TYLER UNION®

Quality Waterworks Products

WATERWORKS CATALOG

PC-2017, March, 2017

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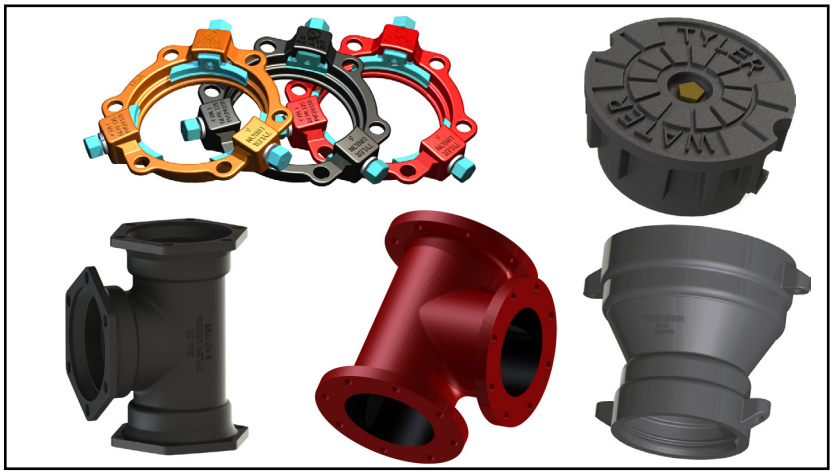

AWWA MEMBER

FM APPROVED

10014257 UL® REGISTERED FIRM ISO 9001:2015 CERTIFIED

Tyler Union

ANSI American National Standards Institute

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TYLER UNION®

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TYLER UNION®

MECHANICAL JOINT C153 DUCTILE IRON COMPACT FITTINGS

UL and FM Listed

SAMPLE SPECIFICATIONS (Current ANSI/AWWA revisions apply)

Mechanical joint watermain fittings with accessories, 2" through 64" shall be manufactured from ductile iron in accordance with and meet all applicable terms and provisions of standards ANSI/AWWA C153/A21.53 and ANSI/AWWA C111/A21.11 Ductile iron mechanical joint fittings 2" through 24" shall be rated for 350 PSI working pressure. Ductile iron 30" through 48" shall be rated for 250 psi working pressure. Flanged ductile iron fittings in 24" (610 mm) and smaller sizes may be rated for 350 psi (2,413 kPa) with the use of special (annular ring or comparable) gaskets. All coated and lined fittings meet requirements of NSF-61, NSF-372, and Annex G.

NOTE - EXCEPTIONS: Mechanical joint fittings with flanged branches are rated for water pressure of 250 PSI.

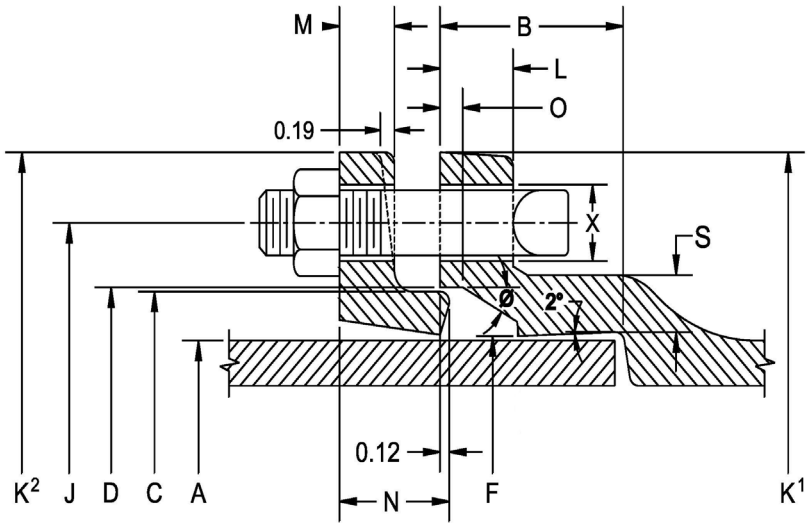
NOTE - Fittings are cement lined and seal coated in accordance with ANSI/AWWA C104/A21.4. Fittings are available double cement-lined, bare, or epoxy coated upon request. Epoxy coating per ANSI/AWWA C116

NOTE - Installation per AWWA C600 and AWWA C651, current revision

Nominal Joint Dimensions in Inches

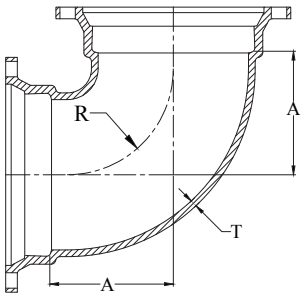
Size	A	B	C	D	F	Θ	X	J	K1	K2	L	M	N	O	S
2	2.51	2.50	3.50	3.60	2.61	28°	3/4	4.75	6.19	6.89	0.58	0.62	1.12	0.31	0.36
3	3.96	2.50	4.84	4.94	4.06	28°	3/4	6.19	7.62	7.69	0.58	0.62	1.37	0.31	0.39
4	4.80	2.50	5.92	6.02	4.90	28°	7/8	7.50	9.06	9.12	0.60	0.75	1.50	0.31	0.39
6	6.90	2.50	8.02	8.12	7.00	28°	7/8	9.50	11.06	11.12	0.63	0.88	1.63	0.31	0.43
8	9.05	2.50	10.17	10.27	9.15	28°	7/8	11.75	13.31	13.37	0.66	1.00	1.75	0.31	0.45
10	11.10	2.50	12.22	12.34	11.20	28°	7/8	14.00	15.62	15.62	0.70	1.00	1.75	0.31	0.47
12	13.20	2.50	14.32	14.44	13.30	28°	7/8	16.25	17.88	17.88	0.73	1.00	1.75	0.31	0.49
14	15.30	3.50	16.40	16.54	15.44	28°	7/8	18.75	20.25	20.25	0.79	1.25	2.00	0.31	0.55
16	17.40	3.50	18.50	18.64	17.54	28°	7/8	21.00	22.50	22.50	0.85	1.31	2.06	0.31	0.58
18	19.50	3.50	20.60	20.74	19.64	28°	7/8	23.25	24.75	24.75	1.00	1.38	2.13	0.31	0.68
20	21.60	3.50	22.70	22.84	21.74	28°	7/8	25.50	27.00	27.00	1.02	1.44	2.19	0.31	0.69
24	25.80	3.50	26.90	27.04	25.94	28°	7/8	30.00	31.50	31.50	1.02	1.56	2.31	0.31	0.75
30	32.00	4.00	33.29	33.46	32.17	20°	1 1/8	36.88	39.12	39.12	1.31	2.00	2.75	0.38	0.82
36	38.30	4.00	39.59	39.76	38.47	20°	1 1/8	43.75	46.00	46.00	1.45	2.00	2.75	0.38	1.00
42	44.50	4.00	45.79	45.96	44.67	20°	1 3/8	50.62	53.12	53.12	1.45	2.00	2.75	0.38	1.35
48	50.80	4.00	52.09	52.26	50.97	20°	1 3/8	57.50	60.00	60.00	1.45	2.00	2.75	0.38	1.35
54	---	---	---	---	---	--	---	---	---	---	--	--	--	--	--
60	---	---	---	---	---	--	---	---	---	---	--	--	--	--	--
64	---	---	---	---	---	--	---	---	---	---	--	--	--	--	--

NOTE:Contact Tyler Union for details on 54" through 64"



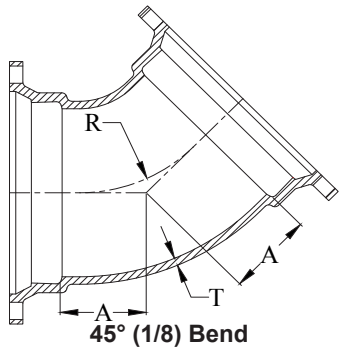
ANSI/AWWA C153 Mechanical Joint Fittings

Bends



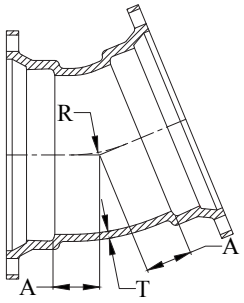
90° (1/4) Bend

	Domestic				Non-Domestic		
Size	T	A	R	Weight	T	A	Weight
3	0.34	3.5	2.5	19	0.33	3.5	19
4	0.35	4.0	3.0	24	0.34	4.0	25
6	0.37	6.0	5.0	41	0.36	5.0	39
8	0.39	7.0	6.0	64	0.38	6.5	57
10	0.41	7.5	6.5	89	0.40	7.5	89
12	0.43	9.0	8.0	114	0.42	9.0	108
14	0.51	12.0	11.5	210	0.47	11.5	210
16	0.52	13.0	12.5	268	0.50	12.5	264
18	0.59	15.5	14.0	375	0.54	14.0	335
20	0.60	17.0	15.5	443	0.57	15.0	400
24	0.62	17.0	15.5	663	0.61	16.75	565
30	0.66	21.5	19.0	1005	0.66	21.5	930
36	0.74	24.5	22.0	1540	0.74	24.5	1450
42	0.82	29.25	26.7	2380	0.82	29.25	2205
48	0.90	33.25	30.8	3084	0.90	33.25	2990



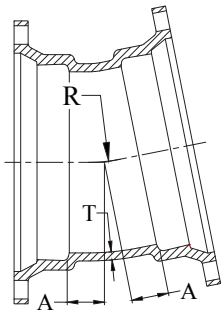
45° (1/8) Bend

	Domestic			Non-Domestic	
A	R	Weight	A	Weight
2.0	2.41	17	1.5	16
2.5	3.56	22	2.0	22
3.5	7.25	36	3.0	32
4.0	8.44	50	3.5	46
5.0	10.88	76	4.5	70
5.98	13.25	108	5.5	86
5.5	12.06	156	5.0	160
5.5	10.42	191	5.5	202
6.0	11.18	252	6.0	250
7.0	13.59	303	7.0	305
7.5	14.89	398	7.5	405
10.5	9.31	850	10.5	780
11.5	21.73	1135	11.5	1135
14.0	27.76	1675	14.0	1610
15.0	30.17	2196	15.0	2090



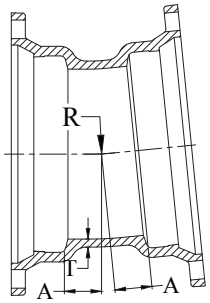
22½° (1/16) Bend

	Domestic			Non-Domestic	
Size	A	R	Weight	A	Weight
3	1.5	2.51	16	1.0	15
4	1.75	3.81	19	1.5	18
6	2.25	6.35	31	2.0	31
8	2.85	11.80	50	2.5	46
10	3.35	14.35	67	3.0	64
12	3.86	16.90	81	3.5	80
14	3.93	17.25	139	3.75	136
16	3.98	17.50	172	3.75	172
18	4.5	15.11	275	4.5	255
20	4.5	15.07	341	4.5	310
24	4.5	15.51	333	4.5	366
30	6.75	21.36	670	6.75	665
36	7.75	26.39	978	7.75	960
42	9.0	32.68	1352	9.0	1350
48	10.0	27.70	1757	10.0	1760



11¼° (1/32) Bend

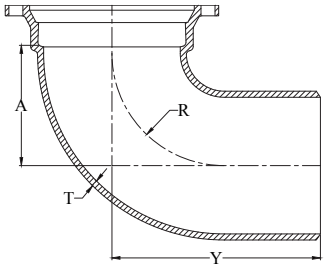
	Domestic			Non-Domestic	
A	R	Weight	A	Weight
1.25	2.53	15	1.0	14
1.5	5.12	19	1.3	16
1.5	5.12	29	1.5	30
2.06	15.80	44	1.8	42
2.32	18.36	58	2.0	58
2.56	20.90	68	2.3	67
2.59	21.25	123	2.5	93
2.62	21.50	145	2.5	148
3.0	16.52	205	3.0	205
3.0	15.23	245	3.0	245
3.0	16.1	304	3.0	315
4.75	22.84	551	4.8	600
5.0	25.38	870	5.0	820
6.0	35.54	1163	6.0	1180
6.5	40.61	1474	6.5	1475



5 5/8° (1/64) Bend

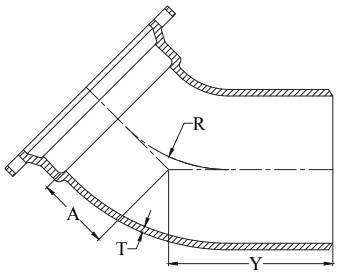
Non-Domestic		
A	R	Weight
1.25	5.08	16
1.5	7.61	18
1.5	10.15	29
1.75	12.69	45
2.0	15.23	59
2.3	17.77	82
2.5	20.31	136
2.5	20.31	157
3.0	25.38	283
3.0	25.38	374
3.0	25.38	487
3.75	32.97	600
4.0	34.55	820
5.0	42.71	1180
5.5	47.35	1475

Bends



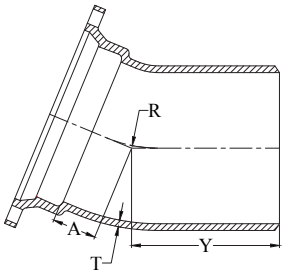
90° (1/4) Bend MJxPE

	Domestic					Non-Domestic			
Size	T	A	Y	R	Weight	T	A	Y	Weight
3	0.34	3.50	9.00	2.50	17	0.33	3.25	8.5	16
4	0.35	4.00	9.50	3.00	22	0.34	4.0	9.5	22
6	0.37	6.00	11.50	5.00	42	0.36	5.0	11.5	41
8	0.39	7.50	13.00	7.00	64	0.38	6.5	12.5	58
10	0.41	9.50	15.00	9.00	89	0.4	7.5	13.0	83
12	0.43	9.00	14.40	8.00	121	0.42	9.0	14.5	114
14	0.51	12.00	20.00	11.50	221	0.47	11.5	19.5	197
16	0.52	13.00	21.00	12.50	261	0.5	12.5	20.5	248
20	0.57	15.00	23.00	13.50	400	0.57	15.0	22.5	390
24	0.62	17.00	25.00	15.50	600	0.61	17.0	25.0	575
30	0.68	21.50	30.50	19.00	865	0.66	21.5	30.5	865



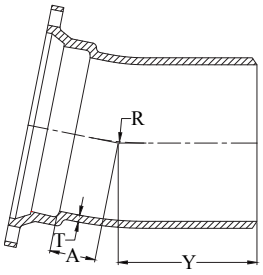
45° (1/8) Bend MJxPE

	Domestic				Non-Domestic		
A	Y	R	Weight	A	Y	Weight
2.00	7.50	2.41	17	1.5	7.0	13
2.50	8.00	3.56	20	2.0	7.5	19
3.20	8.70	5.49	35	3.0	8.5	34
4.00	9.50	8.44	55	3.5	9.0	49
5.00	10.50	10.88	69	4.5	10.0	69
6.00	11.50	13.25	94	5.5	11.0	93
5.50	13.40	10.85	170	5.0	13.0	146
6.00	14.00	13.25	188	5.5	13.5	184
7.00	15.30	13.97	290	7.0	14.0	290
7.50	16.60	14.69	410	7.5	14.5	390
10.50	19.50	19.31	715	10.5	19.5	715



22½° (1/16) Bend MJxPE

	Domestic				Non-Domestic		
Size	A	Y	R	Weight	A	Y	Weight
3	1.50	7.00	2.51	15	1.0	6.5	12
4	1.75	7.25	3.81	17	1.5	7.0	18
6	2.25	7.75	6.35	28	2.0	7.5	29
8	2.84	8.34	11.80	44	2.5	8.0	43
10	3.35	8.85	14.35	62	3.0	8.5	61
12	3.50	9.00	12.70	77	3.5	9.0	79
14	3.93	11.93	17.25	121	3.75	11.25	133
16	3.98	11.98	17.50	167	3.75	11.75	166
20	7.00	14.00	35.19	290	7.0	14.0	300
24	9.00	17.66	37.69	345	7.5	14.5	395
30	6.75	15.75	21.36	600	6.75	15.75	600



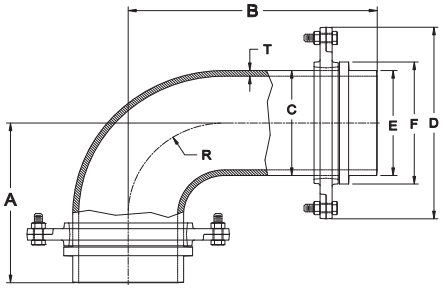
11¼° (1/32) Bend MJxPE

	Domestic				Non-Domestic		
A	Y	R	Weight	A	Y	Weight
1.25	6.75	7.62	15	1.0	6.5	12
1.50	7.00	5.12	17	1.25	6.25	17
1.50	7.00	5.12	29	1.5	7.0	27
2.05	7.55	15.80	38	1.75	7.25	39
2.31	7.81	18.36	52	2.0	7.5	52
2.56	8.06	20.90	68	2.25	7.75	69
2.59	10.59	21.25	134	2.5	10.5	118
2.62	10.62	21.50	161	2.5	10.5	136
7.00	14.00	21.07	290	7.0	14.0	300
9.00	26.12	12.00	475	7.5	14.5	400
4.75	13.75	22.84	535	4.75	13.75	535

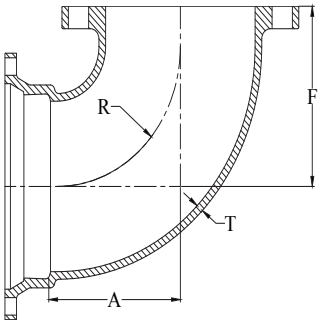
90° SwivelxSwivel Hydrant Ell

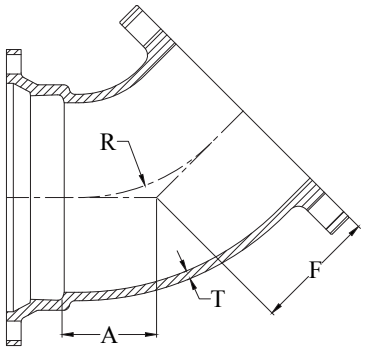
Size	T	A	B	C	D	E	F	R	**Weight
6	0.37	10.50	5.50	6.90	11.20	6.81	7.98	6.00	48

**Weight includes two swivel glands.



Bends



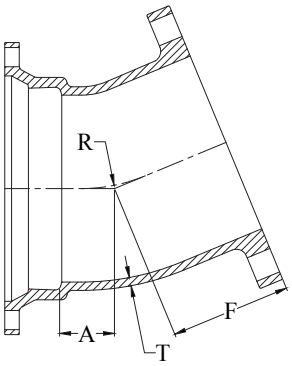


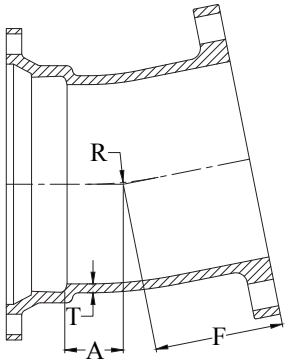
90° (1/4) Bend MJxFE

	Domestic					Non-Domestic			
Size	T	A	F	R	Weight	T	A	F	Weight
3	0.34	3.50	5.50	2.50	21	0.33	4.00	5.5	20
4	0.35	4.00	6.50	3.00	28	0.34	4.50	6.5	36
6	0.37	6.00	8.00	5.00	45	0.36	6.00	8.0	57
8	0.38	7.00	9.00	5.63	67	0.38	7.00	9.0	83
10	0.41	9.50	11.00	9.00	106	0.4	7.50	11.0	109
12	0.43	9.00	10.50	8.00	148	0.42	9.25	12.0	150
14	0.51	12.00	14.00	11.50	217	0.47	11.50	14.0	275
16	0.52	13.00	15.00	12.50	297	0.5	12.50	15.0	335
18	0.59	13.00	19.00	12.50	…	0.54	14.50	16.5	…
20	0.60	15.00	20.50	13.50	…	0.57	15.00	18.0	…
24	0.62	17.00	20.50	15.50	…	0.61	16.75	22.0	618
30	0.68	21.50	26.00	19.00	…	0.68	21.5	26.0	1014

45° (1/8) Bend MJxFE

	Domestic				Non-Domestic		
A	F	R	Weight	A	F	Weight
…	…	…	…	…	…	…
2.50	4.00	3.56	34	2.25	4.00	24
3.25	5.00	5.49	39	3.25	5.00	37
4.25	5.50	7.93	54	3.75	5.50	71
5.00	6.50	9.76	84	4.75	6.50	103
6.00	7.50	12.19	112	5.75	7.50	151
5.50	8.50	10.85	181	5.00	7.50	207
5.50	9.00	10.42	218	5.75	8.00	311
6.50	10.00	12.36	…	6.50	8.50	…
7.00	10.50	13.59	…	7.50	9.50	…
7.50	11.00	14.89	…	8.00	11.00	575
10.50	15.00	9.31	…	10.50	15.00	794





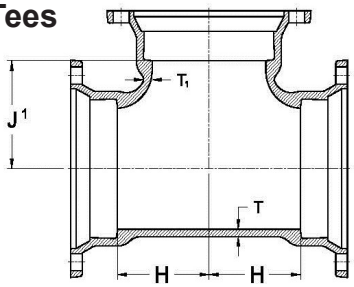
22½° (1/16) Bend MJxFE

	Domestic				Non-Domestic		
Size	A	F	R	Weight	A	F	Weight
3	…	…	…	…	…	…	…
4	1.75	7.25	3.81	21	1.50	7.00	32
6	2.25	7.75	6.35	32	2.00	7.50	41
8	2.84	8.34	11.80	46	2.50	8.00	64
10	3.35	8.85	14.35	78	3.00	8.50	92
12	3.50	9.00	12.70	106	3.50	9.00	132
14	…	…	…	…	…	…	…
16	…	…	…	…	…	…	…
18	4.50	8.00	15.11	…	…	…	…
20	4.50	8.00	15.07	…	…	…	…
24	4.50	8.00	15.51	…	…	…	…
30	6.75	11.25	21.36	…	…	…	…

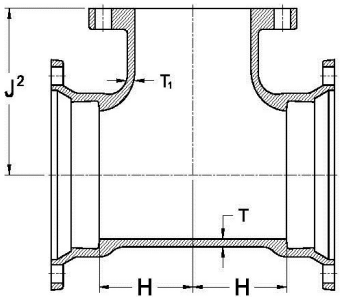
11¼° (1/32) Bend MJxFE

	Domestic				Non-Domestic		
A	F	R	Weight	A	F	Weight
…	…	…	…	…	…	…
1.50	7.00	5.12	20	1.50	4.00	28
1.50	7.00	5.12	29	1.75	5.00	40
2.05	7.55	15.80	42	2.00	5.50	53
2.31	7.81	18.36	58	2.25	6.50	88
2.56	8.06	20.90	85	2.50	7.50	114
…	…	…	…	…	…	…
…	…	…	…	…	…	…
3.00	6.50	16.52	…	…	…	…
3.00	6.50	15.23	…	…	…	…
3.00	6.50	16.10	…	…	…	…
4.75	9.25	22.84	…	…	…	…

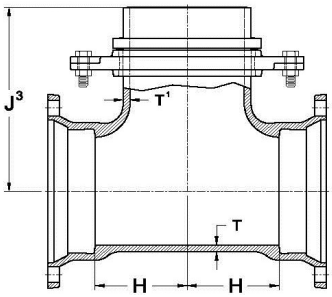
Tees



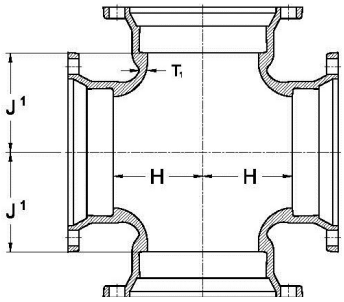
MJ Tee



MJxFE Tee



MJxSwivel Tee

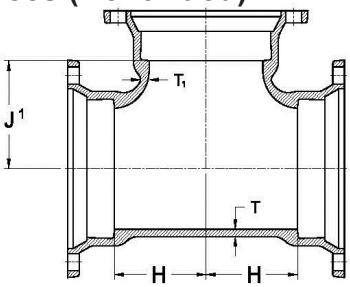


Cross

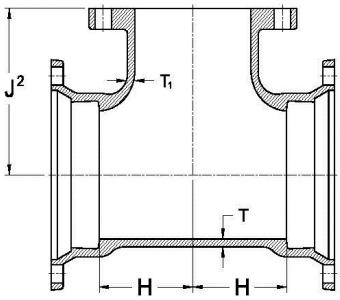
	Domestic						Weight				Non-Domestic				Weight	
Size	T	T1	H	J1	J2	J3	MJ	MJxFE	†MJxS	Cross	T	T1	H	J1	MJ	Cross
3	0.34	0.34	3.50	3.50	5.50	…	26	29	…	31	0.33	0.33	3.00	3.00	28	35
4x3	0.35	0.34	3.50	4.00	6.50	…	35	34	…	39	0.34	0.33	3.50	4.00	30	34
4	0.35	0.35	4.00	4.00	6.50	…	36	39	…	45	0.34	0.34	4.00	4.00	32	40
6x3	0.37	0.34	4.00	4.00	6.50	…	51	54	…	…		0.36	0.33	3.50	58	42
6x4	0.37	0.35	4.00	5.00	8.00	…	52	57	…	62	0.36	0.34	4.00	5.00	46	57
6	0.37	0.37	5.00	5.00	8.00	10.50	66	68	77	72	0.36	0.36	5.00	5.00	56	75
8x3	0.39	0.34	4.00	6.50	9.00	…	56	…	…	…	…	…	…	…		---
8x4	0.39	0.35	4.50	6.50	9.00	…	72	82	…	84	0.38	0.34	4.00	6.50	60	68
8x6	0.39	0.37	5.50	6.50	9.00	11.50	79	81	75	98	0.38	0.36	5.00	6.50	72	74
8	0.39	0.39	6.50	6.50	9.00	11.50	90	101	116	112	0.38	0.38	0.38	6.50	86	105
10x3	0.41	0.34	4.00	7.50	11.00	…	80	…	…	…	…	…	…	…		---
10x4	0.41	0.35	4.50	7.50	11.00	…	82	92	…	98	0.40	0.34	4.00	7.50	78	112
10x6	0.41	0.37	5.50	7.50	11.00	13.00	110	116	114	121	0.40	0.36	5.00	7.50	90	119
10x8	0.41	0.39	6.50	7.50	11.00	13.00	116	128	138	135	0.40	0.38	6.50	7.50	105	124
10	0.41	0.41	7.50	7.50	11.00	…	132	144	…	156	0.40	0.40	7.50	7.50	120	145
12x3	0.43	0.34	4.00	8.75	12.00	…	99	…	…	…	…	…	…	…		---
12x4	0.43	0.35	4.00	9.00	12.00	…	108	118	…	119	0.42	0.34	4.00	8.75	94	119
12x6	0.43	0.37	5.00	9.00	12.00	14.25	119	118	117	138	0.42	0.34	4.00	8.75	110	126
12x8	0.43	0.39	6.50	9.00	12.00	14.25	126	146	149	149	0.42	0.38	6.50	8.75	125	149
12x10	0.43	0.41	7.50	8.75	12.00	…	159	174	…	187	0.42	0.40	7.50	8.75	140	179
12	0.43	0.43	8.75	8.75	12.00	…	171	198	…	202	0.42	0.42	8.75	8.75	160	213
14x6	0.51	0.44	6.50	10.50	14.00	16.00	183	205	211	210	0.47	0.36	6.50	10.50	182	200
14x8	0.51	0.45	7.50	10.50	14.00	…	211	…	…	231	0.47	0.38	7.50	10.50	206	228
14x10	0.51	0.46	8.50	10.50	14.00	…	229	244	…	255	0.47	0.40	8.50	10.50	228	---
14x12	0.51	0.47	9.50	10.50	14.00	…	245	284	…	269	0.47	0.42	9.50	10.50	234	---
14	0.51	0.51	10.50	10.50	14.00	…	281	291	…	299	0.47	0.47	10.50	10.50	280	299
16x6	0.52	0.45	6.50	11.50	15.00	17.00	222	230	243	250	0.50	0.36	6.50	11.50	228	240
16x8	0.52	0.46	7.50	11.50	15.00	…	245	248	…	264	0.50	0.38	7.50	11.50	248	385
16x10	0.52	0.47	8.50	11.50	15.00	…	265	287	…	286	0.50	0.40	8.50	11.50	264	---
16x12	0.52	0.48	9.50	11.50	15.00	…	277	312	…	312	0.50	0.42	9.50	11.50	280	---
16x14	0.52	0.51	10.50	11.50	15.00	…	317	348	…	…	0.50	0.47	10.50	11.50	316	---
16	0.52	0.52	11.50	11.50	15.00	…	324	324	…	451	0.50	0.50	11.50	11.50	322	---
18x6	0.59	0.44	6.50	14.50	15.50	18.00	275	261	279	…	0.54	0.36	6.50	12.50	275	---
18x8	0.59	0.45	7.50	14.50	14.50	…	280	351	…	…	0.54	0.38	7.50	12.50	295	---
18x10	0.59	0.47	8.50	12.50	…	…	286	…	…	…	0.54	0.40	8.50	12.50	315	---
18x12	0.59	0.49	9.50	12.50	…	…	372	…	…	…	0.54	0.42	9.50	12.50	335	348
18x14	0.59	0.56	10.50	12.50	…	…	415	…	…	…	0.54	0.47	10.50	12.50	380	---
18x16	0.59	0.57	11.50	12.50	…	…	432	…	…	…	0.54	0.50	11.50	12.50	405	---
18	0.59	0.59	13.00	12.50	…	…	490	…	…	…	0.54	0.54	12.50	12.50	435	348
20x6	0.60	0.44	6.50	14.00	17.00	19.50	335	362	358	…	0.57	0.36	6.50	14.00	315	---
20x8	0.60	0.45	8.00	14.00	…	…	390	…	…	…	0.57	0.38	8.00	14.00	345	379
20x10	0.60	0.47	9.00	14.00	…	…	472	…	…	…	0.57	0.40	9.00	14.00	370	---
20x12	0.60	0.49	10.00	14.00	…	…	460	…	…	…	0.57	0.42	10.00	14.00	395	413
20x14	0.60	0.56	11.00	14.00	…	…	475	…	…	…	0.57	0.47	11.00	14.00	440	---
20x16	0.60	0.57	12.00	14.00	…	…	487	…	…	…	0.57	0.50	12.00	14.00	465	---
20x18	0.60	0.59	13.00	14.00	…	…	560	…	…	…	0.57	0.54	13.00	14.00	505	---
20	0.60	0.60	14.00	14.00	…	…	605	…	…	…	0.57	0.57	14.00	14.00	535	---

†Weight includes the swivel gland.

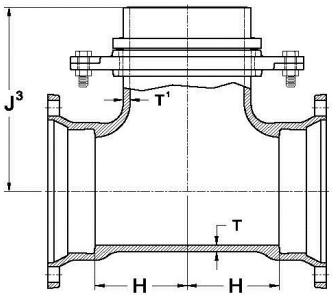
Tees (Continued)



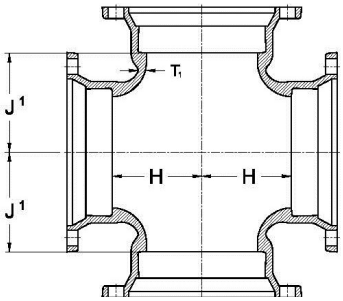
MJ Tee



MJxFE Tee



MJxSwivel Tee

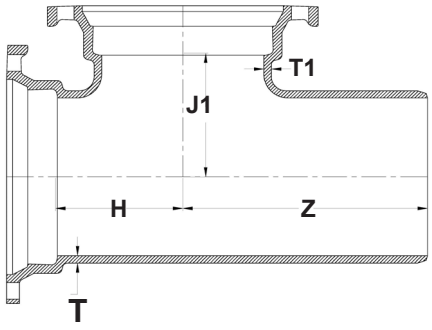


Cross

	Domestic						Weight				Non-Domestic				Weight	
Size	T	T1	H	J1	J2	J3	MJ	MJxFE	†MJxS	Cross	T	T1	H	J1	MJ	Cross
24x6	0.62	0.44	7.00	16.00	19.00	21.50	465	451	457	…	0.61	0.36	7.00	16.00	415	---
24x8	0.62	0.45	8.00	16.00	…	…	475	…	…	…	0.61	0.38	8.00	16.00	445	481
24x10	0.62	0.47	9.00	16.00	…	…	516	…	…	…	0.61	0.40	9.00	16.00	470	…
24x12	0.62	0.49	10.00	16.00	…	…	549	580	…	…	0.61	0.42	10.00	16.00	500	529
24x14	0.62	0.56	11.00	16.00	…	…	585	…	…	…	0.61	0.47	11.00	16.00	550	…
24x16	0.62	0.57	12.00	16.00	…	…	625	744	…	…	0.61	0.50	12.00	16.00	580	576
24x18	0.62	0.59	13.00	16.00	…	…	675	…	…	…	0.61	0.54	13.00	16.00	625	…
24x20	0.62	0.60	14.00	16.00	…	…	710	…	…	…	0.61	0.57	14.00	16.00	660	1589
24	0.62	0.62	16.00	16.00	…	…	814	…	…	920	0.61	0.61	16.00	16.00	720	---
30x6	0.66	0.36	8.00	20.00	…	…	630	…	…	…	0.66	0.36	8.00	20.00	685	---
30x8	0.66	0.38	8.50	20.00	…	…	739	…	…	…	0.66	0.38	8.50	20.00	739	---
30x12	0.66	0.42	10.00	20.00	…	…	739	…	…	…	0.66	0.42	10.00	20.00	830	882
30x16	0.66	0.50	12.50	20.00	…	…	959	…	…	…	0.66	0.50	12.50	20.00	959	---
30x18	0.66	0.52	13.00	20.00	…	…	975	…	…	…	0.66	0.54	13.00	20.00	1039	---
30x20	0.66	0.57	15.00	20.00	…	…	995	…	…	…	0.66	0.57	15.00	20.00	995	---
30x24	0.66	0.61	16.00	20.00	…	…	1160	…	…	…	0.66	0.61	16.00	20.00	1060	1246
30	0.66	0.66	20.00	20.00	…	…	1323	…	…	1840	0.66	0.66	20.00	20.00	1323	1840
36x6	0.74	0.36	7.00	23.50	…	…	630	…	…	…	0.66	0.36	8.00	20.00	685	---
36x8	0.74	0.38	9.00	23.50	…	…	739	…	…	…	0.66	0.38	8.50	20.00	739	---
36x10	0.74	0.47	10.00	23.50	…	…	739	…	…	…	0.66	0.42	10.00	20.00	830	882
36x12	0.74	0.49	10.00	23.50	…	…	959	…	…	…	0.66	0.50	12.50	20.00	959	---
36x14	0.74	0.56	12.50	23.50	…	…	1103	…	…	…	0.74	0.42	10.00	23.50	1146	---
36x16	0.74	0.57	12.50	23.50	…	…	1350	…	…	…	0.74	0.50	12.50	23.50	1385	---
36x18	0.74	0.59	13.00	23.50	…	…	1350	…	…	…	0.74	0.50	12.50	23.50	1385	---
36x20	0.74	0.60	15.00	23.50	…	…	1350	…	…	…	0.74	0.50	12.50	23.50	1385	---
36x24	0.74	0.62	16.00	23.50	…	…	1498	…	…	…	0.74	0.61	16.00	23.50	1498	1785
36x30	0.74	0.66	20.00	23.50	…	…	1555	…	…	…	0.74	0.66	20.00	23.50	1555	---
36	0.74	0.74	23.50	23.50	…	…	1910	…	…	2655	0.74	0.74	23.50	23.50	1900	2655
42x12	0.82	0.62	10.00	27.50	…	…	1410	…	…	…	0.82	0.42	10.00	27.50	1885	---
42x24	0.82	0.62	20.00	27.50	…	…	2295	…	…	…	0.82	0.61	20.00	27.50	2270	2668
42x30	0.82	0.66	22.00	29.50	…	…	2337	…	…	…	0.82	0.66	22.00	30.00	2425	2950
42x36	0.82	0.74	30.00	30.00	…	…	3000	…	…	…	0.82	0.74	30.00	30.00	3000	3607
42	0.82	0.82	30.00	30.00	…	…	3169	…	…	…	0.82	0.82	30.00	30.00	3175	3725
48x12	0.90	0.62	9.00	32.00	…	…	2500	…	…	…	0.90	0.42	9.00	32.00	2535	---
48x24	0.90	0.62	23.00	32.00	…	…	2822	…	…	…	0.90	0.74	23.00	32.00	2870	---
48x36	0.90	0.82	33.50	33.25	…	…	3982	…	…	…	0.90	0.74	33.50	33.25	3900	…
48x42	0.90	0.82	33.50	33.50	…	…	4100	…	…	…	0.90	0.82	33.50	33.50	4100	---
48	0.90	0.82	33.50	33.50	…	…	4251	…	…	…	0.90	0.90	33.50	33.50	4250	4955

†Weight includes the swivel gland.

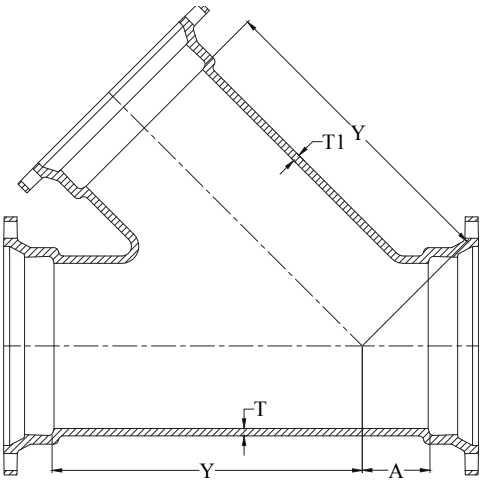
Tees (Continued)



MJxPExMJ Tee

	Domestic						Non-Domestic					
Size	T	T1	*H	*J1	*Z	Weight	T	T1	*H	*J1	*Z	Weight
6	0.37	0.37	5.0	5.0	11.5	57	0.37	0.37	8.0	8.0	16.0	57
8x6	0.39	0.37	5.5	6.5	11.5	79	0.39	0.37	9.0	9.0	17.0	79
8	0.39	0.39	6.5	6.5	12.5	81	0.38	0.38	9.0	9.0	17.0	77
10	0.41	0.41	7.5	7.5	13.0	133	0.40	0.40	11.0	11.0	19.0	120

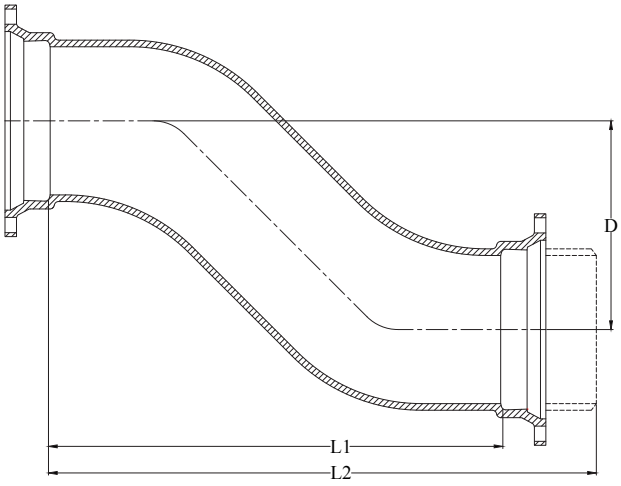
Wyes



Size	*A	*Y	T	T1	Weight
3	2.50	7.50	0.34	0.34	36
4x3	2.00	8.50	0.35	0.34	39
4	2.50	8.50	0.35	0.35	45
6x4	1.50	11.00	0.37	0.35	67
6	3.00	13.00	0.37	0.37	85
8x4	0.50	13.00	0.39	0.35	86
8x6	2.00	14.50	0.39	0.37	109
8	3.50	16.00	0.39	0.39	117
10x4	0.00	15.00	0.41	0.35	112
10x6	1.00	16.00	0.41	0.37	136
10x8	2.50	17.00	0.41	0.39	162
10	3.50	19.00	0.41	0.41	199
12x4	0.00	16.50	0.43	0.35	141
12x6	1.50	18.50	0.43	0.37	170
12x8	1.50	18.50	0.43	0.39	177
12x10	3.00	20.00	0.43	0.41	216
12	4.50	22.50	0.43	0.43	218
†14	6.00	25.00	0.51	0.51	476
†16x6	0.00	21.00	0.52	0.45	300
†16x8	0.50	22.50	0.52	0.46	349
†16x12	3.50	25.00	0.52	0.48	391
†16	6.50	28.00	0.52	0.52	635

*Not in AWWA C153
† Rated at 250psi

Offsets (MJxMJ) & (MJxPE)

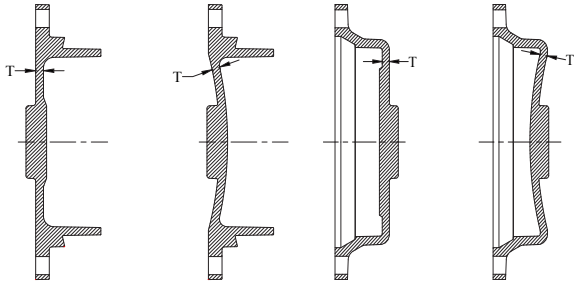


				Domestic		Non-Domestic			
				Weight				Weight	
Size	D	L1	L2	MJxMJ	MJxPE	L1	L2	MJxMJ	MJxPE
3	6	9	14.5	23	29	---	---	---	---
3	12	15	20.5	34	39	---	---	---	---
3	18	21	26.5	40	48	---	---	---	---
3	24	27	32.5	47	53	---	---	---	---
4	6	10	15.5	32	44	10	15.5	32	33
4	12	6	21.5	42	54	18	23.5	55	50
4	18	22	27.5	56	65	22	27.5	63	61
4	24	28	33.5	65	72	28	33.5	79	68
6	6	12	17.5	55	54	12	17.5	48	55
6	12	18	23.5	72	68	18	23.5	68	66
6	18	24	29.5	88	96	24	29.5	86	103
6	24	30	35.5	111	117	30	35.5	110	122
8	6	13	18.5	79	78	13	18.5	74	85
8	12	19	24.5	103	110	19	24.5	94	97
8	18	25	30.5	128	124	25	30.5	118	133
10	6	15	20.5	112	130	---	20.5	---	127
10	12	21	26.5	148	172	21	26.5	144	174
10	18	27	32.5	176	189	27	32.5	192	202
12	6	17	22.5	157	---	17	22.5	150	132
12	12	23	28.5	174	198	23	28.5	192	197
12	18	29	34.5	210	270	27	32.5	226	273
12	24	35	40.5	298	334	35	40.5	272	347
12	30	41	46.5	283	205	---	---	---	---

TYLER UNION®

Plugs

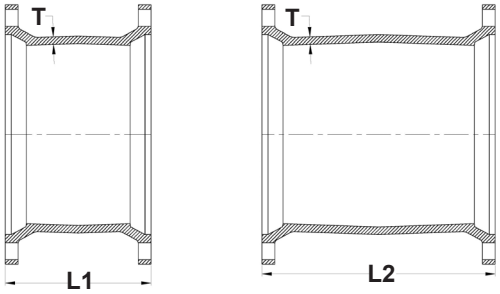
Caps



	Domestic Weight			Non-Domestic Weight		
Size	T	Plugs	Caps	T	Plugs	Caps
3	0.46	9	8	0.33	8	8
4	0.46	9	10	0.34	10	9
6	0.46	13	18	0.36	16	15
8	0.46	25	26	0.38	26	22
10	0.56	36	41	0.40	36	32
12	0.56	47	54	0.42	46	42
14	0.62	76	70	0.47	75	66
16	0.62	98	101	0.50	95	92
18	0.65	138	121	0.54	121	114
20	0.66	158	150	0.57	135	125
24	0.68	223	232	0.61	175	166
30	0.66	426	453	0.66	355	345
36	0.74	560	501	0.74	688	628
42	0.82	1091	723	0.82		
48	0.90	1455	974	0.90		

Note: Optional 2” tap in the center.

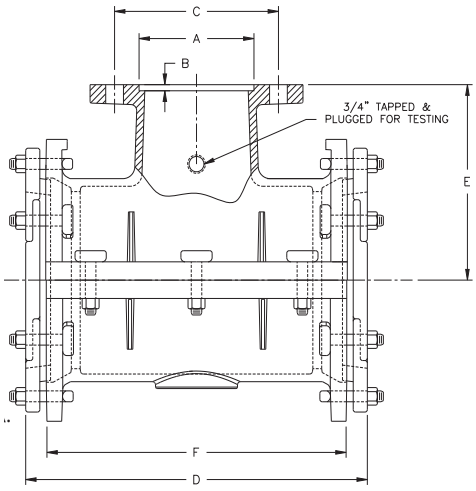
Solid Sleeve



	Domestic Weight					Non-Domestic Weight				
Size	T	L1	L2	Short	Long	T	L1	L2	Short	Long
3	0.34	7.5	12	13	22	0.33	7.5	12	12	17
4	0.35	7.5	12	19	25	0.34	7.5	12	15	20
6	0.37	7.5	12	28	37	0.36	7.5	12	23	29
8	0.39	7.5	12	38	49	0.38	7.5	12	31	45
10	0.41	7.5	12	48	68	0.40	7.5	12	45	61
12	0.43	7.5	12	58	81	0.42	7.5	12	56	76
14	0.56	9.5	15	107	153	0.47	9.5	15	94	128
16	0.57	9.5	15	116	174	0.50	9.5	15	118	159
18	0.68	9.5	15	154	207	0.54	9.0	15	145	200
20	0.69	9.5	15	200	249	0.57	9.0	15	173	236
24	0.75	9.5	15	232	323	0.61	9.0	15	226	306
30	0.66	15.0	24	549	640	0.66	15.0	24	472	634
36	0.74	15.0	24	725	868	0.74	15.0	24	673	889
42	0.82	….	24	….	1146	0.82	15.0	24	887	1150
48	0.90	….	24	….	1431	0.90	15.0	24	1136	1435

Tapping Sleve

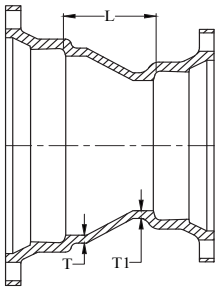
for Cast Iron/Ductile Iron



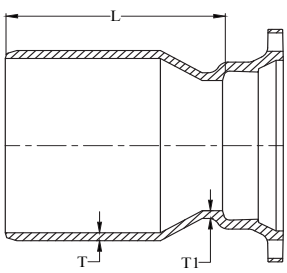
	Dimensions						O.D. Range DI		Weight
Size	A	B	C	D	E	F	Min.	Max.	DI
6x4	5.016	0.250	7.50	15.75	8.00	12.75	6.85	7.15	104
6	7.016	0.312	9.50	15.75	8.00	12.75	6.85	7.15	108
8x4	5.016	0.250	7.50	16.50	9.00	13.50	9.00	9.35	134
8x6	7.016	0.312	9.50	16.50	9.00	13.50	9.00	9.35	140
8	9.016	0.312	11.75	16.50	9.00	13.50	9.00	9.35	148
10x4	5.016	0.250	7.50	24.00	11.04	20.75	11.04	11.45	236
10x6	7.016	0.312	9.50	24.00	11.04	20.75	11.04	11.45	240
10x8	9.016	0.312	11.75	24.00	11.04	20.75	11.04	11.45	246
10	11.016	0.312	14.25	24.00	11.04	20.75	11.04	11.45	257
12x4	5.016	0.250	7.50	26.50	13.14	23.25	13.14	13.56	273
12x6	7.016	0.312	9.50	26.50	13.14	23.25	13.14	13.56	286
12x8	9.016	0.312	11.75	26.50	13.14	23.25	13.14	13.56	292
12x10	11.016	0.312	14.25	26.50	13.14	23.25	13.14	13.56	303
12	13.016	0.312	17.00	26.50	13.14	23.25	13.14	13.56	320

Note: See 25U at www.tylerunion.com for assembly instructions.
Tapping sleeve is assembled with gland and gasket.

