



AMERICAN Ductile Iron Specials Welded-on Outlets for Ductile Iron Pipe

AMERICAN regularly furnishes pipe with welded-on outlets for proven effectiveness and simplicity in layout and installation. Outlets can readily be located at variable positions along the pipeline, and rotation* of the pipe before it is assembled in the line can often position the outlet at any desired angle. This section provides detailed tabular data for 90° lateral and tangential welded-on outlets. Lateral outlets from 45°-90° in 15° increments from the parent pipe axis are also standardly available in some sizes with some additional outlet size restrictions. (Contact AMERICAN for details.)

JOINTS. The outlets are fabricated from centrifugally cast ductile iron pipe, manufactured and tested in accordance with ANSI/AWWA C151/A21.51. They may be furnished with any of AMERICAN's bell ends such as Fastite, MJ, Flex-Ring, or Lok-Ring. They can also be furnished with plain ends. The parent pipe can also be furnished with any type of joints.

THICKNESSES. Minimum nominal thicknesses for both parent and outlet pipe are shown in the following tables. The outlets are rated 200 to 250 PSI working pressure, depending on size, as noted in Table No. 7-11. Contact AMERICAN for higher pressure applications.

This is a shop fabricated product and is not intended for field fabrication. Welded-on outlets for ductile pipe are produced with qualified procedures and welders as per guidelines contained in ANSI/AWS D11.2, Guide for Welding Iron Castings. Joint materials are furnished with Fastite, MJ, Flex-Ring, and Lok-Ring bells. Parent and outlet pipe are normally furnished cement lined in accordance with ANSI/AWWA C104/A21.4. Contact AMERICAN if ends or linings other than cement linings are desired.

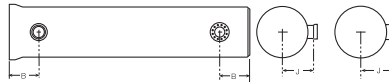


Table No. 7-11

Parent Pipe Diameter in.	Maximum Outlet Diameter** in.	Minimum Nominal Thickness Parent Pipe in.	Standard "J" Dimension† Center-Socket Bell Outlet in.	Standard "J" Dimension† Center-Face Flange Outlet in.	Outlet Diameter** in.	Minimum Nominal Thickness-Outlet Pipe in.	Rated Water Working Pressure of Outlet (psi)	Min. Distance Outlet to Parent Pipe End in. †B††
—	—	—	—	—	4	0.32	250	14-1/2
10	6	0.38	11	14-1/2	6	0.34	250	15-1/2
12	8	0.40	12	16	8	0.36	250	16-1/2
14	8	0.42	14	17	8	0.36	250	16-1/2
16	10	0.43	15	18	10	0.38	250	17-1/2
18	12	0.44	15-1/2	19-1/2	12	0.40	250	20
20	14	0.45	17	20-1/2	14	0.42	250	23
24	16	0.47	19	23	16	0.43	250	26
—	—	—	—	—	18	0.44	250	29
30	20	0.51	23	27	20	0.45	250	32-1/2
36	24	0.58	26	30-1/2	24	0.47	250	39
42	30	0.65	30	35	30	0.51	250	48
48	30	0.72	34	38-1/2	30	0.51	250	48
54	30	0.81	37	42	30	0.51	250	48
54	36	0.81	37	42	36	0.58	200	48
60	30	0.83	41	44	30	0.51	250	48
60	36	0.83	41	44	36	0.58	200	48
64	30	0.87	42	46	30	0.51	250	48
64	36	0.87	42	46	36	0.58	200	48

* Do not attempt to lift or rotate outlet pipes by attaching to or exerting force on the outlet or any branch piping attached thereto. Likewise, do not attach and suspend heavy piping items, etc., from outlet branch.

** The purpose of the 18" outlet diameter line is to provide this data when these standard outlets are applied on 30" and larger parent pipes only. Larger-diameter outlets may be available for some pressure and service applications. Contact AMERICAN for details.

† "J" dimensions are approximate and are the same for all different outlet sizes on a particular parent pipe size. Contact AMERICAN if different dimensions are required. Flanges used on outlets meet ASME B16.1 Class 125 requirements and may be welded on or threaded on.

†† Minimum "B" dimensions are dependent on outlet diameter and are not directly related to parent pipe diameter. For example, a "B" dimension for 6" outlets on all sizes of parent pipe (including 10") is 15 1/2", etc. Nominal thickness of 4"-54" diameter parent pipe and outlet pipe correspond to Special Class 53. Nominal thicknesses of

60" and 64" parent pipe correspond to Pressure Class 350 as shown in ANSI/AWWA C151/A21.51.

