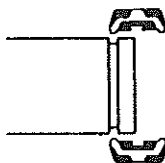


## GROOVED DUCTILE IRON PIPE

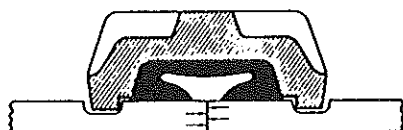
Grooved and shouldered pipe has been used for water and wastewater treatment plant piping for over 50 years. More recently grooved ductile iron pipe and fittings have become the preferred piping system by many owners, engineers and contractors as the means of pipe fabrication in lieu of flanged fabrication.

This standard covers pipe and fittings to be used for water, air, sewage, sludge and other liquids. The joint employs shoulders or grooves to be used in conjunction with a segmented mechanical coupling.

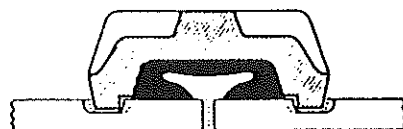
AWWA provides a standard (AWWA C-606) for grooved fabrication through 24" and shouldered through 60" piping. This standard augments AWWA C-606 to include grooved pipe fabrication through 36", and grooved fittings through 36".



Grooves are cut by machining the outside diameter of the ductile iron pipe ends to yield specific dimensions compatible with the grooved segmented couplings. Grooving dimensions are the same for any one pipe O.D. regardless of pipe class or pressure rating. The outside surface of the pipe between the groove and the pipe end must be clean and free from pits or swells to provide a leaktight sealing surface for the gasket.



RIGID



FLEXIBLE

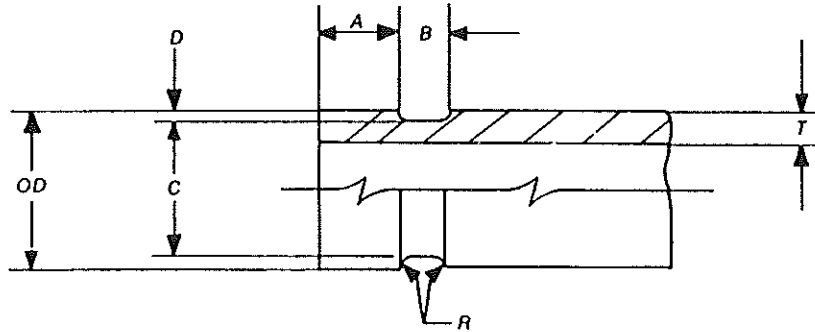
The joint may be designed to be fabricated as rigid or flexible to meet installation requirements. For complete design details, refer to AWWA C-606 and/or the chart on Page 4-02 and 4-03.



A permanent fabricator's symbol shall appear on each pipe end which is grooved in accordance with this standard.

# CUSTOM PIPE & COUPLING INC.

## Cut Grooving Dimensions for Flexible joints—Ductile Iron Pressure Pipe



Nominal Pipe Size in.	Pipe O.D. in.	A* Gasket Seat +0.016 -0.047 in.	B Groove Width +0.031 -0.016 in.	C+ Groove Diameter in.	R Radius in.	T‡ in.	D Groove Depth in.	
							Min.	Max.
4	4.80±0.06	0.750	0.375	4.563 +0 -0.020	0.120	0.32	0.096	0.151
6	6.90±0.06	0.750	0.375	6.656 +0 -0.020	0.120	0.34	0.100	0.154
8	9.05±0.06	0.875	0.500	8.781 +0 -0.025	0.145	0.36	0.104	0.177
10	11.10±0.06	0.938	0.500	10.813 +0 -0.025	0.145	0.38	0.114	0.186
12	13.20±0.06	0.938	0.500	12.906 +0 -0.030	0.145	0.40	0.117	0.192
14	15.30 +0.05 -0.08	0.938	0.625	14.969 +0 -0.030	0.165	0.42	0.126	0.206
16	17.40 +0.05 -0.08	1.188	0.625	17.063 +0 -0.030	0.165	0.43	0.128	0.208
18	19.50 +0.05 -0.08	1.188	0.625	19.125 +0 -0.030	0.185	0.47	0.148	0.228
20	21.60 +0.05 -0.08	1.188	0.625	21.219 +0 -0.030	0.185	0.51	0.150	0.230
24	25.80 +0.05 -0.08	1.188	0.625	25.406 +0 -0.030	0.185	0.56	0.157	0.237
30	32.00 +0.08 -0.06	1.375	0.750	31.550 +0 -0.035	0.215	0.63	0.195	0.283
36	38.30 +0.08 -0.06	1.375	0.750	37.850 +0 -0.035	0.215	0.73	0.195	0.283

### Notes

1. Ovality, or out-of-roundness of OD, must lie within specified tolerances.

2. To convert inches to millimeters, multiply by 25.4.

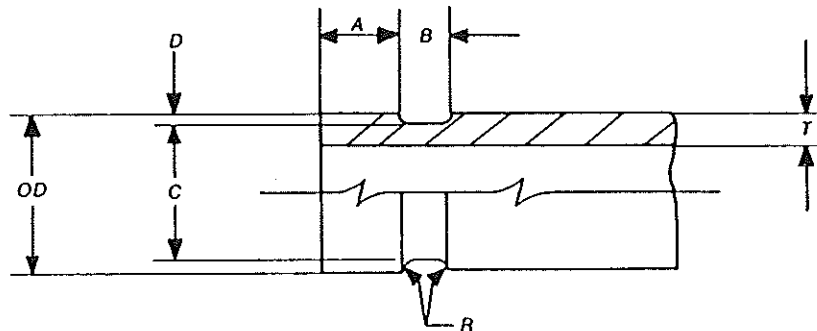
\*A is the gasket seating surface, see Sec. 3.4.