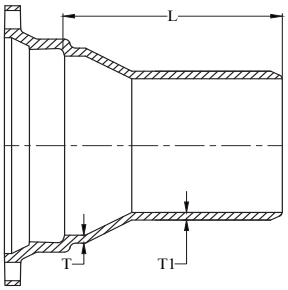
Reducer



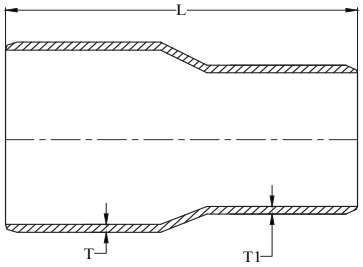
MJxMJ



PExMJ-SEB



MJ-LEBxPE

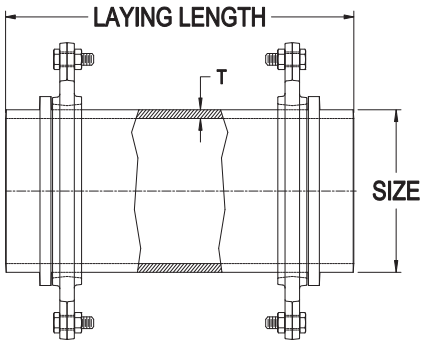


PExPE

Domestic											Non-Domestic									
			MJ	SEB	LEB	PE	Weight						MJ	SEB	LEB	PE	Weight			
Size	T	T1	L	L	L	L	MJ	SEB	LEB	PE	T	T1	L	L	L	L	MJ	SEB	LEB	PE
4x3	0.35	0.34	3.0	8.5	8.5	14.0	18	17	17	18	0.34	0.33	3	8.5	8.5	14.0	18	17	18	14
6x3	0.37	0.34	5.0	10.5	10.5	16.0	28	25	27	20	0.36	0.33	5	10.5	10.5	16.0	22	24	19	16
6x4	0.37	0.35	4.0	9.5	9.5	15.0	28	26	27	26	0.36	0.34	4	9.5	9.5	15.0	24	25	25	22
8x4	0.39	0.35	5.0	10.5	10.5	16.0	36	34	36	33	0.38	0.34	5	10.5	10.5	16.0	32	30	34	30
8x6	0.39	0.37	4.0	9.5	9.5	15.0	39	38	39	30	0.38	0.36	4	9.5	9.5	15.0	36	35	32	30
10x4	0.41	0.35	7.0	12.5	12.5	18.0	53	46	51	…	0.40	0.34	7	12.5	12.5	18.0	46	43	43	46
10x6	0.41	0.37	5.0	10.5	10.5	16.0	59	48	52	49	0.40	0.36	5	10.5	10.5	16.0	47	46	42	46
10x8	0.41	0.39	4.0	9.5	9.5	15.0	54	52	44	47	0.40	0.38	4	9.5	9.5	15.0	50	42	50	47
12x4	0.43	0.35	9.0	14.5	14.5	20.0	67	61	68	60	0.42	0.34	9	14.5	14.5	20.0	58	60	60	58
12x6	0.43	0.37	7.0	12.5	12.5	18.0	64	58	66	54	0.42	0.36	7	12.5	12.5	18.0	58	58	58	57
12x8	0.43	0.39	5.0	10.5	10.5	16.0	57	62	65	60	0.42	0.38	5	10.5	10.5	16.0	57	54	55	54
12x10	0.43	0.41	4.0	9.5	9.5	15.0	63	61	65	57	0.42	0.40	4	9.5	9.5	15.0	61	59	59	54
14x6	0.51	0.44	9.0	17.0	14.5	22.5	104	107	112	…	0.47	0.36	9	16.9	14.5	22.3	100	100	104	93
14x8	0.51	0.45	7.0	15.0	12.5	20.5	104	107	108	…	0.47	0.38	7	14.9	12.4	20.3	100	98	98	94
14x10	0.51	0.46	5.0	13.0	10.5	18.5	100	102	100	…	0.47	0.40	5	12.9	10.4	18.3	100	94	92	90
14x12	0.51	0.47	4.0	12.0	9.5	17.5	100	101	100	100	0.47	0.42	4	11.9	9.4	17.3	100	90	92	88
16x6	0.52	0.45	11.0	19.0	16.5	24.5	132	131	141	128	0.50	0.36	11	18.9	16.5	24.3	124	125	136	93
16x8	0.52	0.46	9.0	17.0	14.5	22.5	136	128	136	136	0.50	0.38	9	16.9	14.4	22.3	124	121	128	119
16x10	0.52	0.47	7.0	15.0	12.5	20.5	128	124	113	123	0.50	0.40	7	15.0	12.5	20.5	124	105	123	119
16x12	0.52	0.48	5.0	13.0	10.5	18.5	120	123	119	11	0.50	0.42	5	12.9	10.5	18.3	112	109	108	99
16x14	0.52	0.51	4.0	12.0	12.0	20.0	140	139	138	133	0.50	0.47	4	12.0	12.0	19.7	140	126	132	129
18x8	0.59	0.45	14.0	22.0	19.5	27.5	201	180	195	…	0.54	0.38	13	20.0	19.5	27.4	190	170	195	170
18x10	0.59	0.47	12.0	20.0	17.5	25.5	196	180	185	…	0.54	0.40	10	18.0	17.4	25.5	195	165	185	160
18x12	0.59	0.49	10.0	18.0	15.5	23.5	175	170	190	…	0.54	0.42	7	15.5	14.0	19.5	180	150	175	150
18x14	0.59	0.56	8.0	16.0	16.0	24.0	180	181	200	…	0.54	0.47	6	15.0	15.0	23.0	190	175	190	160
18x16	0.59	0.57	7.0	15.0	15.0	23.0	194	180	190	…	0.54	0.50	5	12.5	12.5	18.0	195	170	190	145
20x10	0.60	0.47	14.0	22.0	19.4	27.5	225	210	210	…	0.57	0.40	14	22.0	19.0	27.5	220	200	210	180
20x12	0.60	0.49	12.0	20.0	17.5	25.5	214	208	210	…	0.57	0.42	12	17.5	16.0	21.5	205	170	205	190
20x14	0.60	0.56	10.0	18.0	17.8	26.0	208	198	205	…	0.57	0.47	10	18.0	17.9	26.0	200	190	205	195
20x16	0.60	0.57	8.0	16.0	15.8	24.0	225	215	222	…	0.57	0.50	7	13.5	13.5	19.0	200	200	185	170
20x18	0.60	0.59	7.0	15.0	15.0	23.0	233	220	…	…	0.57	0.54	4	12.0	12.0	20.0	225	200	215	190
24x12	0.62	0.49	16.0	24.0	21.4	29.5	320	302	300	…	0.61	0.42	16	21.5	21.0	22.5	305	275	290	240
24x14	0.62	0.56	14.0	22.0	21.8	30.0	314	325	322	…	0.61	0.47	14	22.0	21.9	25.0	306	310	315	295
24x16	0.62	0.57	12.0	20.0	19.8	28.0	325	319	340	…	0.61	0.50	12	17.5	17.5	23.0	320	285	285	285
24x18	0.62	0.59	10.0	18.0	18.0	26.0	325	310	…	…	0.61	0.54	10	18.0	18.0	21.0	305	300	310	290
24x20	0.62	0.60	8.0	16.0	16.0	24.0	315	305	…	…	0.61	0.57	7	13.5	13.5	14.0	300	270	275	240
30x16	0.66	0.50	30.0	39.0	…	…	475	565	…	…	0.66	0.50	30	39.0	39.0	48.0	633	565	623	555
30x18	0.66	0.54	28.0	37.0	…	…	495	590	…	…	0.66	0.54	28	37.0	37.0	46.0	658	590	635	567
30x20	0.66	0.57	24.0	33.0	…	…	525	560	…	…	0.66	0.57	24	33.0	33.0	42.0	628	560	603	535
30x24	0.66	0.61	10.0	24.5	…	…	478	495	…	…	0.66	0.61	10	24.5	24.5	33.5	478	495	526	458
36x16	0.74	0.50	30.0	…	…	…	789	890	…	…	0.74	0.50	30	27.0	---	---	1016	595	---	---
36x20	0.74	0.57	36.0	45.0	…	…	970	874	…	…	0.74	0.57	36	45.0	45.0	54.0	975	874	950	849
36x24	0.74	0.61	19.0	33.0	…	…	770	746	…	…	0.74	0.61	19	33.0	33.0	42.0	770	746	810	709
36x30	0.74	0.66	15.5	24.5	…	…	838	725	…	…	0.74	0.66	15.5	24.5	24.5	33.5	650	725	758	657
42x30	0.82	0.74	20.0	…	…	…	1067	…	…	…	0.82	0.66	20	29.0	29.0	38.0	1083	931	1015	863
42x36	0.82	0.74	15.5	…	…	…	1116	…	…	…	0.82	0.74	15.5	24.5	24.5	33.5	1114	962	1013	861
48x30	0.90	0.66	40.0	…	…	…	1852	…	…	…	0.90	0.66	40	49.0	49.0	58.0	1779	1594	1711	1526
48x36	0.90	0.74	28.0	…	…	…	1632	…	…	…	0.90	0.74	28	37.0	37.0	46.0	1641	1456	1540	1355
48x42	0.90	0.82	15.5	…	…	…	1486	…	…	…	0.90	0.82	15.5	24.5	24.5	33.5	1426	1241	1274	1089

Adapters

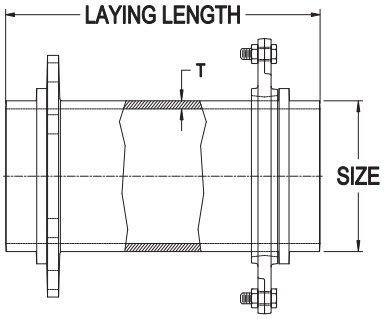
SwivelxSwivel Adapter



Size by Laying Length	Wall Thickness	Weight
6x12	0.37	28
6x18	0.37	49
6x24	0.37	52

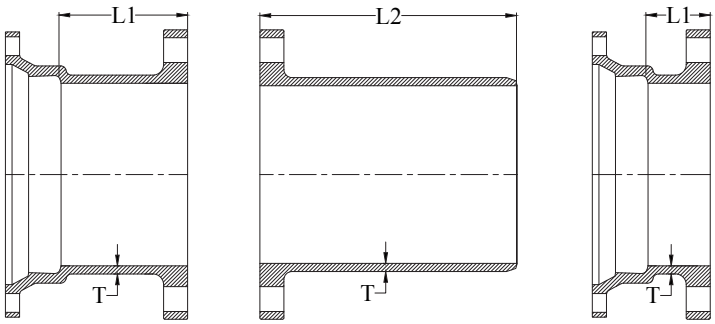
Adapter weights include swivel glands.

SwivelxSolid Adapter with Swivel Gland



Size by Laying Length	Wall Thickness	Weight
6x13	0.37	36
6x18	0.37	52
6x24	0.37	63
8x13	0.39	52

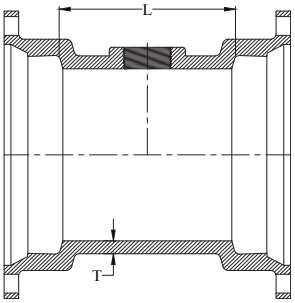
Adapter weights include swivel gland.



Domestic MJxFE | **MJxPE** | **Non-Domestic MJxFE**

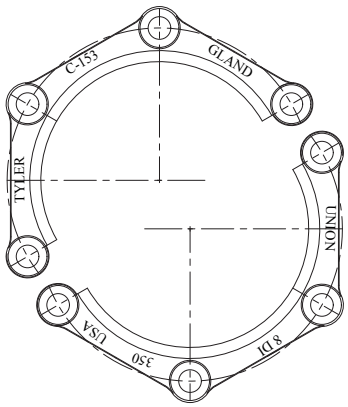
	Domestic					Non-Domestic	
	Dimensions			Weight			Weight
Size	T	L1	L2	MJxFE	FExPE	L1	MJxFE
3	0.34	6	12	18	…	…	…
4	0.35	6	12	26	23	3.5	24
6	0.37	6	12	36	35	3.5	37
8	0.39	6	12	55	43	3.5	51
10	0.41	6	12	69	59	3.5	70
12	0.43	6	12	88	88	3.5	101
14	0.51	6	12	127	…	6	128
16	0.52	6	12	161	149	6	158
18	0.56	6	…	173	…	6	176
20	0.60	7	…	275	…	6	267
24	0.62	8	…	271	…	6	288
30	0.66	7	…	514	…	7	557
36	0.74	8	…	770	…	8	798

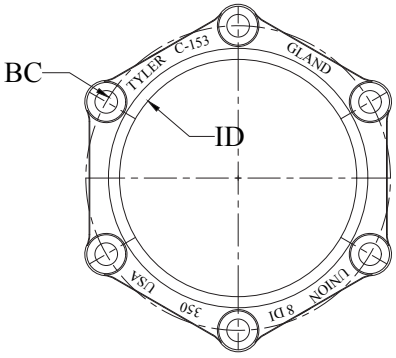
MJ Tapped Tee (2" Tap)



Size	T	L	Max.Tap	Weight
3	0.34	6	2	19
4	0.35	6	2	23
6	0.37	6	2	35
8	0.39	6	2	54
10	0.41	6	2	68
12	0.43	6	2	88
16	0.52	6	2	164

Glands





MJ Split Repair Glands

Size	Inside Diameter (+.07 -.03)	Bolt Circle (+ -.06)	Weight
4	4.90	7.50	4
6	7.00	9.50	5
8	9.15	11.75	6
10	11.20	14.00	8
12	13.30	16.25	18

Split glands work with standard MJ gaskets and standard T-head bolts. Glands are shipped in halves and do not need separate bolts. T-head bolts alone hold the halves together

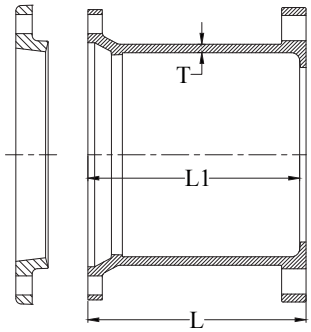
MJ Glands

Size	Weight	Size	Weight
3	2	18	22
4	3	20	32
6	4	24	37
8	6	30	85
10	8	36	115
12	10	42	180
14	17	48	275
16	18		

MJ Accessory Kits and Weights

Size	No.	Bolt Size	Bolt Length	Bolt Torque ft-lb	Wt. of Glands, Bolts and Gasket	Pipe Barrel O.D.
3	4	5/8	3	45-60	4.4	3.96
4	4	3/4	3 1/2	75-90	6.9	4.80
6	6	3/4	3 1/2	75-90	9.8	6.90
8	6	3/4	4	75-90	11.3	9.05
10	8	3/4	4	75-90	15.6	11.10
12	8	3/4	4	75-90	17.3	13.20
14	10	3/4	4 1/2	75-90	26.5	15.30
16	12	3/4	4 1/2	75-90	31.9	17.40
18	12	3/4	4 1/2	75-90	36.2	19.50
20	14	3/4	4 1/2	75-90	42.2	21.60
24	16	3/4	5	75-90	54.2	25.80
30	20	1	6	100-120	224.0	32.00
36	24	1	6	100-120	179.7	38.30
42	28	1 1/4	6 1/2	120-150	382.0	44.50
48	32	1 1/4	6 1/2	120-150	463.0	50.80

Dual Purpose Cutting-in Sleeve

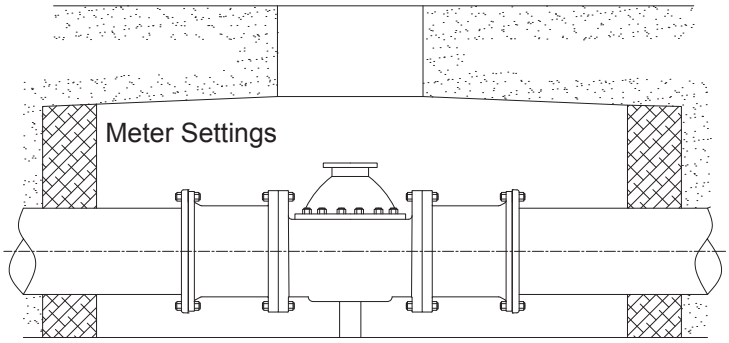


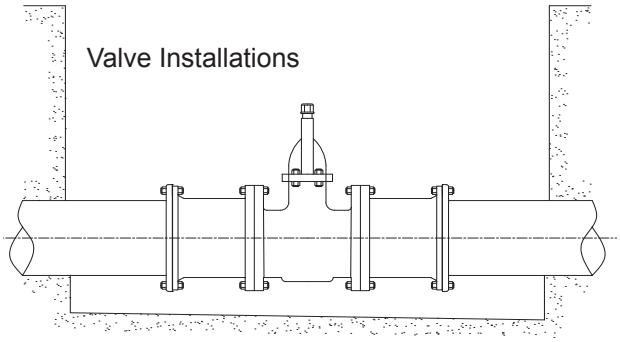
MJxFE
Cutting-In Sleeve with Dual Purpose Accessories

Size	For Pipe Size	L	L1	T	Shipping Wt. Assembled
4	4.80-5.00 O.D.	10	9.5	0.35	33
6	6.90-7.10 O.D.	10	9.5	0.37	50
8	9.05-9.30 O.D.	10	9.5	0.39	67
10	11.10-11.40 O.D.	10	9.5	0.41	122
12	13.20-13.50 O.D.	10	9.5	0.43	157

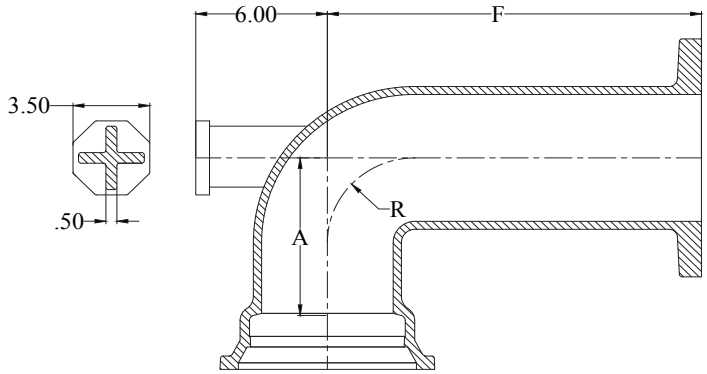
Flanged ends are faced and drilled per ANSI/AWWA C110/A21.10. Mechanical joint ends are designed to receive both standard and oversize gray or ductile iron pipe as shown above.

Typical Cutting-in Sleeve Installations





MJ Hydrant Bury



Size	A	F	R
6X30	7.5	30	4
6X36	7.5	36	4
6X42	7.5	42	4
6X48	7.5	48	4

Note: Please specify 8 bolt hole flange or 6 bolt hole flange upon order placement.

SAMPLE SPECIFICATIONS (Current ANSI/AWWA revisions apply)

Mechanical joint watermain fittings with accessories, 2" through 48" shall be manufactured from ductile iron in accordance with and meet all applicable terms and provisions of standards ANSI/AWWA C110/A21.10 and ANSI/AWWA C111/A21.11 Ductile iron mechanical joint fittings 2" through 24" shall be rated for 350 PSI working pressure. All ductile iron mechanical joint fittings 30" through 48" shall be rated for 250 psi working pressure. Flanged ductile iron fittings in 24" (610 mm) and smaller sizes may be rated for 350 psi (2,413 kPa) with the use of special (annular ring or comparable) gaskets.

NOTE - EXCEPTIONS: Mechanical joint fittings with flanged branches and 14" and larger caps and plugs are rated for water pressure of 250 PSI.

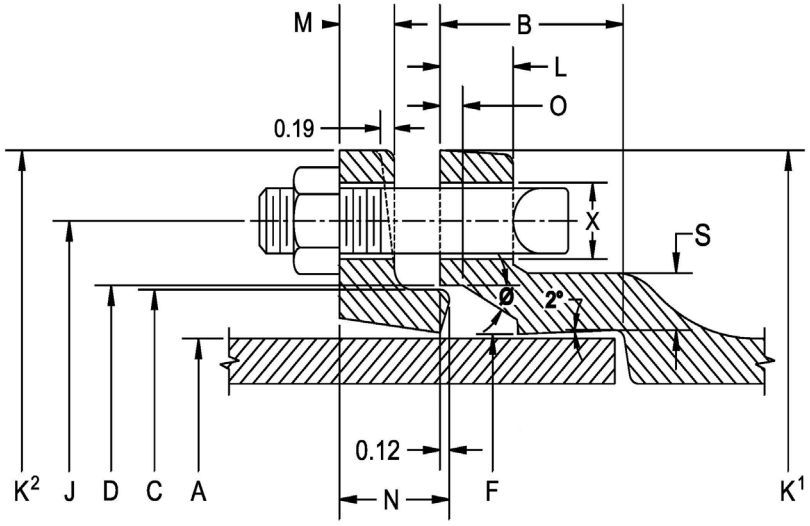
NOTE - Installation per AWWA C600 and AWWA C651, current revision

NOTE - Fittings are cement lined and seal coated in accordance with ANSI/AWWA C104/A21.4. Fittings are also available double cement-lined, bare, or epoxy coated. Coated and lined fittings meet requirements of NSF-61, NSF-372, & Annex G.

Nominal Joint Dimensions in Inches

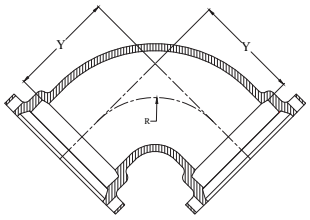
Size	A	B	C	D	F	Θ	X	J	K1	K2	L	M	N	O	S
*2	2.50	2.50	3.39	3.50	2.61	28°	3/4	4.75	6.25	6.25	0.75	0.62	1.12	0.31	0.44
3	3.96	2.50	4.84	4.94	4.06	28°	3/4	6.19	7.69	7.69	0.94	0.62	1.37	0.31	0.52
4	4.80	2.50	5.92	6.02	4.90	28°	7/8	7.50	9.12	9.12	1.00	0.75	1.50	0.31	0.65
6	6.90	2.50	8.02	8.12	7.00	28°	7/8	9.50	11.12	11.12	1.06	0.88	1.63	0.31	0.70
8	9.05	2.50	10.17	10.27	9.15	28°	7/8	11.75	13.37	13.37	1.12	1.00	1.75	0.31	0.75
10	11.10	2.50	12.22	12.34	11.20	28°	7/8	14.00	15.69	15.62	1.19	1.00	1.75	0.31	0.80
12	13.20	2.50	14.32	14.44	13.30	28°	7/8	16.25	17.94	17.88	1.25	1.00	1.75	0.31	0.85
14	15.30	3.50	16.40	16.54	15.44	28°	7/8	18.75	20.31	20.25	1.31	1.25	2.00	0.31	0.89
16	17.40	3.50	18.50	18.64	17.54	28°	7/8	21.00	22.56	22.50	1.38	1.31	2.06	0.31	0.97
18	19.50	3.50	20.60	20.74	19.64	28°	7/8	23.25	24.83	24.75	1.44	1.38	2.13	0.31	1.05
20	21.60	3.50	22.70	22.84	21.74	28°	7/8	25.50	27.08	27.00	1.50	1.44	2.19	0.31	1.12
24	25.80	3.50	26.90	27.04	25.94	28°	7/8	30.00	31.58	31.50	1.62	1.56	2.31	0.31	1.22
30	32.00	4.00	33.29	33.46	32.17	20°	1 1/8	36.88	39.12	39.12	1.81	2.00	2.75	0.38	1.50
36	38.30	4.00	39.59	39.76	38.47	20°	1 1/8	43.75	46.00	46.00	2.00	2.00	2.75	0.38	1.80
42	44.50	4.00	45.79	45.96	44.67	20°	1 3/8	50.62	53.12	53.12	2.00	2.00	2.75	0.38	1.95
48	50.80	4.00	52.09	52.26	50.97	20°	1 3/8	57.50	60.00	60.00	2.00	2.00	2.75	0.38	2.20

* Not included in AWWA C110

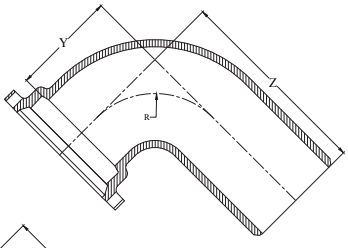


ANSI/AWWA C110 Mechanical Joint Fittings

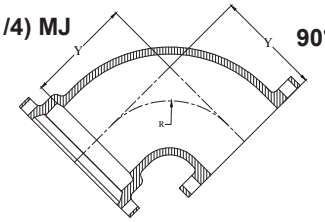
Bends



90° (1/4) MJ



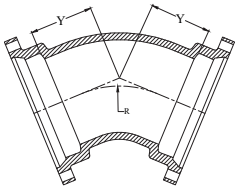
90° (1/4) MJxPE



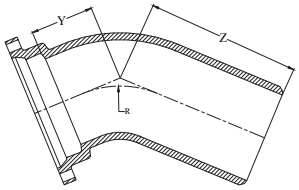
90° (1/4) MJxFE

90° (1/4) Bends

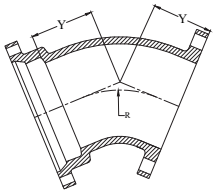
				Domestic Weight			Non-Domestic Weight	
Size	R	Y	Z	MJ	MJxPE	MJxFE	MJ	MJxPE
*2	2.3	3.3	…	16	…	…	...	...
3	4.0	5.5	13.5	26	36	…	35	35
4	4.5	6.5	14.5	56	53	47	55	50
6	6.0	8.0	16.0	88	80	75	88	97
8	7.0	9.0	17.0	123	119	118	136	153
10	9.0	11.0	19.0	182	181	170	190	190
12	10.0	12.0	20.0	280	252	246	255	255
14	11.5	14.0	22.0	380	…	…	400	…
16	12.5	15.0	23.0	552	470	465	480	410
18	14.0	16.5	24.5	630	600	591	641	577
20	15.5	18.0	26.0	862	775	…	725	650
24	18.5	22.0	30.0	1423	1301	1150	1020	985
30	21.5	25.0	33.0	1942	1920	…	1843	1585
36	24.5	28.0	36.0	2629	2310	…	2513	2310
42	27.5	31.0	...	3410	…	…	3410	…
48	30.5	34.0	...	4595	…	…	4595	…



45° (1/8) MJ



45° (1/8) MJxPE

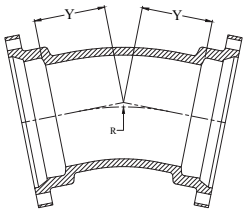


45° (1/8) MJxFE

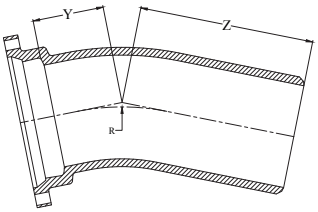
45° (1/8) Bends

				Domestic Weight			Non-Domestic Weight	
Size	R	Y	Z	MJ	MJxFE	MJxPE	MJ	MJxPE
*2	1.96	1.8	...	12	...	...	...	...
3	3.62	3.0	11.0	30	...	...	30	30
4	4.81	4.0	12.0	53	48	45	49	48
6	7.25	5.0	13.0	77	60	69	77	81
8	8.44	5.5	13.5	110	107	111	117	123
10	10.88	6.5	14.5	158	148	167	155	168
12	13.25	7.5	15.5	268	215	196	223	215
14	12.06	7.5	15.5	291	...	...	270	...
16	13.25	8.0	16.0	364	360	349	335	320
18	14.50	8.5	16.5	454	416	455	467	395
20	16.88	9.5	17.5	615	543	537	527	500
24	18.12	11.0	19.0	865	1099	825	754	715
30	27.75	15.0	23.0	1447	...	1510	1451	1275
36	35.00	18.0	26.0	2435	...	1930	2176	1930
42	42.25	21.0	...	2955	...	...	2955	...
48	49.50	24.0	...	4080	...	...	4080	...

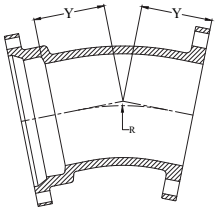
*Not included in AWWA C110



22½° (1/16) MJ



22½° (1/16) MJxPE

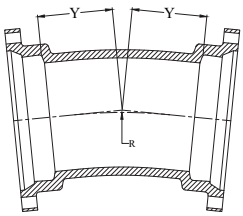


22½° (1/16) MJxFE

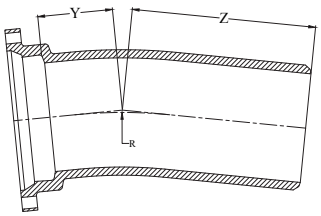
22½° (1/16) Bends

				Domestic Weight			Non- Domestic Weight	
Size	R	Y	Z	MJ	MJxFE*	MJxPE	MJ	MJxPE
3	7.56	3.0	11.0	30	...	...	30	...
4	10.06	4.0	12.0	52	...	...	51	45
6	15.06	5.0	13.0	77	71	70	75	70
8	17.62	5.5	13.5	110	107	109	108	108
10	22.62	6.5	14.5	156	155	163	159	160
12	27.62	7.5	15.5	214	215	212	199	220
14	25.12	7.5	15.5	300	...	...	275	...
16	27.62	8.0	16.0	391	344	334	318	325
18	30.19	8.5	16.5	527	422	423	430	405
20	35.19	9.5	17.5	631	...	575	545	505
24	37.69	11.0	19.0	880	800	930	758	725
30	57.81	15.0	23.0	1898	...	1540	1400	1400
36	72.88	18.0	26.0	2372	...	1970	2121	1970
42	88.00	21.0	...	3020	...	...	3020	...
48	103.06	24.0	...	4170	...	...	4170	...

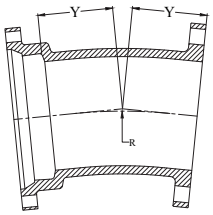
Bends



11¼° (1/32) MJ



11¼° (1/32) MJxPE



11¼° (1/32) MJxFE

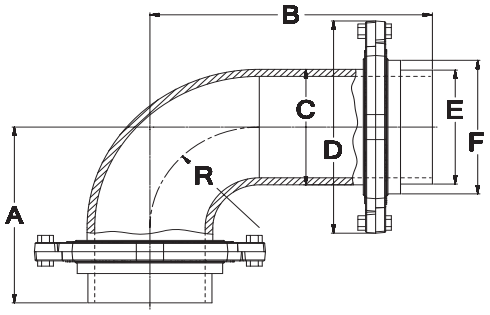
11¼° (1/32) Bends

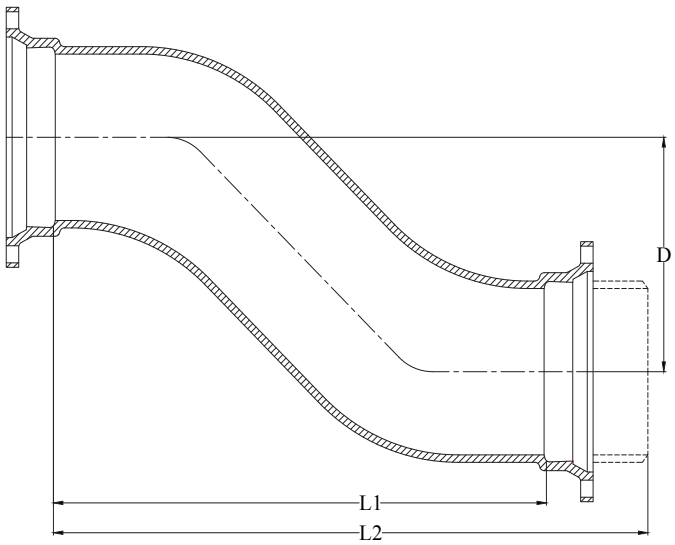
					Domestic Weight		Non-Domestic Weight	
Size	R	Y	Z	MJ	MJxFE	MJxPE	MJ	MJxPE
3	15.25	3.0	11.0	30	…	…	29	…
4	20.31	4.0	12.0	52	…	45	51	…
6	30.50	5.0	13.0	65	71	70	75	…
8	35.50	5.5	13.5	104	105	105	108	105
10	45.69	6.5	14.5	171	...	…	160	…
12	55.81	7.5	15.5	221	215	…	220	…
14	50.75	7.5	15.5	305	...	…	275	…
16	55.81	8.0	16.0	405	345	…	345	…
18	60.94	8.5	16.5	525	422	…	450	…
20	71.06	9.5	17.5	644	…	…	540	…
24	76.12	11.0	19.0	996	800	972	762	730
30	116.75	15.0	23.0	1410	…	1305	1407	1305
36	147.25	18.0	26.0	2397	…	2185	2161	1980
42	177.69	21.0	…	3035	…	…	3740	…
48	208.12	24.0	…	4190	…	…	4190	…

*90° (1/4) SwivelxSwivel Bends

Size	Wall Thickness	A	B	C	D	E	F	R	*Weight
6	0.55	10.5	15.5	7.1	11.12	6.90	8.02	6	106
8	0.60	11.5	16.5	9.2	13.37	9.05	10.17	7	156

NOTE: Includes 2 swivel glands
*Not included in AWWA C110





Offsets

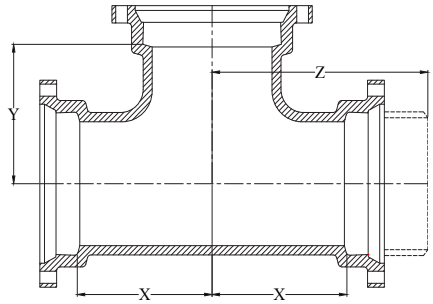
Size	D	L1	L2	Weight MJxMJ	MJxPE
4	6	19	27	…	82
4	12	22	30	85	80
4	18	30	38	105	…
4	24	26	34	126	125
6	6	20	28	114	105
6	12	26	34	148	143
6	18	33	41	188	176
6	24	24	32	156	160
8	6	21	29	177	155
8	12	28	36	206	214
8	18	35	43	257	282
8	24	36	44	280	311
10	12	30	38	347	280
10	18	38	46	340	340
10	24	38	46	420	…
12	6	26	34	320	320
12	12	37	45	420	420
12	18	48	56	520	564
12	24	48	56	649	618
16	12	40	48	715	…
16	18	50	58	850	830
20	12	40	48	1025	…
20	18	48	60	1362	…

TYLER UNION®

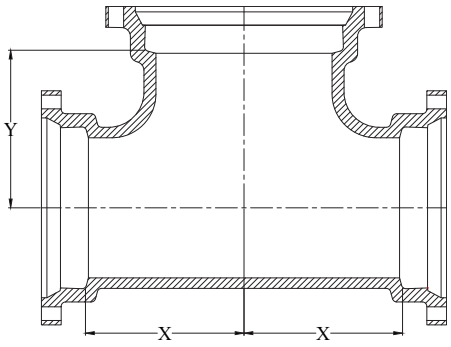
MECHANICAL JOINT C110 DUCTILE IRON FULL BODY FITTINGS

UL and FM Listed

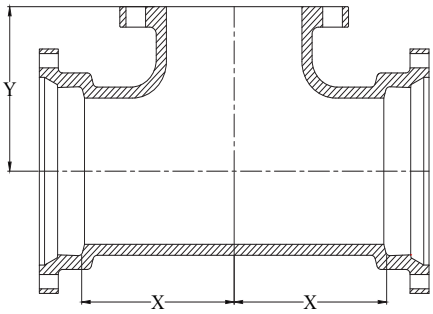
Tees



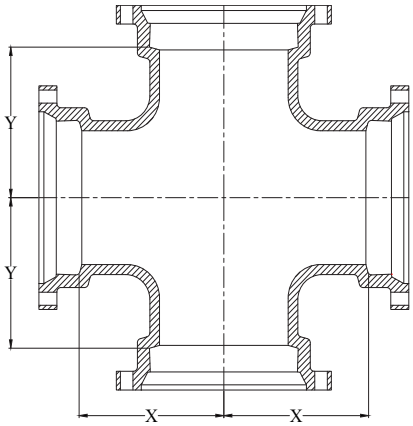
MJ Tees and MJxPExMJ Tees



MJ Bullhead Tees



MJxFE Tees

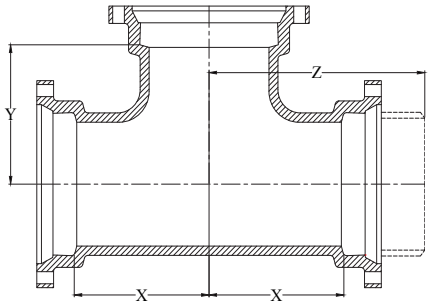


Cross

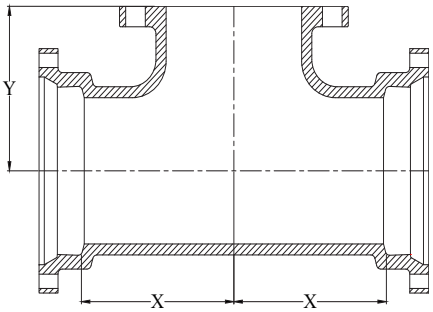
Size					Weight			
Run	Branch	X	Y	Z	MJ	MJxPExMJ	MJxFE	Cross
2	2	3.25	3.25	…	21	…	…	…
3	2	3.25	3.25	…	45	…	…	…
3	3	5.50	5.50	13.5	58	…	…	…
4	2	4.80	4.80	14.5	68	…	49	…
4	3	6.50	6.50	14.5	77	…	…	…
4	4	6.50	6.50	14.5	78	75	76	…
4	6	8.00	8.00	…	112	…	…	…
6	2	8.00	8.00	…	78	…	…	…
6	3	8.00	8.00	16.0	98	…	…	…
6	4	8.00	8.00	16.0	110	…	109	…
6	6	8.00	8.00	16.0	119	120	141	160
6	8	9.00	9.00	…	158	…	…	…
8	3	9.00	9.00	17.0	155	…	…	…
8	4	9.00	9.00	17.0	157	…	150	185
8	6	9.00	9.00	17.0	175	170	182	205
8	8	9.00	9.00	17.0	199	180	194	255
10	4	11.00	11.00	19.0	…	…	229	…
10	6	11.00	11.00	19.0	258	…	264	285
10	8	11.00	11.00	19.0	268	…	245	310
10	10	11.00	11.00	19.0	300	250	…	380
12	4	12.00	12.00	20.0	318	315	323	…
12	6	12.00	12.00	20.0	325	325	335	360
12	8	12.00	12.00	20.0	335	335	372	371
12	10	12.00	12.00	20.0	392	390	…	486
12	12	12.00	12.00	20.0	396	396	476	…
14	12	14.00	14.00	22.0	540	560	…	…
14	14	14.00	14.00	22.0	585	570	…	779
16	4	15.00	15.00	23.0	580	580	575	…
16	6	15.00	15.00	23.0	615	590	605	650
16	8	15.00	15.00	23.0	625	605	615	675
16	10	15.00	15.00	23.0	645	620	…	…
16	12	15.00	15.00	23.0	627	640	651	…
16	16	15.00	15.00	23.0	740	720	730	895
18	6	13.00	15.50	…	710	…	662	…
18	8	13.00	15.50	…	659	…	675	775
18	12	13.00	15.50	…	749	…	733	860
18	18	16.50	16.50	…	945	…	953	1140
20	6	14.00	17.00	…	849	…	…	…
20	8	14.00	17.00	…	892	…	859	951
20	12	14.00	17.00	…	896	…	…	977
20	16	18.00	18.00	…	1095	…	…	1245
20	20	18.00	18.00	…	1258	…	1168	1440
24	6	15.00	19.00	…	1233	…	1228	…
24	8	15.00	19.00	…	1234	…	1242	1244
24	12	15.00	19.00	…	1256	…	1165	1326
24	14	15.00	19.00	…	1220	…	…	…
24	16	15.00	19.00	…	1245	…	…	1479
24	18	22.00	22.00	…	1735	…	…	…
24	20	22.00	22.00	…	1720	…	1638	1965
24	24	22.00	22.00	…	1863	…	…	2192
30	6	18.00	23.00	…	2050	…	…	2085
30	8	18.00	23.00	…	2060	…	…	…
30	10	18.00	23.00	…	2075	…	…	…
30	12	18.00	23.00	…	2090	…	…	2165
30	16	18.00	23.00	…	2145	…	…	…
30	18	18.00	23.00	…	2170	…	…	…
30	20	18.00	23.00	…	2205	…	…	…
30	24	25.00	25.00	…	2880	…	2223	3180
30	30	25.00	25.00	…	2275	…	2430	3640

TYLER UNION®

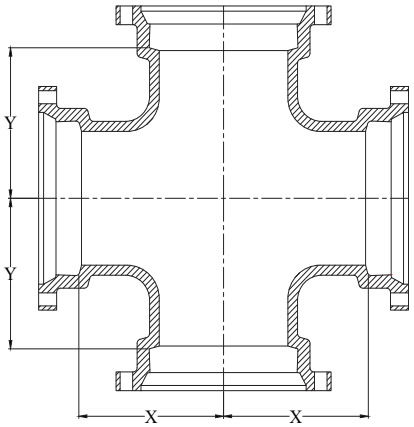
Tees



MJ Tees AND MJxPExMJ Tees

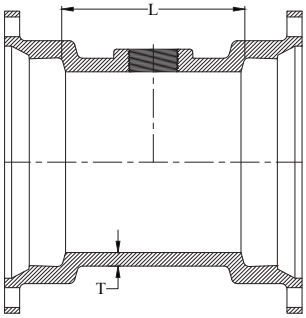


MJxFE Tees



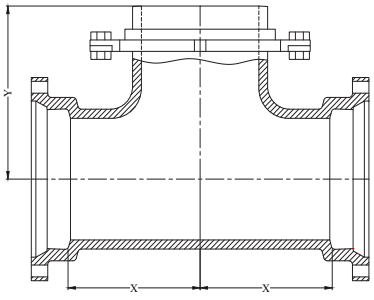
Cross

Size Run	Branch	X	Y	Z	Weight MJ	MJxPExMJ	MJxFE	Cross
36	6	20.00	26.00	…	2439	…	…	…
36	8	20.00	26.00	…	2444	…	…	…
36	10	20.00	26.00	…	2535	…	2550	…
36	12	20.00	26.00	…	2541	…	…	…
36	14	20.00	26.00	…	2570	…	2450	…
36	16	20.00	26.00	…	2585	…	…	…
36	18	20.00	26.00	…	2610	…	…	…
36	20	20.00	26.00	…	2635	…	2489	…
36	24	20.00	26.00	…	2792	…	…	2910
36	30	28.00	28.00	…	3545	…	…	…
36	36	28.00	28.00	…	3450	…	…	4370
42	12	23.00	30.00	…	3555	…	…	3420
42	14	23.00	30.00	…	3575	…	…	3455
42	16	23.00	30.00	…	3595	…	…	3495
42	18	23.00	30.00	…	3615	…	…	3535
42	20	23.00	30.00	…	3640	…	…	3590
42	24	23.00	30.00	…	3690	…	…	3690
42	30	31.00	31.00	…	4650	…	…	4815
42	36	31.00	31.00	…	4880	…	…	6430
42	42	31.00	31.00	…	6320	…	…	6920
48	12	26.00	34.00	…	4870	…	…	4665
48	14	26.00	34.00	…	4885	…	…	4695
48	16	26.00	34.00	…	4905	…	…	4735
48	18	26.00	34.00	…	4925	…	…	4775
48	20	26.00	34.00	…	4950	…	…	4825
48	24	26.00	34.00	…	4995	…	…	4920
48	30	26.00	34.00	…	5140	…	…	5210
48	36	34.00	34.00	…	6280	…	…	6500
48	42	34.00	34.00	…	8130	…	…	8530
48	48	34.00	34.00	…	8420	…	…	9095



MJ Tapped Tees (2" TAP)

Size	Domestic L	Max.Tap	Weight	Non-Domestic L	Max.Tap	Weight
3	8	2	40	6	2	18
4	8	2	51	6	2	24
6	8	2	73	6	2	42
8	8	2	104	6	2	52
10	8	2	130	6	2	64
12	8	2	180	6	2	81

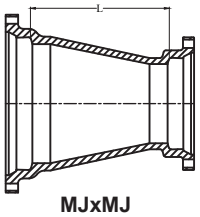


MJxMJxSwivel Tees

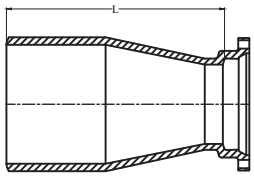
Size	X	Y	Weight
6	8.0	10.5	150
8x6	9.0	11.5	199
8	9.0	11.5	210
10x6	11.0	13.5	225
12x6	12.0	14.5	346
16x6	15.0	17.5	619
16x8	15.0	17.5	649
30x6	18.0	24.5	2070

All weights shown include the swivel gland

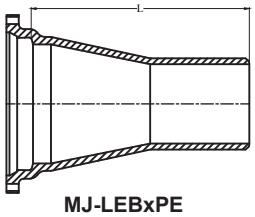
Reducers



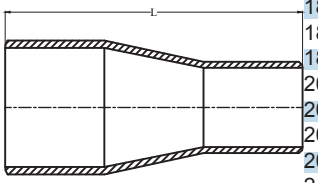
MJxMJ



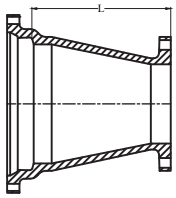
PExMJ-SEB



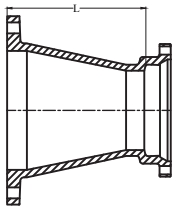
MJ-LEBxPE



PExPE



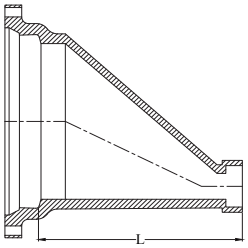
MJxFE



FExMJ

Size	Laying Lengths (L) MJ	SEB	LEB	PE	FExMJ	MJxFE	Weight MJ	SEB	LEB	PE	FExMJ	MJxFE
* 3x2	6	14	14	...	...	...	24	24	24	...	...	...
* 4x2	7	15	15	...	...	...	48	30	31	...	...	...
4x3	7	15	15	23	7	7	37	38	37	34	34	35
* 6x2	9	17	17	...	...	...	46	43	47	...	...	...
6x3	9	17	17	25	...	9	55	50	55	...	...	50
6x4	9	17	17	25	9	9	56	60	59	57	53	62
8x3	11	19	19	27	...	...	84	77	70	...	...	...
8x4	11	19	19	27	11	11	84	82	84	...	73	75
8x6	11	19	19	27	11	11	90	90	93	96	84	80
10x6	12	20	20	28	12	12	115	116	117	...	100	105
10x8	12	20	20	28	12	12	142	135	130	135	130	130
12x4	14	22	22	30	...	...	139	131	...	...	...	...
12x6	14	22	22	30	14	12	148	150	153	...	145	130
12x8	14	22	22	30	14	12	173	168	165	168	170	175
12x10	14	22	22	30	14	12	194	190	178	185	188	190
14x6	16	24	24	32	...	16	...	...	...	...	...	195
14x8	16	24	24	32	...	16	...	...	...	...	...	215
14x12	16	24	24	32	...	16	...	...	...	...	...	270
16x6	18	26	26	34	...	...	250	...	...	...	...	...
16x8	18	26	26	34	...	...	288	248	...	...	...	...
16x10	18	26	26	34	...	...	300	...	...	...	...	...
16x12	18	26	26	34	18	18	330	304	325	...	305	325
16x14	18	26	26	34	...	...	370	...	...	...	...	...
18x8	19	27	27	35	...	19	320	...	...	...	...	300
18x10	19	27	27	35	...	...	388	...	...	...	...	...
18x12	19	27	27	35	...	19	380	355	...	...	...	405
18x14	19	27	27	35	...	...	450	...	...	...	...	...
18x16	19	27	27	35	...	19	476	...	...	...	...	445
20x10	20	28	28	36	...	...	410	...	...	...	...	...
20x12	20	28	28	36	...	...	515	420	...	...	...	...
20x16	20	28	28	36	...	20	578	525	510	...	...	510
20x18	20	28	28	36	...	...	575	...	...	...	...	...
24x12	24	32	32	40	...	24	610	570	...	...	...	455
24x16	24	32	32	40	...	...	705	665	753	...	...	...
24x18	24	32	32	40	...	...	789	720	...	...	...	...
24x20	24	32	32	40	...	...	815	775	804	...	...	...
*30x16	30	38	38	46	...	...	1150	1040	...	1015	...	...
30x18	30	38	38	46	...	...	1160	1050	...	1025	...	...
30x20	30	38	38	46	...	...	1057	1120	...	1090	...	...
30x24	30	38	38	46	...	...	1360	1255	1320	1215	...	...
36x20	36	44	44	52	...	...	1495	...	1466	...	...	...
36x24	36	44	44	52	...	...	1580	...	1535	1389	...	...
36x30	36	44	44	52	...	...	1919	1721	...	1585	...	...
42x24	42	50	50	58	...	...	2060	...	...	...	...	...
42x30	42	50	50	58	...	...	2370	...	...	...	...	...
42x36	42	50	50	58	...	...	2695	...	...	...	...	...
48x30	48	56	56	64	...	...	3005	...	...	...	...	...
48x36	48	56	56	64	...	...	3370	...	...	...	...	...
48x42	48	56	56	64	...	...	3750	...	...	...	...	...

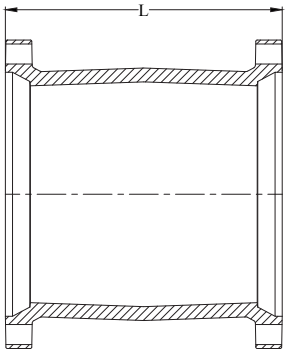
Note:Contact Tyler Union for information on Eccentric MJ Reducers
* Not included in AWWA C110



MJxFIPT Eccentric Reducer

Size	L	Weights
6x2	13	51
8x2	15	71

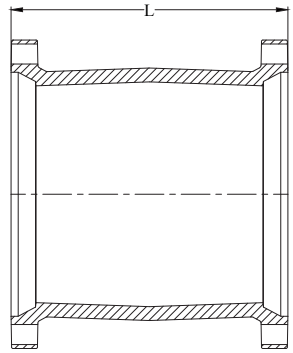
Solid Seeves



Standard Sleeve

Size	Pipe O.D.	L	Short Weight	L	Long Weight
*2	2.5	8.0	13	12	18
3	4.0	7.5	25	12	36
4	4.8	7.5	35	12	47
6	6.9	7.5	45	12	65
8	9.1	7.5	65	12	90
10	11.1	7.5	85	12	108
12	13.2	7.5	102	12	136
16	17.4	9.5	185	15	289
18	19.5	9.5	246	15	282
20	21.6	9.5	252	15	336
24	25.8	9.5	335	15	459
30	32.0	15.0	753	24	1220
36	38.3	15.0	1047	24	1502
42	44.5	15.0	1312	24	1550
48	50.8	15.0	1585	24	1940

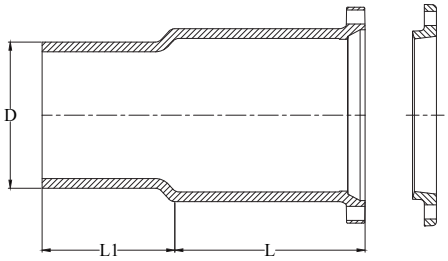
*Not Included in AWWA C110



*Dual Purpose Sleeve

Size	O.D.	L	Weight	L	Weight
4	4.80 - 5.00	7.5	33	12	44
6	6.90 - 7.10	7.5	46	12	67
8	9.05 - 9.30	7.5	65	12	88
10	11.10 - 11.40	...	...	12	111
†12	13.20 - 13.50	...	...	12	221
†16	17.40 - 17.80	...	...	15	385

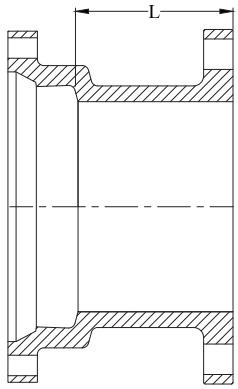
All sizes use MJ Dual purpose Gland
* Not included in AWWA C110
† 12” and 16” are sold assembled
NOTE: Sizes 4” - 10” Use standard MJ Gasket;
12” and 16” require special duo gaskets.