System design and installation should be such so as to avoid beam loads or impacts on the outlets. It is particularly important in underground service to use flexible joints (e.g., Flex-Ring or Fast-Grip) for outlet piping, to allow for at least some incidental movement between the parent and outlet piping. It should be noted that AWWA Manual M41 and the Appendix to ANSI/AWWA C115/A21.15 state that underground use of the flanged joint is generally not recommended because of the rigidity of the joint, and AMERICAN concurs with this guidance. Flexible outlet pipe joints should not be modified to make them rigid, nor should they be installed fully deflected.

This is a shop fabricated product and is not intended for field fabrication.

Contact AMERICAN for any applications of any flanged welded-on outlets involving connecting piping, such as pump suction and discharge headers, etc.



AMERICAN Ductile Iron Specials Tangential Welded-On Outlets for Ductile Iron Pipe

AMERICAN can furnish tangential welded-on outlets in certain diameters. Pipe with tangential outlets can often be positioned* with the outlets on bottom for blow offs or on top for air release. **Flanged and grooved joints are not available for tangential outlets.** Minimum pressure classes and location of outlets are the same as for regular welded-on outlets. This is a shop fabricated product and is not intended for field fabrication. Parent and outlet pipe are normally furnished cement lined in accordance with ANSI/AWWA C104/A21.4. Contact AMERICAN if ends or linings other than cement linings are desired.

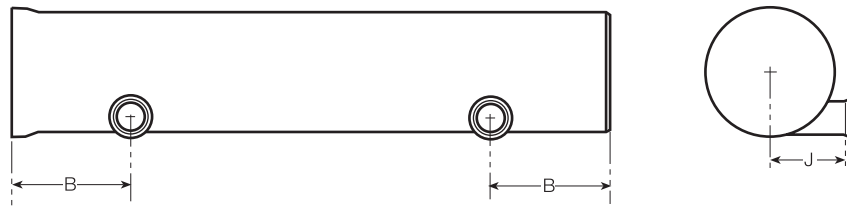


Table No. 7-12

Parent Pipe Diameter in.	Outlet Diameter in.	Minimum Nominal Thickness* Parent/Outlet Pipe in.	Rated Water Working Pressure psi	Minimum "B" Location Outlet to Parent Pipe End in.	Standard "J" Dimension Center to Socket in.
8	4	0.36/0.32	250	14-1/2	11-1/2
10	4	0.38/0.32	250	14-1/2	12-1/2
10	6	0.38/0.34	250	15-1/2	12-1/2
12	4	0.40/0.32	250	14-1/2	13-1/2
12	6	0.40/0.34	250	15-1/2	13-1/2
12	8	0.40/0.36	250	16-1/2	13-1/2
14	4	0.42/0.32	250	14-1/2	14
14	6	0.42/0.34	250	15-1/2	14-1/2
14	8	0.42/0.36	250	16-1/2	14-1/2
16	4	0.43/0.32	250	14-1/2	15
16	6	0.43/0.34	250	15-1/2	15-1/2
16	8	0.43/0.36	250	16-1/2	15-1/2
16	10	0.43/0.38	250	17-1/2	15-1/2
18	4	0.44/0.32	250	14-1/2	15-1/2
18	6	0.44/0.34	250	15-1/2	16-1/2
18	8	0.44/0.36	250	16-1/2	16-1/2
18	10	0.44/0.38	250	17-1/2	17
18	12	0.44/0.40	250	20	17
20	4	0.45/0.32	250	14-1/2	16
20	6	0.45/0.34	250	15-1/2	17
20	8	0.45/0.36	250	16-1/2	17-1/2
20	10	0.45/0.38	250	17-1/2	18
20	12	0.45/0.40	250	20	18
20	14	0.45/0.42	250	23	18

* Do not attempt to lift or rotate outlet pipes by attaching to or exerting force on the outlet or any branch piping attached thereto. Likewise, don't attach and suspend heavy piping items, etc., from outlet branch.



