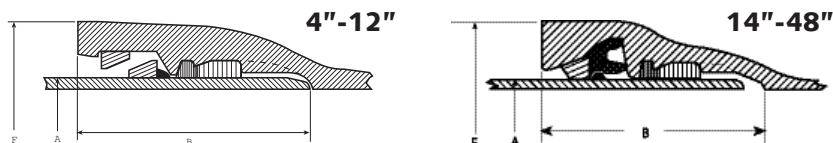


Table No. 7-13

4"-12"

Size in.	Working Pressure* psi	Nominal Laying Length** ft.	A O.D. in.	B Socket Depth in.	F Bell O.D.† in.	Allowable Pulling Load lb.††	Allowable Deflection degree	Offset per 20' Length in.	Radius of Curve^ ft.	Empty Pipe Buoyancy in Water (lb/ft)^^
4	350	20	4.80	5.62	7.06	10,000	5	21	230	-5
6	350	20	6.90	5.62	9.19	20,000	5	21	230	-2
8	350	20	9.05	5.74	11.33	30,000	5	21	230	3
10	350	20	11.10	6.72	13.56	45,000	5	21	230	11
12	350	20	13.20	6.72	15.74	60,000	5	21	230	19

* Working pressure is the maximum pressure rating of the joint and is based on its capability to resist thrust due to internal pressure. If higher working pressure is required, contact AMERICAN.

** Laying length is nominal 20'. Where exact lengths are required, contact AMERICAN. Minimum laying lengths for Flex-Ring & Flex-Ring end pipe is 1'-0" and for Flex-Ring End & Flex-Ring end pipe is 2'-0".

† Dimensions subject to change at our option. Contact AMERICAN if smaller or exact dimensions are required.

†† Intended for horizontal directional drilling (HDD) applications. Flex-Ring pipe may be available for greater pulling loads than indicated in the tabulated values. Contact AMERICAN when higher pulling loads are required.

^ Approximate radius of curve produced by a succession of 20' lengths of pipe fully deflected.

^^ Based on weight of empty (full of air) Pressure Class 350 Flex-Ring pipe with standard cement lining immersed in water. Positive numbers indicate such pipe will float.

Table No. 7-14

14"-48"

Size in.	Working Pressure* psi	Nominal Laying Length** ft.	A O.D. in.	B Socket Depth in.	F Bell O.D.† in.	Allowable Pulling Load lb.††	Allowable Deflection degree	Offset per 20' Length in.	Radius of Curve^ ft.	Empty Pipe Buoyancy in Water (lb/ft)^^
14	350	20	15.30	7.38	19.31	75,000	4	17	285	27
16	350	20	17.40	7.38	21.43	95,000	3 3/4	16	305	38
18	350	20	19.50	8.20	23.70	120,000	3 3/4	16	305	52
20	350	20	21.60	8.20	25.82	150,000	3 1/2	15	327	69
24	350	20	25.80	8.96	29.88	210,000	3	12	380	104
30	250	20	32.00	9.63	36.34	220,000	2 1/2	10	458	175
36	250	20	38.30	9.63	42.86	310,000	2	8	570	266
42	250	20	44.50	10.84	49.92	390,000	2	8	570	359
48	250	20	50.80	12.37	56.36	500,000	2	8	570	484

* Working pressure is the maximum pressure rating of the joint and is based on its capability to resist thrust due to internal pressure. If higher working pressure is required, contact AMERICAN. Pressure rating of the joint is limited by the pressure rating of the parent pipe.

** Laying length is nominal 20'. Where exact lengths are required, contact AMERICAN.

† Dimensions subject to change at our option. Contact AMERICAN if smaller or exact dimensions are required.

†† Intended for horizontal directional drilling (HDD) applications. The tabulated values are based on Pressure Class pipe thickness of the "Working Pressure" shown. Contact AMERICAN when it may be desirable to use lesser pressure class pipe or when higher pulling loads are required. Flex-Ring pipe may be available for greater pulling loads than indicated in the tabulated values.

^ Approximate radius of curve produced by a succession of 20' lengths of pipe fully deflected.

^^ Based on weight of empty (full of air) Pressure Class 350 Flex-Ring pipe with standard cement lining immersed in water. Positive numbers indicate such pipe will float.

Minimum Laying Lengths

Size in.	Flex-Ring & Flex-Ring End	Flex-Ring End & Flex-Ring End
14	1'-6"	2'-0"
16	1'-6"	2'-0"
18	1'-6"	2'-0"
20	1'-6"	2'-0"
24	2'-0"	2'-6"
30	2'-0"	2'-6"
36	2'-0"	2'-6"
42	2'-0"	3'-0"



AMERICAN DUCTILE IRON PIPE

AMERICAN Ductile Iron Specials
AMERICAN Fastite Joint Push-Bar Pipe

ANSI/AWWA C151/A21.51 and AMERICAN Standard

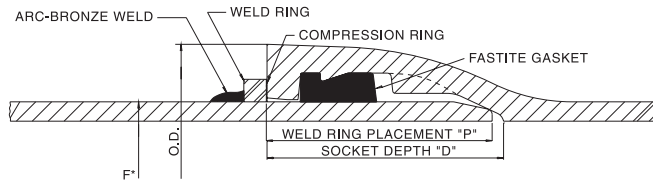
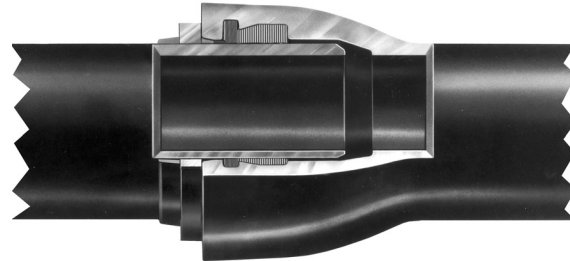


Table No. 7-15

Pipe Size in.	Standard Nominal Laying Length	Pipe O.D. in.	F* Bell O.D. in.	Weld Ring Size	P in.	D in.	Rated Push** (lb. x 1000)
4	18	4.80	6.71	1/2" sq.	3.13	3.31	54
6	20	6.90	8.90	1/2" sq.	3.25	3.38	78
8	20	9.05	11.16	1/2" sq.	3.63	3.75	102
10	20	11.10	13.25	1/2" sq.	3.63	3.75	125
12	20	13.20	15.37	1/2" sq.	3.63	3.75	150
14	20	15.30	17.73	1/2" sq.	5.00	5.23	260
16	20	17.40	19.86	1/2" sq.	5.00	5.23	296
18	20	19.50	22.16	1/2" sq.	5.38	5.50	312
20	20	21.60	24.28	1/2" sq.	5.38	5.50	345
24	20	25.80	28.50	1/2" sq.	5.38	5.50	413
30	20	32.00	34.95	5/8" sq.	6.38	6.50	545
36	20	38.30	41.37	5/8" sq.	6.38	6.50	650
42	20	44.50	48.27	3/4" x 1 1/4" rect.	7.38	7.50	818
48	20	50.80	54.71	3/4" x 1 1/4" rect.	7.88	8.00	934
54	20	57.56	61.65	3/4" x 1 1/4" rect.	8.38	8.50	1,058
60	20	61.61	65.80	3/4" x 1 1/4" rect.	8.62	8.75	1,132
64	20	65.67	70.04	3/4" x 1 1/4" rect.	8.88	9.00	1,206

* Dimensions subject to change at our option. Contact AMERICAN if exact dimensions required.

**Allowable axial compression loads for the Fastite push-bar joint in straight alignment. Contact AMERICAN if higher pushing loads are required.

See Section 3 for pipe classes and pressure ratings