*MJxPE Dual Purpose Cutting-in Sleeve

Size	For Use On Pipe OD	L	L1	D	Weight Gland Only	Weight Gland & Sleeve
4	4.80 - 5.00	12	8	4.80	6	72
6	6.90 - 7.10	12	8	6.90	10	94
8	9.05 - 9.30	12	8	9.05	16	122
10	11.10 - 11.40	12	8	11.10	25	175
12	13.20 - 13.50	12	8	13.20	30	235

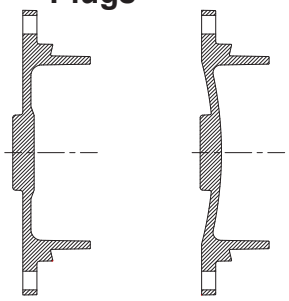
Provided with Dual-Purpose Accessories
*Not included in AWWA C110
NOTE: Gland with cup-joint set screws available at extra cost when specified. NOT FOR RESTRAINT.
Currently, Tyler Union Dual Purpose Glands are not interchangeable.



Adapters MJxFE

Size	L	Weight
3	8	30
4	8	42
6	8	57
8	8	88
10	8	120
12	8	150
16	8	257
18	8	304
20	8	372
24	8	488
30	10	682
36	10	1070

Plugs

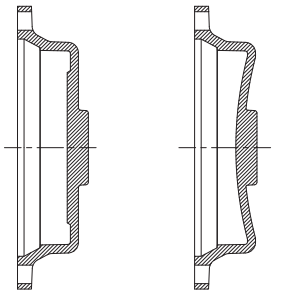


2”-16” 18”-48”

Size	Weight
*2	5
3	9
4	13
6	15
8	45
10	66
12	79
14	120
16	147
†18	192
†20	220
†24	338
†30	660
†36	838
†42	1180
†48	1455

† Dished
* Not included in AWWA C110.
Note: Optional 2” tap in the center.

Caps

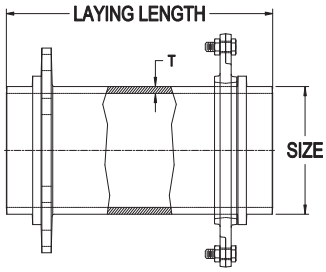


2”-16” 18”-48”

Size	Weight
*2	6
3	10
4	14
6	24
8	39
10	53
12	73
14	130
16	169
†18	188
†20	250
†24	370
†30	680
†36	850
†42	1180
†48	1595

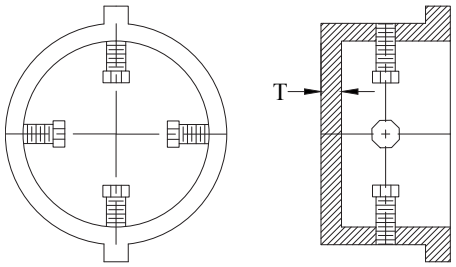
† Dished
* Not included in AWWA C110.
Note: Optional 2” tap in the center.

SwivelxSolid Adapter



Size X Laying Length	Wall Thickness	*Weight
4 x 13	0.52	42
6 x 12	0.55	61
6 x 18	0.55	89
6 x 24	0.55	108
6 x 36	0.55	156
8 x 13	0.60	97
12 x 13	0.75	164

*Weights with Gland.



**TYTON® Plug
Solid or Tapped

Size	Tap	T	*Weight
4	2	0.60	18
6	2	0.65	25
8	2	0.70	46
10	2	0.75	70
12	2	0.75	95

*Weights do not include accessories
** Not included in AWWA C110
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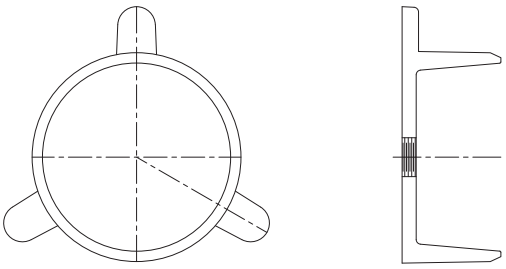
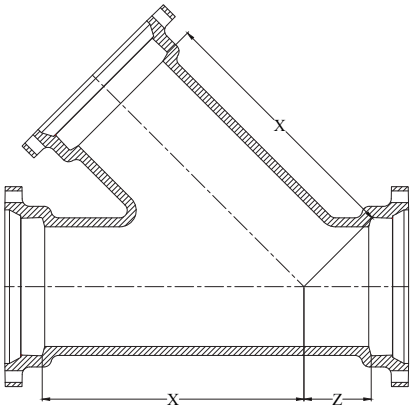


Push-In Plug with Ears

Size	Tap	Weight
14	2	101
16	2	137
18	2	177
†20	2	239
†24	2	311

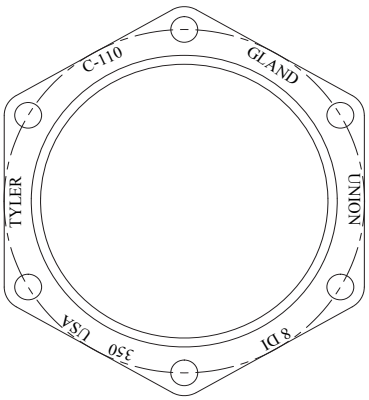
† Dished - Not flat as shown
NOTE: To be used with all push in pipe and fittings
NOTE:Blocking still required ears for assembly only.

Wyes/Laterals



Size Run	Branch	X	Z	Weight
3	3	10.0	3.0	60
4	4	12.0	3.0	90
6	4	14.5	3.5	130
6	6	14.5	3.5	145
8	4	17.5	4.5	190
8	6	17.5	4.5	205
8	8	17.5	4.5	230
10	6	20.5	5.0	330
10	8	20.5	5.0	310
10	10	20.5	5.5	435
12	8	24.5	5.5	505
12	12	24.5	5.5	490
14	6	27.0	6.0	626
16	16	30.0	6.5	1079
18	8	32.0	7.0	815
18	10	32.0	7.0	975
18	12	32.0	7.0	1015
18	16	32.0	7.0	1135
18	18	32.0	7.0	1130
20	10	35.0	8.0	1220
20	12	35.0	8.0	1260
20	16	35.0	8.0	1375
20	20	35.0	8.0	1525
24	24	40.5	9.0	2372
30	30	49.0	10.0	3670
36	24	54.0	15.0	5390
36	36	60.0	19.5	6335
42	24	60.0	12.0	6810
42	30	63.0	12.0	7210
42	36	66.0	12.0	8355
42	42	71.0	15.0	9900
48	48	77.0	16.0	13150

MJ Glands



Size	Gland Weight
2	3
3	4
4	6
6	10
8	16
10	19
12	26
14	34
16	50
18	61
20	73
24	96
30	179
36	245
42	279
48	341

MJ Accessory Kits and Weights

Size	No.	Bolt Size	Bolt Length	Bolt Torque ft-lb	Wt. of Gland, Bolts and Gasket	Pipe Barrel O.D.
*2	2	5/8	3	45-60	5	2.50
3	4	5/8	3	45-60	7	3.96
4	4	3/4	3 1/2	75-90	10	4.80
6	6	3/4	3 1/2	75-90	16	6.90
8	6	3/4	4	75-90	25	9.05
10	8	3/4	4	75-90	30	11.10
12	8	3/4	4	75-90	40	13.20
14	10	3/4	4 1/2	75-90	45	15.30
16	12	3/4	4 1/2	75-90	55	17.40
18	12	3/4	4 1/2	75-90	65	19.50
20	14	3/4	4 1/2	75-90	85	21.60
24	16	3/4	5	75-90	105	25.80
30	20	1	6	100-120	220	32.00
36	24	1	6	100-120	301	38.30
42	28	1 1/4	6 1/2	120-150	389	44.50
48	32	1 1/4	6 1/2	120-150	477	50.80

* Not included in AWWA C-110

SAMPLE SPECIFICATIONS (Current ANSI/AWWA revisions apply)

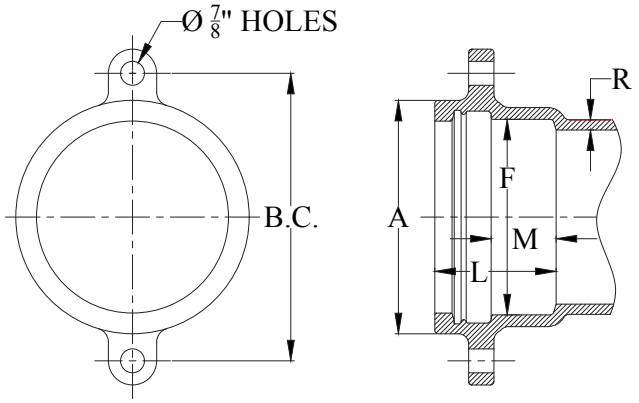
4" through 24" Push-On joint ductile iron fittings shall be produced in accordance with all applicable terms and provisions of ANSI/AWWA C153/A21.53. Fittings are cement-lined and seal-coated in accordance with ANSI/AWWA C104/A21.4. Joints shall be in accordance with manufacturer's design with bell sockets designed to receive pressure pipe O.D.'s as specified in ANSI/AWWA C151/A21.51 and AWWA C900 TABLE 2. The working pressure rating shall be 350 PSI, except for wyes and flanged-branch fittings. NOTE: Fittings are cement lined and seal coated in accordance with ANSI/AWWA C104/A21.4, also available bare or epoxy coated. Double cement lined available. Coated and/or lined fittings meet NSF-61, NSF-372 and Annex G.

Thicknesses and dimensions of bell sockets and gaskets shall be in accordance with the manufacturer's design. Gaskets shall be furnished by the manufacturer. Working pressures apply to fittings only and do not apply to restraining lugs or external restraining devices. Installation of fittings shall be per AWWA C600 and AWWA C651, current revision.

NOTE: Standard restraining lugs are provided on sizes 4" through 16" ONLY. Restraining lugs are available on 18" through 24" fittings provided sufficient time is available to make tooling adaptations.
EXCEPTIONS: Union-Tite fittings with flanged branches are rated for water pressure of 250 PSI but can be rated for 350 PSI with the use of an annular ring or comparable gasket. Wye fittings over 12" are not pressure rated, call Tyler Union for information.

ADVANTAGES AND FEATURES NOTE:

- Push-on gasket joint uses TYTON® or McWane 350 Sure Stop® gaskets
- For use with Ductile iron pipe, C-900/905 PVC pipe, and 4" through 12" pressure rated IPS diameter PVC pipe (with transition gasket)
- Deep stab joint design accommodates common spigot end taper on plastic pipes
- Slip joint installation eliminates T-bolts and nuts (MJ glands not needed)



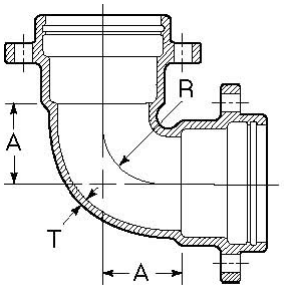
ANSI/AWWA C153 Push-On Joint Fittings

Nominal Joint Dimensions in Inches

Pipe Size	A	F	B.C.	L	M	R
4	6.38	5.04	7.88	4.16	2.25	0.35
6	8.52	7.14	10.50	4.29	2.25	0.37
8	10.90	9.32	12.88	4.78	2.25	0.39
10	12.91	11.37	14.69	4.98	2.25	0.41
12	15.12	13.47	17.19	4.98	2.25	0.43
14	18.12	15.64	19.00	5.40	2.25	0.51
16	20.32	17.74	21.40	5.40	2.25	0.52
18	22.52	19.83	...	5.40	2.25	0.59
20	24.29	21.94	...	5.40	2.25	0.60
24	29.14	26.14	...	5.65	2.50	0.62

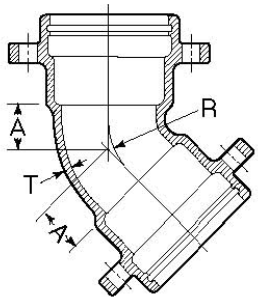
TYTON® is a registered trademark of U.S. Pipe and Foundry Company.
For Joint deflection, refer to Tyler Union product submittal 26U located at www.tylerunion.com

Bends



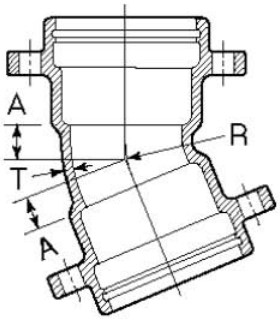
90° (1/4) UT Bends

				Domestic	Non-Domestic	
Size	A	R	T	Weight	T	Weights
4	4.00	3.87	0.35	24	0.34	25
6	5.00	5.37	0.37	51	0.36	39
8	6.50	6.37	0.39	80	0.38	57
10	7.50	8.36	0.41	121	0.40	89
12	9.00	9.36	0.43	151	0.42	108
14	11.50	10.98	0.51	254	0.47	210
16	12.50	12.00	0.52	328	0.50	264
18	14.00	14.00	0.59	390	0.54	335
20	15.00	15.50	0.60	480	0.57	400
24	16.75	15.59	0.62	674	0.61	565



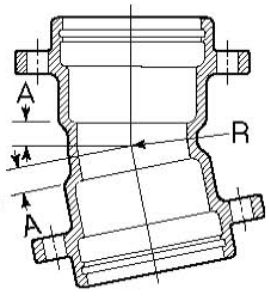
45° (1/8) UT Bends

		Domestic	Non-Domestic
A	R	Weights	Weights
2.00	3.31	26	22
3.00	5.72	42	32
3.50	6.93	66	46
4.50	9.34	101	70
5.50	11.75	128	86
5.00	10.85	143	160
5.50	12.02	225	202
6.00	12.36	209	250
7.00	13.59	397	305
7.50	14.69	492	405



22½° (1/16) UT Bends

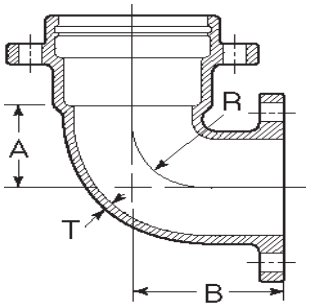
				Domestic	Non-Domestic	
Size	A	R	T	Weight	T	Weights
4	1.50	4.38	0.35	18	0.34	18
6	2.00	8.16	0.37	39	0.36	31
8	2.50	9.40	0.39	64	0.38	46
10	3.00	13.17	0.41	67	0.40	64
12	3.50	14.42	0.43	111	0.42	80
14	3.75	13.82	0.51	162	0.47	136
16	3.75	14.97	0.52	195	0.50	172
18	4.50	30.19	0.59	209	0.54	255
20	4.50	35.19	0.60	414	0.57	310
24	4.50	37.69	0.62	596	0.61	412



11¼° (1/32) UT Bends

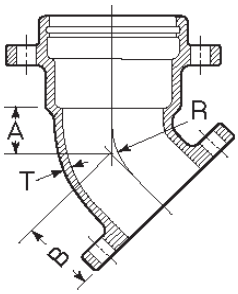
		Domestic	Non-Domestic
A	R	Weights	Weights
1.25	6.77	18	16
1.50	9.38	40	30
1.75	11.48	60	42
2.00	13.95	77	58
2.25	16.50	94	67
2.50	14.26	113	93
2.50	15.23	172	148
3.00	60.94	209	205
3.00	71.07	265	245
...	...	...	315

Bends



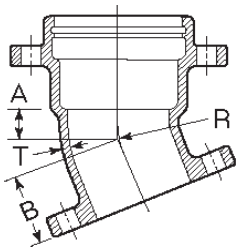
90° (1/4) UTxFE Bends

Size	T	A	B	R	Weights
4	0.35	4.5	6.5	3.87	31
6	0.37	6.0	7.0	5.37	49
8	0.39	7.0	9.0	6.37	74
10	0.41	9.0	10.0	8.36	130
12	0.43	10.0	12.0	9.36	158
14	0.51	12.0	15.5	10.98	231
16	0.52	13.0	16.5	12.00	233



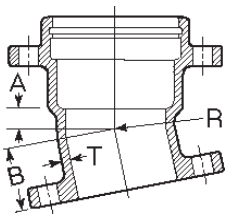
45° (1/8) UTxFE Bends

A	B	R	Weights
2.0	4.0	3.31	21
3.0	5.0	5.72	42
3.5	5.5	6.93	60
4.5	6.5	9.34	93
5.5	7.5	11.75	122
5.5	8.5	10.85	162
6.0	9.5	12.02	275



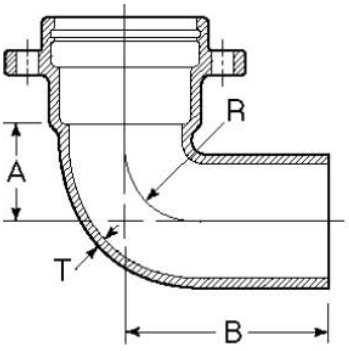
22½° (1/16) UTxFE Bends

A	B	R	Weights
1.50	3.5	4.38	25
2.25	4.3	8.16	44
2.50	4.5	9.40	64
3.00	5.3	13.17	90
3.50	5.5	14.42	112
3.75	6.8	13.82	174
4.00	7.5	14.97	228



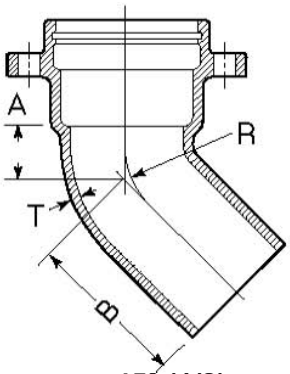
11¼° (1/32) UTxFE Bends

A	B	R	Weights
1.25	3.30	6.77	24
1.50	3.50	9.38	30
1.75	3.75	11.48	61
2.00	4.00	13.95	80
2.25	4.30	16.50	94
2.60	5.75	14.26	170
2.60	6.10	15.23	228



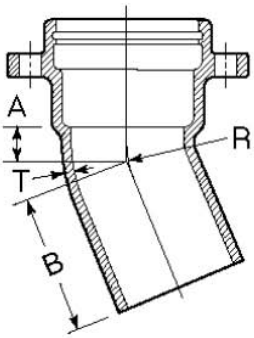
90° (1/4) UTxPE Bends

Size	T	A	B	R	Weights
4	0.35	4.5	6.5	3.87	31
6	0.37	6.0	7.0	5.37	49
8	0.39	…	…	…	…



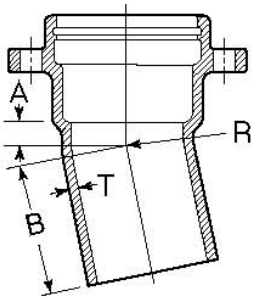
45° (1/8) UTxPE Bends

A	B	R	Weights
2.0	8.0	3.31	21
3.0	9.0	5.72	38
3.5	9.5	6.93	60



22½° (1/16) UTxPE Bends

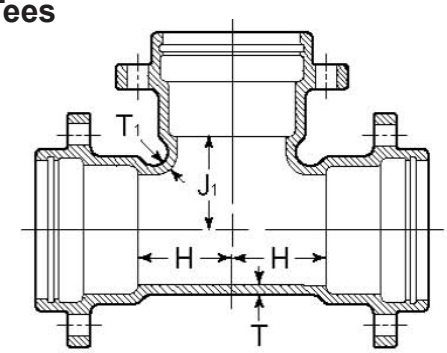
A	B	R	Weights
…	…	…	…
2.25	8.1	8.16	35
2.50	8.3	9.40	57



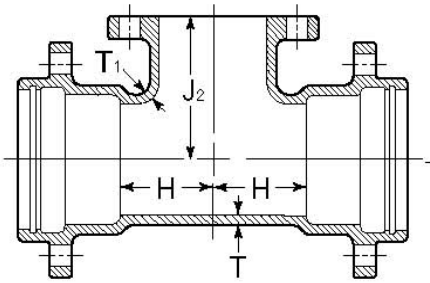
11¼° (1/32) UTxPE Bends

A	B	R	Weights
…	…	…	…
1.50	7.30	9.38	36
1.75	7.55	11.48	55

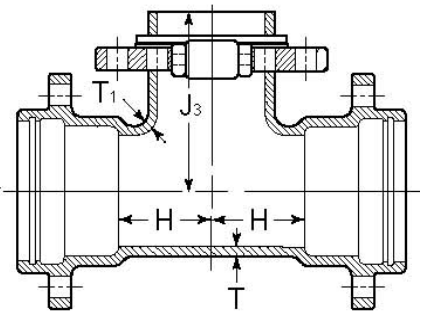
Tees



UTxUT Tee



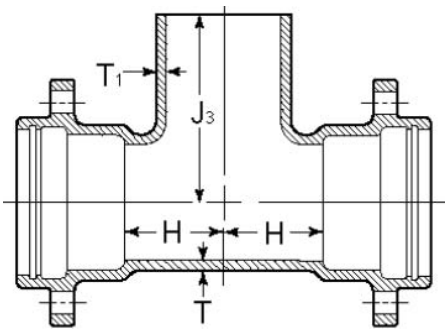
UTxFE Tee



UTxSwivel Tee

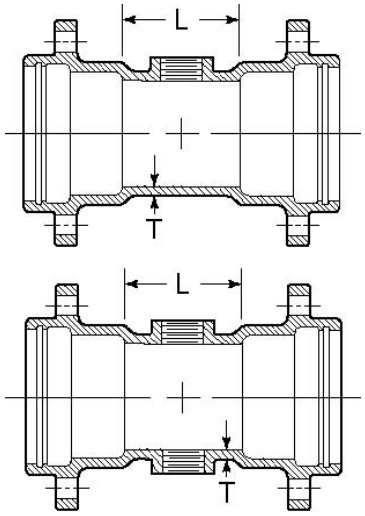
							Weight			
Size	T	T1	H	J1	J2	J3	UTxUT	UTxFE	UTxS	Cross
4	0.35	0.35	4.5	4.5	6.5	…	44	45	...	...
6x4	0.37	0.35	5.0	6.0	8.0	...	68	56	...	...
6	0.37	0.37	6.0	6.0	8.0	9.50	69	71	65	88
8x4	0.39	0.35	5.0	7.0	9.0	...	73	89	...	...
8x6	0.39	0.37	6.0	7.0	9.0	10.50	96	101	100	117
8	0.39	0.39	7.0	7.0	9.0	10.50	116	117	110	156
10x4	0.41	0.35	6.0	9.0	11.0	...	102	115	...	116
10x6	0.41	0.37	7.0	9.0	11.0	13.00	113	128	130	...
10x8	0.41	0.39	8.0	9.0	11.0	12.50	145	145	156	...
10	0.41	0.41	9.0	9.0	11.0	...	155	158	...	...
12x4	0.43	0.35	6.0	10.0	12.0	...	119	138	...	...
12x6	0.43	0.37	7.0	10.0	12.0	13.50	141	148	162	...
12x8	0.43	0.39	8.0	10.0	12.0	13.50	177	170	158	240
12x10	0.43	0.41	9.0	10.0	12.0	...	160	162	...	...
12	0.43	0.43	10.0	10.0	12.0	...	217	183	...	241
14x6	0.51	0.44	6.5	10.5	12.5	14.00	176	212	202	189
14x8	0.45	…	7.5	10.5	…	…	…	…	...	204
14x10	0.51	0.46	8.5	10.5	12.5	...	195	246	...	222
14x12	0.51	0.47	9.5	10.5	12.5	...	196	296	...	239
14	0.51	0.51	10.5	10.5	14.0	...	209	321	...	270
16x6	0.52	0.45	6.5	11.5	13.5	15.00	266	160	229	234
16x8	0.52	0.46	7.5	11.5	13.5	15.00	292	270	292	323
16x10	0.52	0.47	8.5	11.5	13.5	...	232	330	...	268
16x12	0.52	0.48	9.5	11.5	13.5	...	239	321	...	274
16x14	0.52	0.51	10.5	11.5	15.0	...	349	342	...	322
16	0.52	0.52	11.5	11.5	15.0	...	261	355	...	317
18x6	0.59	0.44	6.5	12.5	14.5	16.13	348	301	348	...
18x8	0.59	0.45	7.5	12.5	14.5	16.13	325	319	324	...
18x10	0.59	0.47	8.5	12.5	14.5	...	344	337	...	...
18x14	0.59	0.56	10.5	12.5	16.0	...	342	393	...	...
18x16	0.59	0.57	11.5	12.5	16.0	...	362	420	...	...
20x6	0.60	0.44	7.0	14.0	16.0	17.50	355	341	400	...
20x10	0.60	0.47	9.0	14.0	16.0	...	369	420	...	...
20x14	0.60	0.56	11.0	14.0	17.5	...	484	474	...	...
20x16	0.60	0.57	12.0	14.0	17.5	...	610	498	...	...
20x18	0.60	0.59	13.0	14.0	17.5	...	539	...	...	...
24x6	0.62	0.44	7.0	16.0	18.0	19.50	385	512	525	...
24x10	0.62	0.47	9.0	16.0	18.0	...	478	468	...	...
24x12	0.62	0.49	10.0	16.0	18.0	...	663	503	...	...
24x14	0.62	0.56	11.0	16.0	19.5	...	542	531	...	...
24x16	0.62	0.57	12.0	16.0	19.5	...	566	555	...	...
24x18	0.62	0.59	13.0	16.0	...	...	593	...	...	...
24x20	0.62	0.60	15.0	17.0	...	...	628	...	...	...
24	0.62	0.62	17.0	17.0	...	...	884	...	...	...

Tees



UTxUTxPE Tee

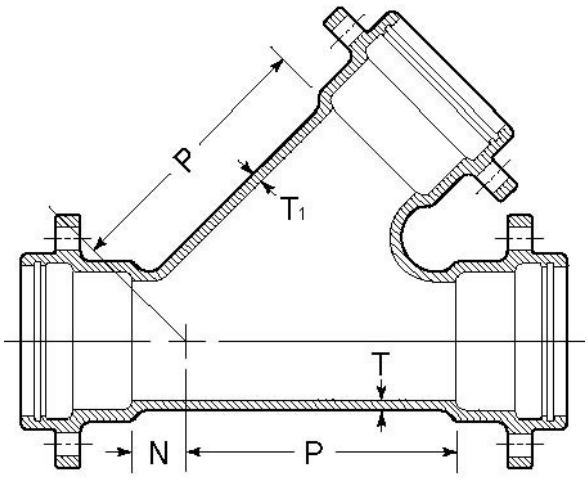
Size						
Run	Branch	T	T1	H	J3	Weight
6	6	0.37	0.37	6	11.5	60
8	6	0.39	0.37	6	12.5	80
12	6	0.43	0.37	7	15.5	140



UTxTapped Tee/Cross

Size	T	Max Tap	L	Weight
4	0.35	2	6	27
6	0.37	2	6	38
8	0.39	2	6	59
10	0.41	2	6	72
12	0.43	2	6	92

Wyes

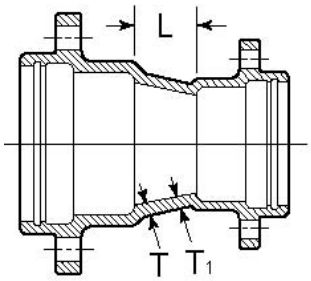


UT Wye

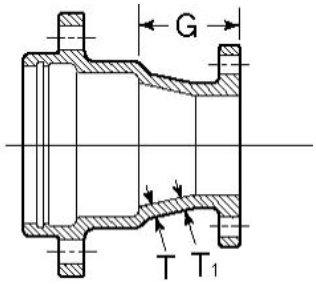
Size	T	T1	P	N	Weight
8x4	0.39	0.35	13.5	0.0	89
10x4	0.41	0.35	15.0	0.0	141
10x6	0.41	0.37	16.0	1.0	151
10x8	0.41	0.39	17.0	2.5	175
10	0.41	0.41	18.0	4.0	200
12x4	0.43	0.35	16.5	0.0	178
12x6	0.43	0.37	18.5	1.5	201
12x8	0.43	0.39	18.5	1.5	224
12x10	0.43	0.41	20.0	3.0	240
12	0.43	0.43	20.0	5.0	289
14x6	0.51	0.44	19.5	0.0	236
14x8	0.51	0.45	21.0	1.5	255
14x10	0.51	0.46	22.5	3.0	325
14	0.51	0.51	25.0	6.0	475
16x6	0.52	0.45	21.0	0.0	281
16x8	0.52	0.46	22.5	0.5	304
16x12	0.52	0.48	25.0	3.5	346
16	0.52	0.52	28.0	6.5	380

TYLER UNION®

Reducers



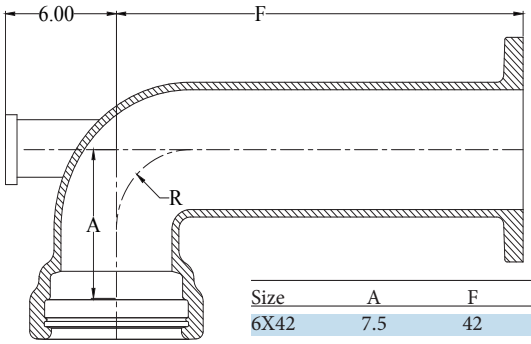
UTxUT Reducer



UTxFE Reducer

Size	T	T1	L	G	Weight UTxUT	Weight UTxFE
6x4	0.37	0.35	4.0	6.0	32	32
8x4	0.39	0.35	5.0	7.0	46	46
8x6	0.39	0.37	4.0	6.0	49	47
10x4	0.41	0.35	7.0	9.0	47	55
10x6	0.41	0.37	5.0	7.0	47	59
10x8	0.41	0.39	4.0	6.0	53	61
12x4	0.43	0.35	9.0	11.0	74	78
12x6	0.43	0.37	7.0	9.0	58	75
12x8	0.43	0.39	5.0	7.0	74	74
12x10	0.43	0.41	4.0	6.0	82	95
14x6	0.51	0.44	9.0	11.0	84	121
14x8	0.51	0.45	7.0	9.0	85	128
14x10	0.51	0.46	5.0	7.0	87	127
14x12	0.51	0.47	4.0	6.0	104	144
16x6	0.52	0.45	11.0	13.0	94	133
16x8	0.52	0.46	9.0	11.0	104	141
16x10	0.52	0.47	7.0	9.0	130	158
16x12	0.52	0.48	5.0	7.0	152	172
16x14	0.52	0.51	4.0	6.0	139	196
18x8	0.59	0.45	14.0	16.0	142	157
18x10	0.59	0.47	12.0	14.0	151	175
18x12	0.59	0.49	10.0	12.0	167	215
18x14	0.59	0.56	8.0	11.5	217	234
18x16	0.59	0.57	7.0	10.5	202	246
20x10	0.60	0.47	14.0	16.0	180	234
20x12	0.60	0.49	12.0	...	205	...
20x14	0.60	0.56	10.0	13.5	233	249
20x16	0.60	0.57	8.0	11.5	250	272
20x18	0.60	0.59	7.0	...	248	...
24x12	0.62	0.49	16.0	18.0	246	262
24x14	0.62	0.56	14.0	17.5	281	315
24x16	0.62	0.57	12.0	15.5	380	328
24x18	0.62	0.59	10.0	...	390	...
24x20	0.62	0.60	8.0	...	421	...

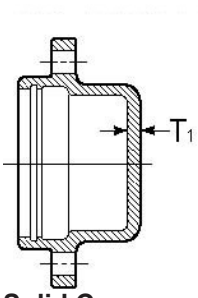
UT Hydrant Bury



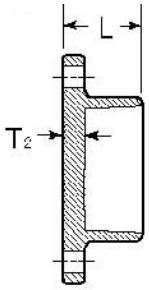
Size	A	F	R
6X42	7.5	42	4

Note: Please specify 8 bolt hole flange or 6 bolt hole flange upon order placement.

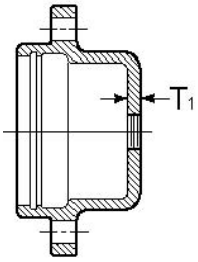
Caps and Plugs



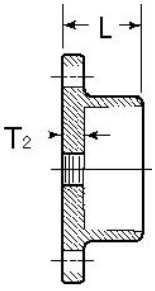
Solid Cap



Solid Plug



Tapped Cap

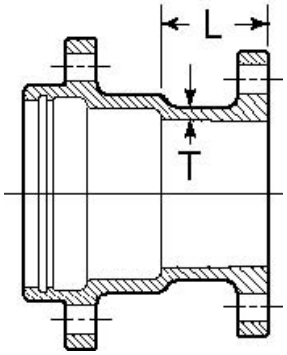


Tapped Plug

Size	T1	T2	L	Weight Cap	Weight Plug
4	0.48	0.5	5.3	15	8.0
6	0.48	0.5	5.3	20	23.0
8	0.51	0.5	5.3	35	32.0
10	0.53	0.6	5.3	50	38.0
12	0.55	0.6	5.3	75	49.0

Note: Optional 2" tap in the center.

ADAPTERS

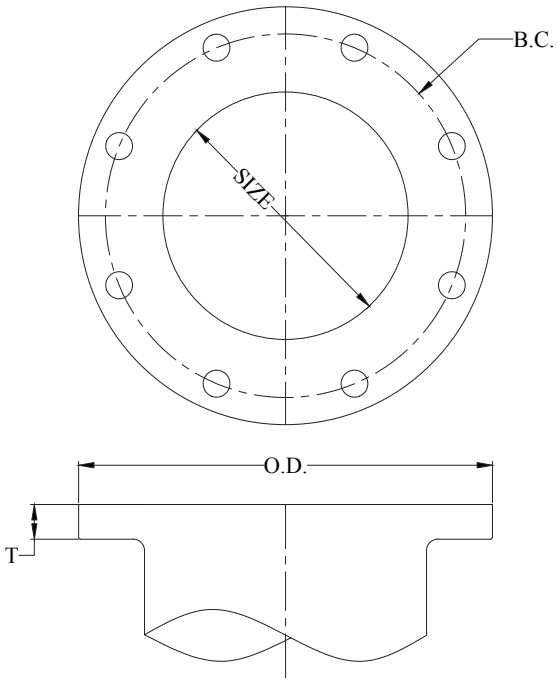


UTxFE Adapter

Size	T1	L	Weight
4	0.35	6	28
6	0.37	6	36
8	0.39	6	54
10	0.41	6	71
12	0.43	6	102
14	0.51	7	113
16	0.52	7	115
20	0.60	6	295

SAMPLE SPECIFICATION (Current ANSI/AWWA revisions apply)
Flanged fittings, 2" through 64" shall be manufactured of ductile iron in accordance with all applicable terms and provisions of standards ANSI/AWWA C110/A21.10. Flange surfaces shall be faced and drilled in accordance with ANSI Class 125, B16.1. All ductile iron flanged fittings shall be rated for water pressure of 250 PSI. Flanged ductile iron fittings in 24" (610 mm) and smaller sizes may be rated for 350 psi (2,413 kPa) with the use of special gaskets .

NOTE: Fittings are available prime coated, bare or epoxy coated. All coated fittings meet requirements of NSF-61, NS1F-372, and Annex G. Interiors of fittings shall be lined and seal coated in accordance with ANSI/AWWA C104/A21.4. Installation of fittings shall be per AWWA C110.

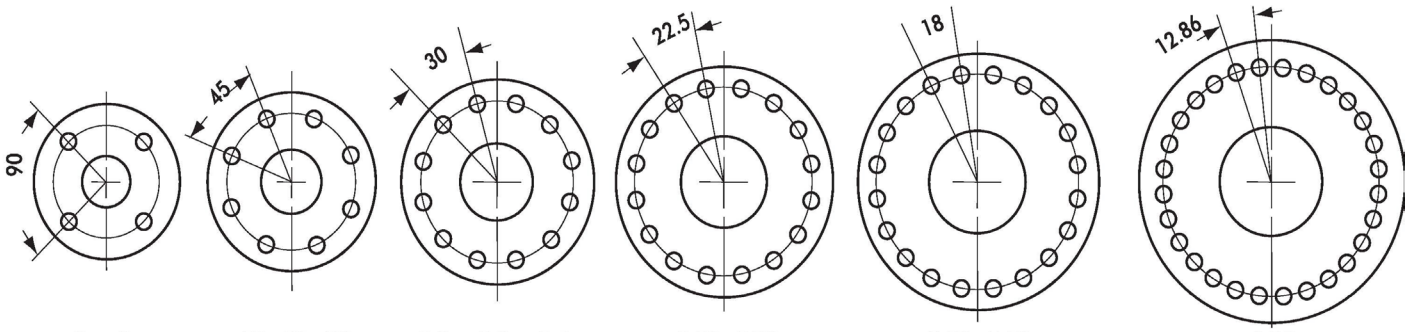


Flange Details

Nominal Pipe Size Inch	Flange O.D.	B.C. Diameter	Flange Thickness T	Bolt Hole Diameter	Number of Bolts	Bolt Dia. and Lengths
2	6.00	4.75	0.62	0.75	4	5/8 x 2 1/4
3	7.50	6.00	0.75	0.75	4	5/8 x 2 1/2
4	9.00	7.50	0.94	0.75	8	5/8 x 3
6	11.00	9.50	1.00	0.875	8	3/4 x 3 1/2
8	13.50	11.75	1.12	0.875	8	3/4 x 3 1/2
10	16.00	14.25	1.19	1.00	12	7/8 x 4
12	19.00	17.00	1.25	1.00	12	7/8 x 4
14	21.00	18.75	1.38	1.125	12	1 x 4 1/2
16	23.50	21.25	1.44	1.125	16	1 x 4 1/2
18	25.00	22.75	1.56	1.25	16	1 1/8 x 5
20	27.50	25.00	1.69	1.25	20	1 1/8 x 5
24	32.00	29.50	1.88	1.375	20	1 1/4 x 5 1/2
30	38.75	36.00	2.12	1.375	28	1 1/4 x 6 1/2
36	46.00	42.75	2.38	1.675	32	1 1/2 x 7
42	53.00	49.50	2.62	1.625	36	1 1/2 x 7 1/2
48	59 50	56 00	2.75	1 625	44	1 1/2 x 8
54	---	---	--	---	---	---
60	---	---	--	---	---	---
64	---	---	--	---	---	---

Contact Tyler Union for 54" - 64" flange fitting information

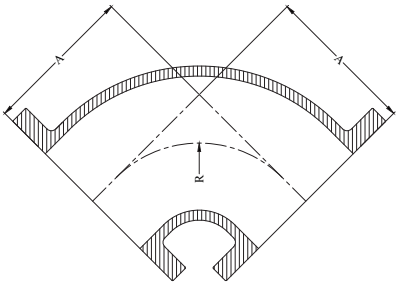
ANSI/AWWA C110 Class 125 Flange Fittings



2", 3" | 4", 6", 8" | 10", 12", 14" | 16", 18" | 20", 24" | 30"

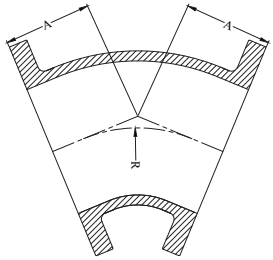
NOTE: Drilling templates are in multiples of four so that fittings may be made to face in any quarter. Bolt holes shall straddle the center line.

Bends



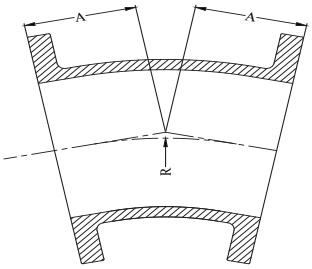
90° (1/4) Bends

Size	R	A	Domestic Weight	Non-Domestic Weight
2	3.0	4.5	14	…
3	4.0	5.5	26	25
4	4.5	6.5	44	45
6	6.0	8.0	67	65
8	7.0	9.0	115	105
10	9.0	11.0	159	165
12	10.0	12.0	244	235
14	11.5	14.0	341	290
16	12.5	15.0	455	370
18	14.0	16.5	527	450
20	15.5	18.0	878	580
24	18.5	22.0	1085	900
30	21.5	25.0	1427	1430
36	24.5	28.0	2135	2135
42	27.5	31.0	3055	3055
48	30.5	34.0	4095	4095



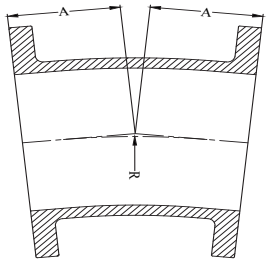
45° (1/8) Bends

R	A	Domestic Weight	Non-Domestic Weight
...	...	...	...
3.62	3.0	20	20
4.81	4.0	36	40
7.25	5.0	57	55
8.44	5.5	105	90
10.88	6.5	127	130
13.25	7.5	149	195
12.06	7.5	260	220
13.25	8.0	322	280
14.50	8.5	371	325
16.88	9.5	485	430
18.12	11.0	742	630
27.75	15.0	1355	1120
35.00	18.0	1755	1755
42.25	21.0	2600	2600
49.50	24.0	3580	3580



22½° (1/16) Bends

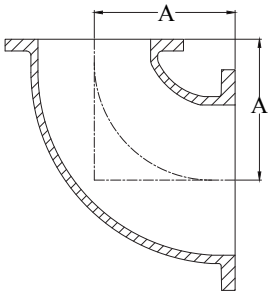
Size	R	A	Domestic Weight	Non-Domestic Weight
2	...	...	...	…
3	7.56	3.0	22	20
4	10.06	4.0	35	40
6	15.06	5.0	64	55
8	17.62	5.5	90	90
10	22.62	6.5	130	135
12	27.67	7.5	199	205
14	25.12	7.5	281	225
16	27.62	8.0	315	285
18	30.19	8.5	402	335
20	35.19	9.5	543	435
24	37.69	11.0	528	640
30	57.81	15.0	1385	1135
36	72.88	18.0	1790	1790
42	88.00	21.0	2665	2663
48	103.06	24.0	3665	3665



11¼° (1/32) Bends

R	A	Domestic Weight	Non-Domestic Weight
...	…	…	…
15.25	3.0	20	20
20.31	4.0	40	40
30.50	5.0	56	55
35.50	5.5	90	90
45.69	6.5	136	135
55.81	7.5	213	205
50.75	7.5	261	225
55.81	8.0	315	285
60.94	8.5	385	335
71.06	9.5	505	435
76.12	11.0	760	645
116.75	15.0	1395	1150
147.25	18.0	1805	1805
177.69	21.0	2680	2680
208.12	24.0	3695	3695

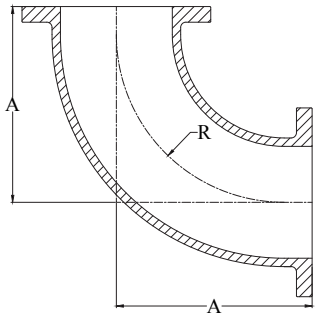
Bends



*90° (1/4) Reducing Bend

Size	A	Weight
4x3	6.5	35
6x4	8.0	65
8x4	9.0	88
8x6	9.0	96
10x6	11.0	131
10x8	11.0	166
12x6	12.0	177
12x8	12.0	201
12x10	12.0	218
14x3	14.0	230
14x8	14.0	240
16x10	15.0	280

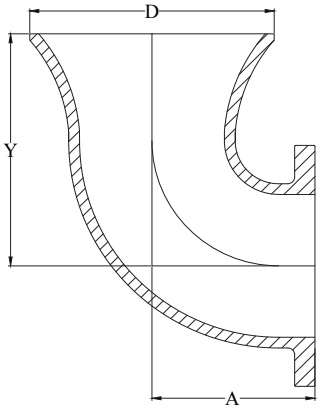
*Not included in AWWA C110
Contact Tyler Union for sizes not shown.



*90° (1/4) Long Radius Bend

Size	R	A	Weight
3	6.25	7.75	32
4	7.0	9.0	46
6	9.5	11.5	83
8	14.0	14.0	140
10	16.5	16.5	252
12	17.0	19.0	364
14	19.0	21.5	475
16	21.5	24.0	630
18	…	26.5	812
20	…	29.0	1080
24	…	34.0	1640

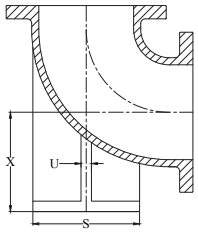
*Not included in AWWA C110
Contact Tyler Union for sizes not shown



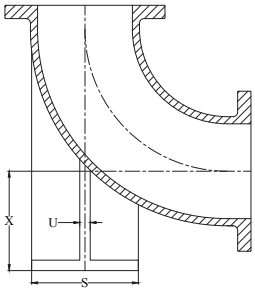
Flange x Flare 90° (1/4) Bend

Size	D	A	Y	Weight
3	8	5.5	8.5	26
4	9	6.5	9.5	39
6	11	8.0	12.0	73
8	14	9.0	13.0	110
10	16	11.0	15.0	171
12	19	12.0	16.0	253
14	21	14.0	22.0	450
16	24	15.0	23.0	502
18	25	16.5	24.5	675
20	28	18.0	26.0	773
24	32	22.0	30.0	1195
30	39	25.0	38.0	2070
36	48	28.0	38.0	2900

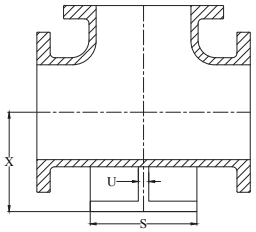
Base Bends/Base Tees



90° Base Bends



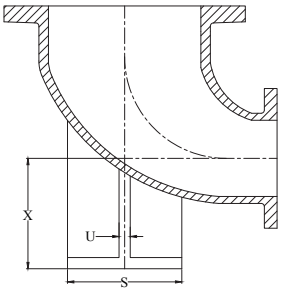
90° Long Radius Base Bends



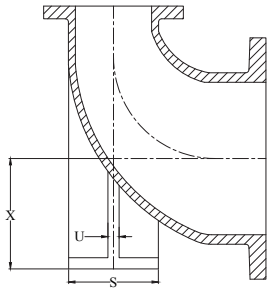
Base Tee

Size	X	S	U	Support Pipe Size	Weight 90°	90°L R	Tee	90°
3	4.88	5.0	0.50	1.5	38	41	47	35
4	5.50	6.0	0.50	2.0	50	60	76	55
6	7.00	7.0	0.62	2.5	83	100	115	85
8	8.38	9.0	0.88	4.0	142	180	195	145
10	9.75	9.0	0.88	4.0	210	315	315	145
12	11.25	11.0	1.00	6.0	300	427	450	300
14	12.50	11.0	1.00	6.0	400	580	570	360
16	13.75	11.0	1.00	6.0	505	740	710	445
18	15.00	13.5	1.12	8.0	659	...	900	565
20	16.00	13.5	1.12	8.0	805	...	1125	700
24	18.50	13.5	1.12	8.0	1215	...	1927	1030
30	23.00	16.0	1.15	10.0	1945	...	...	1625
36	26.00	19.0	1.15	12.0	2395	2895	...	2385
42	30.00	23.5	1.28	...	...	...	...	3465
48	34.00	25.0	1.42	...	...	...	...	4610

Base Bends are made to order only not returnable. Bases are furnished faced and drilled.



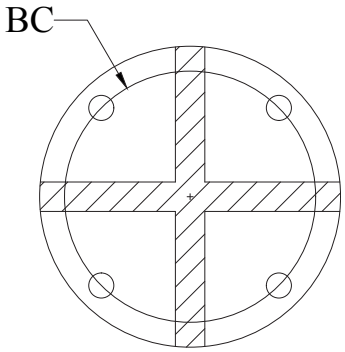
Base Under Large End



Base Under Small End

Size	X	S	U	Weight
4x3	5.50	6	0.50	45
6x4	7.00	7	0.62	75
8x4	8.38	9	0.88	118
8x6	8.38	9	0.88	135
10x6	9.75	9	0.88	175
10x8	9.75	9	0.88	184
12x6	11.25	11	1.00	230
12x8	11.25	11	1.00	255

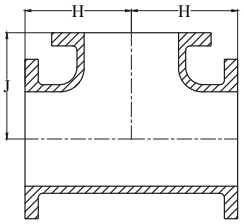
Note : X dimensions are identical on Base Under Large End & Base Under Small End. S dimensions is determined by the largest fitting opening.