+C diameters are average values. Ovality of C diameter must lie within OD tolerances.

‡T is the minimum standard wall thickness that should be grooved. Tolerances are to conform to ANSI/AWWA C151/A21.51.

# CUSTOM PIPE & COUPLING INC.

## Cut Grooving Dimensions for Rigid Joints—Ductile Iron Pressure Pipe



Nominal Pipe Size in.	Pipe O.D. in.	A* Gasket Seat +0 -0.20 in.	B Groove Width +0.031 -0.016 in.	C+ Groove Diameter in.	R Radius in.	T‡ Ductile Iron in.	D Groove Depth in.	
							Min.	Max.
4	4.80±0.045	0.840	0.375	+0 4.563 -0.020	0.120	0.32	0.096	0.151
6	6.90±0.045	0.840	0.375	+0 6.656 -0.020	0.120	0.34	0.100	0.154
8	9.05±0.060	0.950	0.500	+0 8.781 -0.025	0.145	0.36	0.104	0.177
10	11.10±0.060	1.015	0.500	+0 10.813 -0.025	0.145	0.38	0.114	0.186
12	13.20±0.060	1.015	0.500	+0 12.906 -0.030	0.145	0.40	0.117	0.192
14	+0.050 15.30 -0.080	1.015	0.625	+0 14.969 -0.030	0.165	0.42	0.126	0.206
16	+0.050 17.40 -0.080	1.340	0.625	+0 17.063 -0.030	0.165	0.43	0.128	0.208
18	+0.050 19.50 -0.080	1.340	0.625	+0 19.125 -0.030	0.185	0.47	0.148	0.228
20	+0.050 21.60 -0.080	1.340	0.625	+0 21.219 -0.030	0.185	0.51	0.150	0.230
24	+0.050 25.80 -0.080	1.340	0.625	+0 25.406 -0.030	0.185	0.56	0.157	0.237
30	+0.080 32.00 -0.060	1.625	0.750	+0 31.550 -0.035	0.215	0.63	0.195	0.283
36	+0.080 38.30 -0.060	1.625	0.750	+0 37.850 -0.035	0.215	0.73	0.195	0.283

### Notes

1. Ovality, or out-of-roundness of OD, must lie within specified tolerances.

2. To convert inches to millimeters, multiply by 25.4.

\*A is the gasket seating surface, see Sec. 3.4.

+C diameters are average values. Ovality of C diameter must lie within OD tolerances.

‡T is the minimum standard wall thickness that should be grooved. Tolerances are to conform to ANSI/AWWA C151/A21.51.

## SHOULDERED END PIPE

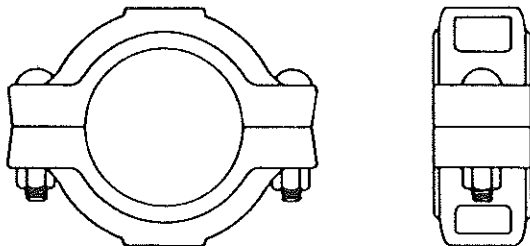
When it is necessary to join two different diameters of pipe, valves, fittings, etc., the smaller of the two must be fitted with a shouldered end.

In selecting the proper type ring for use with shouldered fabrication, consideration must be given to pressures, installation conditions, wall thicknesses and fabrication procedures. Type E rings are most commonly used for installation of shouldered end valves and may be applied to the pipe end as cast, threaded or welded. The ring material shall be manufactured of a mild steel or ductile iron.



Type E

For pipe material that is not conducive to welding, the threaded shoulder will usually suffice.



## COUPLINGS

Housings shall be made up with two or more identical segments manufactured from ductile iron conforming to ASTM 536 or malleable iron conforming to ASTM A-47.

Gaskets shall be manufactured in accordance with AWWA C-606 Section 2 and be of the center leg design.

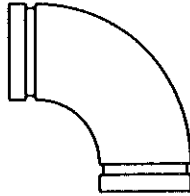
**GROOVED FITTINGS**

This standard has been derived from the following standards as closely as possible and practical.

\* ANSI/AWWA A21.10/C110  
Ductile and Gray Iron Fittings

\* ANSI/AWWA C-153/A21.53  
Ductile Iron Compact Fittings

\* AWWA C-606  
Grooved and Shouldered Joints



**FLANGED ADAPTERS**

Flanged adapters shall be manufactured of ductile iron conforming to ASTM A-536 or malleable iron conforming to ASTM A-47. Each shall have a "key" section that engages the groove and bolt circle to match Class 125 flanges.