**AMERICAN Ductile Iron Specials
Tangential Welded-On Outlets
for Ductile Iron Pipe**

Table No. 7-12 - Continued

Parent Pipe Diameter in.	Outlet Diameter in.	Minimum Nominal Thickness* Parent/Outlet Pipe in.	Rated Water Working Pressure psi	Minimum "B" Location Outlet to Parent Pipe End in.	Standard "J" Dimension Center to Socket in.
24	4	0.47/0.32	250	14-1/2	17
24	6	0.47/0.34	250	15-1/2	18-1/2
24	8	0.47/0.36	250	16-1/2	19-1/2
24	10	0.47/0.38	250	17-1/2	20
24	12	0.47/0.40	250	20	20
24	14	0.47/0.42	250	23	20
24	16	0.47/0.43	250	26	20
30	4	0.51/0.32	250	14-1/2	18-1/2
30	6	0.51/0.34	250	15-1/2	20-1/2
30	8	0.51/0.36	250	16-1/2	21-1/2
30	10	0.51/0.38	250	17-1/2	22-1/2
30	12	0.51/0.40	250	20	23
30	14	0.51/0.42	250	23	23-1/2
30	16	0.51/0.43	250	26	23-1/2
30	18	0.51/0.44	250	29	23-1/2
30	20	0.51/0.45	250	32-1/2	23-1/2
36	4	0.58/0.32	250	14-1/2	20
36	6	0.58/0.34	250	15-1/2	22
36	8	0.58/0.36	250	16-1/2	24
36	10	0.58/0.38	250	17-1/2	25
36	12	0.58/0.40	250	20	25-1/2
36	14	0.58/0.42	250	23	26-1/2
36	16	0.58/0.43	250	26	26-1/2
36	18	0.58/0.44	250	29	26-1/2
36	20	0.58/0.45	250	32-1/2	26-1/2
36	24	0.58/0.47	250	39	26-1/2
42	4	0.65/0.32	250	14-1/2	21-1/2
42	6	0.65/0.34	250	15-1/2	23-1/2
42	8	0.65/0.36	250	16-1/2	25-1/2
42	10	0.65/0.38	250	17-1/2	27
42	12	0.65/0.40	250	20	28
42	14	0.65/0.42	250	23	28-1/2
42	16	0.65/0.43	250	26	29
42	18	0.65/0.44	250	29	29-1/2
42	20	0.65/0.45	250	32-1/2	29-1/2
42	24	0.65/0.47	250	39	30
42	30	0.65/0.51	250	48	30
48	4	0.72/0.32	250	14-1/2	22-1/2
48	6	0.72/0.34	250	15-1/2	25
48	8	0.72/0.36	250	16-1/2	27
48	10	0.72/0.38	250	17-1/2	28-1/2
48	12	0.72/0.40	250	20	30
48	14	0.72/0.42	250	23	31
48	16	0.72/0.43	250	26	31-1/2
48	18	0.72/0.44	250	29	32
48	20	0.72/0.45	250	32-1/2	32-1/2
48	24	0.72/0.47	250	39	33
48	30	0.72/0.51	250	48	34



AMERICAN Ductile Iron Specials
Tangential Welded-On Outlets
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Table No. 7-12 - Continued

Parent Pipe Diameter in.	Outlet Diameter in.	Minimum Nominal Thickness* Parent/Outlet Pipe in.	Rated Water Working Pressure psi	Minimum "B" Location Outlet to Parent Pipe End in.	Standard "J" Dimension Center to Socket in.
54	4	0.81/0.32	250	14-1/2	23-1/2
54	6	0.81/0.34	250	15-1/2	26
54	8	0.81/0.36	250	16-1/2	28-1/2
54	10	0.81/0.38	250	17-1/2	30
54	12	0.81/0.40	250	20	31-1/2
54	14	0.81/0.42	250	23	33
54	16	0.81/0.43	250	26	34
54	18	0.81/0.44	250	29	34-1/2
54	20	0.81/0.45	250	32-1/2	35-1/2
54	24	0.81/0.47	250	39	36
54	30	0.81/0.51	250	48	37-1/2
54	36	0.81/0.58	200	48	37-1/2
60	4	0.83/0.32	250	14-1/2	25
60	6	0.83/0.34	250	15-1/2	28
60	8	0.83/0.36	250	16-1/2	30-1/2
60	10	0.83/0.38	250	17-1/2	32
60	12	0.83/0.40	250	20	34
60	14	0.83/0.42	250	23	35
60	16	0.83/0.43	250	26	36
60	18	0.83/0.44	250	29	37
60	20	0.83/0.45	250	32-1/2	38
60	24	0.83/0.47	250	39	39
60	30	0.83/0.51	250	48	39-1/2
60	36	0.83/0.58	200	48	39-1/2
64	4	0.87/0.32	250	14-1/2	25-1/2
64	6	0.87/0.34	250	15-1/2	28-1/2
64	8	0.87/0.36	250	16-1/2	31
64	10	0.87/0.38	250	17-1/2	33
64	12	0.87/0.40	250	20	35
64	14	0.87/0.42	250	23	36-1/2
64	16	0.87/0.43	250	26	37-1/2
64	18	0.87/0.44	250	29	38-1/2
64	20	0.87/0.45	250	32-1/2	39-1/2
64	24	0.87/0.47	250	39	40-1/2
64	30	0.87/0.51	250	48	41-1/2
64	36	0.87/0.58	200	48	41-1/2

* Nominal thickness of 4"-54" diameter parent pipe correspond to Special Class 53. Nominal thickness of 60" and 64" parent pipe correspond to Pressure Class 350.