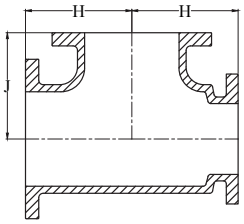
Base Drilling Details

Size	BC	Bolt Hole Diameter	Number of Bolts
3	3.88	5/8	4
4	4.75	3/4	4
6	5.50	3/4	4
8	7.50	3/4	4
10	7.50	3/4	4
12	9.50	7/8	4
14	9.50	7/8	4
16	9.50	7/8	4
18	11.75	7/8	4
20	11.75	7/8	4
24	11.75	7/8	4
30	14.25	1	4
36	17.00	1	4
42	21.25	1-1/8	4
48	22.75	1-1/4	4

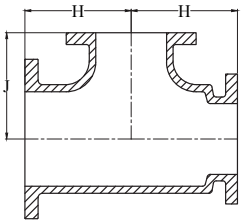
Tees



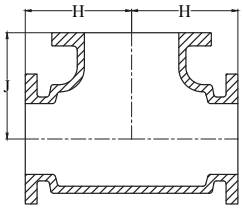
Straight Tees, Reducing on Branch Tees



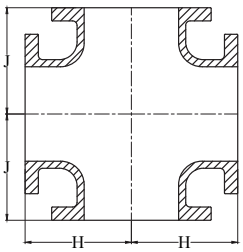
*** Reducing on Run**



***Reducing on Run and Branch**



*** Bullhead Tees**



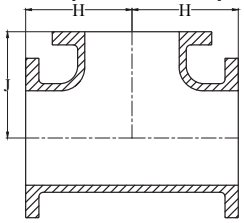
Straight and Reducing Crosses

					Domestic		Non-Domestic	
	Sizes				Weight		Weight	
Run	Run	Branch	H	J	Tee	Cross	Tee	Cross
2	2	2	4.5	4.5	20	…	…	…
3	3	2	5.5	5.5	35	…	…	…
3	3	3	5.5	5.5	37	51	40	50
4	4	2	6.5	5.5	53	…	…	…
*4	4	2	6.5	6.5	55	…	…	…
4	4	3	6.5	6.5	54	76	60	70
4	4	4	6.5	6.5	60	…	65	80
*4	4	6	8.0	8.0	88	…	…	…
*6	4	2	8.0	8.0	96	…	…	…
*6	4	3	8.0	8.0	100	…	…	…
*6	4	4	8.0	8.0	85	…	…	…
*6	6	6	8.0	8.0	85	96	…	…
6	6	8	8.0	8.0	90	112	85	95
6	6	4	8.0	8.0	98	141	90	110
6	6	6	8.0	8.0	138	…	95	120
*8	6	4	9.0	9.0	130	…	…	…
*8	6	8	9.0	9.0	154	…	…	…
8	8	3	9.0	9.0	128	140	…	…
8	8	4	9.0	9.0	155	155	140	155
8	8	6	9.0	9.0	148	172	145	165
8	8	8	9.0	9.0	179	195	155	195
*8	8	10	11.0	11.0	225	…	…	…
*8	8	12	12.0	12.0	277	…	…	…
*†10	6	6	13.0	13.0	278	…	…	…
*†10	8	6	13.0	13.0	298	…	…	…
*†10	8	8	13.0	13.0	278	…	…	…
*†10	8	10	13.0	13.0	325	…	…	…
10	10	4	11.0	11.0	239	220	205	220
10	10	6	11.0	11.0	215	242	215	240
10	10	8	11.0	11.0	254	294	225	265
10	10	10	11.0	11.0	265	…	270	330
10	10	12	12.0	12.0	337	…	…	…
*†12	6	6	14.0	14.0	346	…	…	…
*†12	6	8	14.0	14.0	362	…	…	…
*†12	8	6	14.0	14.0	355	…	…	…
*12	8	8	14.0	14.0	375	…	…	…
*12	8	12	14.0	14.0	420	…	…	…
*†12	10	6	14.0	14.0	390	…	…	…
12	10	8	14.0	14.0	400	…	…	…
12	10	10	14.0	14.0	420	…	…	…
12	10	12	14.0	14.0	440	…	…	…

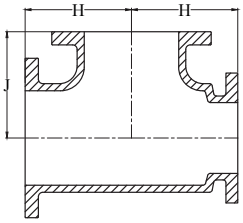
* Not included in AWWA C110

† H and J dimensions are two-inches longer than straight tees.

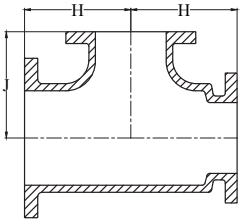
Tees (continued)



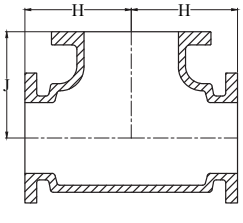
Straight Tees, Reducing on Branch Tees



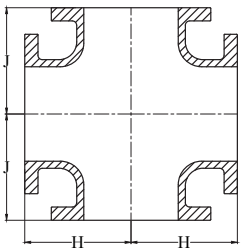
*** Reducing on Run**



***Reducing on Run and Branch**



*** Bullhead Tees**

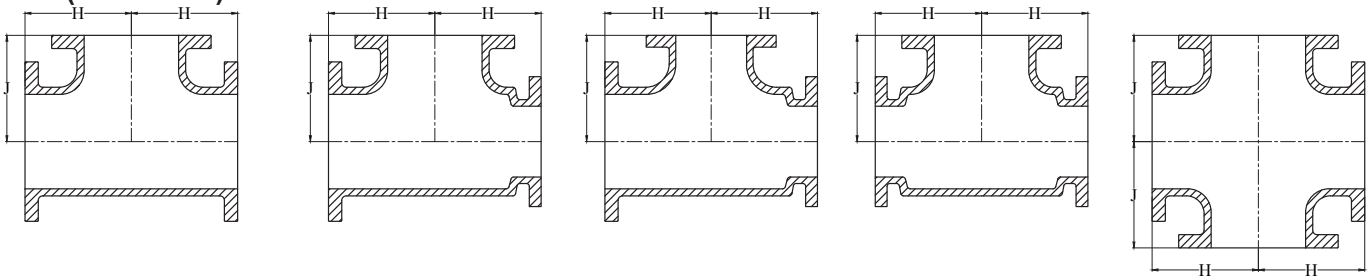


Straight and Reducing Crosses

					Domestic		Non-Domestic	
Sizes					Weight		Weight	
Run	Run	Branch	H	J	Tee	Cross	Tee	Cross
12	12	4	12.0	12.0	322	310	290	310
12	12	6	12.0	12.0	297	326	295	320
12	12	8	12.0	12.0	346	351	310	345
12	12	10	12.0	12.0	394	415	360	415
12	12	12	12.0	12.0	369	438	385	460
*14	14	4	14.0	14.0	419	…	…	…
14	14	6	14.0	14.0	420	450	375	400
14	14	8	14.0	14.0	435	475	390	425
14	14	10	14.0	14.0	450	…	400	460
14	14	12	14.0	14.0	470	543	425	505
14	14	14	14.0	14.0	500	595	435	550
*16	14	4	15.0	15.0	525	…	…	…
16	16	6	15.0	15.0	573	565	465	490
16	16	8	15.0	15.0	534	590	475	520
16	16	10	15.0	15.0	565	620	495	555
16	16	12	15.0	15.0	590	665	520	605
16	16	14	15.0	15.0	592	…	530	620
16	16	16	15.0	15.0	635	755	550	665
18	18	6	13.0	15.5	780	…	480	505
18	18	8	13.0	15.5	609	…	495	535
18	18	10	13.0	15.5	568	…	510	560
18	18	12	13.0	15.5	638	706	535	610
18	18	14	16.5	16.5	726	…	630	720
18	18	16	16.5	16.5	760	…	650	765
18	18	18	16.5	16.5	865	895	665	795
20	20	6	14.0	17.0	773	…	610	635
20	20	8	14.0	17.0	720	…	620	665
20	20	10	14.0	17.0	735	…	635	685
20	20	12	14.0	17.0	816	834	660	735
20	20	14	14.0	17.0	744	…	665	745
20	20	16	18.0	18.0	1054	1065	810	915
20	20	18	18.0	18.0	965	…	820	945
20	20	20	18.0	18.0	966	1175	855	1015
24	24	6	15.0	19.0	1040	…	845	875
24	24	8	15.0	19.0	1060	…	860	895
24	24	10	15.0	19.0	1004	…	880	930
24	24	12	15.0	19.0	986	1100	890	960
24	24	14	15.0	19.0	1021	1125	900	975
24	24	16	15.0	19.0	1013	1160	915	1010
24	24	18	22.0	22.0	1416	…	1220	1365
24	24	20	22.0	22.0	1510	1695	1255	1430
24	24	24	22.0	22.0	1536	1850	1330	1570

* Not included in AWWA C110

Tees (continued)



Straight Tees, Reducing on Branch Tees | *** Reducing on Run** | ***Reducing on Run and Branch** | *** Bullhead Tees** | **Straight and Reducing Crosses**

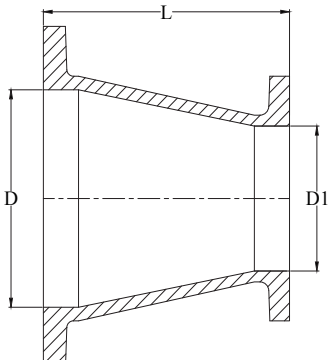
Sizes					Domestic Weight		Non-Domestic Weight	
Run	Run	Branch	H	J	Tee	Cross	Tee	Cross
30	30	6	18.0	23.0	1725	…	…	…
30	30	8	18.0	23.0	…	…	1490	1565
30	30	10	18.0	23.0	…	…	1490	1565
30	30	12	18.0	23.0	…	…	1490	1565
30	30	14	18.0	23.0	…	…	1490	1570
30	30	16	18.0	23.0	…	…	1505	1605
30	30	18	18.0	23.0	1852	…	1515	1615
30	30	20	18.0	23.0	…	…	1540	1670
30	30	24	25.0	25.0	2475	2695	2025	2245
30	30	30	25.0	25.0	2340	2985	2150	2500
36	36	12	20.0	26.0	…	…	2170	2240
36	36	14	20.0	26.0	…	…	2175	2240
36	36	16	20.0	26.0	…	…	2185	2270
36	36	18	20.0	26.0	…	…	2190	2280
36	36	20	20.0	26.0	…	…	2210	2325
36	36	24	20.0	26.0	2255	…	2255	2405
36	36	30	28.0	28.0	3000	…	3000	3300
36	36	36	28.0	28.0	3160	6740	3160	3620
42	42	12	23.0	30.0	…	…	3165	3200
42	42	14	23.0	30.0	…	…	3170	3200
42	42	16	23.0	30.0	…	…	3180	3270
42	42	18	23.0	30.0	…	…	3185	3300
42	42	20	23.0	30.0	…	…	3205	3320
42	42	24	23.0	30.0	3245	…	3245	3395
42	42	30	31.0	31.0	4125	…	4125	4375
42	42	36	31.0	31.0	5360	…	5360	5720
42	42	42	31.0	31.0	5580	…	5585	6155
48	48	12	26.0	34.0	…	…	4315	4390
48	48	14	26.0	34.0	…	…	4315	4385
48	48	16	26.0	34.0	…	…	4330	4415
48	48	18	26.0	34.0	…	…	4330	4420
48	48	20	26.0	34.0	…	…	4350	4460
48	48	24	26.0	34.0	4385	…	4385	4535
48	48	30	26.0	34.0	4455	…	4455	4670
48	48	36	34.0	34.0	5555	…	5555	5880
48	48	42	34.0	34.0	7195	…	7195	7630
48	48	48	34.0	34.0	7385	…	7385	8005

* Not included in AWWA C110

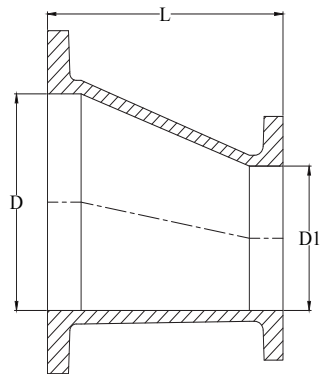
Reducers

Concentric Reducer

Size			Domestic	Non-Domestic
D	D1	L	Weight	Weight
3	2	6.0	17	…
4	2	7.0	23	…
4	3	7.0	29	30
6	2	9.0	30	…
6	3	9.0	44	40
6	4	9.0	46	45
6	5	9.0	49	…
8	3	11.0	61	…
8	4	11.0	63	65
8	5	11.0	70	…
8	6	11.0	75	75
10	4	12.0	98	85
10	6	12.0	107	90
10	8	12.0	116	110
12	4	14.0	119	120
12	6	14.0	130	130
12	8	14.0	152	145
12	10	14.0	178	170
14	6	16.0	165	155
14	8	16.0	185	175
14	10	16.0	205	190
14	12	16.0	235	220
16	6	18.0	210	190
16	8	18.0	230	210
16	10	18.0	255	235
16	12	18.0	285	265
16	14	18.0	315	280
18	8	19.0	265	240
18	10	19.0	290	265
18	12	19.0	320	295
18	14	19.0	350	310
18	16	19.0	405	340
20	10	20.0	363	…
20	12	20.0	465	345
20	14	20.0	430	355
20	16	20.0	445	390
20	18	20.0	470	410
24	12	24.0	608	480
24	14	24.0	565	490
24	16	24.0	610	525
24	18	24.0	654	550
24	20	24.0	727	590
30	16	30.0	945	…
30	18	30.0	970	810
30	20	30.0	1144	870
30	24	30.0	1078	970
36	20	36.0	…	1230
36	24	36.0	…	1345
36	30	36.0	…	1555
42	24	42.0	1810	1820
42	30	42.0	2060	2060
42	36	42.0	…	2345
48	30	48.0	2615	2625
48	36	48.0	2940	2950
48	42	48.0	3320	3320



Concentric Reducer



Eccentric Reducer

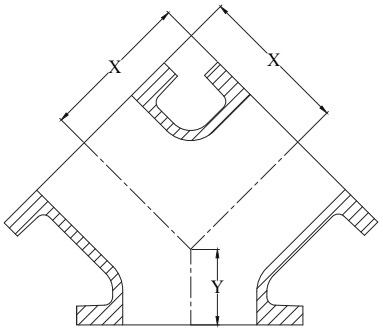
*Eccentric Reducer

Size			Domestic
D	D1	L	Weight
4	3	7.0	30
6	3	9.0	45
6	4	9.0	52
8	4	11.0	70
8	6	11.0	80
10	4	12.0	95
10	6	12.0	98
10	8	12.0	123
12	4	14.0	120
12	6	14.0	135
12	8	14.0	149
12	10	14.0	177
14	6	16.0	165
14	8	16.0	185
14	10	16.0	205
14	12	16.0	294
16	6	18.0	210
16	8	18.0	230
16	10	18.0	255
16	12	18.0	285
16	14	18.0	315
18	8	19.0	265
18	10	19.0	290
18	12	19.0	306
18	14	19.0	350
18	16	19.0	385
20	10	20.0	350
20	12	20.0	370
20	14	20.0	448
20	16	20.0	449
20	18	20.0	455
24	12	24.0	535
24	14	24.0	570
24	16	24.0	614
24	18	24.0	645
24	20	24.0	695
30	16	30.0	778
30	18	30.0	810
30	20	30.0	870
30	24	30.0	970
36	24	36.0	1425
36	30	36.0	2120
42	24	42.0	2340
42	30	42.0	2060
42	36	42.0	2345
48	30	48.0	2625
48	36	48.0	2950
48	42	48.0	3320

*Eccentric Reducers not included in AWWA C110

TYLER UNION®

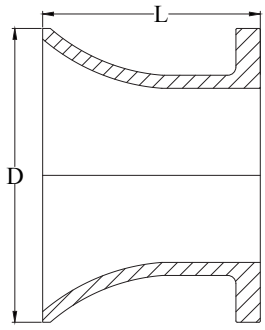
Wyes/Laterals



*True Wyes

Size				
Stem	Branch	X	Y	Weight
4	4	6.5	3.0	35
6	4	8.0	3.5	75
6	6	8.0	3.5	84
8	6	9.0	4.5	134
8	8	9.0	4.5	125
10	6	8.0	5.0	140
10	8	9.0	5.0	155
10	10	11.0	5.0	220
12	8	9.0	5.5	210
12	10	11.0	5.5	240
12	12	12.0	5.5	323
16	16	13.0	6.5	520

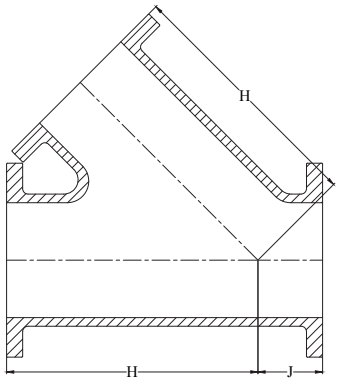
*Not included in AWWA C110



*Flange x Flare Piece

Size	D	L	Weight
3	7	8.0	21
4	9	8.0	30
6	11	8.0	44
8	14	10.0	75
10	16	12.0	119
12	19	12.0	150
14	21	16.0	225
16	24	16.0	280
18	25	16.0	317
20	28	18.0	379
24	32	18.0	494
30	39	24.0	865
36	46	24.0	1200

*Not included in AWWA C110



*Wyes/Laterals

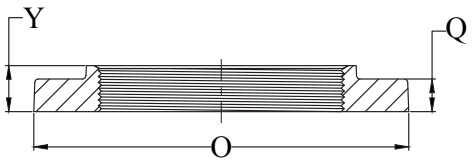
Run	Branch	H	J	Weight
3	3	10.0	3.0	49
4	3	12.0	3.0	68
4	4	12.0	3.0	76
6	4	14.5	3.5	106
6	6	14.5	3.5	131
8	4	17.5	4.5	153
8	6	17.5	4.5	188
8	8	17.5	4.5	201
10	4	20.5	5.0	232
10	6	20.5	5.0	288
10	8	20.5	5.0	333
10	10	20.5	5.0	300
12	4	24.5	5.5	355
12	6	24.5	5.5	370
12	8	24.5	5.5	395
12	10	24.5	5.5	420
12	12	24.5	5.5	460
14	6	27.0	6.0	500
14	8	27.0	6.0	525
14	10	27.0	6.0	555
14	12	27.0	6.0	600
14	14	27.0	6.0	640
16	6	30.0	6.5	655
16	8	30.0	6.5	680
16	10	30.0	6.5	715
16	12	30.0	6.5	755
16	14	30.0	6.5	800
16	16	30.0	6.5	850
18	8	32.0	7.0	820
18	10	32.0	7.0	855
18	12	32.0	7.0	873
18	14	32.0	7.0	940
18	16	32.0	7.0	990
18	18	32.0	7.0	1035
20	10	28.0	8.0	1095
20	12	35.0	8.0	1130
20	14	35.0	8.0	1170
20	16	35.0	8.0	1220
20	20	35.0	8.0	1345
24	24	40.5	9.0	2020
36	36	60.0	19.5	5740

*Not included in AWWA C110

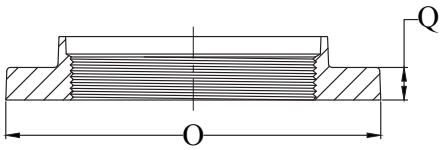
TYLER UNION®

CLASS 125 FLANGE DUCTILE IRON
C110 FULL BODY FITTINGS
UL and FM Listed

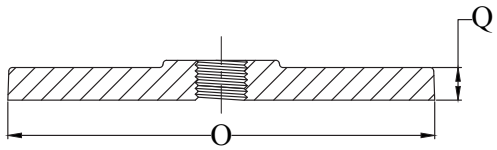
Flanges



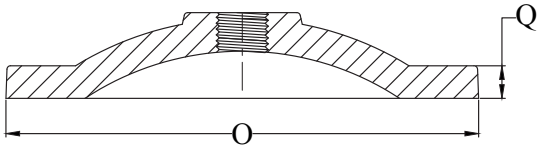
Flange for Steel Pipe
Reducing Flange for Steel Pipe



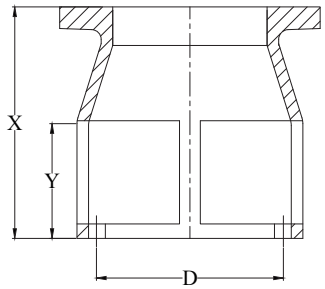
Flange for DI Pipe
Reducing Flange for DI Pipe



Under 12" Blind Flange
with Optional 2" Tap



12" and Larger Blind Flange
with Optional 2" Tap



*Flange Sludge Shoe

Size	D	X	Y	Weight
3	5.75	12	6	28
4	7.00	12	6	35
6	7.87	12	6	45
8	10.12	12	6	69
10	12.25	12	6	88
12	15.25	12	6	120

*Not included in AWWA C110

Flanges

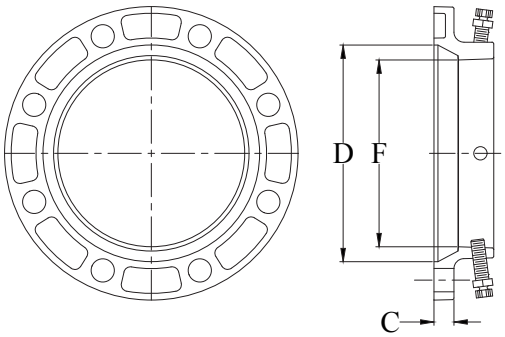
Size	O	Q	Y	Steel	DI	Blind
2	6.00	0.62	1.00	4	...	...
2½	7.00	0.69	1.13	8	...	...
3	7.50	0.75	1.19	7	6	9
4	9.00	0.94	1.31	12	11	15
6	11.00	1.00	1.56	21	19	28
8	13.50	1.12	1.75	28	29	45
10	16.00	1.19	1.94	49	33	62
12	19.00	1.25	2.19	61	61	73
14	21.00	1.38	2.25	...	59	116
16	23.50	1.44	2.50	...	78	165
18	25.00	1.56	2.69	...	98	192
20	27.50	1.69	2.88	...	103	249
24	32.00	1.88	3.25	...	147	348
30	38.75	2.12	...	...	255	615
36	46.00	2.38	...	...	360	1130
42	53.00	2.62	...	...	535	1175
48	59.50	2.75	...	...	650	1585

DI Reducing Flange Threaded for Steel Pipe

Size	TapxO.D.	Weight
4x3	3x9	16
6x4	4x11	25
8x4	4x13.5	44
8x6	6x13.5	31
10x6	6x16	50
12x6	6x19	60
10x8	8x16	55
12x10	10x19	72

DI Reducing Flange Threaded for Ductile Iron Pipe

Size	TapxO.D.	Weight
4x3	3x9	16
6x4	4x11	25
8x4	4x13.5	40
8x6	6x13.5	35
10x6	6x16	50
12x6	6x19	85



Adapter Flange

Size	Rated Working Pressure	No. of Set Screws	Bolt Circle	D.I. Pipe O.D. +.06 / -.06	D +.06 -.04	F +.07 -.03	C	Weight
3	250	4	6.00	3.96	4.94	4.06	.94	7
4	250	4	7.50	4.80	6.02	4.90	1.00	10
6	250	8	9.50	6.90	8.12	7.00	1.06	14
8	250	8	11.75	9.05	10.27	9.15	1.12	22
10	250	12	14.25	11.10	12.34	11.20	1.19	30
12	150	12	17.00	13.20	14.44	13.30	1.25	40

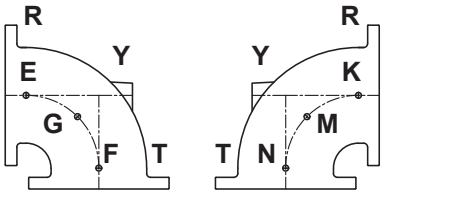
All set screws are 5/8" 80lb. torque head.
Note: Recommended for class 53 - class 56 wall thickness D.I. pipe.

Tap Locations

Fittings can be supplied with tap sizes and located to ANSI B16.1 and MSS-SP-45. Specify fitting size, tap location by letter (refer to drawings below) and tap size by NPT dimension, on order.

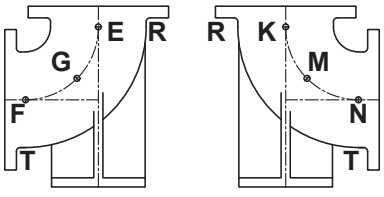
Note: Boss is always required at location “Y” or “V” on straight and reducing sizes of 90° degree bends, and on tapered sides of reducers.

Fitting Size	Max Tap Without Boss
3	1/2
4-6	3/4
8	1 1/4
10-16	1 1/2
18-36	2

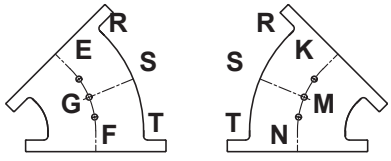


90° Bend, Straight Size

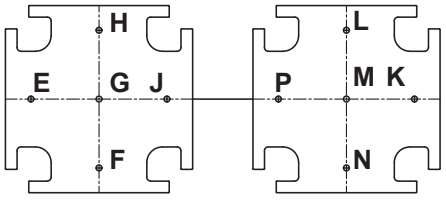
90° Bend, Reducing Size



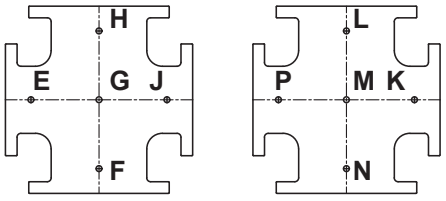
Base 90° Bend Elbow



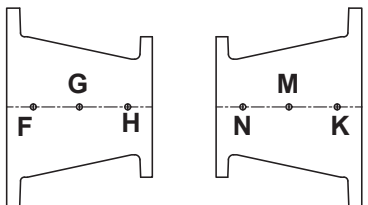
45° Bend



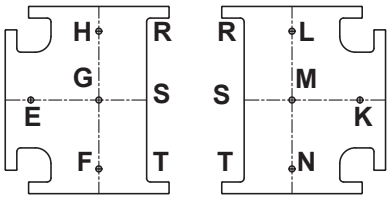
Cross, Straight Size



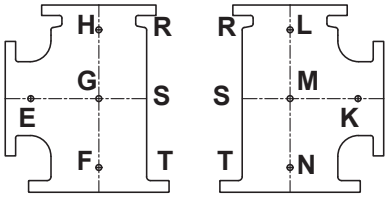
Cross, Reducing Size



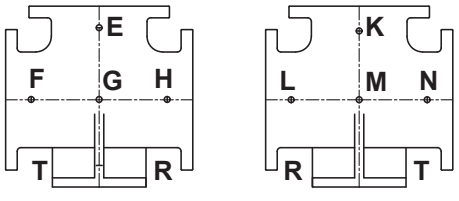
Concentric Reducer



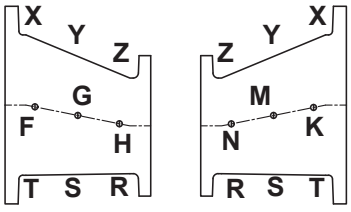
Tee, Straight Size



Tee, Reducing Size



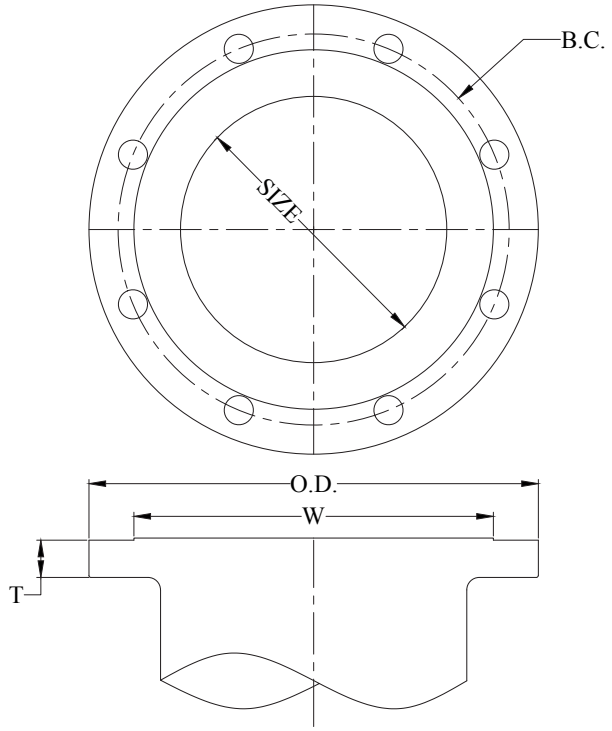
Base Tee



Eccentric Reducer

TYLER UNION®

SAMPLE SPECIFICATION (Current ANSI/AWWA revisions apply)
Class 250 flanged fittings, 2" through 30" shall be manufactured of ductile Iron in accordance with all applicable terms and provisions of standard ANSI/AWWA C110/A21.10. Flange surfaces shall be faced and drilled in accordance with ANSI Class 250, B16.1. All ductile iron flanged fittings shall be rated for water pressure of 250 PSI. Flanged ductile-iron fittings in 24" (610 mm) and smaller sizes may be rated for 350 psi (2,413 kPa) with the use of special gaskets. NOTE: Fittings are available prime coated, bare, or epoxy coated. All coated fittings meet requirements of NSF-61, NSF-372, and Annex G. Interiors of fittings shall be lined and seal coated in accordance with ANSI/AWWA C104/A21.4. Cement mortar lining for ductile iron pipe and fittings for potable water unless otherwise specified. Installation of fittings shall be per AWWA C110.



ANSI/AWWA C110 Class 250 Flange Fittings

Flange Details

Nominal Pipe Size Inch	Flange O.D.	W (Raised Face)	B.C. Diameter	Flange Thickness T	Bolt Hole Diameter	Number of Bolts	Bolt Dia. and Lengths
2	6.50	4.19	5.00	0.88	0.75	8	5/8 x 3
3	8.25	5.69	6.62	1.12	0.875	8	3/4 x 3 1/2
4	10.00	6.94	7.88	1.25	0.875	8	3/4 x 4
6	12.50	9.69	10.62	1.44	0.875	12	3/4 x 4
8	15.00	11.94	13.00	1.62	1.000	12	7/8 x 4 1/2
10	17.50	14.06	15.25	1.88	1.125	16	1 x 5 1/2
12	20.50	16.44	17.75	2.00	1.250	16	1 1/8 x 5 1/2
14	23.00	18.94	20.25	2.12	1.250	20	1 1/8 x 6
16	25.50	21.06	22.50	2.25	1.375	20	1 1/4 x 6 1/2
18	28.00	23.31	24.75	2.38	1.375	24	1 1/4 x 6 1/2
20	30.50	25.56	27.00	2.50	1.375	24	1 1/4 x 7
24	36.00	30.31	32.00	2.75	1.625	24	1 1/2 x 7 1/2
30	43.00	37.19	39.25	3.00	2.00	28	1 3/4 x 8 1/2
*36	50.00	43.69	46.00	3.38	2.25	32	2 x 11
*42	57.00	50.44	52.75	3.69	2.25	36	2 x 11
*48	65.00	58.44	60.75	4.00	2.25	40	2 x 11

*For LL information on sizes 36" and above contact Tyler Union.

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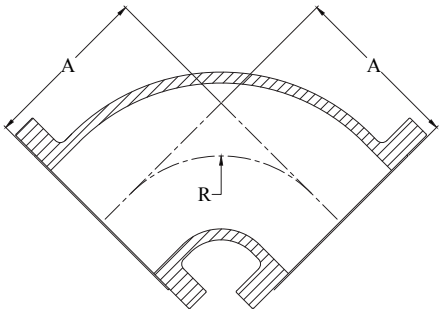
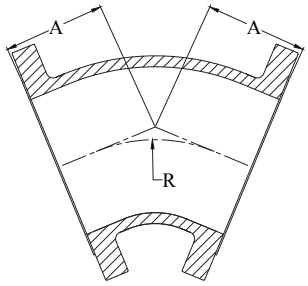
Bends



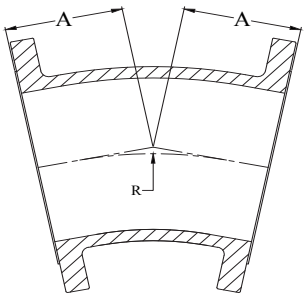
90° (1/4) Bends

Size	R	A
2	3.0	4.5
3	4.0	6.0
4	4.5	7.0
6	6.0	8.5
8	7.0	10.0
10	9.0	11.5
12	10.0	13.0
14	11.5	15.0
16	12.5	16.5
18	14.0	18.0
20	15.5	19.5
24	18.5	22.5
30	21.5	27.5



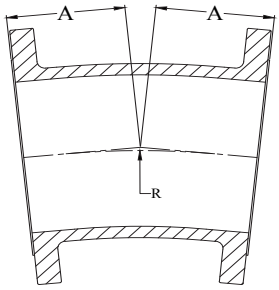
45° (1/8) Bends

Size	R	A
2	...	...
3	3.62	3.5
4	4.81	4.5
6	7.25	5.5
8	8.44	6.0
10	10.88	7.0
12	13.25	8.0
14	12.06	8.5
16	13.25	9.5
18	14.50	10.0
20	16.88	10.5
24	18.12	12.0
30	27.75	15.0



22½° (1/16) Bends

Size	R	A
3	7.56	3.5
4	10.06	4.5
6	15.06	5.5
8	17.62	6.0
10	22.62	7.0
12	27.62	8.0

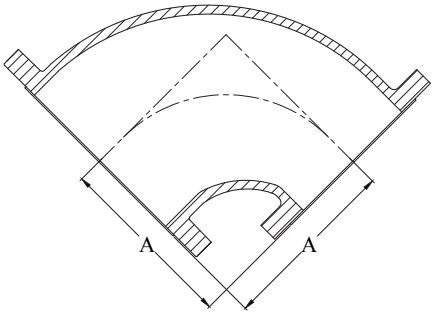


11¼° (1/32) Bends

Size	R	A
3	15.25	3.5
4	20.31	4.5
6	30.50	5.5
8	35.50	6.0
10	45.69	7.0
12	55.81	8.0

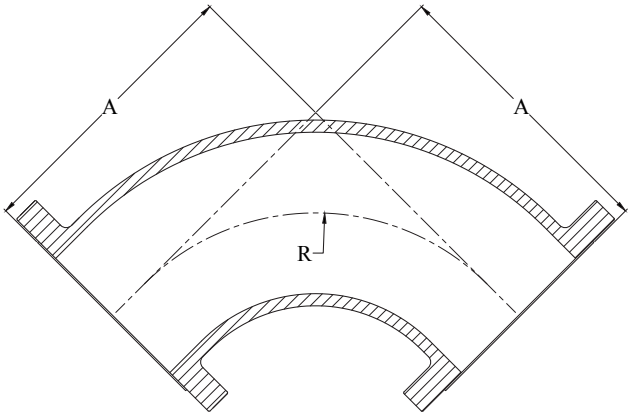
TYLER UNION®

Bends



*90° (1/4) Reducing Bends

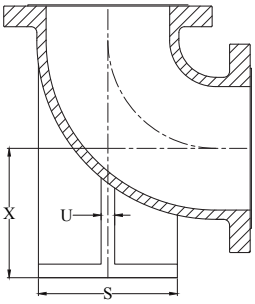
Size	A
4x3	6.5
6x4	8.0
8x4	9.0
8x6	9.0
10x6	11.0
10x8	10.0
12x6	12.0
12x8	12.0
12x10	12.0
14x8	14.0
16X12	16.5



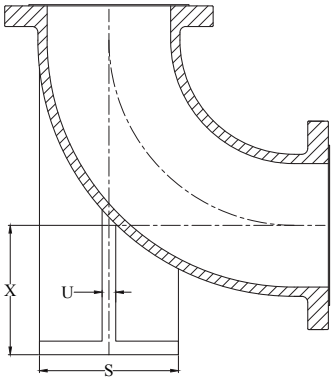
*90° (1/4) Long Radius Bends

Size	R	A
3	6.25	7.75
4	7.0	9.0
6	9.5	11.5
8	14.0	14.0
10	16.5	16.5
12	17.0	19.0
14	19.0	21.5
16	21.5	24.0
18	…	26.5
20	…	29.0
24	…	34.0

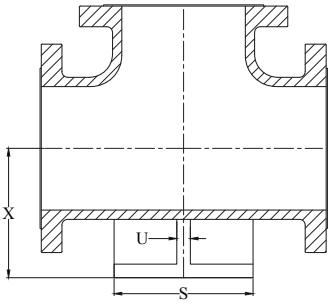
*Not included in AWWA C110
Contact Tyler Union for sizes not shown.



90° Base Bends



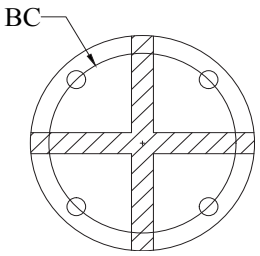
90° Long Radius Base Bends



Base Tees

Size	X	S	U	Support Pipe Size
3	5.25	6.12	0.62	1.5
4	6.00	6.5	0.50	2
6	7.50	7.5	0.75	2.5
8	9.00	10.0	0.88	4
10	10.50	10.0	0.88	4
12	12.00	10.5	1.00	6
14	13.50	12.5	1.12	6
16	14.75	12.5	1.12	6
18	16.25	15.0	1.12	8
20	17.88	15.0	1.25	8
24	20.75	17.5	1.25	8
30	23.00	16.0	1.15	10
36	26.00	19.0	1.15	12

Base Bends are made to order only and not returnable.
Bases are furnished faced and drilled.



Size	BC	Bolt Hole Diameter	No of Holes
3	4.50	7/8	4
4	5.00	3/4	4
6	5.88	7/8	4
8	7.88	7/8	4
10	7.88	7/8	4
12	10.62	7/8	4
14	10.62	7/8	4
16	10.62	7/8	4
18	13.00	1	4
20	13.00	1	4
24	15.25	1 1/8	4

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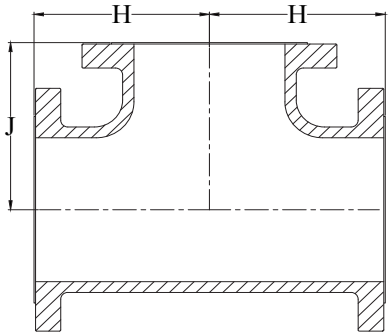
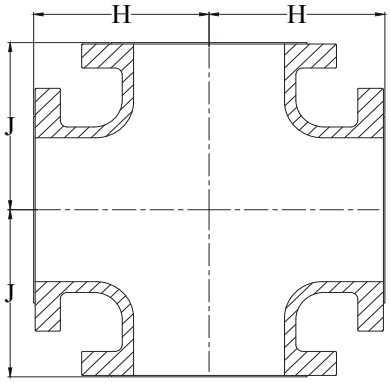
Tees



Straight Tees, Reducing on Branch Tees

Sizes Run	Run	Branch	H	J
2	2	2	5.0	5.0
3	3	2	6.0	6.0
3	3	3	6.0	6.0
4	4	3	7.0	7.0
4	4	4	7.0	7.0
6	6	2	8.5	8.5
6	6	3	8.5	8.5
6	6	4	8.5	8.5
6	6	6	8.5	8.5
8	8	3	10.0	10.0
8	8	4	10.0	10.0
8	8	6	10.0	10.0
8	8	8	10.0	10.0
10	10	4	11.5	11.5
10	10	6	11.5	11.5
10	10	8	11.5	11.5
10	10	10	11.5	11.5
12	12	4	13.0	13.0
12	12	6	13.0	13.0
12	12	8	13.0	13.0
12	12	10	13.0	13.0
12	12	12	13.0	13.0
14	14	4	15.0	15.0
14	14	6	15.0	15.0
14	14	8	15.0	15.0
14	14	10	15.0	15.0
14	14	12	15.0	15.0
14	14	14	15.0	15.0
16	16	4	16.5	16.5
16	16	6	16.5	16.5
16	16	8	16.5	16.5
16	16	10	16.5	16.5
16	16	12	16.5	16.5
16	16	14	16.5	16.5
16	16	16	16.5	16.5



Straight and Reducing Crosses

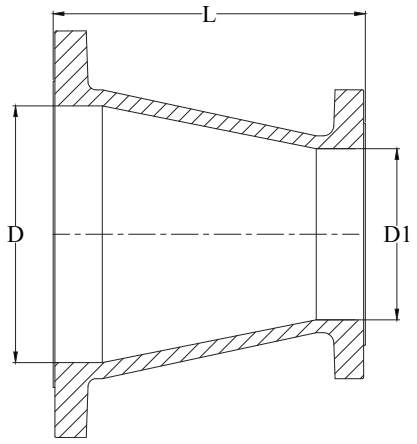
Sizes Run	Run	Branch	H	J
18	18	6	14.0	17.0
18	18	8	14.0	17.0
18	18	10	14.0	17.0
18	18	12	14.0	17.0
18	18	14	18.0	18.0
18	18	16	18.0	18.0
18	18	18	18.0	18.0
20	20	6	15.5	18.5
20	20	8	15.5	18.5
20	20	10	15.5	18.5
20	20	12	15.5	18.5
20	20	14	15.5	18.5
20	20	16	19.5	19.5
20	20	18	19.5	19.5
20	20	20	19.5	19.5
24	24	6	17.0	21.5
24	24	8	17.0	21.5
24	24	10	17.0	21.5
24	24	12	17.0	21.5
24	24	14	17.0	21.5
24	24	16	17.0	21.5
24	24	18	22.5	22.5
24	24	20	22.5	22.5
24	24	24	22.5	22.5
30	30	6	20.5	25.5
30	30	12	20.5	25.5
30	30	18	20.5	25.5
30	30	24	27.5	27.5
30	30	30	27.5	27.5

TYLER UNION®

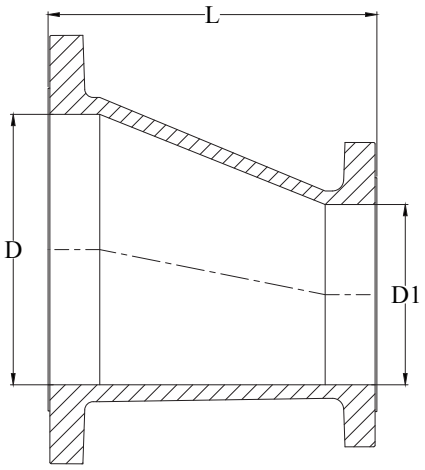
Reducers

Concentric Reducer

Size D	D1	L
3	2	6
4	2	7
4	3	7
6	2	9
6	3	9
6	4	9
6	5	9
8	3	11
8	4	11
8	5	11
8	6	11
10	4	12
10	6	12
10	8	12
12	4	14
12	6	14
12	8	14
12	10	14
14	6	16
14	8	16
14	10	16
14	12	16
16	6	18
16	8	18
16	10	18
16	12	18
16	14	18
18	8	19
18	10	19
18	12	19
18	14	19
18	16	19
20	10	20
20	12	20
20	14	20
20	16	20
20	18	20
24	12	24
24	14	24
24	16	24
24	18	24
24	20	24
30	16	30
30	18	30
30	20	30
30	24	30



Concentric Reducer



Eccentric Reducer

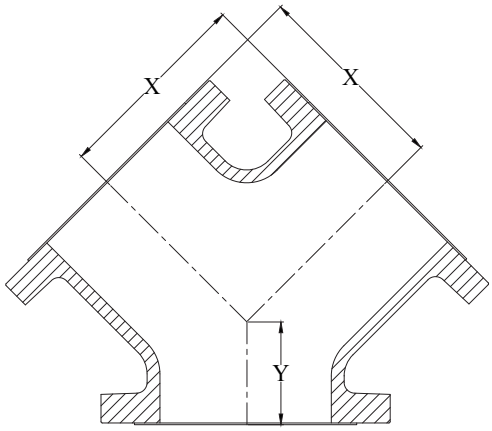
*Eccentric Reducer

Size D	D1	L
4	3	7
6	3	9
6	4	9
8	4	11
8	6	11
10	4	12
10	6	12
10	8	12
12	4	14
12	6	14
12	8	14
12	10	14
14	6	16
14	8	16
14	10	16
14	12	16
16	6	18
16	8	18
16	10	18
16	12	18
16	14	18
18	8	19
18	10	19
18	12	19
18	14	19
18	16	19
20	10	20
20	12	20
20	14	20
20	16	20
20	18	20
24	12	24
24	14	24
24	16	24
24	18	24
24	20	24
30	16	30
30	18	30
30	20	30
30	24	30

* Eccentric Reducers not included in AWWA C110

TYLER UNION®

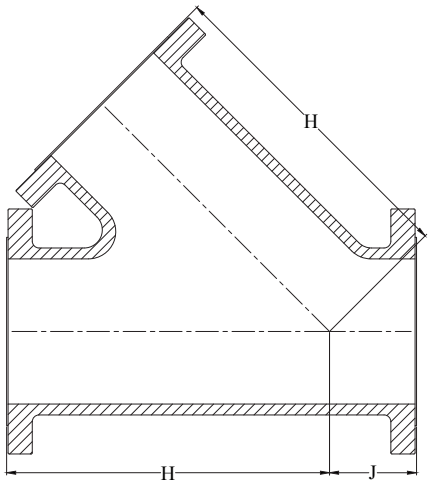
Wyes/Laterals



*True Wyes

Size Stem	Branch	X	Y
4	4	6.5	3.0
6	4	8.0	3.5
6	6	8.0	3.5
8	6	9.0	4.5
8	8	9.0	4.5
10	6	8.0	5.0
10	8	9.0	5.0
10	10	11.0	5.0
12	8	9.0	5.5
12	10	11.0	5.5
12	12	12.0	5.5
16	16	13.0	6.5

*Not included in AWWA C110



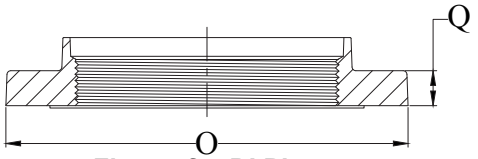
*Wyes/Laterals

Run	Branch	H	J
3	3	11.0	3.0
4	3	13.5	3.0
4	4	13.5	3.0
6	4	17.5	4.0
6	6	17.5	4.0
8	4	20.5	5.0
8	6	20.5	5.0
8	8	20.5	5.0
10	4	24.0	5.5
10	6	24.0	5.5
10	8	24.0	5.5
10	10	24.0	5.5
12	4	27.5	6.0
12	6	27.5	6.0
12	8	27.5	6.0
12	10	27.5	6.0
12	12	27.5	6.0
14	6	31.0	6.5
14	8	31.0	6.5
14	10	31.0	6.5
14	12	31.0	6.5
14	14	31.0	6.5
16	6	34.5	7.5
16	8	34.5	7.5
16	10	34.5	7.5
16	12	34.5	7.5
16	14	34.5	7.5
16	16	34.5	7.5
18	8	37.5	8.0
18	10	37.5	8.0
18	12	37.5	8.0
18	14	37.5	8.0
18	16	37.5	8.0
18	18	37.5	8.0
20	20	40.5	8.5
24	24	47.5	10.0

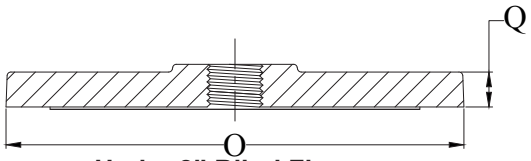
*Not included in AWWA C110

TYLER UNION®

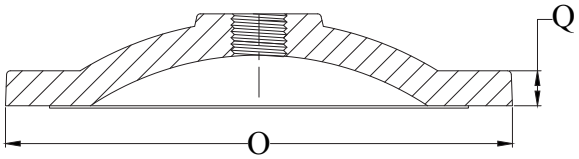
Flanges



Flange for DI Pipe
Reducing Flange for DI Pipe



Under 8” Blind Flange
with Optional 2” Tap



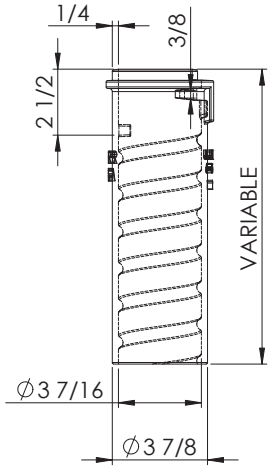
10” and Larger Blind Flange
with Optional 2” Tap

Flanges

Size	O	Q
2	6.00	0.62
3	7.50	0.75
4	9.00	0.94
6	11.00	1.00
8	13.50	1.12
10	16.00	1.19
12	19.00	1.25
14	21.00	1.38
16	23.50	1.44
18	25.00	1.56
20	27.50	1.69
24	32.00	1.88
30	38.75	2.12
36	46.00	2.38
42	53.00	2.62
48	59.50	2.75

TYLER UNION®

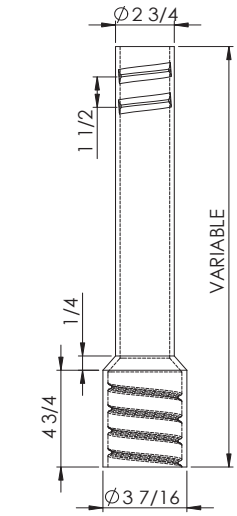
6500 SERIES
CAST IRON SCREW TYPE VALVE BOXES
for 1 1/4" through 2" curbstops, enlarged base
Accommodates 2" curbstops, 2 1/2 shaft - screw type



6500 Series, Screw Type Assemblies with Water Lid

Box (Components)	**D-UPC 670610	Weight	Extension Height	**ND-UPC 670610	Weight
89-A (12T & 128)	146681	20	15-21	111863	20
90-8 (12T & 158)	146742	21	18-24	111870	21
90-C (15T & 158)	146803	22	21-27	111887	24
91-C (15T & 218)	146865	24	24-33	111894	26
92-C (15T & 278)	146926	26	30-39	111900	28
92-D (1ST & 278)	146988	28	30-42	111917	29
93-0 (1ST & 338)	147046	32	36-48	111924	33
93-E (UT & 338)	147114	37	36-54	111931	39
94-E (24T & 398)	147183	41	42-60	111948	44
95-E (30T & 398)	147251	44	41-64	111955	49
100-E (24T & 21B & #154 Ext)	147312	50	54-72	111832	55
100-F (30T & 21B & #15.4 Ext)	147381	53	54-78	111849	59
101-F (30T & 27B & #15.4 Ext)	147459	55	60-84	111856	61

** D=DOMESTIC ND=NON-DOMESTIC



Top Section with Water Lid

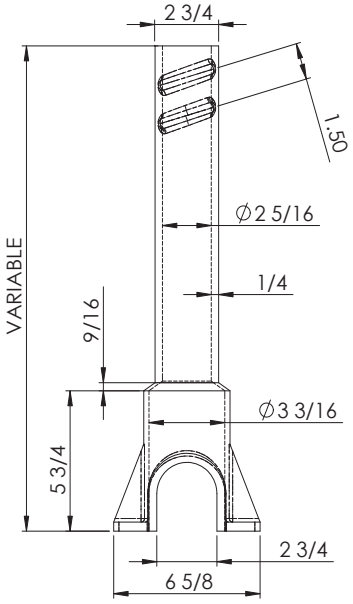
Box	**D-UPC 670610	Weight	**ND-UPC 670610	Weight
12T	147510	11	112006	12
15T	147589	12	112013	15
18T	147640	14	112020	16
24T	147701	19	112037	22
30T	147763	22	112044	27

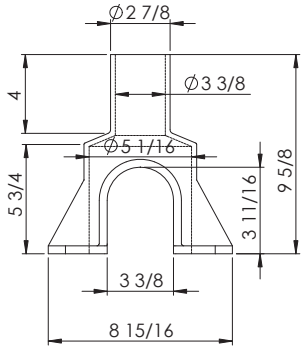
** D=DOMESTIC ND=NON-DOMESTIC

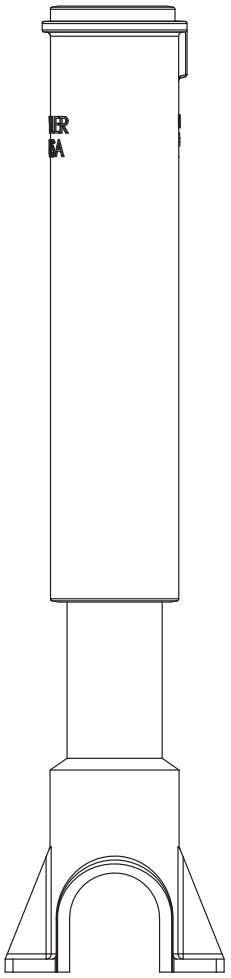
Bottom Only

Box	**D-UPC 670610	Weight	**ND-UPC 670610	Weight
12B	144670	9	136941	8
15B	144687	10	111788	9
21B	144694	12	111795	11
27B	144700	14	111801	13
33B	144717	18	111818	17
39B	144724	22	111825	22

** D=DOMESTIC ND=NON-DOMESTIC







6500 Parts

Box	**D-UPC 670610	Weight	**ND-UPC 670610	Weight	Height Increase
151	144762	7	111962	9	9
152	144779	12	111979	14	16
153	144786	17	111986	21	28
154	144793	19	111993	21	30
Enlarged Base	144806	8	136934	11	6
2 1/2 '' Water Lid	144830	1			
Brass Screw	144816				
Wrench	144908	0.5			
2 1/2 '' Repair Lid-Outside cover	381518	4.5			

** D=DOMESTIC ND=NON-DOMESTIC

TYLER UNION®

6850 SERIES
CAST IRON TWO-PIECE VALVE BOXES
for 4" through 12" valves, 5 1/4 shaft, screw type

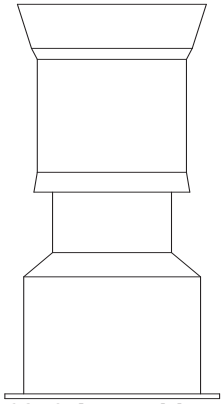
Tyler Union Valve boxes are available either assembled or as individual tops and bottoms.

Note: Domestic valve boxes available in Heavy Duty only, Non-Domestic available in Standard or Heavy Duty

6850 Assembled Boxes (Less Lid)

Box (Components)	Extension Height	**(D-HD) UPC 670610	**(ND-HD) UPC 670610	Weight	**(ND-Std.) UPC 670610	Weight
461-S (10T + 15B)	19-22	145776	502098	50	112280	35
462-S (10T + 24B)	27-32	145783	502104	58	112297	43
562-S (16T + 24B)	27-37	145790	502111	71	112303	50
563-S (16T + 30B)	33-43	145752	…	78	112310	60
564-S (16T + 36B)	39-50	145806	502128	85	112327	66
662-S (26T + 30B)	36-52	145769	…	93	112341	76
664-S (26T + 36B)	39-60	145813	…	100	112358	82
665-S (26T + 24B)	39-63	375296	…	87	…	…
666-S (26T+24B+60 Ext)	53-71	145820	502135	128	112365	95
668-S (26T+36B+60 Ext)	64-82	145837	…	136	112372	111

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight

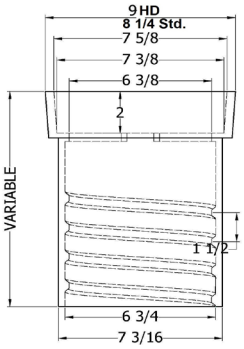


6850 Assembly (Less Lid)

6850 Individual Tops (Less Lids)

Box	Top Length	** (D-HD) UPC 670610	Weight	**(ND-HD) UPC 670610	Weight	** (ND-Std) UPC 670610	Weight
461-S	(10T)	144939	22	502142	22	112402	15
462-S	(10T)	144939	22	502142	22	112402	15
562-S	(16T)	144946	36	502159	36	112419	22
563-S	(16T)	144946	36	502159	36	112419	22
564-S	(16T)	144946	36	502159	36	112419	22
662-S	(26T)	144953	51	502166	51	112426	38
664-S	(26T)	144953	51	502166	51	112426	38
666-S	(26T)	144953	51	502166	51	112426	38
668-S	(26T)	144953	51	502166	51	112426	38

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight

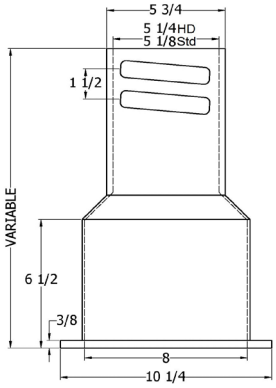


Top

6850 Individual Bottoms

Box	Bottom Length	** (D-HD) UPC 670610	Weight	** (ND-HD) UPC 670610	Weight	** (ND-Std) UPC 670610	Weight
461-S	(15B)	145004	27	502173	27	112242	20
462-S	(24B)	145011	35	502180	35	112259	28
562-S	(24B)	145011	35	502180	35	112259	28
563-S	(30B)	144991	42	502197	42	112266	38
564-S	(36B)	145028	49	502203	49	112273	44
662-S	(30B)	144991	42	502197	42	112266	38
664-S	(36B)	145028	49	502203	49	112273	44
666-S	(24B)	145011	35	502180	35	112259	28
668-S	(36B)	145028	49	502203	49	112273	44
	(48B)	…	…	…	…	452737	62
	(60B)	…	…	…	…	452744	85

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight



Bottom

See page 50 for extensions

TYLER UNION®

6855 SERIES
CAST IRON TWO-PIECE VALVE BOXES
for 4” through 12” valves, 5 1/4 shaft, slip type

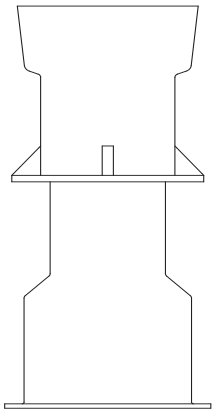
Tyler Union Valve boxes are available either assembled or as individual tops and bottoms.

Note: Domestic valve boxes available in Heavy Duty only, Non-Domestic available in Standard or Heavy Duty

6855 Assembled Boxes (Less Lid)

Box (Components)	Extension Height	**(D-HD) UPC 670610	**(ND-HD) UPC 670610	Weight	**(ND-Std.) UPC 670610	Weight
461-A (10T + 15B)	19-22	145844	502234	55	112099	34
462-A (10T + 24B)	27-32	145831	----	65	112105	46
562-A (16T + 24B)	27-37	145868	502241	72	112112	55
563-A (16T + 30B)	33-43	145714	----	81	112129	67
564-A (16T + 36B)	39-50	145875	502258	83	112136	72
662-A (26T + 30B)	36-52	145721	----	97	112143	83
664-A (26T + 36B)	39-60	145882	502265	99	112150	88
666-A (26T+24B+60 Ext)	53-71	145899	----	124	112167	108
668-A (26T+36B+60 Ext)	64-82	145905	----	135	112181	125

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight

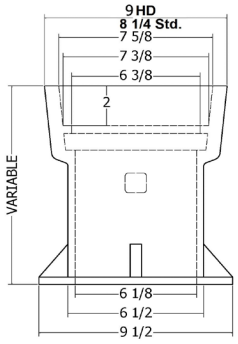


6855 Assembly (Less Lid)

6855 Individual Tops (Less Lids)

Box	Top Length	** (D-HD) UPC 670610	Weight	** (ND-HD) UPC 670610	Weight	** (ND-Std) UPC 670610	Weight
461-A	(10T)	144960	29	502272	29	112211	15
462-A	(10T)	144960	29	502272	29	112211	15
562-A	(16T)	144977	36	502289	36	112228	25
563-A	(16T)	144977	36	502289	36	112228	25
564-A	(16T)	144977	36	502289	36	112228	25
662-A	(26T)	144984	52	502296	52	112235	38
664-A	(26T)	144984	52	502296	52	112235	38
666-A	(26T)	144984	52	502296	52	112235	38
668-A	(26T)	144984	52	502296	52	112235	38

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight



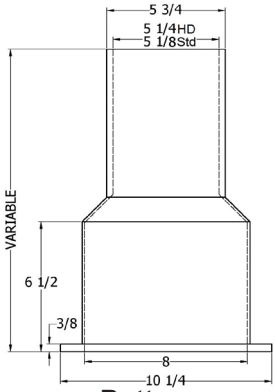
Top

6855 Individual Bottoms

Box	Bottom Length	** (D-HD) UPC 670610	Weight	** (ND-HD) UPC 670610	Weight	** (ND-Std) UPC 670610	Weight
461-A	(15B)	145073	26	502302	26	112051	20
462-A	(24B)	145080	36	502319	36	112068	30
562-A	(24B)	145080	36	502319	36	112068	30
563-A	(30B)	145127	45	502333	45	112075	39
564-A	(36B)	145097	47	502340	47	112082	43
662-A	(30B)	145127	45	502333	45	112075	39
664-A	(36B)	145097	47	502340	47	112082	43
666-A	(24B)	*145080	36	*502319	36	*112068	30
668-A	(36B)	*145097	47	*502240	47	*112082	43
	(60B)	---	---	---	---	458302	75

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight

***Note: When installing with an extension a 6850 screw type bottom is required**



Bottom

See page 50 for extensions

TYLER UNION®

6860 SERIES
CAST IRON THREE-PIECE VALVE BOXES
for 3" through 20" valves, 5 1/4 shaft, screw type
(Base required, order separately)

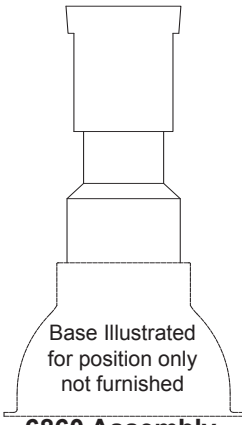
Tyler Union Valve boxes are available either assembled or as individual tops and bottoms.

Note: Domestic valve boxes available in Heavy Duty only, Non-Domestic available in Standard or Heavy Duty

6860 Assembled Boxes (Less Lid)

Box (Components)	Extension Height	**(D-HD) UPC 670610	**(ND-HD) UPC 670610	Weight	**(ND-Std.) UPC 670610	Weight
AA (10T + 12B)	27-37	145912	----	42	136668	29
A (16T + 18B)	33-42	145929	----	65	136651	38
B (16T + 24B)	39-49	145936	----	69	136675	51
C (16T + 30B)	45-54	145943	----	73	136682	55
CC (16T + 36B)	51-60	145950	----	75	136699	59
D (26T + 30B)	45-66	145967	502357	88	136811	71
DD (26T + 36B)	51-72	145974	502364	90	136828	75
E (16T+24B+60 Ext)	63-72	145981	----	105	136835	80
F (26T+24B+60 Ext)	63-84	145998	----	120	136842	96
G (26T+36B+60 Ext)	74-94	146001	502371	126	136859	104

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight

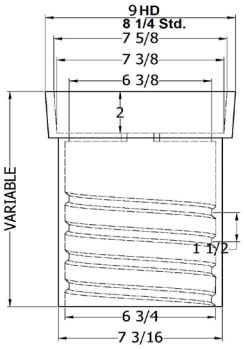


6860 Assembly (Less Lid)

6860 Individual Tops (Less Lids)

Box	Top Length	** (D-HD) UPC 670610	Weight	** (ND-HD) UPC 670610	Weight	** (ND-Std) UPC 670610	Weight
AA	(10T)	144939	23	502142	23	112402	15
A	(10T)	144939	23	502142	23	112402	15
B	(16T)	144946	36	502159	36	112419	22
C	(16T)	144946	36	502159	36	112419	22
CC	(16T)	144946	36	502159	36	112419	22
D	(26T)	144953	51	502166	52	112426	38
DD	(26T)	144953	51	502166	52	112426	38
E	(16T)	144946	36	502159	36	112419	22
F	(26T)	144953	51	502166	52	112426	38
G	(26T)	144953	51	502166	52	112426	38

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight

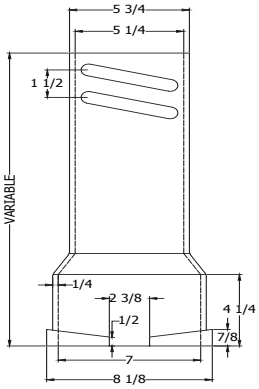


Top

6850 Individual Bottoms

Box	Top Length	** (D-HD) UPC 670610	Weight	** (ND-HD) UPC 670610	Weight	** (ND-Std) UPC 670610	Weight
AA	(12B)	145134	19	---	---	250524	14
A	(18B)	145141	29	505594	29	250517	25
B	(24B)	145158	33	502388	33	136958	29
C	(30B)	145165	37	502395	37	136613	33
CC	(36B)	145172	39	502401	39	136620	35
D	(30B)	145165	37	502395	37	136613	33
DD	(36B)	145172	39	502401	39	136620	35
E	(24B)	145158	33	502388	33	136958	29
F	(24B)	145158	33	502388	33	136958	29
G	(36B)	145172	39	502401	39	136620	35
	(48B)	---	---	---	---	452713	65
	(60B)	---	---	---	---	452720	91

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight

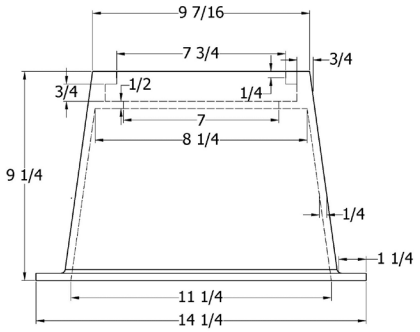


Bottom

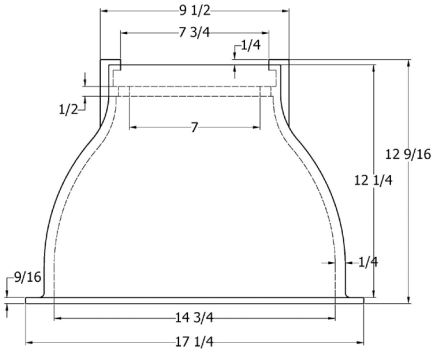
See page 50 for extensions

TYLER UNION®

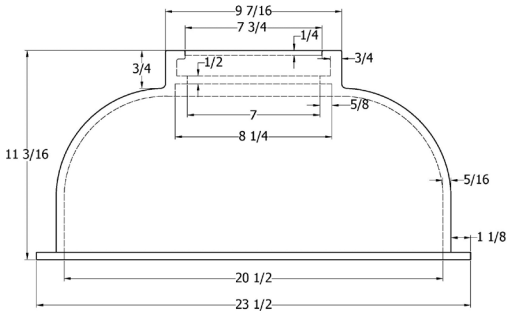
6860 SERIES
CAST IRON THREE-PIECE VALVE BOXES
for 3” through 20” valves, 5 1/4 shaft, screw type
(Base required, order separately)



#4 Base



#6 Base



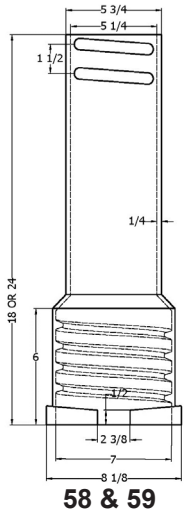
#160 Base

6860 Bases

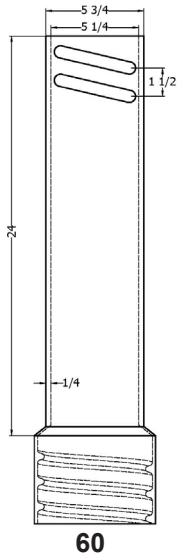
Item/Description	**(D-HD) UPC 670610	Weight	**(ND-HD) UPC 670610	Weight	**(ND-Std) UPC 670610	Weight
#4, 11 1/4” Wide	145653	42	---	34	381532	22
#6, 14 3/4” Wide	145660	38	502432	45	381525	36
#160, 20 1/2” Wide	145684	71	502425	68	256861	55

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight

6850/60 Extensions



58 & 59

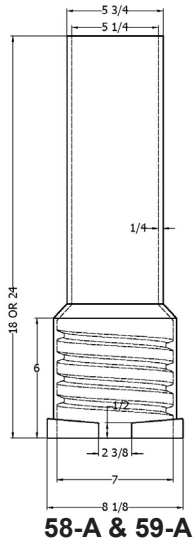


60

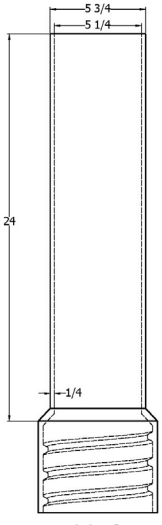
Item/Description	Height Increase	**(D-HD) UPC 670610	Weight	**(ND-HD) UPC 670610	Weight
#58 Screw-Type	14	145141	29	---	---
#59 Screw-Type	18	145158	30	---	---
#60 Screw-Type	24	145059	37	112389	29

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight

6855 Extensions



58-A & 59-A



60-A

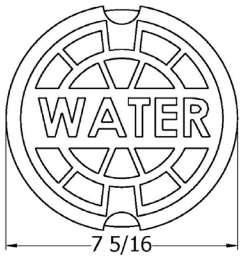
Item/Description	Height Increase	**(D-HD) UPC 670610	Weight	**(ND-HD) UPC 670610	Weight
#58-A Slip-Type	6 to 14	145233	29	136637	26
#59-A Slip-Type	6 to 18	145240	30	136644	28
#60-A Slip-Type	6 to 24	145066	36	112198	37

*NOTE: When installing these extensions a 6850 screw type bottom is required.

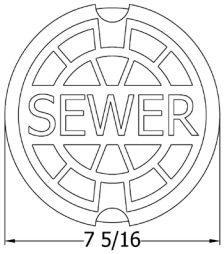
** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight

TYLER UNION®

Water Lid



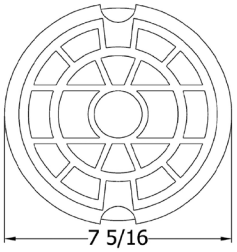
Sewer Lid



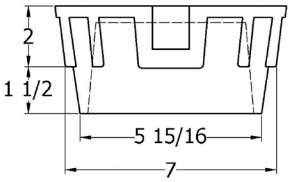
Gas Lid

Reuse Lid

Plain Lid



*5 1/4 Drop Lid

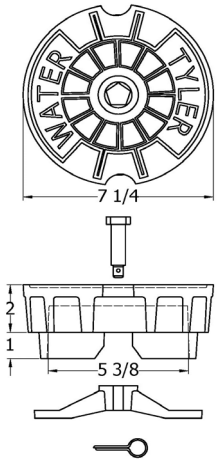


Item/Description	**(D-HD) UPC 670610	Weight	**(ND-Std) UPC 670610	Weight	Special Mark
5 1/4 Drop Lid	145325	12	136910	9	WATER
5 1/4 Drop Lid	145349	12	136903	9	SEWER
5 1/4 Drop Lid	145332	12	136873	9	GAS
5 1/4 Drop Lid	458975	12	...	...	REUSE
5 1/4 Drop Lid	145356	12	136897	9	PLAIN

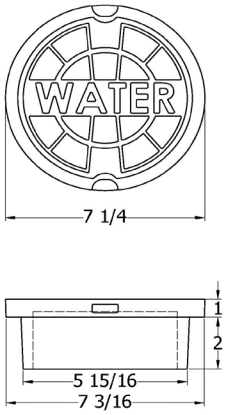
** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight
Std.=Standard Weight
*Lids marked WATER will be shipped unless otherwise specified.

Specialty Lids

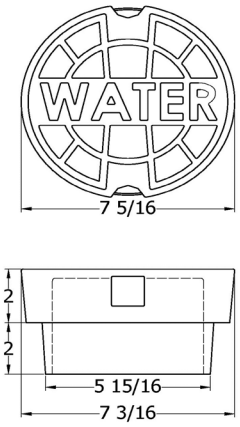
Lock Lid



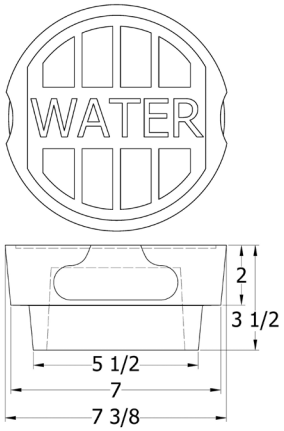
1 1/8" Lid



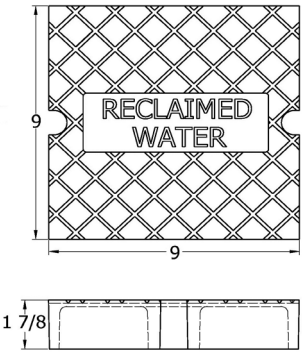
OMA Lid

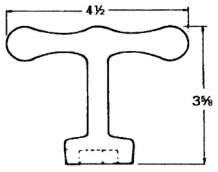


MWW Lid



***Square Reclaimed Lid





Wrench
Fits Standard Waterworks Pentagon Head 27/32" Brass Screws

UPCode 670610	Weight	Description
144908	0.5	Wrench

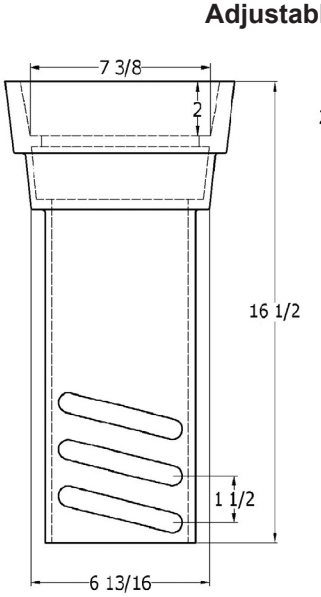
Item/Description	**(D-HD) UPC 670610	Weight	**(ND-Std) UPC 670610	Weight	Special Mark
5 1/4 Lock Lid	145462	11	136866	11	WATER
*1 1/8 Drop Lid	145509	11	112532	9	WATER
5 1/4 OMA Drop Lid	145301	12	136927	12	WATER
5 1/4 MWW Drop Lid	145370	12	136880	12	WATER
***Square Drop Lid	458982	14	...	...	RECLAIMED WATER

*Note: Use with 1 1/8 Riser only
** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight
***Note: Use with 9T Top #144622

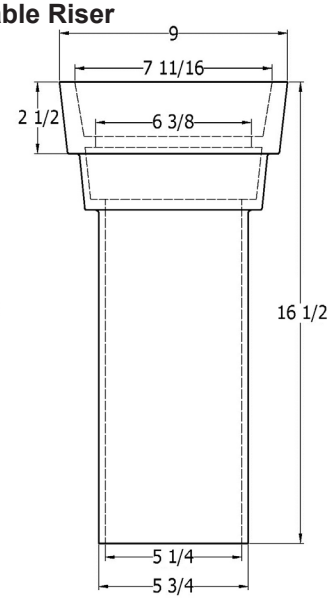
TYLER UNION®

CAST IRON - FIXED AND ADJUSTABLE RISERS PLUS SPECIALTY VALVE BOX TOPS

Adjustable Riser



#69 Screw Type

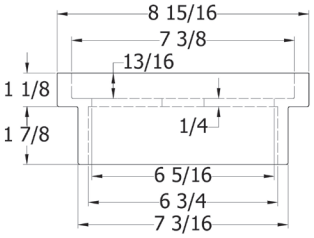


#69-A Slip Type

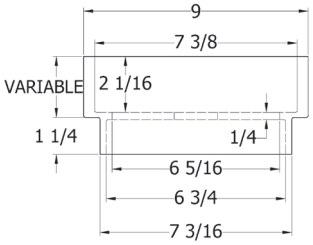
Item/Description	**(D-HD) UPC 670610	**(ND-HD) UPC 670610	Weight	Height Increase
#69 Adjustable Riser	148197	112396	29	2 1/2" - 9"
#69-A Adjustable Riser	148241	112204	29	2 1/2" - 12"

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight

Paving Riser



5 1/4 X 1 1/8 Riser
(Requires 1 1/8 Lid)

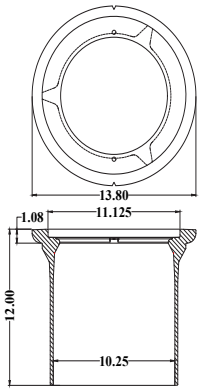


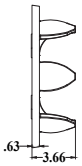
5 1/4 Paving Riser
(Uses Standard 5 1/4 Lid)

Item/Description	**D -UPC 670610	Weight	**ND -UPC 670610	Weight	Height Increase
5 1/4 x 1 Slip-In	533641	8.3	...	...	1"
5 1/4 x 1 1/8 Slip-In	145554	9.0	112549	8.0	1 1/8"
5 1/4 x 1 1/2 Slip-In	533672	11.0	...	...	1 1/2"
5 1/4 x 2 Slip-In	533689	13.0	...	...	2"
5 1/4 x 2 1/2 Slip-In	145547	15.0	112556	14.0	2 1/2"
5 1/4 x 3 Slip-In	533696	20.5	...	...	3"
5 1/4 x 4 Slip-In	533702	28.5	...	...	4"

** D=Domestic ND=Non-Domestic

G05 Valve Box & Lid



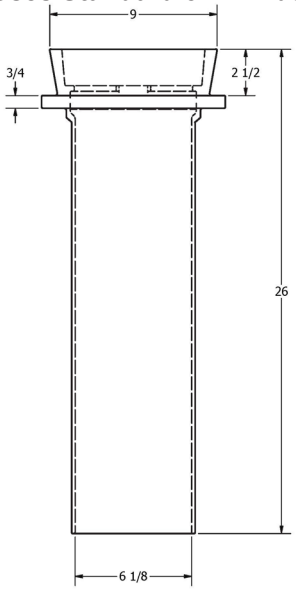


Item	**D -UPC 670610	**ND -UPC 670610	Weight
G05 Valve Box	605010	605005	42
G05 Lid	502551	605000	16
G05 Box & Lid	506011	605007	58

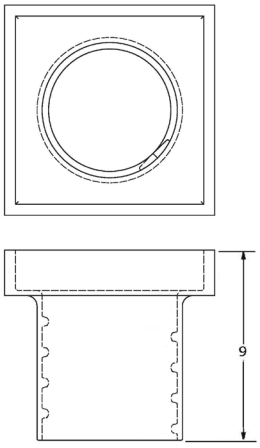
** D=Domestic ND=Non-Domestic

Specialty Tops

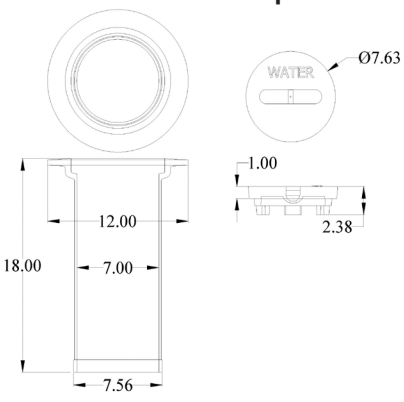
7126 Top
(Uses Standard 5 1/4 Lids)



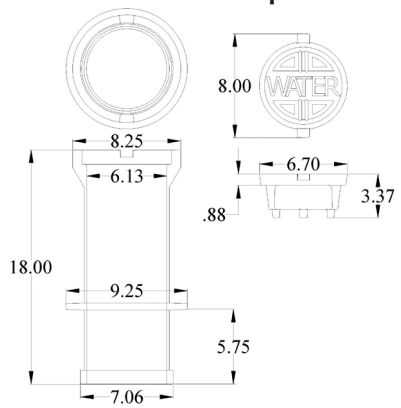
Square Top



910 18T Top



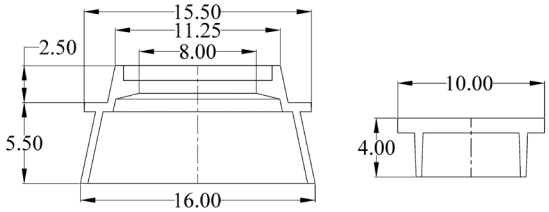
940 18T Top



Item/Description	**D -UPC 670610	**ND -UPC 670610	Weight
7126 26T Top	376774	111111	49
*Square 9T Top	144622	...	36
910 18T Top	...	502883	37
910 18T Top w/ Lid	...	457305	56
940 18T Top	...	502890	35
940 18T Top w/ Lid	...	457299	45
Monument Box w/ Lid	...	506904	67

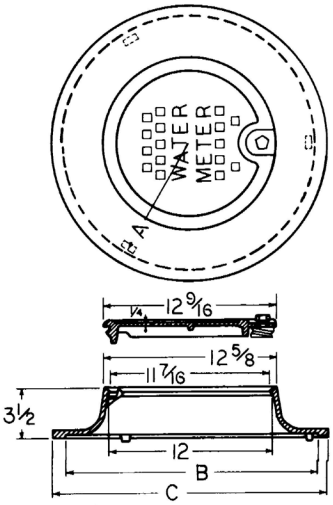
** D=Domestic ND=Non-Domestic
* Works with Square Lid #458982

Monument Box with Lid



TYLER UNION®

6150 & 6150TR Meter Covers
Cast Iron



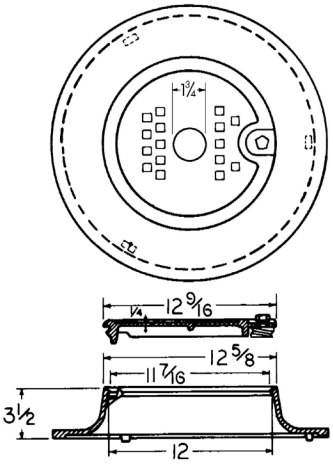
Item/Description	A	B	C
18” 6150 Series	8 3/4	18	20
20” 6150	9 3/4	20	22

Item/Description	UPC 670610	Weigh
6150-18 Ring & Lid B/L*	148449	39
6150-18 Ring & Lid B/S*	148456	39
6150-18 Ring Only	148647	27
6150-18/20 Lid With Lock B/L*	148494	13
6150-18/20 Lid Less Lock	148593	14
6150-18/20 Lid With Lock B/S*	148500	13
6150-20 Ring & Lid B/L*	148463	41
6150-20 Ring & Lid B/S*	148470	41
6150-20 Ring Only	148630	29

*B/L = Large Head Bolt (1-1/32”); *B/S = Small Head Bolts (27/32” Standard)

Note: The B/L & B/S pentagon head screws use the same worm locking gear.

6150TR Meter Covers
Cast Iron



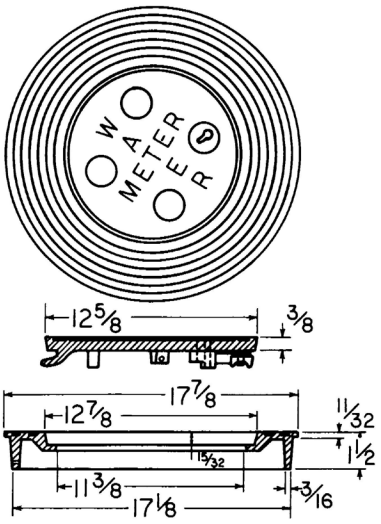
Item/Description	UPC 670610	Weight
6150-18 TR Ring & Lid B/L*	148531	39
6150-18 TR Ring & Lid B/S*	148524	39
6150-18/20 TR Lid With Lock B/L*	148579	13
6150-18/20 TR Lid Less Lock	148586	14
6150-18/20 TR Lid With Lock B/S*	148562	13
6150-20 Ring & Lid B/L*	148555	41
6150-20 Ring & Lid B/S*	148548	41

*B/L = Large Head Bolt (1-1/32”); *B/S = Small Head Bolts (27/32” Standard)

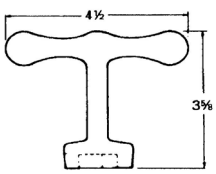
Note: 6150TR - Same dimensions as 6150, plus a 1-27/32” access hole in lid.

Note: The B/L & B/S pentagon head screws use the same worm locking gear.

6200 Meter Cover Cast Iron



Item/Description	UPC 670610	Weight
6200 Ring & Lid Less Lock	148708	28
6200-R Ring Only	148760	18
6200-L Lid Less Lock	148739	13
6200-L Lid With Lock	148722	11



Wrench

Fits Standard Waterworks Pentagon Head 27/32” Brass Screws

UPC 670610	Weight	Description
144908	0.5	Wrench

TYLER UNION®
Quality Waterworks Products
www.tylerunion.com

DOMESTIC PRODUCT SUBMITTAL

TUFGRIP™

Series 1000 - For Ductile Iron Pipe

"A Proven Third Generation Mechanical Joint Restraint"

TYLER UNION®
Quality Waterworks Products

Tyler Union's TUF Grip restraints represent the culmination of 20 years of engineering and testing. As a 3rd generation restraint, TUF Grip is the best available technology in the Waterworks market for use in restraining Ductile Iron Pipe.

HK&A Designed by Harold Kennedy & Associates, Inc.

"BETTER BY DESIGN"

SPECIFICATIONS:

- Designed and proven to restrain plain end ductile iron pipe conforming to ANSI/AWWA C151/A21.51 in diameters 3" - 48"
- Proven for use on heavy wall **Schedule 40 or greater steel pipe in sizes 3" - 12" and on all sizes 3" - 16" when pipe O.D. and wall thickness conforms to C151 **Note: IPS diameter steel pipe requires the use of an MJ Transition gasket
- Restraint design conforms with applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153, and ANSI/AWWA C110
- Restraint engineered for securing plain end pipe to mechanical joint fittings conforming to ANSI/AWWA C110, C111, and C153
- Restraints rated for working water pressure of 350 psi and transitory surges of 100psi for 3" - 16" and 250 psi for 18" - 48"
- Cast of ASTM A536 compliant 65-45-12 ductile iron complete with a cast on date code and country of origin for traceability
- Restraints and all components are designed and proven for a 2:1 safety factor based on the pipe pressure rating
- Restraint deflection rating when installed on nominal diameter pipe: 3° max for 3", 5° max for 4"-12", 2° max for 14"-16", and 1.5° max for 18" - 48"
- Standard coating for Domestic restraint is 4-6 mil of TUF-Bond™ **(thermoset polyester for impact, corrosion and UV protection)**
- Gripping wedges are heat treated to a mininum 420 Brinell Hardness
- Gripping wedge, wedge collar bolt, and twist off torque limiting nut shall be e-coated
- FM approved for 4" - 12" applications and UL listed and approved for 3" - 36" applications
- Not recommended for use on plain end fittings
- Color coded black for pipe type(ductile/*cast iron/*steel) - ***Note: Refer to the following pages for cast iron and steel pipe applications**

FEATURES & ADVANTAGES:

- Torque limiting nut on gripping wedge assembly twists off within a designed torque range eliminating the need for specialized tools
- Gripping wedge assembly pivots providing stronger engagement of pipe wall at lower torque requirement (45-60 ft-lb)
- Proven restraint technology utilizing fewer gripping wedges in frequently applied diameters, reducing trench time and project cost
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Suitable for potable and wastewater applications

ISO 9001-2015 Registered	Listed with Underwriters Laboratory	Factory Mutual Approved

Product Source/Type	Name of Project	Name of Contractor	Project Engineer	Spec. Section and/or Project No.

☐ 100% Domestic ☐ Domestic Gland with Import Components

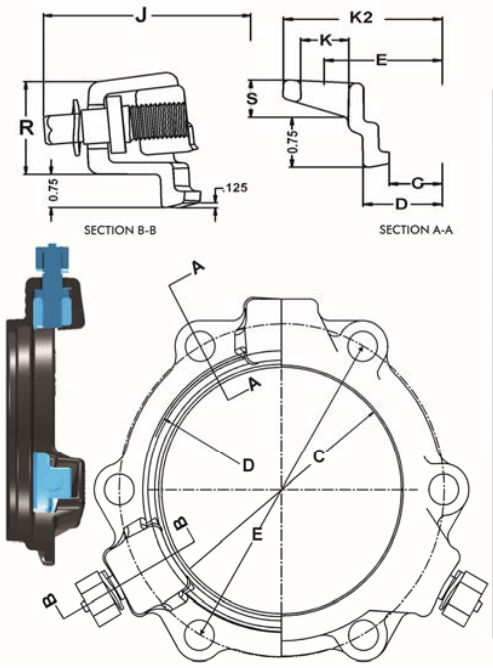
Anniston: 1501 W 17th St. ● Anniston, AL 36201 ● (800) 226-7601
Corona: 1001 El Camino Ave. ● Corona, CA 92879 ● (866) 527-8471
Tyler: 11910 CR 492 ● Tyler, Texas 75706 ● (800) 527-8478
Dallas: 1201 Ave. S. Suite100 ● Grande Prairie, TX 75050
Elmer: 701 Kenyon Ave.● Elmer, New Jersey 03318
New Lenox: 2200 West Haven● New Lenox, IL 60451
Portland: 15670 N. Lombard St. ● Portland, OR 97203
Oxford: 1800 Greenbrier Dear Road ●Anniston, AL 36207

TYLER UNION®
Quality Waterworks Products

TUFGRIP™

"Better By Design"

Series 1000-Ductile Pipe Restraint



TUFGrip™ MJ Restraint Dimensions

Size (inches)	C	D	E	K2	J	K	R	S
3	4.08	4.88	6.19	7.67	9.82	3/4	2.20	0.86
4	4.93	5.92	7.50	8.98	10.67	7/8	2.20	0.73
6	7.03	8.02	9.50	10.98	12.77	7/8	2.24	0.82
8	9.18	10.17	11.75	13.23	14.92	7/8	2.28	0.82
10	11.23	12.22	14.00	15.70	16.97	7/8	2.37	0.93
12	13.33	14.32	16.25	17.95	19.07	7/8	2.40	0.93
14	15.44	16.40	18.75	20.43	21.18	7/8	2.57	0.91
16	17.54	18.50	21.00	22.88	23.28	7/8	2.57	1.05
18	19.64	20.60	23.25	25.43	25.38	7/8	2.57	1.05
20	21.74	22.70	25.50	27.50	27.48	7/8	2.66	1.15
24	25.94	26.90	30.00	32.00	31.68	7/8	2.72	1.35
30	32.18	33.30	36.88	39.42	39.78	1-1/8	3.86	1.53
36	38.48	39.60	43.75	46.29	46.08	1-1/8	3.86	1.53
42	44.68	45.80	50.62	53.62	53.08	1-3/8	4.56	2.05
48	50.98	52.10	57.50	60.50	59.28	1-3/8	4.56	2.05

SERIES 1000 TLD-DUCTILE TUFGrip™ - APPLICATION CHART

Size (Inches)	Part # - Gland Only Hybrid / 100% Domestic	Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland Weight(lbs.)	Weight (w/Acc.)	Pressure Rating	Pipe O.D.
3	540823 / CALL	2	4	⅝" x 3"	6.5	10.5	350	3.96
4	515944 / 600905	2	4	¾" x 3 ½"	7.1	11.8	350	4.80
6	515968 / 600910	3	6	¾" x 4"	11.2	18.8	350	6.90
8	515975 / 600915	3	6	¾" x 4"	13.1	20.3	350	9.05
10	515982 / 600920	6	8	¾" x 4"	26.0	32.5	350	11.10
12	515999 / 600925	8	8	¾" x 4"	31.5	40.4	350	13.20
14	516231 / 600930	10	10	¾" x 4 ½"	43.3	53.6	350	15.30
16	516255 / 600935	12	12	¾" x 4 ½"	54.1	66.3	350	17.40
18	516279 / 600940	12	12	¾" x 4 ½"	59.8	72.2	250	19.50
20	516293 / 600945	14	14	¾" x 4 ½"	69.8	83.8	250	21.60
24	516316 / 600950	16	16	¾" x 5"	90.4	106.9	250	25.80
30	539759 / 600955	20	20	1" x 7 ½"	248	290	250	32.00
36	539764 / 600960	24	24	1" x 7 ½"	277	327	250	38.30
42	539695 / 600961	28	28	1 ¼" x 8 ½"	448	512	250	44.50
48	539699 / 600962	32	32	1 ¼" x 8 ½"	519	597	250	50.80

ISO 9001-2015 Registered | Listed with Underwriters Laboratory | Factory Mutual Approved

STOP-LOOK :

- Extra length T-Head bolts are provided with 30" - 48" restraints to facilitate mechanical joint assembly
- For UL/FM Approvals, 3"-12" were tested at 5°of deflection and 14"- 24" inch were tested at 3° of deflection; all test were to 700 psi
- The Series 1000 TUF Grip is specified for use on ductile iron pipe but can be used on some sizes of cast grey iron or pit cast pipe if the pipe is not severely corroded, is in sound condition, and has an outside diameter compatible with the as provided dimensions
- TUF Grip 30"– 48" inch provided with TRU-Lock™ mechanical joint gasket to ensure pressure ratings and safety factors are met
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651
- Some vertical applications where the piping is partially buried may require additional restraint – Contact Tyler Union
- **Caution:** Pressure testing of piping systems restrained or un-restrained with insufficient backfill or bracing is not recommended

Anniston: 1501 W 17th St. ● Anniston, AL 36201 ● (800) 226-7601
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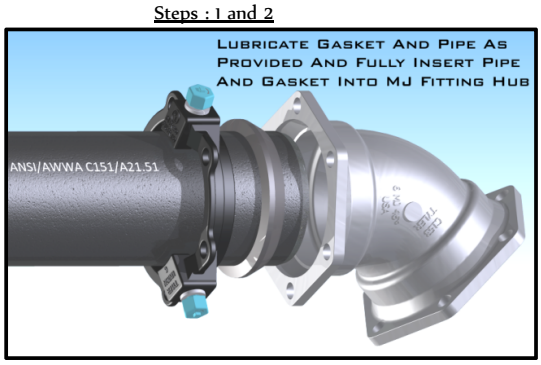
Tyler: 11910 CR 492 ● Tyler, Texas 75706 ● (800) 527-8478
Dallas: 1201 Ave. S. Suite100 ● Grande Prairie, TX 75050
Elmer: 701 Kenyon Ave.● Elmer, New Jersey 03318
New Lenox: 2200 West Haven● New Lenox, IL 60451
Portland: 15670 N. Lombard St. ● Portland, OR 97203
Oxford: 1800 Greenbrier Dear Road ●Anniston, AL 36207

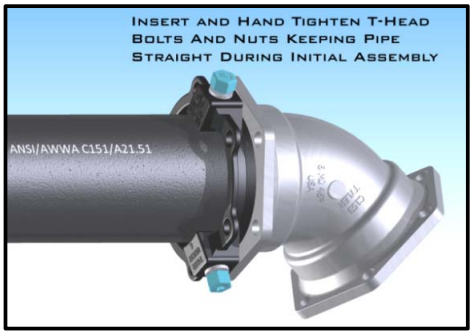
DOMESTIC - TLD TUFGrip™

Assembly Steps – Series 1000 – For Ductile Iron Pipe

Steps : 1 and 2

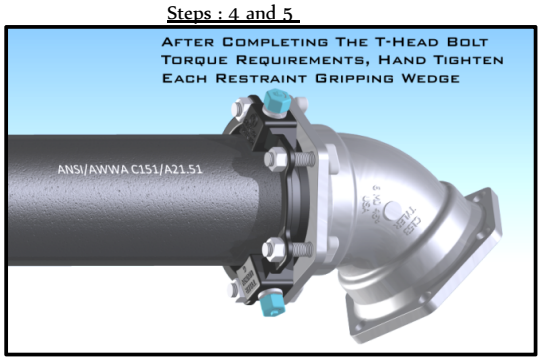


Step : 3

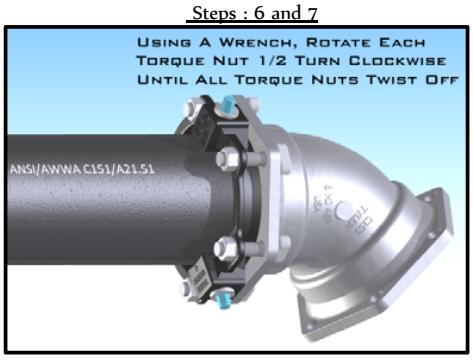


1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the Black TUF Grip onto the pipe to be restrained. The TUF Grip compression lip extension must be toward the beveled end of the pipe to be restrained.
2. Evenly lubricate the beveled pipe end, pipe wall exterior, and inside surface of the MJ gasket with a lubricant that meets the requirements of AWWA C111. Now place the **MJ gasket over the plain beveled end of the pipe with the narrow edge of the tapered gasket toward the beveled end of the pipe to be restrained. **NOTE : For Steel pipe with IPS diameter in sizes 3”-12”, use of a MJ Transition gasket is required.
3. Fully insert the pipe end into the MJ socket pipe landing. Keeping the pipe straight, slide/push the MJ gasket firmly and evenly into the socket recess. Joint must be kept straight during assembly.

Steps : 4 and 5



Steps : 6 and 7



4. Push the TUF Grip compression lip extension evenly against the thick side of the gasket and insert T-Head bolts with the T-Head against the back side of the MJ fitting bolt flange. Use only T-Head bolts and nuts that meet AWWA C111 requirements. Evenly hand-tighten the nuts on the T-Head bolts making sure the gland is centered around the pipe and within the MJ socket. If joint deflection is needed, only deflect the pipe in the joint after hand tightening of all nuts is completed. *Joint deflection is 3° max for 3”, 5° max for 4”-12”, 2° max for 14”-16”, and 1.5° max for 18”- 48”.
   ***NOTE :** Maximum deflection values provided apply with nominal pipe, fitting, and restraint diameters.
5. Using a wrench, tighten the nuts on the T-Head bolts a few turns at a time in an alternating or star pattern maintaining equal spacing or distance between the TUF Grip bolt flange and face of the MJ socket bolt flange as the MJ gasket is compressed. The T-Head bolt and nut torque requirement is 45-60 ft-lb for 3”, 75-90 ft-lb for 4”- 24”, 100-120 ft-lb for 30”- 36”, and 120-150 ft-lb for 42”- 48”. **DO NOT OVER-TORQUE!**
6. Hand-tighten the torque limiting nut attached to each TUF Grip wedge assembly in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque limiting nut is indicated by a recessed arrow on the face of the nut. With a wrench (box, socket, or pneumatic), continue to tighten each torque nut ½ turn in an alternating or star pattern around the restraint until all torque limiting nuts twist off. **NEVER** turn a torque limiting nut more than ½ turn without turning the remaining torque nuts an equal amount!
7. When all torque limiting nuts twist off, the assembly of the mechanical joint is complete.

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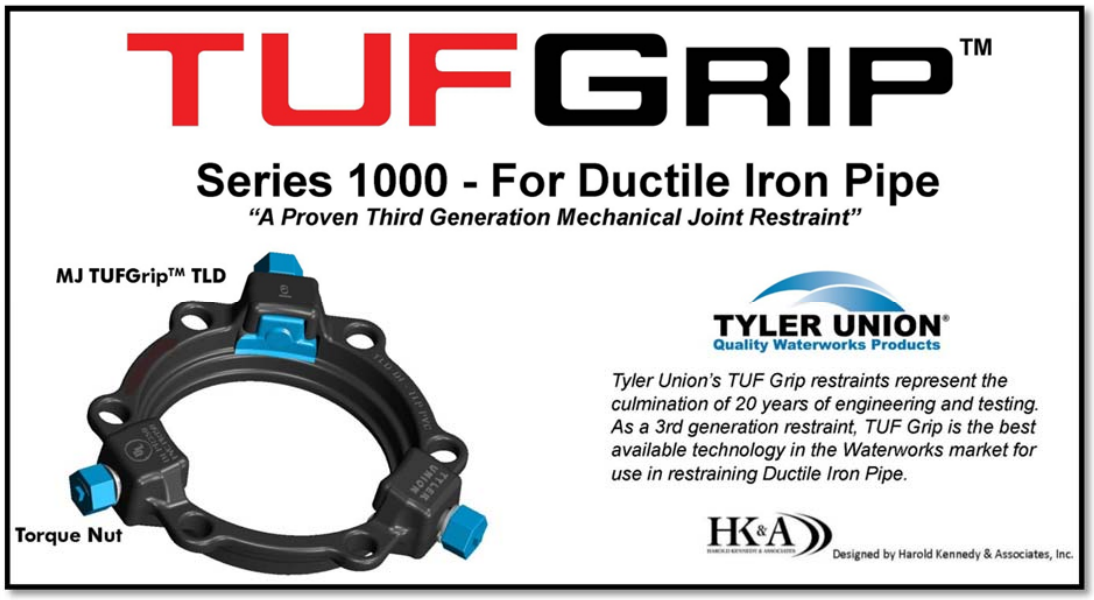

"BETTER BY DESIGN"

SPECIFICATIONS:

- Designed and proven to restrain plain end ductile iron pipe conforming to ANSI/AWWA C151/A21.51 in diameters 3" - 48"
- Proven for use on heavy wall **Schedule 40 or greater steel pipe in sizes 3"- 12" and on all sizes 3" - 16" when pipe O.D. and wall thickness conforms to C151 **Note: IPS diameter steel pipe requires the use of an MJ Transition gasket
- Restraint design conforms with applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153, and ANSI/AWWA C110
- Restraint engineered for securing plain end pipe to mechanical joint fittings conforming to ANSI/AWWA C110, C111, and C153
- Restraints rated for working water pressure of 350 psi and transitory surges of 100psi for 3" - 16" and 250 psi for 18" - 48"
- Cast of ASTM A536 compliant 65-45-12 ductile iron complete with a cast on date code and country of origin for traceability
- Restraints and all components are designed and proven for a 2:1 safety factor based on the pipe pressure rating
- Restraint deflection rating when installed on nominal diameter pipe: 3° max for 3", 5° max for 4"-12", 2° max for 14"-16", and 1.5° max for 18"- 48"
- Standard coating for Non-Domestic restraint is 4-6 mil of *Alkyd resin baking enamel -***Note: Epoxy coatings available upon request**
- Gripping wedges are heat treated to a mininum 420 Brinell Hardness
- Gripping wedge, wedge collar bolt, and twist off torque limiting nut shall be e-coated
- FM approved for 4" - 12" applications and UL listed and approved for 3" - 36" applications
- Not recommended for use on plain end fittings
- Color coded black for pipe type(ductile/*cast iron/*steel) - ***Note: Refer to the following pages for cast iron and steel pipe applications**

FEATURES & ADVANTAGES:

- Torque limiting nut on gripping wedge assembly twists off within a designed torque range eliminating the need for specialized tools
- Gripping wedge assembly pivots providing stronger engagement of pipe wall at lower torque requirement (45-60 ft-lb)
- Proven restraint technology utilizing fewer gripping wedges in frequently applied diameters, reducing trench time and project cost
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Suitable for potable and wastewater applications

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Product Source/Type	Name of Project	Name of Contractor	Project Engineer	Spec. Section and/or Project No.

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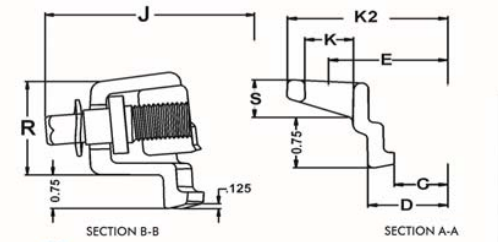
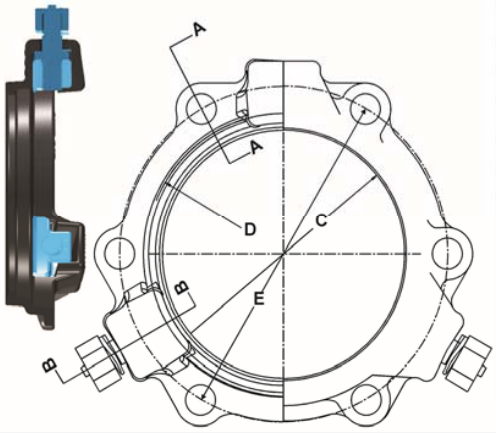
Series 1000-Ductile Pipe Restraint





TUFGrip™ MJ Restraint Dimensions

Size (inches)	C	D	E	K2	J	K	R	S
3	4.08	4.88	6.19	7.67	9.82	3/4	2.20	0.86
4	4.93	5.92	7.50	8.98	10.67	7/8	2.20	0.73
6	7.03	8.02	9.50	10.98	12.77	7/8	2.24	0.82
8	9.18	10.17	11.75	13.23	14.92	7/8	2.28	0.82
10	11.23	12.22	14.00	15.70	16.97	7/8	2.37	0.93
12	13.33	14.32	16.25	17.95	19.07	7/8	2.40	0.93
14	15.44	16.40	18.75	20.43	21.18	7/8	2.57	0.91
16	17.54	18.50	21.00	22.88	23.28	7/8	2.57	1.05
18	19.64	20.60	23.25	25.43	25.38	7/8	2.57	1.05
20	21.74	22.70	25.50	27.50	27.48	7/8	2.66	1.15
24	25.94	26.90	30.00	32.00	31.68	7/8	2.72	1.35
30	32.18	33.30	36.88	39.42	39.78	1-1/8	3.86	1.53
36	38.48	39.60	43.75	46.29	46.08	1-1/8	3.86	1.53
42	44.68	45.80	50.62	53.62	53.08	1-3/8	4.56	2.05
48	50.98	52.10	57.50	60.50	59.28	1-3/8	4.56	2.05

SERIES 1000 TLD-DUCTILE TUFGrip™ - APPLICATION CHART

Size (Inches)	Part # - Gland Only Non-Domestic	Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland Weight(lbs.)	Weight (w/Acc.)	Pressure Rating	Pipe O.D.
3	113805	2	4	⅝" x 3"	6.5	10.5	350	3.96
4	113812	2	4	¾" x 3 ½"	7.1	11.8	350	4.80
6	113829	3	6	¾" x 4"	11.2	18.8	350	6.90
8	113836	3	6	¾" x 4"	13.1	20.3	350	9.05
10	113843	6	8	¾" x 4"	26.0	32.5	350	11.10
12	113850	8	8	¾" x 4"	31.5	40.4	350	13.20
14	113867	10	10	¾" x 4 ½"	43.3	53.6	350	15.30
16	113874	12	12	¾" x 4 ½"	54.1	66.3	350	17.40
18	113898	12	12	¾" x 4 ½"	59.8	72.2	250	19.50
20	113904	14	14	¾" x 4 ½"	69.8	83.8	250	21.60
24	113911	16	16	¾" x 5"	90.4	106.9	250	25.80
30	461289	20	20	1" x 7 ½"	248	290	250	32.00
36	461333	24	24	1" x 7 ½"	277	327	250	38.30
42	461319	28	28	1-1/4" x 8 ½"	448	512	250	44.50
48	461326	32	32	1-1/4" x 8 ½"	519	597	250	50.80

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STOP-LOOK :

- Extra length T-Head bolts are provided with 30" - 48" restraints to facilitate mechanical joint assembly
- For UL/FM Approvals, 3" - 12" were tested at 5°of deflection and 14"- 24" inch were tested at 3° of deflection; all test were to 700 psi
- The Series 1000 TUF Grip is specified for use on ductile iron pipe but can be used on some sizes of cast grey iron or pit cast pipe if the pipe is not severely corroded, is in sound condition, and has an outside diameter compatible with the as provided dimensions
- TUF Grip 30" - 48" inch provided with TRU-Lock™ mechanical joint gasket to ensure pressure ratings and safety factors are met
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651
- Some vertical applications where piping is partially buried may require additional restraint – Contact Tyler Union
- **Caution:** Pressure testing of piping systems restrained or un-restrained with insufficient backfill or bracing is not recommended

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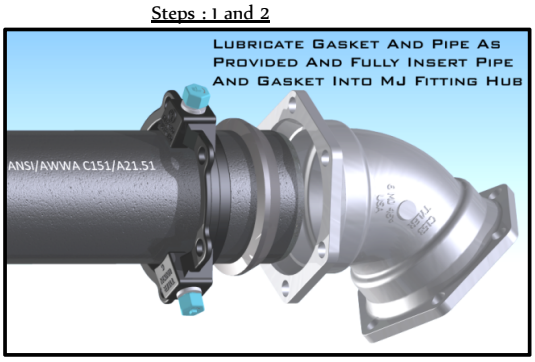
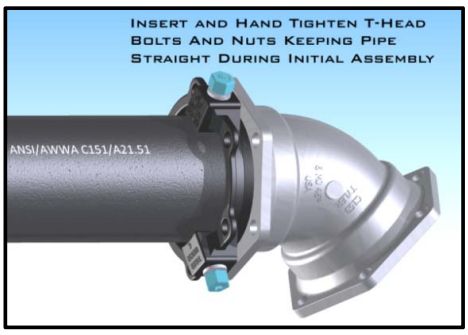
NON-DOMESTIC - TLD TUFGrip™

Assembly Steps – Series 1000 – For Ductile Iron Pipe

Steps : 1 and 2

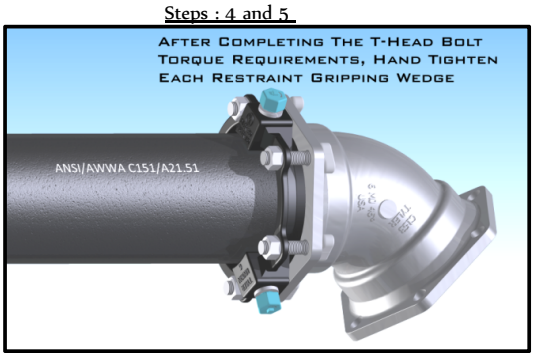


Step : 3

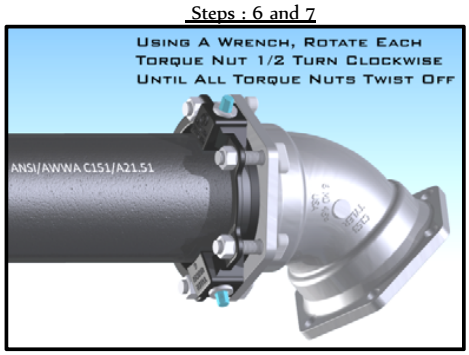


1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the Black TUF Grip onto the pipe to be restrained. The TUF Grip compression lip extension must be toward the beveled end of the pipe to be restrained.
2. Evenly lubricate the beveled pipe end, pipe wall exterior, and inside surface of the MJ gasket with a lubricant that meets the requirements of AWWA C111. Now place the **MJ gasket over the plain beveled end of the pipe with the narrow edge of the tapered gasket toward the beveled end of the pipe to be restrained. **NOTE : For Steel pipe with IPS diameter in sizes 3”-12”, use of a MJ Transition gasket is required.
3. Fully insert the pipe end into the MJ socket pipe landing. Keeping the pipe straight, slide/push the MJ gasket firmly and evenly into the socket recess. Joint must be kept straight during assembly.

Steps : 4 and 5



Steps : 6 and 7



4. Push the TUF Grip compression lip extension evenly against the thick side of the gasket and insert T-Head bolts with the T-Head against the back side of the MJ fitting bolt flange. Use only T-Head bolts and nuts that meet AWWA C111 requirements. Evenly hand-tighten the nuts on the T-Head bolts making sure the gland is centered around the pipe and within the MJ socket. If joint deflection is needed, only deflect the pipe in the joint after hand tightening of all nuts is completed. *Joint deflection is 3° max for 3”, 5° max for 4”-12”, 2° max for 14”-16”, and 1.5° max for 18”-48”.
   *NOTE : Maximum deflection values provided apply with nominal pipe, fitting, and restraint diameters.
5. Using a wrench, tighten the nuts on the T-Head bolts a few turns at a time in an alternating or star pattern maintaining equal spacing or distance between the TUF Grip bolt flange and face of the MJ socket bolt flange as the MJ gasket is compressed. The T-Head bolt and nut torque requirement is 45-60 ft-lb for 3”, 75-90 ft-lb for 4”- 24”, 100-120 ft-lb for 30”- 36”, and 120-150 ft-lb for 42”- 48”. **DO NOT OVER-TORQUE!**
6. Hand-tighten the torque limiting nut attached to each TUF Grip wedge assembly in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque limiting nut is indicated by a recessed arrow on the face of the nut. With a wrench (box, socket, or pneumatic), continue to tighten each torque nut ½ turn in an alternating or star pattern around the restraint until all torque limiting nuts twist off. **NEVER** turn a torque limiting nut more than ½ turn without turning the remaining torque nuts an equal amount!
   When all torque limiting nuts twist off, the assembly of the mechanical joint is complete.

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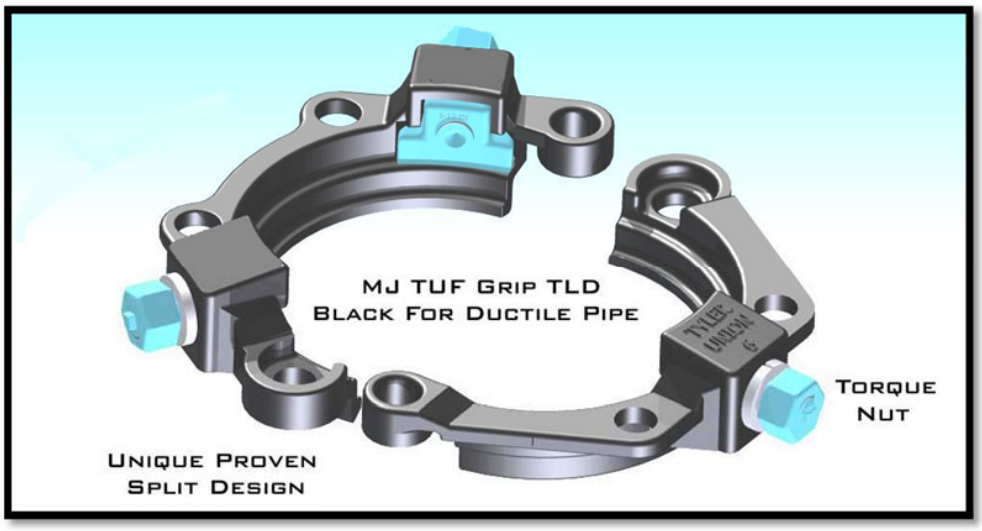
SERIES 1000S – MJ TLD SPLIT For DUCTILE PIPE

"A Proven Third Generation Mechanical Joint Restraint"



"BETTER BY DESIGN"

SPECIFICATIONS:

- Designed and proven to restrain plain end ductile iron pipe conforming to ANSI/AWWA C151/A21.51 in diameters 4" - 12"
- Restraint design conforms with applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153, and ANSI/AWWA C110
- Restraint engineered for securing plain end pipe to mechanical joint fittings conforming to ANSI/AWWA C110, C111, and C153
- Rated restraint rated for working water pressure of 350 psi for 4" - 12" restraints
- Cast of ASTM A536 compliant 65-45-12 ductile iron complete with a cast on date code and country of origin for traceability
- Restraints and all components are designed and proven for a 2:1 safety factor based on the pipe pressure rating
- Deflection rating when installed on AWWA C151 pipe with nominal diameter shall be 3° for 4" - 12" restraints
- Standard coating for Non-Domestic restraint is 4-6 mil of *Alkyd resin baking enamel -***Note: Epoxy coatings available upon request**
- Gripping wedges are heat treated to a mininum 420 Brinell Hardness
- Gripping wedge, wedge collar bolt, and twist off torque limiting nut shall be e-coated
- Not recommended for use on plain end fittings
- Color coded black for pipe type(ductile pipe/*cast iron pipe) - ***Note: Refer to the next page for cast iron pipe application**

FEATURES & ADVANTAGES:

- Torque limiting nut on gripping wedge assembly twists off within a designed torque range eliminating the need for specialized tools
- Gripping wedge assembly pivots providing stronger engagement of pipe wall at lower torque requirement (45-60 ft.-lbs.)
- Proven restraint technology utilizing fewer gripping wedges in frequently applied diameters, reducing trench time and project cost
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Suitable for potable and wastewater applications

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Product Source/Type	Name of Project	Name of Contractor	Project Engineer	Spec. Section and/or Project No.

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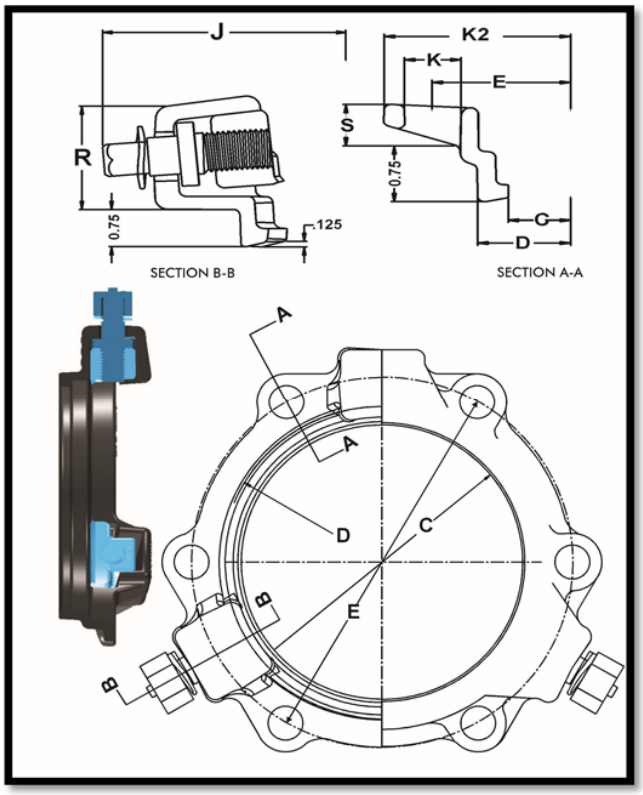
SERIES 1000S – MJ TLD SPLIT For DUCTILE PIPE



Size (inches)	C	D	E	K2	J	K	R	S
4	4.93	5.92	7.50	8.98	10.67	7/8	2.20	0.73
6	7.03	8.02	9.50	10.98	12.77	7/8	2.24	0.82
8	9.18	10.17	11.75	13.23	14.92	7/8	2.28	0.82
10	11.23	12.22	14.00	15.70	16.97	7/8	2.37	0.93
12	13.33	14.32	16.25	17.95	19.07	7/8	2.40	0.93

SERIES 1000 TLD-DUCTILE MJ TUFGrip™ - APPLICATION CHART

Size (Inches)	Part # Gland+Accessories Domestic / Non-Domestic	Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland Weight(lbs.)	Weight (w/Acc.)	Pressure Rating	Pipe O.D.
4	N/A / 495918	2	4	¾" x 3 ½"	7.1	11.8	350	4.80
6	N/A / 495925	3	6	¾" x 4"	11.2	18.8	350	6.90
8	N/A / 495932	3	6	¾" x 4"	13.1	20.3	350	9.05
10	N/A / 495949	6	8	¾" x 4"	26.0	32.5	350	11.10
12	N/A / 495956	8	8	¾" x 4"	31.5	40.4	350	13.20

ISO 9001-2015 Registered

STOP-LOOK :
- The Series 1000S TUF Grip is specified for use on ductile iron pipe but can be used on some sizes of cast grey iron or pit cast pipe as provided (pipe not severely corroded, in sound condition, and with an outside diameter compatible with restraint "C" dimension)
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651

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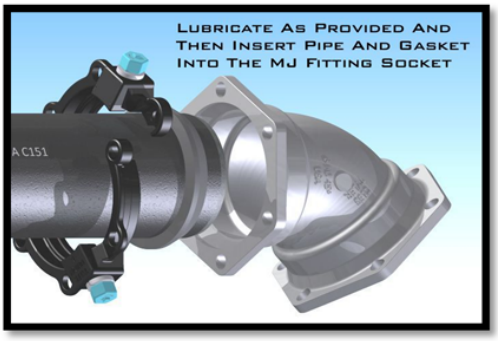
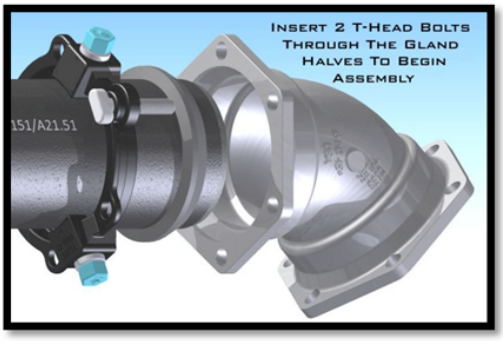
Assembly Steps – Series 1000S TLD Split – For Ductile Iron Pipe

Steps: 1 and 2



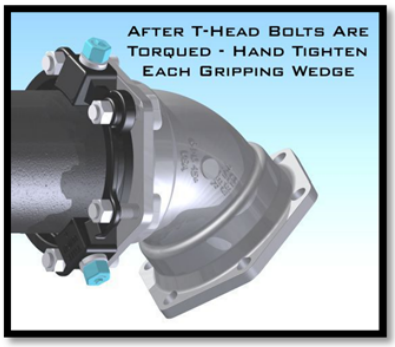
Step: 3 and 4



1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris.
2. Lubricate the pipe end and exterior plus the inside surface of gasket with joint lubricant that meets the requirements of AWWA C111. Now place the MJ gasket over the plain beveled end of the pipe with the narrow edge of the tapered gasket toward the beveled end of the pipe to be restrained.
3. Fully insert the pipe end into the MJ socket pipe landing. Keeping the pipe straight, slide/push the gasket firmly and evenly into the MJ socket recess.
4. Place the two halves of the black TUF Grip around the pipe with the compression lip extension toward the MJ socket. Join the two restraint halves together with two T-Head bolts. Use only T-Head bolts, gaskets, and nuts that meet AWWA C111 requirements.

Step: 5

Steps: 6 and 7



Steps: 8 and 9

5. With the two T-Head bolts inserted through the restraint, push the TUF Grip lip extension evenly against the thick side of the MJ gasket. With the TUF Grip restraint against the gasket, the remaining T-Head bolts are inserted with the T-Head against the back of the MJ fitting bolt flange. Install two additional T-Head bolts with nuts and hand tighten to secure the restraint to the fitting.
6. With the restraint secured to the fitting, remove the original assembly T-Head bolts and reinsert with the T-Head against the back of the MJ fitting bolt flange. Making sure the TUF Grip is centered around the pipe's wall, hand tighten all remaining T-Head bolts and nuts. If joint deflection is needed, only deflect the pipe in the joint after hand tightening of all nuts is completed. Maximum joint deflection is 3° when pipe and fitting dimensions are nominal.
7. Using a wrench, tighten the nuts on the T-Head bolts a few turns at a time in an alternating or star pattern. Maintain equal spacing between the TUF Grip bolt flange and the bolt flange of the MJ socket as the gasket is compressed. The T-Head bolt and nut torque requirement is 75-90 ft.-lbs. for 4" - 12" restraints. **DO NOT OVER-TORQUE!**
8. Hand-tighten the torque limiting nut attached to the TUF Grip wedge assemblies in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque limiting nut is indicated by a recessed arrow on the face of the nut. With a wrench, continue to tighten each torque nut ½ turn in an alternating or star pattern until all torque limiting nuts twist off. NEVER turn a torque limiting nut more than ½ turn without turning the remaining torque nuts an equal amount!
9. When all torque limiting nuts twist off, the assembly of the mechanical joint restraint is complete.

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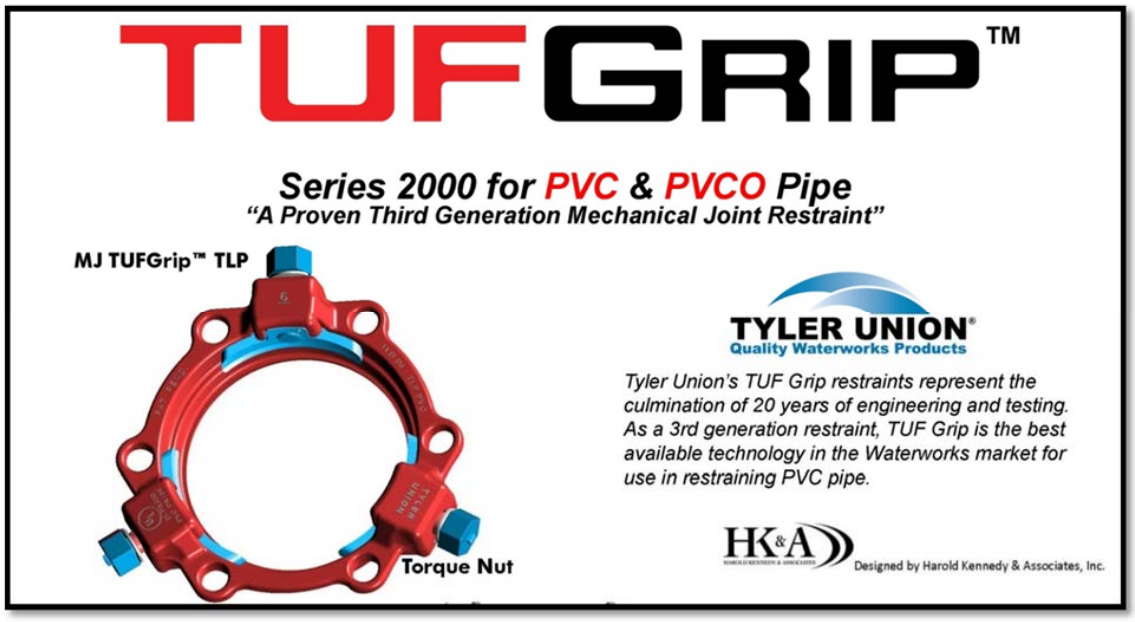

"BETTER BY DESIGN"

SPECIFICATIONS:

- Proven to restrain plain end PVC pipe in diameters 3" - 36", PVCO pipe in diameters 4" - 12", and HDPE Pipe 4" - 16"
- Restraint design conforms to applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153, and ANSI/AWWA C110
- Restraint engineered for securing plain end pipe to mechanical joint fittings conforming to ANSI/AWWA C110, C111, and C153
- Rated for working water pressure of 305 psi for 3"- 12", 235 psi for 14"- 24", 150 psi for 30", and 125 psi for 36" **(details on next page)**
- Cast of ASTM compliant 65-45-12 ductile iron complete with cast on date code and country of origin for traceability
- Restraint and all components are designed and proven for a 2:1 safety factor based on the PVC, PVCO, and HDPE pipe pressure rating **Note: Refer to the following pages for pressure rating**
- Restraint deflection rating when installed on nominal diameter pipe: 3° max for 3"-12", 2° max for 14"-16", and 1.5° max for 18"-36"
- Standard coating for Domestic restraint is 4-6 mil of TUF-Bond™ **(thermoset polyester for impact, corrosion, and UV protection)**
- Gripping wedge, wedge collar bolt and twist off torque limiting nut shall be e-coated
- FM approved for 4" - 12" applications and UL listed and approved for 3" - 12" applications
- Color coded red for pipe type (C900 PVC/C905 PVC/ *C909 PVCO/D2241 PVC) - ***Note: Refer to next page for C909 pipe applications**

FEATURES & ADVANTAGES:

- Torque limiting nut on gripping wedge assembly twists off within a designed torque range eliminating the need for specialized tools
- Gripping wedge assembly pivots providing stronger engagement of pipe wall at lower torque requirement (45-60 ft-lb)
- Proven restraint technology utilizing fewer gripping wedges in frequently applied diameters, reducing trench time and project cost
- There is no washer or spacer to remove when installing restraints on 3" - 12" ASTM D2241 PVC pipe with IPS outside diameter
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Suitable for potable and wastewater applications
- Approved for use on multiple classes of pipe - **Additional pressure ratings and associated pipe classes provided on the following pages**

ISO 9001-2015 Registered	Listed with Underwriters Laboratory	Factory Mutual Approved

Product Source/Type	Name of Project	Name of Contractor	Project Engineer	Spec. Section and/or Project No.

☐ 100% Domestic ☐ Domestic Gland with Import Components

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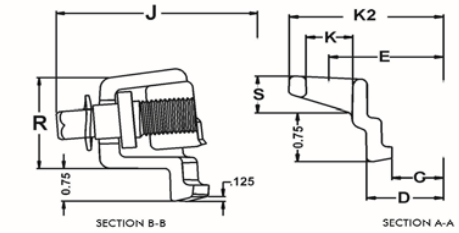

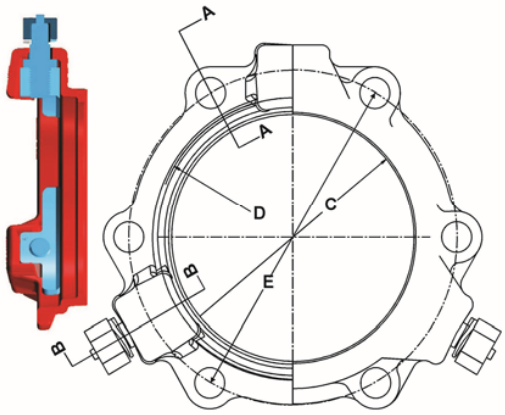

TUFGrip™ MJ Restraint Dimensions

Size (inches)	C	D	E	K2	J	K	R	S
3	4.08	4.88	6.19	7.67	9.82	3/4	2.20	0.86
4	4.93	5.92	7.50	8.98	10.67	7/8	2.20	0.73
6	7.03	8.02	9.50	10.98	12.77	7/8	2.24	0.82
8	9.18	10.17	11.75	13.23	14.92	7/8	2.28	0.82
10	11.23	12.22	14.00	15.70	16.97	7/8	2.37	0.93
12	13.33	14.32	16.25	17.95	19.07	7/8	2.40	0.93
14	15.44	16.40	18.75	20.43	21.18	7/8	2.57	0.91
16	17.54	18.50	21.00	22.88	23.28	7/8	2.57	1.05
18	19.64	20.60	23.25	25.43	25.38	7/8	2.57	1.05
20	21.74	22.70	25.50	27.50	27.48	7/8	2.66	1.15
24	25.94	26.90	30.00	32.00	31.68	7/8	2.72	1.35
30	32.18	33.30	36.88	39.42	39.78	1-1/8	3.86	1.53
36	38.48	39.60	43.75	46.29	46.08	1-1/8	3.86	1.53

SERIES 2000 TLP-PVC TUFGrip™ - APPLICATION CHART

Size (Inches)	Part # - Gland Only Hybrid / 100% Domestic	Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland Weight(lbs.)	Weight (w/Acc.)	*Pressure Rating	Pipe O.D. (Inches)
3	CALL / N/A	2	4	⅝" x 3"	7.0	11.0	*305 / DR14	3.50
4	516002 / 601000	2	4	¾" x 3 ½"	8.3	12.2	*305 / DR14	4.50-4.80
6	516019 / 601005	3	6	¾" x 4"	12.4	18.3	*305 / DR14	6.63-6.90
8	516026 / 601010	3	6	¾" x 4"	14.9	20.8	*305 / DR14	8.63-9.12
10	516033 / 601015	6	8	¾" x 4"	25.7	33.4	*305 / DR14	10.75-11.10
12	516040 / 601020	8	8	¾" x 4"	34.1	42.0	*305 / DR14	12.75-13.20
14	516248 / 601025	10	10	¾" x 4 ½"	45.1	55.4	*235 / DR18	15.30
16	516262 / 601030	12	12	¾" x 4 ½"	56.2	68.4	*235 / DR18	17.40
18	516286 / 601035	12	12	¾" x 4 ½"	62.4	74.8	*235 / DR25	19.50
20	516309 / 601040	14	14	¾" x 4 ½"	72.9	86.9	*235 / DR25	21.60
24	516323 / 601045	16	16	¾" x 5"	93.2	109.8	*235 / DR25	25.80
30	CALL / CALL	20	20	1" x 7 ½"	251	293	*150 / DR25	32.00
36	CALL / CALL	24	24	1" x 7 ½"	281	331	*125 / DR25	38.30

*Note: The pressure ratings are rated working water pressures for the restraint. See page 3 for additional ratings.

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STOP-LOOK :

- Extra length T-Head bolts are provided with 30"- 36" restraints to facilitate mechanical joint assembly per AWWA C600
- For UL/FM Approvals, 3"- 12" were tested to 755 psi, 14"- 16" were tested to 755 psi and 18"- 24" were tested to 535 psi
- TUF Grip 30"- 36" provided with TRU-Lock™ mechanical joint gasket to ensure pressure rating & safety factors are met
- Mechanical joint T-head bolt torques for C909 applications are as provided; *55-65 ft-lb for 4" - 8" and *65 - 75 ft-lb for 10" - 12" assembly. You must specifiy restraints are for C909 PVCO pipe upon order placement. Call for availability
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651
- TUF Grip 4" - 24" restraints shall meet the requirements of ASTM F1674, current revision
- Caution: Pressure testing of piping systems restrained or un-restrained with insufficient backfill or bracing is not recommended

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TUFGRIP™

**ADDITIONAL SERIES 2000 TLP-TUF GRIP™ RESTRAINT RATINGS														
	AWWA C900			AWWA C905			ASTM D2241			HDPE* AWWA C906				
SIZE (Inches)	DR14	DR18	DR25	DR18	DR25	DR32.5	SDR17	SDR21	SDR26	DR7.3	DR9	DR11	DR13.5	DR17
3	-	-	-	-	-	-	250	200	160	254	200	160	128	100
4	305	235	165	-	-	-	250	200	160	254	200	160	128	100
6	305	235	165	-	-	-	250	200	160	254	200	160	128	100
8	305	235	165	-	-	-	250	200	160	254	200	160	128	100
10	305	235	165	-	-	-	250	200	160	254	200	160	128	100
12	305	235	165	-	-	-	250	200		254	200	160	128	100
14	-	-	-	235	165	125	-	-	-	254	200	160	128	100
16	-	-	-	235	165	125	-	-	-	254	200	160	128	100
18	-	-	-	200	165	-	-	-	-	-	-	-	-	-
20	-	-	-	200	165	-	-	-	-	-	-	-	-	-
24	-	-	-	165	165	125	-	-	-	-	-	-	-	-
30	-	-	-	-	165	125	-	-	-	-	-	-	-	-
36	-	-	-	-	125	125	-	-	-	-	-	-	-	-

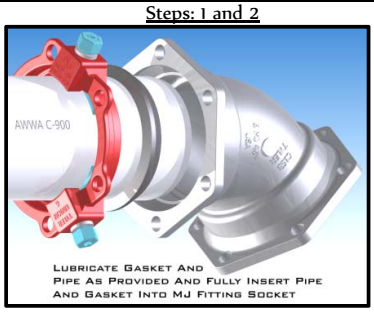
**Note: Pressure Ratings for Ordinary Water Works Restraint Application with Transitory Surges Only

**Note: AWWA C909 PVCO Restraint Pressure Rating is per the Pressure Rating Listed on the Pipe

*Note: HDPE applications require a separate stiffener ring. 4"-16" for DI OD Pipe and 4"-12" for IPS Pipe

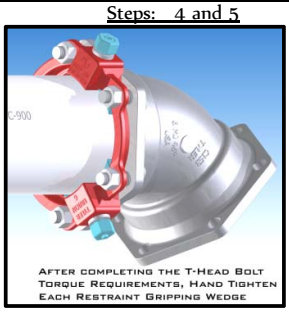
Assembly steps for (3"-12" ASTM D2241 IPS PVC), (4"-12" AWWA C909 PVCO), and (4"-36" AWWAC900/C905 PVC)

Steps: 1 and 2



Step: 3

Steps: 4 and 5



Steps: 6 and 7

1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the Red TUF Grip onto the beveled end of the pipe to be restrained. The TUF Grip compression lip extension must be toward the beveled end of the pipe being restrained.
2. Evenly lubricate the beveled pipe end, exterior pipe wall, and inside surface of the gasket with a lubricant that meets the requirements of AWWA C111. Now place the **MJ gasket over the plain beveled end of the pipe with the narrow edge of the tapered gasket toward the pipe end. **NOTE: Use MJ transition gasket with IPS diameter pipe.
3. Fully insert the beveled pipe end into the MJ socket pipe landing. Keeping the pipe straight in the MJ socket, slide/push the MJ gasket firmly and evenly into the MJ socket recess. Joint must be kept straight during assembly.
4. Push the TUF Grip compression lip extension evenly against the thick side of the MJ gasket and insert all T-Head bolts with nuts. Use only T-Head bolts and nuts that meet AWWA C111 requirements. With the TUF Grip restraint lip extension against the MJ gasket, evenly hand-tighten the nuts on the T-Head bolts making sure the restraint body is centered on the pipe and within the MJ socket. If joint deflection is needed, deflect the pipe only after hand tightening of all nuts is completed. Joint deflection is 3° max for 3", 5° max for 4"-12", 2° max for 14"-16", 1.5° max for 18"- 36". NOTE: Maximum deflection values provided apply with nominal pipe, fitting, and restraint diameters.
5. Using a wrench, tighten the T-Head bolts and nuts a few turns at a time in an alternating or star pattern. Maintain equal spacing or distance between the TUF Grip bolt flange and the MJ socket bolt flange as the MJ gasket is compressed. Repeat the process in an alternating pattern for all T-Head bolts and nuts. The T-Head bolt and nut torque requirement is 45-60 ft-lb for 3", 75-90 ft-lb for 4"-24", and 100-120 ft-lb for 30"- 36".
   NOTE: The C909 PVCO T-Head bolt and nut torque is 55-65 ft-lb for 4"-8" and 65-75 ft-lb for 10"-12" restraints.
   DO NOT OVER-TORQUE T-HEAD BOLTS and NUTS WHEN ASSEMBLING PVC and PVCO PIPE!
6. **Hand-tighten the torque limiting nuts attached to the TUF Grip wedge assemblies in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque nut is indicated by a recessed arrow on the face of the nut. With a wrench (box, socket, or pneumatic), continue to tighten each torque nut ½ turn in an alternating or star pattern around the restraint until all torque limiting nuts twist off. NEVER turn a torque limiting nut more than ½ turn without turning the remaining torque nuts an equal amount! **NOTE: For IPS and PVCO applications, ensure step 5 is completed before engaging wedges. Failure to comply will result in excessive pipe wall deflection and torque nuts will not twist off as designed.
7. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.

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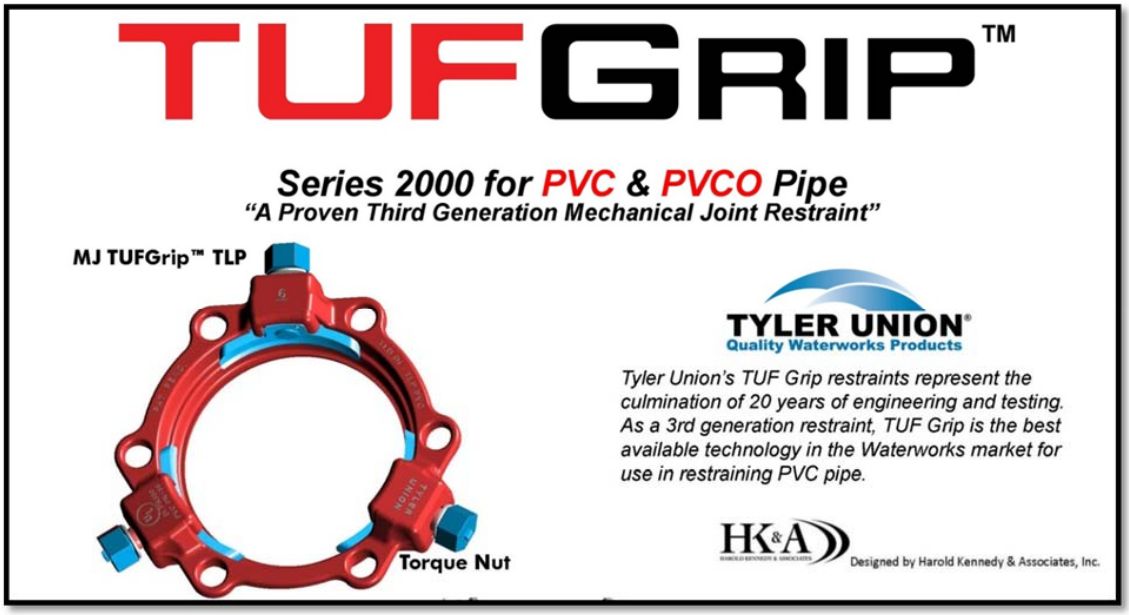

"BETTER BY DESIGN"

SPECIFICATIONS:

- Proven to restrain plain end PVC pipe in diameters 3" - 36", PVCO pipe in diameters 4" - 12", and HDPE Pipe 4" - 16"
- Restraint design conforms to applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153, and ANSI/AWWA C110
- Restraint engineered for securing plain end pipe to mechanical joint fittings conforming to ANSI/AWWA C110, C111, and C153
- Rated for working water pressure of 305 psi for 3"-12", 235 psi for 14"- 24", 150 psi for 30", and 125 psi for 36" (**details on next page**)
- Cast of ASTM compliant 65-45-12 ductile iron complete with cast on date code and country of origin for traceability
- Restraint and all components are designed and proven for a 2:1 safety factor based on the PVC, PVCO, and HDPE pipe pressure rating **Note: Refer to the following pages for pressure rating**
- Restraint deflection rating when installed on nominal diameter pipe: 3° max for 3"-12", 2° max for 14"-16", and 1.5° max for 18"- 36"
- Standard coating for Non-Domestic restraint is 4-6 mil of Alkyd resin baking enamel
- Gripping wedge, wedge collar bolt and twist off torque limiting nut shall be e-coated
- FM approved for 4" - 12" applications and UL listed and approved for 3" - 12" applications
- Color coded red for pipe type (C900 PVC/C905 PVC/ *C909 PVCO/D2241 PVC) - ***Note: Refer to next page for C909 pipe applications**

FEATURES & ADVANTAGES:

- Torque limiting nut on gripping wedge assembly twists off within a designed torque range eliminating the need for specialized tools
- Gripping wedge assembly pivots providing stronger engagement of pipe wall at lower torque requirement (45-60 ft-lb)
- Proven restraint technology utilizing fewer gripping wedges in frequently applied diameters, reducing trench time and project cost
- There is no washer or spacer to remove when installing restraints on 3" - 12" ASTM D2241 PVC pipe with IPS outside diameter
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Suitable for potable and wastewater applications
- Approved for use on multiple classes of pipe - **Additional pressure ratings and associated pipe classes provided on the following pages**

ISO 9001-2015 Registered	Listed with Underwriters Laboratory	Factory Mutual Approved

Product Source/Type	Name of Project	Name of Contractor	Project Engineer	Spec. Section and/or Project No.

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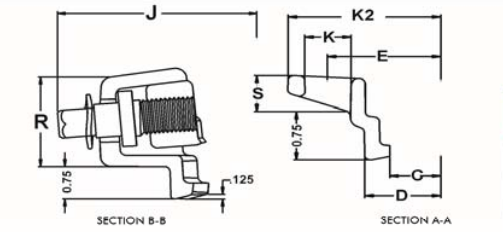

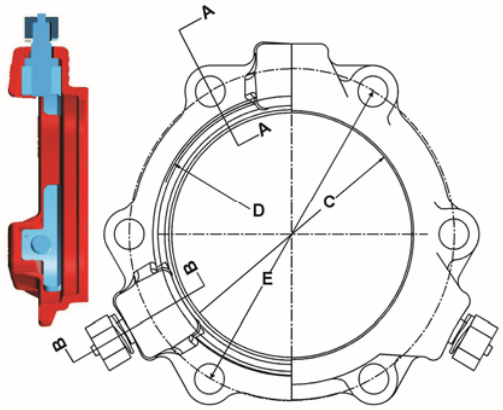

TUFGrip™ MJ Restraint Dimensions

Size (inches)	C	D	E	K2	J	K	R	S
3	4.08	4.88	6.19	7.67	9.82	3/4	2.20	0.86
4	4.93	5.92	7.50	8.98	10.67	7/8	2.20	0.73
6	7.03	8.02	9.50	10.98	12.77	7/8	2.24	0.82
8	9.18	10.17	11.75	13.23	14.92	7/8	2.28	0.82
10	11.23	12.22	14.00	15.70	16.97	7/8	2.37	0.93
12	13.33	14.32	16.25	17.95	19.07	7/8	2.40	0.93
14	15.44	16.40	18.75	20.43	21.18	7/8	2.57	0.91
16	17.54	18.50	21.00	22.88	23.28	7/8	2.57	1.05
18	19.64	20.60	23.25	25.43	25.38	7/8	2.57	1.05
20	21.74	22.70	25.50	27.50	27.48	7/8	2.66	1.15
24	25.94	26.90	30.00	32.00	31.68	7/8	2.72	1.35
30	32.18	33.30	36.88	39.42	39.78	1-1/8	3.86	1.53
36	38.48	39.60	43.75	46.29	46.08	1-1/8	3.86	1.53

SERIES 2000 TLP-PVC TUFGrip™ - APPLICATION CHART

Size (Inches)	Part # - Gland Only Non-Domestic	Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland Weight(lbs.)	Weight (w/Acc.)	*Pressure Rating	Pipe O.D. (Inches)
3	113928	2	4	⅝" x 3"	7.0	11.0	*305 / DR14	3.50
4	113935	2	4	¾" x 3 ½"	8.3	12.2	*305 / DR14	4.50-4.80
6	113942	3	6	¾" x 4"	12.4	18.3	*305 / DR14	6.63-6.90
8	113959	3	6	¾" x 4"	14.9	20.8	*305 / DR14	8.63-9.12
10	113973	6	8	¾" x 4"	25.7	33.4	*305 / DR14	10.75-11.10
12	113980	8	8	¾" x 4"	34.1	42.0	*305 / DR14	12.75-13.20
14	113997	10	10	¾" x 4 ½"	45.1	55.4	*235 / DR18	15.30
16	114000	12	12	¾" x 4 ½"	56.2	68.4	*235 / DR18	17.40
18	114017	12	12	¾" x 4 ½"	62.4	74.8	*235 / DR25	19.50
20	114024	14	14	¾" x 4 ½"	72.9	86.9	*235 / DR25	21.60
24	114031	16	16	¾" x 5"	93.2	109.8	*235 / DR25	25.80
30	461302	20	20	1" x 7 ½"	251	293	*150 / DR25	32.00
36	461357	24	24	1" x 7 ½"	281	331	*125 / DR25	38.30

*Note: The pressure ratings are rated working water pressures for the restraint. See page 3 for additional ratings.

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STOP-LOOK :

- Extra length T-Head bolts are provided with 30"- 36" restraints to facilitate mechanical joint assembly per AWWA C600
- For UL/FM Approvals, 3"- 12" were tested to 755 psi, 14"- 16" were tested to 755 psi and 18"- 24" were tested to 535 psi
- TUF Grip 30"- 36" provided with TRU-Lock™ mechanical joint gasket to ensure pressure rating and safety factors are met
- Mechanical joint T-head bolt torques for C909 applications are as provided; *55-65 ft-lb for 4" - 8" and *65 - 75 ft-lb for 10" - 12" assembly. You must specify restraints are for C909 PVCO pipe upon order placement. Call for availability
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651
- TUF Grip 4" - 24" restraints shall meet the requirements of ASTM F1674, current revision
- Caution: Pressure testing of piping systems restrained or un-restrained with insufficient backfill or bracing is not recommended

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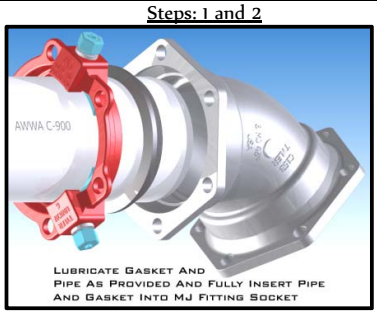
NON-DOMESTIC PRODUCT SUBMITTAL

**ADDITIONAL SERIES 2000 TLP-TUF GRIP™ RESTRAINT RATINGS														
	AWWA C900			AWWA C905			ASTM D2241			HDPE* AWWA C906				
SIZE (Inches)	DR14	DR18	DR25	DR18	DR25	DR32.5	SDR17	SDR21	SDR26	DR7.3	DR9	DR11	DR13.5	DR17
3	-	-	-	-	-	-	250	200	160	254	200	160	128	100
4	305	235	165	-	-	-	250	200	160	254	200	160	128	100
6	305	235	165	-	-	-	250	200	160	254	200	160	128	100
8	305	235	165	-	-	-	250	200	160	254	200	160	128	100
10	305	235	165	-	-	-	250	200	160	254	200	160	128	100
12	305	235	165	-	-	-	250	200		254	200	160	128	100
14	-	-	-	235	165	125	-	-	-	254	200	160	128	100
16	-	-	-	235	165	125	-	-	-	254	200	160	128	100
18	-	-	-	200	165	-	-	-	-	-	-	-	-	-
20	-	-	-	200	165	-	-	-	-	-	-	-	-	-
24	-	-	-	165	165	125	-	-	-	-	-	-	-	-
30	-	-	-	-	165	125	-	-	-	-	-	-	-	-
36	-	-	-	-	125	125	-	-	-	-	-	-	-	-
**Note: Pressure Ratings for Ordinary Water Works Restraint Application with Transitory Surges Only														
**Note: AWWA C909 PVCO Restraint Pressure Rating is per the Pressure Rating Listed on the Pipe														
* Note: HDPE application require a separate stiffener ring. 4"-16" for DI OD Pipe and 4"-12" for IPS Pipe														
Assembly steps for (3"-12" ASTM D2241 IPS PVC), (4"-12" AWWA C909 PVCO), and (4"-36" AWWAC900/C905 PVC)														

Steps: 1 and 2



Step: 3

Steps: 4 and 5

Steps: 6 and 7

1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the Red TUF Grip onto the beveled end of the pipe to be restrained. The TUF Grip compression lip extension must be toward the beveled end of the pipe being restrained.
2. Evenly lubricate the beveled pipe end, exterior pipe wall, and inside surface of the gasket with a lubricant that meets the requirements of AWWA C111. Now place the **MJ gasket over the plain beveled end of the pipe with the narrow edge of the tapered gasket toward the pipe end. **NOTE: Use MJ transition gasket with IPS diameter pipe.
3. Fully insert the beveled pipe end into the MJ socket pipe landing. Keeping the pipe straight in the MJ socket, slide/push the MJ gasket firmly and evenly into the MJ socket recess. Joint must be kept straight during assembly.
4. Push the TUF Grip compression lip extension evenly against the thick side of the MJ gasket and insert all T-Head bolts with nuts. Use only T-Head bolts and nuts that meet AWWA C111 requirements. With the TUF Grip restraint lip extension against the MJ gasket, evenly hand-tighten the nuts on the T-Head bolts making sure the restraint body is centered on the pipe and within the MJ socket. If joint deflection is needed, deflect the pipe only after hand tightening of all nuts is completed. Joint deflection is 3° max for 3", 5° max for 4"-12", 2° max for 14"-16", 1.5° max for 18"-36". NOTE: Maximum deflection values provided apply with nominal pipe, fitting, and restraint diameters.
5. Using a wrench, tighten the T-Head bolts and nuts a few turns at a time in an alternating or star pattern. Maintain equal spacing or distance between the TUF Grip bolt flange and the MJ socket bolt flange as the MJ gasket is compressed. Repeat the process in an alternating pattern for all T-Head bolts and nuts. The T-Head bolt and nut torque requirement is 45- 60 ft-lb for 3", 75-90 ft-lb for 4"- 24", and 100-120 ft-lb for 30"- 36".
   NOTE: The C909 PVCO T-Head bolt and nut torque is 55-65 ft-lb for 4"-8" and 65-75 ft-lb for 10"-12" restraints.
   DO NOT OVER-TORQUE T-HEAD BOLTS and NUTS WHEN ASSEMBLING PVC and PVCO PIPE!
6. **Hand-tighten the torque limiting nuts attached to the TUF Grip wedge assemblies in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque nut is indicated by a recessed arrow on the face of the nut. With a wrench (box, socket, or pneumatic), continue to tighten each torque nut ½ turn in an alternating or star pattern around the restraint until all torque limiting nuts twist off. NEVER turn a torque limiting nut more than ½ turn without turning the remaining torque nuts an equal amount! **NOTE: For IPS and PVCO applications, ensure step 5 is completed before engaging wedges. Failure to comply will result in excessive pipe wall deflection and torque nuts will not twist off as designed.
7. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.

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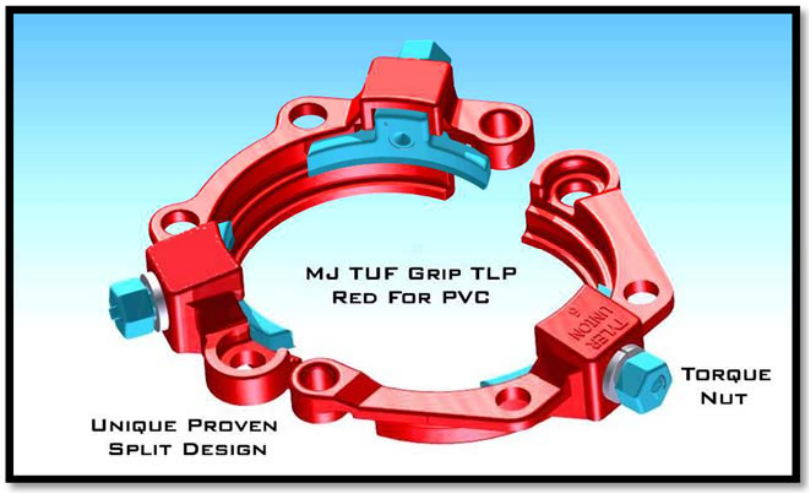
TUFGRIP™

SERIES 2000S – MJ TLP SPLIT FOR PVC PIPE

"A PROVEN THIRD GENERATION MECHANICAL JOINT RESTRAINT"



"BETTER BY DESIGN"

SPECIFICATIONS:

- Proven to restrain plain end PVC pipe in diameters 4" - 12"
- Restraint design conforms to applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153, and ANSI/AWWA C110
- Restraint engineered for securing plain end pipe to mechanical joint fittings conforming to ANSI/AWWA C110, C111, and C153
- Restraint rated for working water pressure of 305 psi for 4" - 12" restraints **(details on the next page)**
- Cast of ASTM A536 compliant 65-45-12 ductile iron complete with cast on date code and country of origin for traceability
- Restraints and all components are designed and proven for a 2:1 safety factor based on the PVC pipe pressure rating
- Restraint deflection rating when installed on nominal diameter pipe: 3° max for 4"-12"
- Standard coating for Non-Domestic restraint is 4-6 mil of *Alkyd resin baking enamel - ***Note: Epoxy coatings available upon request**
- Gripping wedge, wedge collar bolt and twist off torque limiting nut shall be e-coated
- Restraint body color coded red for pipe type (AWWA C900 PVC and ASTM D2241)

FEATURES & ADVANTAGES:

- Unique Split design assembles using standard T-bolts and without additional accessories in sizes 6" - 12"
- Torque limiting nut on gripping wedge assembly twists off within a designed torque range eliminating the need for specialized tools
- Gripping wedge assembly pivots providing stronger engagement of pipe wall at lower torque requirement (45-60 ft-lb)
- Proven restraint technology utilizing fewer gripping wedges in frequently applied diameters, reducing trench time and project cost
- There is no washer or spacer to remove when installing restraints on 4" - 12" ASTM D2241 PVC pipe with IPS outside diameter
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Suitable for potable and wastewater applications
- Approved for use on multiple classes of pipe - **Additional pressure ratings and associated pipe classes provided on the next page**

ISO 9001-2015 Registered

Product Source/Type	Name of Project	Name of Contractor	Project Engineer	Spec. Section and/or Project No.

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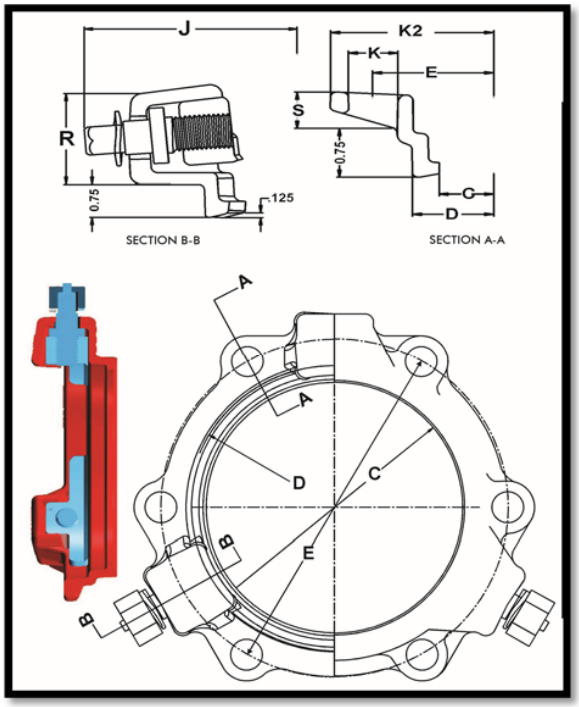
SERIES 2000S – MJ TLP SPLIT FOR PVC PIPE



Size (inches)	C	D	E	K2	J	K	R	S
4	4.93	5.92	7.50	8.98	10.67	7/8	2.20	0.73
6	7.03	8.02	9.50	10.98	12.77	7/8	2.24	0.82
8	9.18	10.17	11.75	13.23	14.92	7/8	2.28	0.82
10	11.23	12.22	14.00	15.70	16.97	7/8	2.37	0.93
12	13.33	14.32	16.25	17.95	19.07	7/8	2.40	0.93

SERIES 2000S TLP-PVC MJ TUFGrip™ - APPLICATION CHART

Size (Inches)	Part # Gland+Accessories Domestic / Non-Domestic	Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland Weight(lbs.)	Weight (w/Acc.)	*Pressure Rating	Pipe O.D. (Inches)
4	N/A / 537052	2	4	¾" x 3 ½"	8.3	12.2	*305 / DR14	4.50-4.80
6	N/A / 537069	3	6	¾" x 4"	12.4	18.3	*305 / DR14	6.63-6.90
8	N/A / 537076	3	6	¾" x 4"	14.9	20.8	*305 / DR14	8.63-9.12
10	N/A / 537083	6	8	¾" x 4"	25.7	33.4	*305 / DR14	10.75-11.10
12	N/A / 537090	8	8	¾" x 4"	34.1	42.0	*305 / DR14	12.75-13.20

*Note: The Pressure Ratings are Rated Working Water Pressures for the Restraint.

****ADDITIONAL SERIES 2000S SPLIT TLP-PVC MJ TUFGrip™ RESTRAINT RATINGS**

PIPE TYPE ▶	AWWA C900			ASTM D2241		
SIZE (Inches)	DR14	DR18	DR25	SDR17	SDR21	SDR26
4	305	235	150	250	200	160
6	305	235	150	250	200	160
8	305	235	150	250	200	160
10	305	235	150	250	200	160
12	305	235	150	250	200	-

****Note: Ratings for Ordinary Water Works Restraint Applications with Transitory Surges Only**

STOP-LOOK :
- Piping system installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651.
- TUF Grip 4" - 12" restraints shall meet the requirements of ASTM F1674, current revision.

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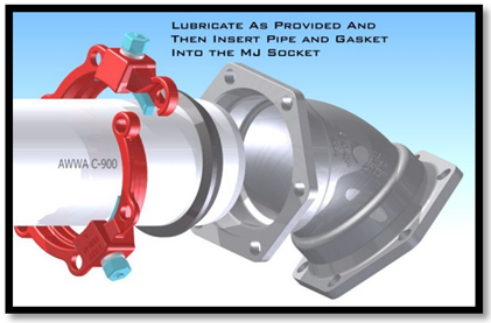
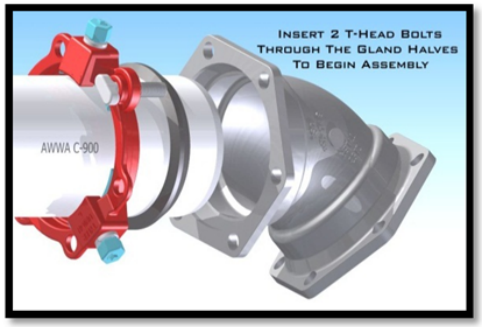
Assembly Steps – Series 2000S TLP Split – For PVC Pipe

Steps:1and 2

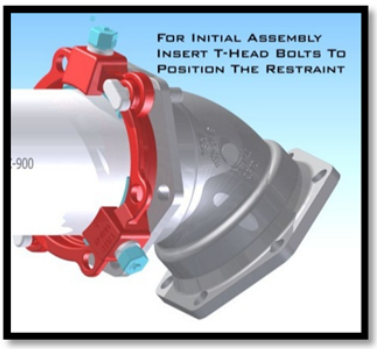


Step:3 and 4

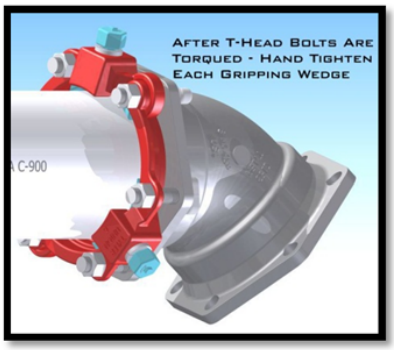


1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris.
2. Lubricate the pipe end and exterior plus the inside surface of gasket with joint lubricant that meets the requirements of AWWA C111. Now place the MJ gasket over the plain beveled end of the pipe with the narrow edge of the tapered gasket toward the beveled end of the pipe to be restrained.
3. Fully insert the pipe end into the MJ socket pipe landing. Keeping the pipe straight, slide/push the gasket firmly and evenly into the MJ socket recess. **NOTE: For IPS diameter pipe use of an MJ transition gasket is required.
4. Place the two halves of the red TUF Grip around the pipe with the compression lip extension toward the MJ socket. Join the two restraint halves together with two T-Head bolts. Use only T-Head bolts, nuts, and gasket that meet AWWA C111 requirements.

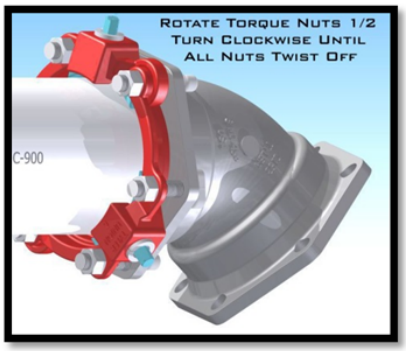
Steps:5



Steps:6 and 7



Steps:8 and 9



5. With the two T-Head bolts inserted through the restraint, push the TUF Grip lip extension evenly against the thick side of the MJ gasket. With the TUF Grip restraint against the gasket, the remaining T-Head bolts are inserted with the T-Head against the back of the MJ fitting bolt flange. Install two additional T-Head bolts with nuts and hand tighten to secure the restraint to the fitting.
6. With the restraint secured to the fitting, remove the original assembly T-Head bolts and reinsert with the T-Head against the back of the MJ fitting bolt flange. Making sure the TUF Grip is centered around the pipe's wall, hand tighten all the remaining T-Head bolts and nuts. If joint deflection is needed, only deflect the pipe in joint after hand tightening of all nuts is completed. Maximum joint deflection is 3° when pipe and fitting dimensions are nominal.
7. Using a wrench, tighten the nuts on the T-Head bolts a few turns at a time in an alternating or star pattern. Maintain equal spacing between the TUF Grip bolt flange and the bolt flange of the MJ socket as the gasket is compressed. The T-Head bolt and nut torque requirement is 75-90 ft.-lbs. for 4"-12" restraints. **DO NOT OVER-TORQUE!**
8. Hand-tighten the torque limiting nut attached to the TUF Grip wedge assemblies in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque nut is indicated by a recessed arrow on the face of the nut. With a wrench, continue to tighten each torque nut ½ turn in an alternating or star pattern until all torque limiting nuts twist off. NEVER tighten a torque limiting nut more than ½ turn without turning the remaining torque nuts an equal amount! **NOTE: For IPS applications, ensure step 7 is complete before engaging the wedges. Failure to comply will result in excessive pipe wall deflection and torque nuts will not twist off as designed.
9. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.

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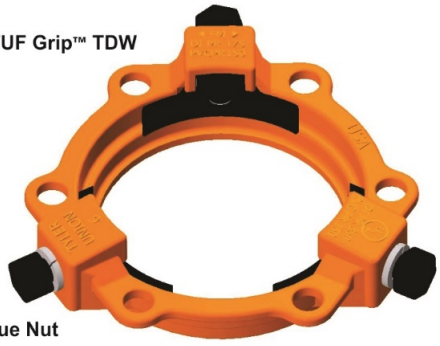
DOMESTIC PRODUCT SUBMITTAL

TUFGRIP™ DUAL WEDGE®
PATENT PENDING

Series 1500 DUAL WEDGE® - For PVC, Ductile, and HDPE Pipe
" A Proven Third Generation Mechanical Joint Restraint"

MJ TUF Grip™ TDW



Torque Nut

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Tyler Union's TUF Grip restraint represents the culmination of 20 years of engineering and testing. As a 3rd generation restraint, TUF Grip is the best available technology in the Waterworks market for use in restraining PVC, Ductile, and HDPE Pipe.

"BETTER BY DESIGN"

SPECIFICATIONS:

- Proven to restrain plain end PVC, Ductile iron, and HDPE pipe in diameters 4" - 24". **Note: IPS diameter pipe requires the use of an MJ Transition gasket
- Restraint design conforms with applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153, and ANSI/AWWA C110
- Restraint engineered for securing plain end pipe to mechanical joint fittings conforming to ANSI/AWWA C110, C111, and C153
- Cast of ASTM A536 compliant 65-45-12 ductile iron complete with a cast on date code and country of origin for traceability
- Restraints and all components are designed and proven for a 2:1 safety factor based on the pipe pressure rating
- Restraint deflection rating when installed on nominal diameter pipe: 3° max for 4"-12", 2° max for 14"-16", and 1.5° max for 18"- 24"
- Standard coating for Domestic restraint is 4 - 6 mil of TUF-Bond™ **(thermoset polyester for impact, corrosion and UV protection)**
- Gripping wedges are heat treated to a mininum 420 Brinell Hardness
- Gripping wedge, wedge collar bolt, and twist off torque limiting nut shall be e-coated
- FM approved for 4" - 12" applications and UL listed and approved for 4" - 24" applications
- Not recommended for use on plain end fittings
- Color coded orange for use on multiple classes of pipe and to distunguish from traditional restraints.

FEATURES & ADVANTAGES:

- Torque limiting nut on gripping wedge assembly twists off within a designed torque range eliminating the need for specialized tools
- Gripping wedge assembly pivots providing stronger engagement of pipe wall at lower torque requirement (45 - 60 ft-lb)
- Proven restraint technology utilizing fewer gripping wedges in frequently applied diameters, reducing trench time and project cost
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Approved for use on multiple classes of pipe – **Pressure ratings and associated pipe classes provided on the following pages**
- Suitable for potable and wastewater applications
- Controlled wedge contour to accommodate contact circumference when assembled on different types of pipe.

ISO 9001-2015 Registered	Listed with Underwriters Laboratory	Factory Mutual Approved

Product Source/Type	Name of Project	Name of Contractor	Project Engineer	Spec. Section and/or Project No.
☐ 100% Domestic				

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TUFGRIP™ DUAL WEDGE®
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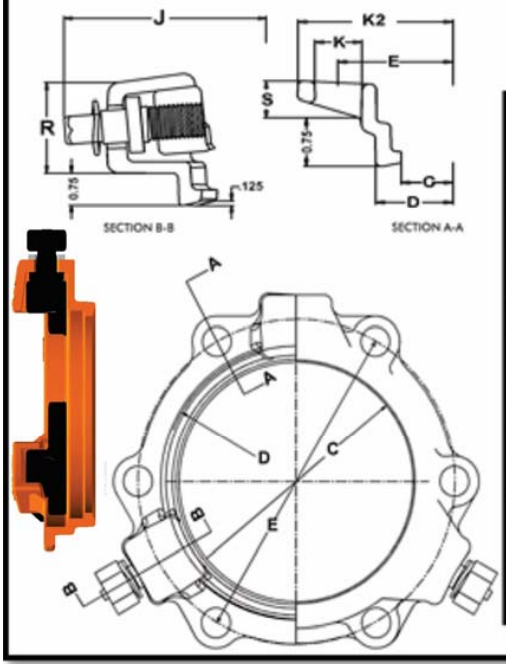
"Better By Design"

Series 1500 DUAL WEDGE®- PVC, Ductile, and HDPE Restraint



TUFGrip™ MJ Restraint Dimensions

Size (inches)	C	D	E	K2	J	K	R	S
3	4.08	4.88	6.19	7.67	9.82	3/4	2.20	0.86
4	4.93	5.92	7.50	8.98	10.67	7/8	2.20	0.73
6	7.03	8.02	9.50	10.98	12.77	7/8	2.24	0.82
8	9.18	10.17	11.75	13.23	14.92	7/8	2.28	0.82
10	11.23	12.22	14.00	15.70	16.97	7/8	2.37	0.93
12	13.33	14.32	16.25	17.95	19.07	7/8	2.40	0.93
14	15.44	16.40	18.75	20.43	21.18	7/8	2.57	0.91
16	17.54	18.50	21.00	22.88	23.28	7/8	2.57	1.05
18	19.64	20.60	23.25	25.43	25.38	7/8	2.57	1.05
20	21.74	22.70	25.50	27.50	27.48	7/8	2.66	1.15
24	25.94	26.90	30.00	32.00	31.68	7/8	2.72	1.35
30	32.18	33.30	36.88	39.42	39.78	1-1/8	3.86	1.53
36	38.48	39.60	43.75	46.29	46.08	1-1/8	3.86	1.53
42	44.68	45.80	50.62	53.62	53.08	1-3/8	4.56	2.05
48	50.98	52.10	57.50	60.50	59.28	1-3/8	4.56	2.05

SERIES 1500 TDW - TUFGrip™ - APPLICATION CHART | Pressure Rating |

Size (Inches)	Part # - Gland Only 100% Domestic	Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland weight(lbs.)	Weight (w/Acc.)	DI Pipe	C-900 C-905	Pipe O.D.
4	603000	2	4	¾" x 3 ½"	7.1	11.8	350	*305/DR14	4.80
6	603005	3	6	¾" x 4"	11.2	18.8	350	*305/DR14	6.90
8	603010	3	6	¾" x 4"	13.1	20.3	350	*305/DR14	9.05
10	603015	6	8	¾" x 4"	26.0	32.5	350	*305/DR14	11.10
12	603020	8	8	¾" x 4"	31.5	40.4	350	*305/DR14	13.20
14	603025	10	10	¾" x 4 ½"	43.3	53.6	350	*235/DR18	15.30
16	603030	12	12	¾" x 4 ½"	54.1	66.3	350	*235/DR18	17.40
18	603035	12	12	¾" x 4 ½"	59.8	72.2	250	*235/DR25	19.50
20	603040	14	14	¾" x 4 ½"	69.8	83.8	250	*235/DR25	21.60
24	603045	16	16	¾" x 5"	90.4	106.9	250	*235/DR25	25.80

***Note: The pressure ratings are rated working water pressure for the restraint. See page 3 for additional ratings.**

ISO 9001-2015 Registered	Listed with Underwriters Laboratory	Factory Mutual Approved

STOP-LOOK :

- For Approvals, 3"-12" were tested at 3°of deflection, 14"-16" were tested at 2° of deflection, and 18"- 24" were tested at 1.5° of deflection; 4"- 16" inch tests were to 700 psi and 18"- 24" tests were to 500 psi.
- The Series 1500 TUF Grip is specified for use on PVC, Ductile, and HDPE Pipe but can be used on some sizes of cast grey iron or pit cast pipe if the pipe is not severely corroded, is in sound condition, and has an outside diameter compatible with the as provided dimensions.
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651.

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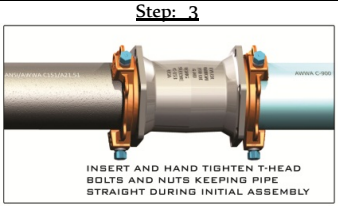
DOMESTIC PRODUCT SUBMITTAL

TUFGRIP™ DUAL WEDGE®
PATENT PENDING

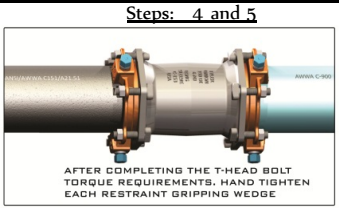
**SERIES 1500 TDW-TUF GRIP™ RESTRAINT RATINGS																
SIZE	Ductile Pipe	AWWA C900			AWWA C905			AWWA	ASTM D2241			HDPE* AWWA C906				
(Inches)	C151/A21.51	DR14	DR18	DR25	DR18	DR25	DR32.5	C909	SDR17	SDR21	SDR26	DR7.3	DR9	DR11	DR13.5	DR17
4	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
6	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
8	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
10	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
12	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
14	350	-	-	-	235	165	125	-	-	-	-	254	200	160	128	100
16	350	-	-	-	235	165	125	-	-	-	-	254	200	160	128	100
18	250	-	-	-	200	165	125	-	-	-	-	-	-	-	-	-
20	250	-	-	-	200	165	125	-	-	-	-	-	-	-	-	-
24	250	-	-	-	165	165	125	-	-	-	-	-	-	-	-	-
**Note: Pressure Ratings for Ordinary Water Works Restraint Applications with Transitory Surges Only																
**Note: AWWA C909 PVCO Restraint Pressure Rating is per the Pressure Rating Listed on the Pipe																
*Note: HDPE applications require a separate stiffener ring, 4”- 16” for DI OD Pipe and 4”-12” for IPS OD Pipe																

Steps: 1 and 2

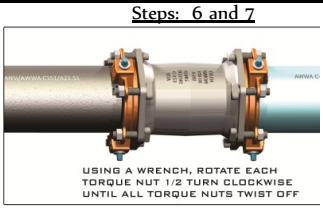
Step: 3



Steps: 4 and 5



Steps: 6 and 7



1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the Orange TUF Grip onto the beveled end of the pipe to be restrained. The TUF Grip compression lip extension must be toward the beveled end of the pipe being restrained.
2. Evenly lubricate the beveled pipe end, exterior pipe wall, and inside surface of the gasket with a lubricant that meets the requirements of AWWA C111. Now place the **MJ gasket over the plain beveled end of the pipe with the narrow edge of the tapered gasket toward the pipe end. **NOTE: Use MJ transition gasket with IPS diameter pipe.
3. Fully insert the beveled pipe end into the MJ socket pipe landing. Keeping the pipe straight in the MJ socket, slide/push the MJ gasket firmly and evenly into the MJ socket recess. Joint must be kept straight during assembly.
4. Push the TUF Grip compression lip extension evenly against the thick side of the MJ gasket and insert all T-Head bolts with nuts. Use only T-Head bolts and nuts that meet AWWA C111 requirements. With the TUF Grip restraint lip extension against the MJ gasket, evenly hand-tighten the nuts on the T-Head bolts making sure the restraint body is centered on the pipe and within the MJ socket. If joint deflection is needed, deflect the pipe only after hand tightening of all nuts is completed. Joint deflection is 3° max for 4”-12”, 2° max for 14”-16”, 1.5° max for 18”- 24”. NOTE: Maximum deflection values provided apply with nominal pipe, fitting, and restraint diameters.
5. Using a wrench, tighten the T-Head bolts and nuts a few turns at a time in an alternating or star pattern. Maintain equal spacing or distance between the TUF Grip bolt flange and the MJ socket bolt flange as the MJ gasket is compressed. Repeat the process in an alternating pattern for all T-Head bolts and nuts. The T-Head bolt and nut torque requirement is 75 - 90 ft-lb for 4”- 24”.
   NOTE: The C909 PVCO T-Head bolt and nut torque is 55 - 65 ft-lb for 4”- 8” and 65 - 75 ft-lb for 10”- 12” restraints.
   DO NOT OVER-TORQUE T-HEAD BOLTS and NUTS WHEN ASSEMBLING PVC and PVCO PIPE!
6. **Hand-tighten the torque limiting nuts attached to the TUF Grip wedge assemblies in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque nut is indicated by recessed arrow on the face of the nut. With a wrench (box, socket, or pneumatic), continue to tighten each torque nut ½ turn in an alternating or star pattern around the restraint until all torque limiting nuts twist off. NEVER turn a torque limiting nut more than ½ turn without turning the remaining torque nuts an equal amount! **NOTE: For IPS and PVCO applications, ensure step 5 is completed before engaging wedges. Failure to comply will result in excessive pipe wall deflection and torque nuts will not twist off as designed.
7. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.

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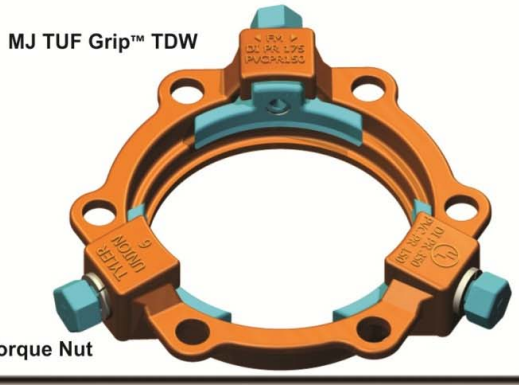
Quality Waterworks Products

NON-DOMESTIC PRODUCT SUBMITTAL

TUFGRIP™ DUAL WEDGE®
PATENT PENDING

Series 1500 DUAL WEDGE® - For PVC, Ductile, and HDPE Pipe
" A Proven Third Generation Mechanical Joint Restraint"



TYLER UNION®
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Tyler Union's TUF Grip restraint represents the culmination of 20 years of engineering and testing. As a 3rd generation restraint, TUF Grip is the best available technology in the Waterworks market for use in restraining PVC, Ductile, and HDPE Pipe.

"BETTER BY DESIGN"

SPECIFICATIONS:

- Proven to restrain plain end PVC, Ductile iron, and HDPE pipe in diameters 4" - 24". **Note: IPS diameter pipe requires the use of an MJ Transition gasket
- Restraint design conforms with applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153, and ANSI/AWWA C110
- Restraint engineered for securing plain end pipe to mechanical joint fittings conforming to ANSI/AWWA C110, C111, and C153
- Cast of ASTM A536 compliant 65-45-12 ductile iron complete with a cast on date code and country of origin for traceability
- Restraints and all components are designed and proven for a 2:1 safety factor based on the pipe pressure rating
- Restraint deflection rating when installed on nominal diameter pipe: 3° max for 4"-12", 2° max for 14"-16", and 1.5° max for 18"- 24"
- Standard coating for Non-Domestic restraint is 4 - 6 mil of enamel paint
- Gripping wedges are heat treated to a mininum 420 Brinell Hardness
- Gripping wedge, wedge collar bolt, and twist off torque limiting nut shall be e-coated
- FM approved for 4" - 12" applications and UL listed and approved for 4" - 24" applications
- Not recommended for use on plain end fittings
- Color coded orange for use on multiple classes of pipe and to distunguish from traditional restraints.

FEATURES & ADVANTAGES:

- Torque limiting nut on gripping wedge assembly twists off within a designed torque range eliminating the need for specialized tools
- Gripping wedge assembly pivots providing stronger engagement of pipe wall at lower torque requirement (45 - 60 ft-lb)
- Proven restraint technology utilizing fewer gripping wedges in frequently applied diameters, reducing trench time and project cost
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Approved for use on multiple classes of pipe – **Pressure ratings and associated pipe classes provided on the following pages**
- Suitable for potable and wastewater applications
- Controlled wedge contour to accommodate contact circumference when assembled on different types of pipe.

ISO 9001-2015 Registered	Listed with Underwriters Laboratory	Factory Mutual Approved

Product Source/Type	Name of Project	Name of Contractor	Project Engineer	Spec. Section and/or Project No.

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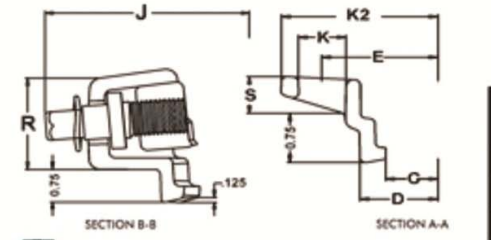
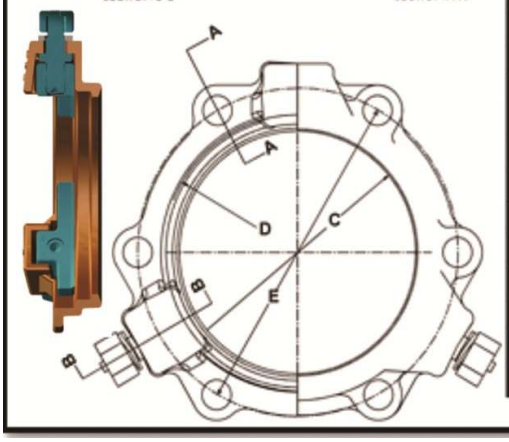
TUFGRIP™ DUAL WEDGE®
PATENT PENDING

"Better By Design"

Series 1500 DUAL WEDGE®- PVC, Ductile, and HDPE Restraint





TUFGrip™ MJ Restraint Dimensions

Size (inches)	C	D	E	K2	J	K	R	S
3	4.08	4.88	6.19	7.67	9.82	3/4	2.20	0.86
4	4.93	5.92	7.50	8.98	10.67	7/8	2.20	0.73
6	7.03	8.02	9.50	10.98	12.77	7/8	2.24	0.82
8	9.18	10.17	11.75	13.23	14.92	7/8	2.28	0.82
10	11.23	12.22	14.00	15.70	16.97	7/8	2.37	0.93
12	13.33	14.32	16.25	17.95	19.07	7/8	2.40	0.93
14	15.44	16.40	18.75	20.43	21.18	7/8	2.57	0.91
16	17.54	18.50	21.00	22.88	23.28	7/8	2.57	1.05
18	19.64	20.60	23.25	25.43	25.38	7/8	2.57	1.05
20	21.74	22.70	25.50	27.50	27.48	7/8	2.66	1.15
24	25.94	26.90	30.00	32.00	31.68	7/8	2.72	1.35
30	32.18	33.30	36.88	39.42	39.78	1-1/8	3.86	1.53
36	38.48	39.60	43.75	46.29	46.08	1-1/8	3.86	1.53
42	44.68	45.80	50.62	53.62	53.08	1-3/8	4.56	2.05
48	50.98	52.10	57.50	60.50	59.28	1-3/8	4.56	2.05

SERIES 1500 TDW - TUFGrip™ - APPLICATION CHART

Size (Inches)	Part # - Gland Only Non-Domestic	Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland weight(lbs.)	Weight (w/Acc.)	Pressure Rating DI Pipe	C-900 C-905	Pipe O.D.
4	602000	2	4	¾" x 3 ½"	7.1	11.8	350	*305/DR14	4.80
6	602005	3	6	¾" x 4"	11.2	18.8	350	*305/DR14	6.90
8	602010	3	6	¾" x 4"	13.1	20.3	350	*305/DR14	9.05
10	602015	6	8	¾" x 4"	26.0	32.5	350	*305/DR14	11.10
12	602020	8	8	¾" x 4"	31.5	40.4	350	*305/DR14	13.20
14	602025	10	10	¾" x 4 ½"	43.3	53.6	350	*235/DR18	15.30
16	602030	12	12	¾" x 4 ½"	54.1	66.3	350	*235/DR18	17.40
18	602035	12	12	¾" x 4 ½"	59.8	72.2	250	*235/DR25	19.50
20	602040	14	14	¾" x 4 ½"	69.8	83.8	250	*235/DR25	21.60
24	602045	16	16	¾" x 5"	90.4	106.9	250	*235/DR25	25.80

***Note: The pressure ratings are rated working water pressure for the restraint. See page 3 for additional ratings.**

ISO 9001-2015 Registered	Listed with Underwriters Laboratory	Factory Mutual Approved

STOP-LOOK :

- For Approvals, 3"- 12" were tested at 3°of deflection, 14"- 16" were tested at 2° of deflection, and 18"- 24" were tested at 1.5° of deflection; 4"- 16" tests were to 700 psi and 18"- 24" tests were to 500 psi.
- The Series 1500 TUF Grip is specified for use on PVC, Ductile, and HDPE Pipe but can be used on some sizes of cast grey iron or pit cast pipe if the pipe is not severely corroded, is in sound condition, and has an outside diameter compatible with the as provided dimensions.
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651.

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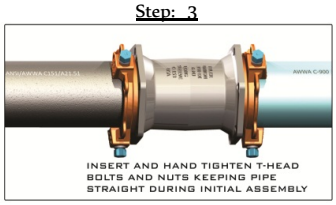
PRODUCT SUBMITTAL

TUFGRIP™ DUAL WEDGE®
PATENT PENDING

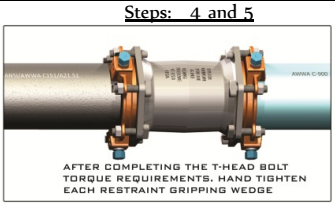
**SERIES 1500 TDW-TUF GRIP™ RESTRAINT RATINGS																
SIZE	Ductile Pipe	AWWA C900			AWWA C905			AWWA C909	ASTM D2241			HDPE* AWWA C906				
(Inches)	C151/A21.51	DR14	DR18	DR25	DR18	DR25	DR32.5		SDR17	SDR21	SDR26	DR7.3	DR9	DR11	DR13.5	DR17
4	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
6	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
8	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
10	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
12	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
14	350	-	-	-	235	165	125	-	-	-	-	254	200	160	128	100
16	350	-	-	-	235	165	125	-	-	-	-	254	200	160	128	100
18	250	-	-	-	200	165	125	-	-	-	-	-	-	-	-	-
20	250	-	-	-	200	165	125	-	-	-	-	-	-	-	-	-
24	250	-	-	-	165	165	125	-	-	-	-	-	-	-	-	-
**Note: Pressure Ratings for Ordinary Water Works Restraint Applications with Transitory Surges Only																
**Note: AWWA C909 PVCO Restraint Pressure Rating is per the Pressure Rating Listed on the Pipe																
*Note: HDPE applications require a separate stiffener ring. 4"- 16" for DI OD Pipe and 4"- 12" for IPS OD Pipe																

Steps: 1 and 2

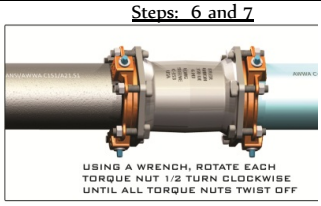
Step: 3



Steps: 4 and 5



Steps: 6 and 7



1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the Orange TUF Grip onto the beveled end of the pipe to be restrained. The TUF Grip compression lip extension must be toward the beveled end of the pipe being restrained.
2. Evenly lubricate the beveled pipe end, exterior pipe wall, and inside surface of the gasket with a lubricant that meets the requirements of AWWA C111. Now place the **MJ gasket over the plain beveled end of the pipe with the narrow edge of the tapered gasket toward the pipe end. **NOTE: Use MJ transition gasket with IPS diameter pipe.
3. Fully insert the beveled pipe end into the MJ socket pipe landing. Keeping the pipe straight in the MJ socket, slide/push the MJ gasket firmly and evenly into the MJ socket recess. Joint must be kept straight during assembly.
4. Push the TUF Grip compression lip extension evenly against the thick side of the MJ gasket and insert all T-Head bolts with nuts. Use only T-Head bolts and nuts that meet AWWA C111 requirements. With the TUF Grip restraint lip extension against the MJ gasket, evenly hand-tighten the nuts on the T-Head bolts making sure the restraint body is centered on the pipe and within the MJ socket. If joint deflection is needed, deflect the pipe only after hand tightening of all nuts is completed. Joint deflection is 3° max for 4"-12", 2° max for 14"-16", 1.5° max for 18"- 24". NOTE: Maximum deflection values provided apply with nominal pipe, fitting, and restraint diameters.
5. Using a wrench, tighten the T-Head bolts and nuts a few turns at a time in an alternating or star pattern. Maintain equal spacing or distance between the TUF Grip bolt flange and the MJ socket bolt flange as the MJ gasket is compressed. Repeat the process in an alternating pattern for all T-Head bolts and nuts. The T-Head bolt and nut torque requirement is 75 - 90 ft-lb for 4"- 24".
   NOTE: The C909 PVCO T-Head bolt and nut torque is 55 - 65 ft-lb for 4"- 8" and 65 - 75 ft-lb for 10"-12" restraints.
   DO NOT OVER-TORQUE T-HEAD BOLTS and NUTS WHEN ASSEMBLING PVC and PVCO PIPE!
6. **Hand-tighten the torque limiting nuts attached to the TUF Grip wedge assemblies in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque nut is indicated by a recessed arrow on the face of the nut. With a wrench (box, socket, or pneumatic), continue to tighten each torque nut ½ turn in an alternating or star pattern around the restraint until all torque limiting nuts twist off. NEVER turn a torque limiting nut more than ½ turn without turning the remaining torque nuts an equal amount! **NOTE: For IPS and PVCO applications, ensure step 5 is completed before engaging wedges. Failure to comply will result in excessive pipe wall deflection and torque nuts will not twist off as designed.
7. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.

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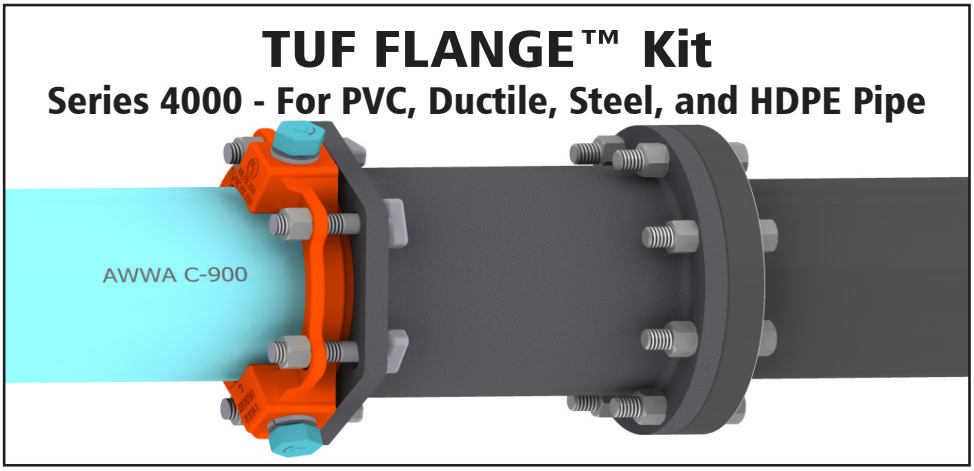
"BETTER BY DESIGN"

TUF FLANGE™ Kit

Series 4000 - For PVC, Ductile, Steel, and HDPE Pipe



SPECIFICATION:

- TUF FLANGE™ Kit restrains plain end PVC, Ductile Iron, Steel, and HDPE pipe to flanged fittings, where the flange conforms to ANSI/AWWA C111, ANSI/AWWA C110
- Design conforms with applicable requirements of ANSI/AWWA C111, ANSI/AWWA C110, ANSI/AWWA C153, ANSI B16.1 class 125
- Material compliant with ASTM A536 Ductile iron grade 65-45-12 / 70-50-05 / 60-42-10
- Cast on date code with country of origin for traceability.
- 2:1 safety factor. PVC and HDPE based on pipe pressure rating. 350 PSI rating for sizes 4" - 12"
- Restraint deflection rating when installed on nominal diameter pipe: 3° max for 4" - 12"
- Standard coating for restraint gland is 4-6 mil of TUF Bond™ (thermoset polyester for impact, corrosion, and UV protection), Adapter 2-3 mil of Black Asphaltic coating
- UL and FM approved for 4" - 12"
- Pipe can be field cut. Minimum insertion depth required for deflection
- Not recommended for use on plain end fittings
- T-bolts/Nut are produced from high strength low alloy steel per ANSI/AWWA C111/A21.11
- Gripping wedges are heat treated to a minimum 420 Brinell hardness

FEATURES & ADVANTAGES

- No special tools required for assembly
- Plain end pipe doesn't need to be square cut
- Can be used with steel diameter pipe 4" - 12", transition gasket required
- Accommodates pipe misalignment
- Assembly uses industry standard MJ and Flange gaskets made of SBR (styrene butadiene rubber) per ANSI/AWWA C111
- Suitable for potable and wastewater applications

Country of Origin Options:

☐ Domestic ☐ Non-Domestic

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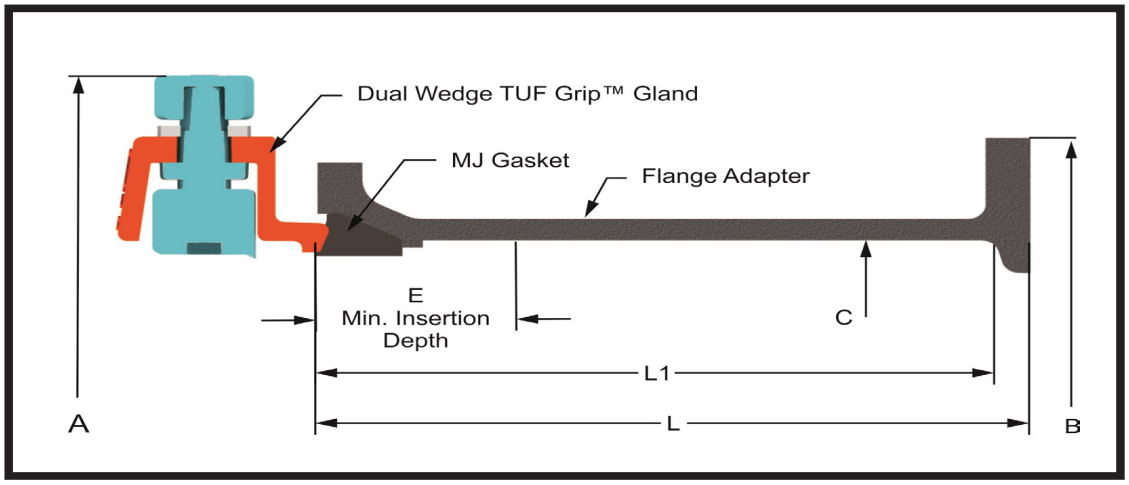

SERIES 4000 Dimensions and Application Chart										
Size (Inches)	Pipe O.D.	A	B	C	E	L	L1	T-Head Bolt Qty.	Bolt Size	Weight (w/Acc.)
4	4.50 - 4.80	10.67	9.0	5.35	2.5	10.0	9.5	4	¾" x 3-1/2"	45
6	6.63 - 6.90	12.77	11.0	7.45	2.5	10.0	9.5	6	¾" x 4"	60
8	8.63 - 9.12	14.92	13.5	9.65	2.5	10.0	9.5	6	¾" x 4"	75
10	10.75 - 11.10	16.97	16.0	11.81	2.5	10.0	9.5	8	¾" x 4"	103
12	12.75 - 13.20	19.07	19.0	13.89	2.5	10.0	9.5	8	¾" x 4"	130

*SERIES 4000 TUF FLANGE™ Pressure Ratings													
SIZE (Inches)	**Ductile Pipe**	AWWA C900			AWWA C909	ASTM D2241			HDPE** AWWA C906				
	C151/A21.51	DR14	DR18	DR25		SDR17	SDR21	SDR26	DR7.3	DR9	DR11	DR13.5	DR17
4	**350**	**305**	**235**	**165**	**235/150***	**250**	**200**	**160**	**254**	**200**	**160**	**128**	**100**
6	**350**	**305**	**235**	**165**	**235/150***	**250**	**200**	**160**	**254**	**200**	**160**	**128**	**100**
8	**350**	**305**	**235**	**165**	**235/150***	**250**	**200**	**160**	**254**	**200**	**160**	**128**	**100**
10	**350**	**305**	**235**	**165**	**235/150***	**250**	**200**	**160**	**254**	**200**	**160**	**128**	**100**
12	**350**	**305**	**235**	**165**	**235/150***	**250**	**200**	**160**	**254**	**200**	**160**	**128**	**100**
***Note: Pressure Ratings for Ordinary Water Works Restraint Application with Transitory Surges Only**													
*Note: AWWA C909 PVCO Restraint Pressure Rating is per the Pressure Rating Listed on the Pipe													
**Note: HDPE applications require a separate stiffener ring, 4"- 12" for DI OD Pipe & 4"- 12" for IPS OD Pipe													

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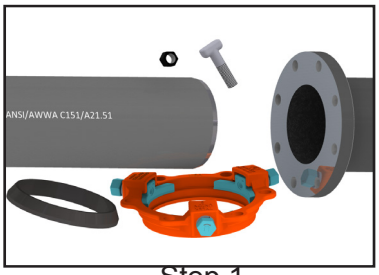
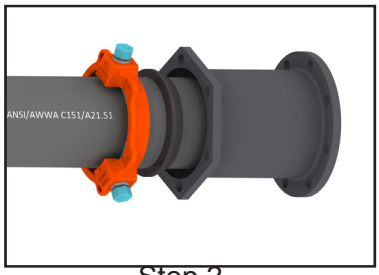
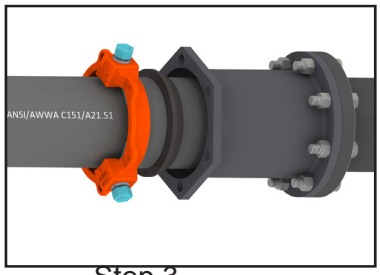
Assembly Steps - Series 4000 TUF FLANGE™



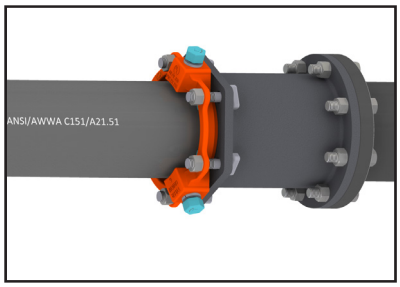
Step 1



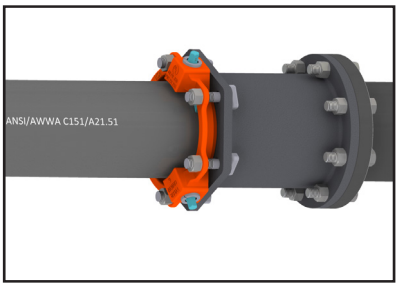
Step 2



Step 3



Step 4



Step 5

1. Check the kit to ensure no parts are damaged or missing. Cut pipe to the length required. Remove debris and excess paint from pipe end and flange face using a wire brush or rag.
2. Slide Orange TUF Grip onto plain end of pipe. The TUF Grip compression lip extension must be toward the cut end of the pipe. Evenly lubricate the pipe end, exterior pipe wall, and inside surface of the gasket with a lubricant that meets the requirements of AWWA C111. Now place the **MJ gasket over the plain end of the pipe with the narrow edge of the tapered gasket toward the pipe end. **NOTE: Use transition gasket with IPS diameter pipe. Slide the Flange Adapter over the plain end of the pipe. Minimum insertion depth required is 2.5” for 4” - 12” in order to accommodate the maximum deflection of the joint.
3. Connect the flange end with the adjacent flange making sure bolt holes line up. NOTE: Flange kit is not provided with the TUF FLANGE™. Complete flange assembly before moving to step 4.
4. Slide/Push MJ gasket firmly and evenly into MJ socket recess. Push the TUF Grip compression lip extension evenly against the thick side of the MJ gasket and insert all T-Head bolts with nuts. Use only T-Head bolts and nuts that meet AWWA C111 requirements. With the TUF Grip restraint lip extension against the MJ gasket, evenly hand-tighten the nuts on the T-Head bolts making sure the restraint body is centered on the pipe and within the MJ socket. Using a wrench, tighten the T-Head bolts and nuts a few turns at a time in an alternating or star pattern. Maintain equal spacing or distance between the TUF Grip bolt flange and the MJ socket bolt flange as the MJ gasket is compressed. Repeat the process in an alternating pattern for all T-Head bolts and nuts. The T-Head bolt and nut torque requirement for restraints is 75-90 ft-lb for 4” - 12”.
5. **Hand-tighten the torque limiting nuts attached to the TUF Grip wedge assemblies in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque nut is indicated by a recessed arrow on the face of the nut. With a wrench (box, socket, or pneumatic), continue to tighten each torque nut ½ turn in an alternating or star pattern around the restraint until all torque limiting nuts twist off. NEVER turn a torque limiting nut more than ½ turn without turning the remaining torque nuts an equal amount! **NOTE: For IPS and PVCO applications, ensure step 5 is completed before engaging wedges. Failure to comply will result in excessive pipe wall deflection and torque nuts will not twist off as designed.
6. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.

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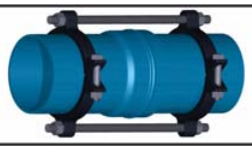

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33U- PVC Pipe to Pipe Bell to Spigot Restraint Series 3000PP Kits for 4" - 36" Applications 4" - 36" for DIOD & 4" - 12" for IPS

Revised 3/01/2017

FOR: Restraint of 4" - 36" DIOD AWWAC900/905 PVC Pipe to Pipe Bell to Spigot Applications (Black Clamps)
Restraint of 4" - 12" IPS PVC Pipe to Pipe Bell to Spigot Applications (Grey Clamps)

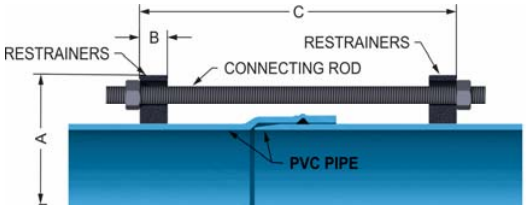
FEATURES and ADVANTAGES:

- Available in sizes 4" - 36" (IPS PVC pipe restraints available in 4" – 12" only)
- Restraints rated at the listed pressure on the PVC pipe with a 2:1 safety factor
- Full 360° contact, no pipe distortion or point loading
- To ease installation, restraints and pipe can be assembled outside the trench
- Connecting rods, hex nuts, T-head bolts consist of low alloy high strength steel and comply with applicable requirements of ANSI/AWWA C111/A21.11
- Clamping bolts are SAE Grade 5 and comply to applicable requirements of ANSI/AWWA C111/A21.11
- For easy identification, *IPS* pipe diameter clamps are GREY and *DI* pipe diameter clamps are BLACK

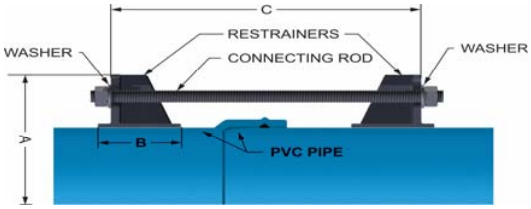
SAMPLE SPECIFICATIONS:

For use on water or wastewater piping systems subject to hydrostatic pressure and tested in accordance with ASTM D2774 or AWWA C600. All sizes of clamps are made of high strength grade 65-45-12 ductile iron in accordance with the requirements and specifications of ASTM A536. Restraint clamps internal serrations are machined to exact tolerances. Restrainers approved per applicable requirements of ASTM F1674, current revisions apply. Standard restraint is provided with an alkyd resin baking enamel. The 3000PP kit includes, 1) 2 each 3000C restrainers, 2) hex head bolts and hex nuts for restrainer assembly, and 3) threaded restrainer connecting rods with hex nuts and flat washers where applicable.

4" - 12" Assembly



14" - 36" Assembly



Nom Size	Series 3000PP For PVC Pipe With Ductile Pipe O.D.		Series 3000PP For PVC Pipe With IPS Pipe O.D.		*A	*B	*C Max.	Restraint Rods Connecting		Quantity, Sizing and Torque For Clamp Assembly Bolts (Torque in ft-lb)			WT
	Pipe Dia.	Part #	Pipe Dia.	Part #				Qty	Size	Qty	Size	Torque	lbs.
4	4.80	462422	4.50	462477	9.12	1.12	12.0	2	3/4 X 17	4	5/8 X 3 ½	100	15
6	6.90	462439	6.63	462484	11.12	1.12	13.0	2	3/4 X 17	4	5/8 X 3 ½	100	19
8	9.05	462446	8.63	462491	14.74	1.25	15.0	2	3/4 X 17	4	3/4 X 5	150	31
10	11.10	462453	10.75	462507	16.81	1.38	16.0	4	3/4 X 24	4	7/8 X 5	150	51
12	13.20	462460	12.75	462514	19.45	1.38	18.0	4	3/4 X 24	4	7/8 X 5	150	55
14	15.30	488033	N/A	N/A	22.54	4.00	24.0	6	3/4 X 30	8	7/8 X 6 ½	150	138
16	17.40	488040	N/A	N/A	24.66	4.00	28.0	6	3/4 X 30	8	7/8 X 6 ½	150	148
18	19.50	488057	N/A	N/A	26.64	5.06	28.0	8	3/4 X 30	8	1 X 8	175	207
20	21.60	488064	N/A	N/A	28.76	5.06	34.0	8	3/4 X 36	8	1-1/8 X 8 ½	200	265
24	25.80	488071	N/A	N/A	33.98	5.20	34.0	12	3/4 X 36	8	1-1/8 X 8 ½	225	407
30	32.00	498599	N/A	N/A	40.90	10.0	34.0	12	1 X 40	16	1-1/8 X 8 ½	250	605
36	38.30	498605	N/A	N/A	48.00	10.0	34.0	12	1 X 40	16	1-1/8 X 8 ½	250	670
Note: Approximate dimensions and weights													

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33U- PVC Pipe to Pipe Bell to Spigot Restraint Series 3000PP Kits for 4" - 36" Applications 4" - 36" for DIOD & 4" - 12" for IPS

Revised 3/01/2017

Installation Instructions for Sizes 4" – 36" Series 3000PP:

Figure 1

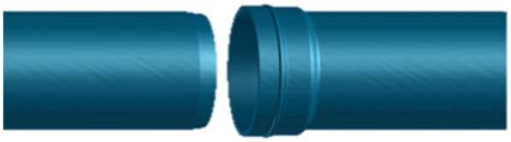

Figure 2

Figure 3

Figure 4

Step (1): Assemble pipe per Figure 1 making sure the spigot end of the pipe is fully seated in the bell end of the pipe.

Step (2): Assemble first restrainer on the bell end of the pipe joint and using one of the connecting rods (included) as a guide, mark the location for the spigot restrainer per Figure 2.

Step (3): Assemble the spigot restrainer leaving sufficient threads on each end of the connecting rod to fully install washer (where provided) and fully engage nut per Figure 3. Tighten the restrainer clamp assembly bolts on each side evenly to the recommended torque maintaining even gaps between the clamp pads.

Step (4): Connect both restrainers per Figure 4 utilizing the threaded restrainer connecting rods provided. Place a flat washer (where provided) over onto connecting rods and against the restrainer ear. Install hex nuts on the connecting rods and hand tighten all hex nuts to hand tight plus 1/2 turn. Do not over tighten connecting rod retaining hex nuts thus forcing the spigot further into the joint.

Suggested hex head bolt and nut *torque recommendations for assembly of the 3000C restrainers is as provided
NOTE: For best results use the lower end of the recommended torque range for DR 41 and DR 51 PVC pipe

***100 ft-lb for 4"-6" / 150 ft-lb for 8"-12" / 150-200 ft-lb for 14"-16"**

175-225 ft-lb for 18" / 200-250 ft-lb for 20" / 225-275 ft-lb for 24" / 250-300 ft-lb for 30"-36"

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34U- PVC Pipe to Mechanical Joint Fitting Restraint
Series 3000MJ Kits for 4"-36" Applications
Sizes 4" - 36" for DIOD and 4" - 12" for IPS Pipe

Revised 3/01/2017

FOR: Restraint of AWWA C900/905 PVC pipe in sizes 4" - 36" to Mechanical joint AWWA C153/C110 ductile iron fittings
Restraint of *IPS diameter ASTM D2241 PVC pipe in sizes 4" - 12" to Mechanical joint AWWA C153/C110 ductile iron fittings
*NOTE: Transition gasket required for IPS diameter ASTM D2241 PVC pipe
NOTE: 4" – 16" restraints and accessories provided in boxed kits. Sizes larger than 16" will be provided with accessories kitted separate from the restraint and gland.

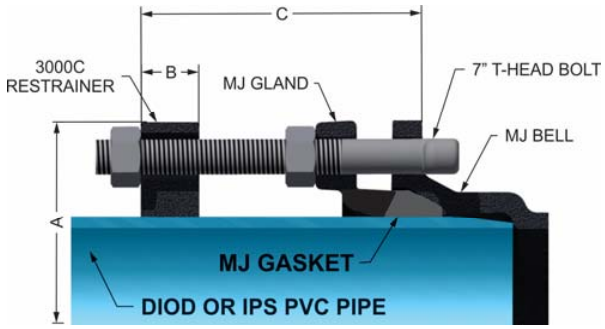
FEATURES and ADVANTAGES:

- Available for PVC sizes 4" - 36" for both ductile iron outside diameter (DIOD) pipe or iron pipe size (IPS) outside diameter pipe
- Restraints and fasteners rated at the listed pressure on the PVC pipe and restraint shall have a 2:1 safety factor
- Full 360° contact, no pipe distortion or point loading
- Connecting T-head bolts or threaded rods, clamp assembly bolts, and hex nuts consist of low alloy high strength steel and comply with applicable requirements of ANSI/AWWA C111/A21.11.
- System pressure rating *305 psi for DR14i, *235 psi for DR18, *165 psi for DR25.
- For easy identification, *IPS* pipe diameter clamps are GREY and *DI* pipe diameter clamps are BLACK

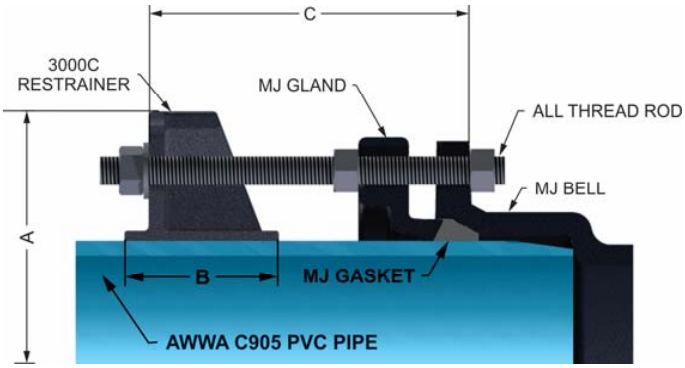
SAMPLE SPECIFICATIONS:

All clamps are made of high strength grade 65-45-12 ductile iron in accordance with the requirements and specifications of ASTM A536. Clamps coated with alkyd resin based baking enamel. Clamps provide 360 degree contact with the PVC pipe and internal serrations are machined to exact tolerances. Restrainers approved per applicable requirements of ASTM F1674, current revisions apply. Kits include, 1 each 3000C restrainer, hex head clamping bolts and nuts for restrainer assembly, NSF approved MJ or transition gasket, mechanical joint gland and restraint to fitting T-head bolts or connecting threaded rods with hex nuts. For use on water or wastewater pipelines subject to hydrostatic pressure and tested in accordance with ASTM D2774 or AWWA C600 as applicable.

4" - 12" Assembly



14" - 36" Assembly



Nominal Size	Series 3000MJ For PVC Pipe With Ductile Pipe O.D.		Series 3000MJ For PVC Pipe With IPS Pipe O.D.		*A	*B	*C Max.	Restraint Rods Connecting		Quantity, Sizing and Torque For Clamp Assembly Bolts			*Kit (lbs.)
	Pipe O.D.	DIOD Part #.	Pipe O.D.	IPS Part #.				Qty	Size	Qty	Size	Torque	
4	4.80	462576	4.50	512899	9.12	1.12	6.00	2	3/4 X 7	2	5/8 X 3 ½	100 ft-lb	14
6	6.90	462583	6.63	512905	11.12	1.12	6.00	2	3/4 X 7	2	5/8 X 3 ½	100 ft-lb	19
8	9.05	462590	8.63	512912	14.74	1.25	6.00	2	3/4 X 7	2	3/4 X 5	150 ft-lb	26
10	11.10	462606	10.75	512875	16.81	1.38	6.00	4	3/4 X 7	2	7/8 X 5	150 ft-lb	39
12	13.20	462613	12.75	512882	19.45	1.38	6.00	4	3/4 X 7	2	7/8 X 5	150 ft-lb	42
14	15.30	CALL	N/A	N/A	22.54	4.00	15.00	6	3/4 X 17	4	7/8 X 6 ½	150 ft-lb	92
16	17.40	CALL	N/A	N/A	24.66	4.00	15.00	6	3/4 X 17	4	7/8 X 6 ½	150 ft-lb	97
18	19.50	CALL	N/A	N/A	26.64	5.06	15.00	8	3/4 X 17	4	1 X 8	175 ft-lb	143
20	21.60	CALL	N/A	N/A	28.76	5.06	22.00	8	3/4 X 24	4	1-1/8 X 8 ½	200 ft-lb	169
24	25.80	CALL	N/A	N/A	33.98	5.20	22.00	12	3/4 X 24	4	1-1/8 X 8 ½	225 ft-lb	224
30	32.00	CALL	N/A	N/A	40.90	10.00	22.00	12	1 X 24	8	1-1/8 X 8 ½	250 ft-lb	408
36	38.30	CALL	N/A	N/A	48.00	10.00	22.00	12	1 X 24	8	1-1/8 X 8 ½	250 ft-lb	500

*Note: Approximate dimensions and weights

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34U- PVC Pipe to Mechanical Joint Fitting Restraint Series 3000MJ Kits for 4"-36" Applications Sizes 4" - 36" for DIOD and 4" - 12" for IPS Pipe

Revised 3/01/2017

Installation Instructions for Sizes 4" – 12" Series 3000MJ:

Figure 1 Figure 2 Figure 3 Figure 4 Figure 5

Step (1): Assemble the mechanical joint, installing gasket, gland, and T-head bolts per AWWA C600 standard, leave out the T-head bolt corresponding to the restrainer ears per Figure 1.

Step (2): Per Figure 2, use a 7" T-head bolt (included) as a guide and mark the location on the pipe where the restrainer will be assembled.

Step (3): Assemble restrainer per Figure 3, leaving sufficient threads on the end of the T-head bolt to fully engage nut.

Step (4): Tighten the restrainer clamp assembly bolts on each side evenly to the recommended torque maintaining even gaps between the clamp pads. (100 ft-lb for 4"-6" and 150 ft-lb for 8"-12")

Step (5): Connect restrainer to fitting per Figure 5. Insert the 7" T-head bolt (bolt and 2 hex nuts provided) through the bolt flange installing a hex nut between the gland and restrainer. Tighten the hex nut up to the gland per AWWA C600 standard. Tighten the second hex nut up to the restrainer as show in Figure 5. Use additional hex nuts (not included) on the inside of the restrainer ear if joint is expected to contract.

Installation Instructions for Sizes 14" – 36" Series 3000MJ:

Figure 1 Figure 2 Figure 3 Figure 4

Step (1): Assemble the mechanical joint, installing gasket, gland, and T-head bolts per AWWA C600 standard, leave out the T-head bolt corresponding to the restrainer ears per Figure 1.

Step (2): Per Figure 2, use a connecting rod (included) as a guide and mark the location on the pipe where the restrainer will be assembled.

Step (3): Assemble restrainer per Figure 3, leaving sufficient threads on the end of the connecting rod to fully install washer and fully engage hex nut. Tighten the restrainer clamp assembly bolts on each side evenly to the recommended torque maintaining even gaps between the clamp pads. (150-200 ft-lb for 14"-16", 175-225 ft-lb for 18", 200-250 ft-lb for 20", 225-275 ft-lb for 24", 250-300 ft-lb for 30", and 250-300 ft-lb for 36")

Step (4): Connect restrainer to fitting per Figure 4. Inserting the rods through the restrainer ears (rod and 3 hex nuts provided for each ear), gland, and fitting bolt hole. Install one hex nut behind fitting bell, one hex nut against the gland and one hex nut behind the restrainer ear against the washer. Tighten hex nut up to gland per AWWA C600 standard. Use additional hex nuts (not included) on the inside of the restrainer ear if joint is expected to contract.

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35U- PVC Pipe to Push-On Fitting Restraint
Series 3000PO Kits for 4" - 12" Applications
4" - 12" for DIOD Diameter PVC
4" - 12" for IPS Diameter PVC

Revised 3/01/2017

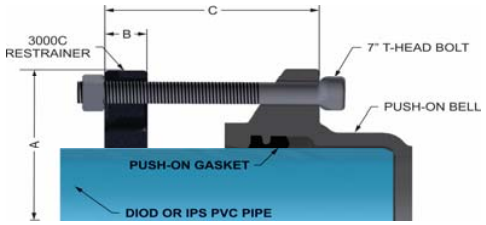
FOR: Restrains AWWA C900 PVC pipe in sizes 4" – 12" to Push-on AWWA C153 ductile iron fittings
Restrains *IPS diameter PVC pipe in sizes 4" – 12" to Push-on AWWA C153 ductile iron fittings. ***Transition gasket required**

FEATURES and ADVANTAGES:

- Available for PVC sizes 4" - 12" for both ductile iron outside diameter (DIOD) pipe or iron pipe size (IPS) outside diameter pipe
- Restraints and fasteners rated at the listed pressure on the PVC pipe and restraint shall have a 2:1 safety factor
- Full 360° contact, no pipe distortion or point loading
- Connecting T-head bolts, clamp assembly bolts, and hex nuts consist of low alloy high strength steel and comply with applicable requirements of ANSI/AWWA C111/A21.11.
- System pressure rating *305 psi for DR14i, *235 psi for DR18, *165 psi for DR25. *Derated if all T-head bolts provided cannot be installed
- For easy identification, *IPS* pipe diameter clamps are GREY and *DI* pipe diameter clamps are BLACK

SAMPLE SPECIFICATIONS:

All clamps are made of high strength grade 65-45-12 ductile iron in accordance with the requirements and specifications of ASTM A536. Clamps coated with alkyd resin based baking enamel. Clamps provide 360 degree contact with the PVC pipe and internal serrations are machined to exact tolerances. Restrainers approved per applicable requirements of ASTM F1674, current revisions apply. Kits include, 1 each 3000C restrainer, 2 each hex head clamping bolts and nuts for restrainer assembly, and restraint to fitting connecting T-head bolts and hex nuts. For use on water or wastewater pipelines subject to hydrostatic pressure and tested in accordance with ASTM D2774 or AWWA C600. *Note: 10" and 12" fittings may have a single top/bottom restraining lug, contact Tyler Union for restraint pressure rating



4" - 12" Assembly

Nominal Pipe Size	Series 3000PO For PVC Pipe With Ductile Pipe O.D.		Series 3000PO For PVC Pipe With IPS Pipe O.D.		*A	*B	C Max.	T-head Connecting Bolt		Quantity, Sizing and Torque For Clamp Assembly Bolts			Kit lbs.
	Nom. Pipe O.D.	DIOD Part #	Nom. Pipe O.D.	IPS Part #				Qty	Size	Qty	Size	Torque	Wt.
4"	4.80	462521	4.50	CALL	9.12	1.12	6.00	2	3/4 X 7	2	5/8 X 3 ½	100 ft-lb	8
6"	6.90	462538	6.63	CALL	11.12	1.12	6.00	2	3/4 X 7	2	5/8 X 3 ½	100 ft-lb	10
8"	9.05	462545	8.63	CALL	14.74	1.25	6.00	2	3/4 X 7	2	3/4 X 5	150 ft-lb	15
10"	11.10	462552	10.75	CALL	16.81	1.38	6.00	4	3/4 X 7	2	7/8 X 5	150 ft-lb	24
12"	13.20	462569	12.75	CALL	19.45	1.38	6.00	4	3/4 X 7	2	7/8 X 5	150 ft-lb	26

*Note: Approximate dimension

Installation Instructions for Sizes 4" – 12" Series 3000PO:

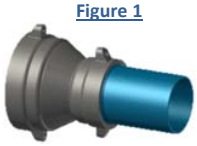
Figure 1 

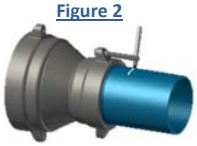
Figure 2 

Figure 3 

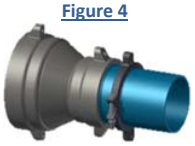
Figure 4 

Figure 5 

Step (1): Figure 1, Push-On joint assembly per AWWA C600 - make sure the pipe spigot is beveled, ensure the fitting gasket seat is clean and dry prior to joint assembly. Insert the gasket into the fitting gasket seat and evenly lubricate the inside surface of the gasket only. Confirm the exterior pipe wall of the spigot end of the pipe is clean and free from raised or rough areas. Keeping the pipe straight with the fitting socket, insert the spigot end of the pipe fully against the pipe stop inside the fitting socket.

Step (2): Per Figure 2, use a 7" T-head bolt (included) as a guide and mark the location on the pipe where the restrainer will be assembled.

Step (3): Assemble restrainer per Figure 3, leaving sufficient threads on the end of the T-head bolt to fully engage nut.

Step (4): Tighten the restrainer clamp assembly bolts on each side evenly to the recommended torque maintaining even gaps between the clamp pads. (100 ft-lb for 4"-6" and 150 ft-lb for 8"-12")

Step (5): Connect restrainer to fitting per Figure 5. Insert the 7" T-head bolt (bolts and hex nuts provided) through the fitting ear and tighten the hex nut up to the restrainer hand tight plus a half turn. Do not over tighten T-head bolts thus forcing the spigot further into the joint.

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TYLER UNION®
Quality Waterworks Products

36U- PVC Pipe to Pipe Bell to Spigot Restraint
Series 3000PP Kits for 4" - 36" Applications
4" - 36" for DIOD & 4" - 12" for IPS

Revised 3/01/2017

FOR: Use as a PVC pipe stop for pipe to pipe bell to spigot joints on 4" – 16" DIOD AWWA C900/C905/C909 pipe
*Use as a PVC pipe stop for pipe to pipe bell to spigot joints on 4" – 12" IPS D2241 pipe
*Use as a PVCO pipe stop for pipe to pipe bell to spigot joints on 4" – 12" IPS AWWA C909 pipe
*NOTE: Requires MJ transition bell stop ring

USE:

Improper installation such as over-insertion of a PVC/PVCO pipe to pipe bell to spigot joint can cause damage to pipe bells, reduction in joint deflection, and joint leaks. The 3000PS properly installed will allow the joint to assemble as designed

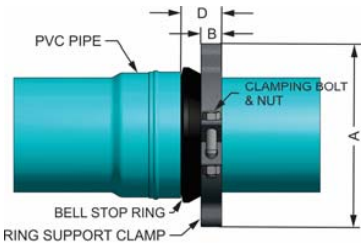
FEATURES and ADVANTAGES:

- Available in sizes 4" - 16" (Ring support clamps for IPS PVC/PVCO pipe available in 4" – 12" only)
- Full 360° contact, no pipe distortion or point loading
- To ease installation, ring support clamp can be assembled on the piping outside the trench
- Clamping bolts comply with applicable ANSI/AWWA C111/A21.11 requirements
- For easy identification, *IPS* pipe diameter clamps are GREY and *DI* pipe diameter clamps are BLACK

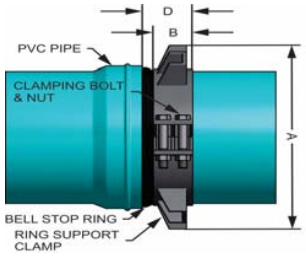
SAMPLE SPECIFICATIONS:

Ring support clamps are made of high strength grade 65-45-12 ductile iron in accordance with the requirements and specifications of ASTM A536 and the standard coating is an alkyd resin baking enamel. Restraint internal serrations are machined to exact tolerances. Serrated restraint clamps shall be used to grip the pipe spigot and be capable of being installed bi-directional. Rubber bell stop ring is NSF 61 approved.

4" - 12" Assembly



14" - 16" Assembly



Nominal Size	Series 3000PS for PVC/PVCO Pipe With Ductile Pipe O.D.		Series 3000PS For PVC/PVCO Pipe With IPS Pipe O.D.		*A	*B	**D	Quantity, Sizing and Torque For Clamp Assembly Bolts			Clamp Weight	Kit Weight
	Pipe O.D.	Part #	Pipe O.D.	Part #			DIOD/IPS	Qty	Size	Bolt Torque		
4	4.80	538981	4.50	CALL	9.12	1.12	2.34 /2.38	2	5/8 X 3 ½	100 ft-lb	4.5	6.0
6	6.90	538998	6.63	CALL	11.12	1.12	2.34 /2.37	2	5/8 X 3 ½	100 ft-lb	6.5	7.9
8	9.05	539001	8.63	CALL	14.74	1.25	2.47 /2.52	2	3/4 X 5	150 ft-lb	10.0	13.0
10	11.10	538967	10.75	CALL	16.81	1.38	2.60 /2.64	2	7/8 X 5	150 ft-lb	18.0	20.3
12	13.20	538974	12.75	CALL	19.45	1.38	2.60 /2.66	2	7/8 X 5	150 ft-lb	21.0	22.9
14	15.30	539018	N/A	N/A	22.54	4.00	5.22 /N/A	4	7/8 X 6 ½	150 ft-lb	43.5	45.0
16	17.40	539025	N/A	N/A	24.66	4.00	5.22 /N/A	4	7/8 X 6 ½	150 ft-lb	46.0	48.0
*Note: Approximate dimension							**Note: IPS dimensions for pipe bell stop rings are in red					

Figure 1

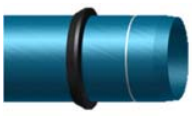


Figure 2

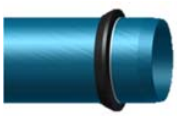


Figure 3

Figure 4

Step (1): Lube the inside diameter of the bell stop ring and slide the ring onto the plain end of the PVC pipe. The angled side of the gasket must face away from the end of the pipe to be assembled per Figure 1.

Step (2): Align the bell stop ring with the pipe manufacturer's reference line per Figure 2. If the pipe has been cut or the line is not visible, mark a line at the pipe manufacturers recommended distance.

Step (3): Assemble the 3000C ring support clamp at the end of the bell stop ring per Figure 3. Tighten the ring support clamping bolts on each side evenly, maintaining equal spacing between the clamp ring support pads on both sides. (Torque 4" – 6" clamp assembly bolts at 100 ft-lb and 8" – 12" clamp assembly bolts to 150 ft-lb)

Step (4): Complete PVC pipe joint assembly per manufacturer's assembly instructions.

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Instant Joint Restraint with McWane's new

SURE STOP 350® GASKET

TYLER UNION®
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SURE STOP 350® GASKETS

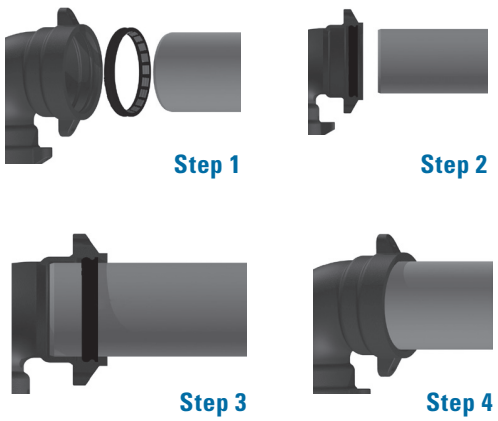
McWane's SURE STOP 350® GASKETS are a fast and easy way of restraining TYTON®, TRIM TYTON® or TYTON JOINT® pipe valves and fittings. The gaskets are suitable for water, wastewater, fire protection and other related applications. Simply install the gasket in a TYTON JOINT® pipe, valve or fitting socket and assemble the joint in accordance with proper procedures, and the joint is restrained for working pressures up to 350 psi. The gaskets are available in sizes 3"–24", and with a rating of 350 psi, they will meet or exceed the capabilities of ductile iron pipe, valves and fittings. SURE STOP 350® GASKETS are NSF 61 approved, UL listed and approved by FM Approvals. There is no need to use bolts, clamps, rods, thrust blocks or other restraining devices when you can use an easy push to restrain SURE STOP 350® GASKETS. SURE STOP 350® GASKETS are produced and tested in accordance with ANSI/AWWA C111/A21.11 and have a 350 psi pressure rating. The gaskets have been successfully tested at a minimum of 700 psi to nationally recognized listing agency requirements, as witnessed by independent testing agencies (certificates available upon request).

INSTALLATION NOTES

1. For ductile iron applications utilizing TYTON pipe, valves, and fittings made to AWWA standards.
2. In cold weather assembly, maintain the gasket temperature above 40° F.
3. The socket of the joint should be clean and free of debris (excess paint, cement, etc.).
4. Gasket should be properly seated in the bell socket.
5. Keep the pipe and joint in alignment during assembly. If installed out of alignment, the gasket can be pushed out of position, creating the potential for leaks and failures.
6. If deflection is wanted in the joint, deflect before fully inserting the joint.
7. Some extension of the joint will occur when pressurized. To avoid this, the joint should be pulled out after assembly to set the stainless teeth in the inserted pipe.
8. Once assembled, the joint can be disassembled using steel shims.
9. When cut pipe is used, the following steps are required:
   a. Ensure that the spigot end is properly beveled.
   b. Mark the joint depth on the spigot so it is clear when the joint is fully inserted.
   c. Ensure that the pipe meets the required dimensional tolerances as noted in the table to the right.
10. Do not reuse SURE STOP 350® GASKETS as they may have been damaged during any previous installation or during removal.
11. Do not use SURE STOP 350® GASKETS to conduct electricity through the pipe joint as they could be damaged and fail.
12. Do not use SURE STOP 350® GASKETS in above-ground applications.
13. Do not use SURE STOP 350® GASKETS with thick coatings on the pipe exterior.

PIPE SIZE	CIRCUMFERENCE		DIAMETER	
Nominal	Maximum	Minimum	Maximum	Minimum
3"	12-5/8"	12-1/4"	4.02"	3.90"
4"	15-9/32"	14-29/32"	4.86"	4.74"
6"	21-7/8"	21-1/2"	6.96"	6.84"
8"	28-5/8"	28-1/4"	9.11"	8.99"
10"	35-1/16"	34-11/16"	11.16"	11.04"
12"	41-21/32"	41-9/32"	13.26"	13.14"
14"	48-7/32"	47-13/16"	15.35"	15.22"
16"	54-13/16"	54-13/32"	17.45"	17.32"
18"	61-13/32"	61"	19.55"	19.42"
20"	68"	67-19/32"	21.65"	21.52"
24"	81-7/32"	80-13/16"	25.85"	25.72"

McWane's Sure Stop 350® Gaskets are a fast and easy way of restraining TYTON JOINT® pipe, valves and fittings.



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TYLER UNION®
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SUBMITTAL: PROTECTIVE FUSION BONDED EPOXY (FBE)

(Current revisions for the noted Standards apply)

Tyler Union Waterworks standard applied coating thickness for protective fusion bonded epoxy (FBE) is 6 - 8 mil and our FBE is NSF61 and Annex G approved. Tyler Union Waterworks FBE water works fittings are coated internally and externally in accordance with the applicable requirements of ANSI/AWWA C116/A21.16. Section 4.3.2 of the ANSI/AWWA C116 standard provides that FBE mil thickness in the joint area shall not have a coating of less than 4 mil. Additionally, the standard advises it may be necessary to establish a limit for the maximum applied thickness in the joint areas.

Tyler Union Waterworks upon request at time of order placement, can provide FBE fittings with increased mil thickness. However, FBE thickness greater than 6 - 8 mil may interfere with the pipe to fitting fit and inhibit the sealing for a leakproof joint. For these reasons, Tyler Union Waterworks does not provide warranty for FBE lined and coated fittings with greater than 8 mil thickness in the joint area.

Tyler Union Waterworks FBE is tested and approved per Underwriters Laboratories UL262. Testing of FBE involves immersing coated parts in four aqueous solutions at 158°F and evaluate for blistering during 90 day continuous exposure period. The solutions are distilled water, 2% sodium chloride in distilled water, distilled water with a pH adjusted to 4.0 using potassium hydrogen phthalate, and distilled water with pH adjusted to 10.0 using sodium carbonate. Tyler Union Waterworks FBE is also tested for blister resistance when immersed in acid, alkali, alcohol, and hydrocarbons at room temperature over 90 days. Additional test data and recommended exposures for Tyler Union Waterworks FBE is as provided in Tables 1 - 3.

The ANSI/AWWA C116/A21.16 standard describes the use of protective fusion bonded epoxy coatings as being utilized for the interior and exterior surfaces of ductile or gray iron fittings supplied for “water systems”. Section 1.1 of the standard specifically provides that the standard does not cover instances where coatings are agreed upon by purchaser and manufacturer for sewer or other special applications. Though not always recommended for use in **sewer systems; FBE coated and lined fittings may be used in sewer applications conveying materials conforming to the properties as provided in Tables 2 and 3 on page 2.

TABLE #1

TEST	METHOD	CONDITIONS	RESULT
Abrasion Resistance	ASTM D4060	CS-17 wheels, 1000 cycles, 1 kg load	32 mg loss
Adhesion	ASTM D3359 - Method A	X-cut and tape	5A
Adhesion	ASTM D3359 - Method B	Crosshatch and tape	5B
Gloss, 60°	ASTM D523	N/A	70-85
Humidity Resistance	ASTM D2247	1000 hours at 100°F	No blisters or rusting
Impact	ASTM D2794	N/A	Pass 40 inch-lbs. direct
Pencil hardness	ASTM D3363	N/A	Pass 4H
Salt Spray	ASTM B117	1000 hours	No blisters or face rust, no scoreline creepage
Water Resistance	AWWA C550	90 days immersion at 70°C	Pass
Weather Resistance	ASTM G154	UVA-340, cycle 4 hrs UV at 60°C, 4 hrs condensation at 50°C	Chalks after 200 hours exposure

TABLE #2	
Immersion Environments with the following chemicals (ambient temperature)	
Aliphatic Hydrocarbons	Fresh water
Calcium Chloride (10% solution)	Fuel Oil
Calcium Hydroxide (10% solution)	Hexane
Calcium Sulfate (saturated solution)	Kerosine
Calcium Carbonate (saturated solution)	Motor oil
Distilled water	Magnesium Sulfate (saturated solution)
Gasoline (unleaded)	Potassium Acetate (saturated solution)
Diesel Fuel	Soap solutions
Sodium Chloride (5% solution)	Sodium Nitrate (10% solution)
Sodium Hydroxide (5% solution)	Trisodium Phosphate (5% solution)

TABLE #3	
Splash and Spillage Environments against the following chemicals	
Aromatic Hydrocarbons	Butanol
Ethanol	Hydrochloric Acid (5% solution)
Isopropyl Alcohol	Methanol
Sulfuric Acid (5% solution)	Toluene
Xylene	

NOTE:

Due to the prescribed application methods of protective fusion bonded epoxy and the combination of varying fitting diameters, recesses, raised lettering, tapping bosses, and numerous radiused surfaces; the applied thickness of the FBE coating or lining may vary 1 to 2 mils over the coated surfaces of a fitting.

NOTE:

Final determination of the suitability of this product for your application shall be determined by the end user .

Additional types of epoxy coatings are available upon request at time of order placement. Please contact a Tyler Union Waterworks Customer Service representative to discuss the additional coating and lining options that are available.

TYLER UNION®
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SUBMITTAL: CEMENT-MORTAR AND ASPHALTIC MATERIAL

(Current revisions for the noted Standards apply)

Tyler Union Waterworks Type I-II cement lining and asphaltic coating and lining provided with our ANSI/AWWA C104 cement-mortar lined ductile iron fittings are NSF-61, NSF-372 and Annex G approved. Tyler Union Waterworks lined and/or coated 2" – 64" fittings are provided in accordance with and meet all the applicable terms and requirements of ANSI/AWWA C104/A21.4, ANSI/AWWA C110/A21.10, ANSI/AWWA C111/A21.11, ANSI/AWWA C153/A21.53, ANSI/AWWA C151/A21.51, and ASTM C150.

The standard specified thicknesses for cement and asphaltic linings for ductile iron fittings 2" – 64" are as provided. Unless specified otherwise upon order placement, all cement lined **fittings provided by Tyler Union Waterworks will be provided with an asphaltic lining and coating and the minimum thickness cement lining as provided for by ANSI/AWWA C104.

Fitting Size	Minimum AWWA Cement Lining Thickness	*Double Cement Lining Thickness	Minimum Asphaltic Thickness	Typical Tyler Union Asphaltic Thickness
2" – 12" or 76 - 305mm.	1/16" or 1.6mm	1/8" or 3.2mm	1 mil	2 – 4 mil
14" - 24". or 356 - 610mm	3/32" or 2.4mm	3/16" or 4.8mm	1 mil	2 – 4 mil
30" – 64" or 762 to 1600mm	1/8" or 3.2mm	1/4" or 6.4mm	1 mil	2 – 4 mil
*NOTE: You must specify double cement lining upon order placement				
**NOTE: Mechanical Joint Solid Sleeves, Caps, and Plugs are provided with asphaltic coating only as per AWWA C110/C153 Section 4.4.3				

The asphaltic coating and lining utilized on the "inside" of pipe and fittings is to aid in the proper curing of the cement mortar lining as described in the ANSI/AWWA C104 standard, Section 4.10. The asphaltic coating and lining utilized on the "outside" of pipe and fittings is for cosmetic purposes and intended to provide some level of corrosion protection prior to being installed.

The purpose of the cement lining on the inside of ductile iron waterworks fittings is to reduce the degree of tuberculation (buildup) or corrosion on the fitting wall. Tuberculation or corrosion of the fitting wall is minimized in soft or acid water as the cement lining creates a high pH at the fitting wall. Beginning in 1995, the asphaltic lining for the inside of fittings is no longer required by the AWWA but is recommended in instances where the pH of the water is less than 6.0 or greater than 10.0.

Additional Applications and Ratings for Cement-Mortar and Asphaltic Materials:	
Cement without asphaltic coating: Service to *212°F max.	Cement with asphaltic coating: Service to 150°F max.
Asphalt Only: Air Service to 150°F max.	Cement w/o asphalt: sea water, non-septic gravity sewer, reclaim water
*NOTE: For systems designed to convey materials above 150°F, contact Tyler Union for adjusted pressure rating of the fittings	

ANSI/AWWA C104/A21.4 - Approved Field Repair Method for Cement-Mortar Lined Fittings:	
1.	Remove the damaged portion or area of the lining down to the metal surface, making sure any remaining lining edges are undercut slightly or perpendicular to the fitting wall.
2.	Clean the surface of loose debris and any tuberculation or corrosion where the lining was removed.
3.	Prepare a stiff mortar from a mixture of sand, cement, and water making sure the mix contains no less than one part cement to two parts sand by volume.
4.	Thoroughly wet the cut out area and the adjoining lining.
5.	Apply mortar mix and trowel smooth with the adjoining lining
6.	After any surface water has evaporated, but while the patch is still moist, cure the lining as provided.
7.	The repaired cement lining can be kept moist by seal (asphaltic) coating or with the use of **wetted burlap bags placed over the entire waterway opening of the fitting or access point. Once the mortar is applied to the fitting apply the seal coat by spraying or brushing on the seal coat within 5 to 15 minutes after any surface water has evaporated.
** Note:	(1) In instances where seal coat is not used, cure cement as provided for 24 hours after application. (2) In cold weather the patched area should be protected from freezing. (3) If seal coat paint is used during field repair, allow a cure time of 48 hours after the seal coat is applied before placing fitting back in service.
Tyler Union Waterworks - Approved Field Repair for Asphaltic Coating of Interior and Exterior Fitting Surfaces:	
1.	Paint repair to the fitting body or mechanical joint includes use of a hand steel bristle brush to remove loose corrosion. Wipe area free of dust or debris with a cloth suitable for the task and recoat exterior areas of the fitting with the paint provided as needed using a standard paint brush sized for the task.
2.	Recoating of the cement lining is achieved by wiping the lining with a cloth to remove any loose paint or debris and then apply paint using a standard size paint brush suitable for the task applying paint to affected areas as needed.

Note: Pressure washing of cement linings is not recommended. However, if required contact your Tyler Union representative for instructions before proceeding. Failure to follow these instructions or provide suitable supporting documentation will void the warranty on our lining.

TYLER UNION®
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22U - ANSI/AWWA C110/A21.10
Mechanical Joint Full Body
Ductile Iron Fittings
Revised 3/2017

☐ **DOMESTIC** ☐ **NON-DOMESTIC**

SUBMITTAL: C110 MECHANICAL JOINT PRODUCT

(Current revisions for the noted Standards apply)

SIZES: 2" - 48"

STANDARDS: ANSI/AWWA C110/A21.10, NFPA 13/24, 3" - 12" UL listed and approved (File - Tyler Union)

MATERIAL: Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.

PRESSURE RATING: *Flanged fittings rated at 250 psi. Mechanical joints 2" – 24" rated at 350 psi and 30" – 48" at 250 psi. *Note: With rubber annular ring flange gasket, 2" – 24" Flanged fittings can be rated at 350 psi.

DEFLECTION: Joint deflection 5° max for 2"– 12" and 3° max for 14"– 48". Reduces by 50% at nominal pipe & fitting diameters

NSF-61 & NSF372: Meets all requirements including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.

ASPHALT COATING: Per ANSI/AWWA C104/A21.4 and ANSI/AWWA C110/A21.10.

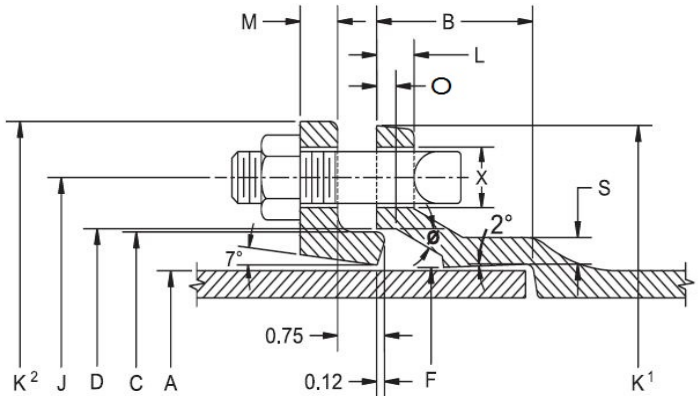
CEMENT LINING: Per ANSI/AWWA C104/A21.4, with double cement lining.

EPOXY COATING: Fusion bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.

BARE FITTINGS: Available upon request.

FASTNERS: High strength low alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242

INSTALLATION: Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51 or AWWA C900/905.



NOMINAL JOINT DIMENSIONS IN INCHES

Size Inches	A Dia. DI Pipe	B Hub Depth	C Dia. GLAND	D Dia.	F Dia.	Ø	X	J Dia. GLAND	K¹ Dia.	K² Dia. GLAND	L	M GLAND	O	S	Qty. BOLTS
2	2.51	2.50	3.39	3.50	2.61	28°	3/4	4.75	6.25	6.25	0.73	0.62	0.31	0.44	2
3	3.96	2.50	4.84	4.94	4.06	28°	3/4	6.19	7.69	7.69	0.94	0.62	0.31	0.52	4
4	4.80	2.50	5.92	6.02	4.90	28°	7/8	7.50	9.12	9.12	1.00	0.75	0.31	0.65	4
6	6.90	2.50	8.02	8.12	7.00	28°	7/8	9.50	11.12	11.12	1.06	0.88	0.31	0.70	6
8	9.05	2.50	10.17	10.27	9.15	28°	7/8	11.75	13.37	13.37	1.12	1.00	0.31	0.75	6
10	11.10	2.50	12.22	12.34	11.20	28°	7/8	14.00	15.69	15.62	1.19	1.00	0.31	0.80	8
12	13.20	2.50	14.32	14.44	13.30	28°	7/8	16.25	17.94	17.88	1.25	1.00	0.31	0.85	8
14	15.30	3.50	16.40	16.54	15.44	28°	7/8	18.75	20.31	20.25	1.31	1.25	0.31	0.89	10
16	17.40	3.50	18.50	18.64	17.54	28°	7/8	21.00	22.56	22.50	1.38	1.31	0.31	0.97	12
18	19.50	3.50	20.60	20.74	19.64	28°	7/8	23.25	24.83	24.75	1.44	1.38	0.31	1.05	12
20	21.60	3.50	22.70	22.84	21.74	28°	7/8	25.50	27.08	27.00	1.56	1.44	0.31	1.12	14
24	25.80	3.50	26.90	27.04	25.94	28°	7/8	30.00	31.58	31.50	1.62	1.56	0.31	1.22	16
30	32.00	4.00	33.29	33.46	32.17	20°	1-1/8	36.88	39.12	39.12	1.81	2.00	0.38	1.50	20
36	38.30	4.00	39.59	39.76	38.47	20°	1-1/8	43.75	46.00	46.00	2.00	2.00	0.38	1.80	24
42	44.50	4.00	45.79	45.96	44.67	20°	1-3/8	50.62	53.12	53.12	2.00	2.00	0.38	1.95	28
48	50.80	4.00	52.09	52.26	50.97	20°	1-3/8	57.50	60.00	60.00	2.00	2.00	0.38	2.20	32

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23U - ANSI/AWWA C153/A21.53
Mechanical Joint Compact
Ductile Iron Fittings
Revised 3/2017

☐ **DOMESTIC** ☐ **NON-DOMESTIC**

SUBMITTAL: C153 MECHANICAL JOINT PRODUCT

(Current revisions for the noted Standards apply)

SIZES: 2" - 64" (2" not included in ANSI/AWWA C153 standard)

STANDARDS: ANSI/AWWA C153/A21.53, NFPA13/24, 3"-16" UL and 3"-10" FM listed & approved (File - Tyler Union)

MATERIAL: Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.

PRESSURE RATING: *Flanged fittings rated at 250 psi. Mechanical joints 2" – 24" rated at 350 psi and 30" – 48" at 250 psi.
*Note: With rubber annular ring flange gasket, 2" – 24" Flanged fittings can be rated at 350 psi.
Note: Wyes over 12" are not pressure rated. Contact Tyler Union for rating in your application.

DEFLECTION: Joint deflection 5° max for 2"– 12" and 3° max for 14"– 48". Reduces by 50% at nominal pipe & fitting diameters

NSF-61 & NSF372: Meets all requirements including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.

ASPHALT COATING: Per ANSI/AWWA C104/A21.4 and ANSI/AWWA C153/A21.53.

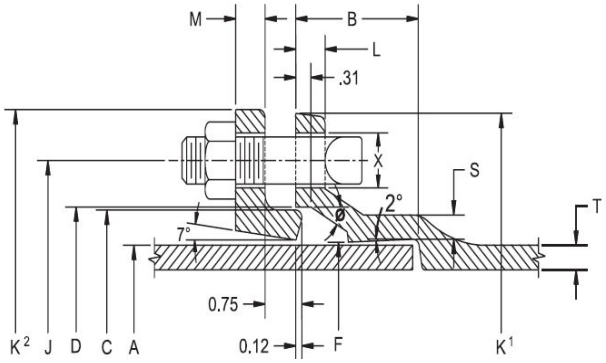
CEMENT LINING: Per ANSI/AWWA C104/A21.4, with double cement lining.

EPOXY COATING: Fusion bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.

BARE FITTINGS: Available upon request.

FASTNERS: High strength low alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242

INSTALLATION: Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51 or AWWA C900/905.



	NOMINAL JOINT DIMENSIONS IN INCHES													BOLTS	
Size Inches	A Dia. DI Pipe	B Hub Depth	C Dia. GLAND	D Dia.	F Dia.	J Dia. GLAND	K[1] Dia.	K[2] Dia. GLAND	L	M GLAND	S	T	X	Size	Qty.
2	2.51	2.50	3.50	3.60	2.61	4.75	6.19	6.89	0.58	0.62	0.36	0.30	3/4	5/8x3	2
3	3.96	2.50	4.84	4.94	4.06	6.19	7.62	7.69	0.58	0.62	0.39	0.33	3/4	5/8x3	4
4	4.80	2.50	5.92	6.02	4.90	7.50	9.06	9.12	0.60	0.75	0.39	0.34	7/8	3/4x3-1/2	4
6	6.90	2.50	8.02	8.12	7.00	9.50	11.06	11.12	0.63	0.88	0.43	0.36	7/8	3/4x3-1/2	6
8	9.05	2.50	10.17	10.27	9.15	11.75	13.31	13.37	0.66	1.00	0.45	0.38	7/8	3/4x4	6
10	11.10	2.50	12.22	12.34	11.20	14.00	15.62	15.62	0.70	1.00	0.47	0.40	7/8	3/4x4	8
12	13.20	2.50	14.32	14.44	13.30	16.25	17.88	17.88	0.73	1.00	0.49	0.42	7/8	3/4x4	8
14	15.30	3.50	16.40	16.54	15.44	18.75	20.31	20.25	0.79	1.25	0.55	0.47	7/8	3/4x4-1/2	10
16	17.40	3.50	18.50	18.64	17.54	21.00	22.56	22.50	0.85	1.31	0.58	0.50	7/8	3/4x4-1/2	12
18	19.50	3.50	20.60	20.74	19.64	23.25	24.83	24.75	1.00	1.38	0.68	0.54	7/8	3/4x4-1/2	12
20	21.60	3.50	22.70	22.84	21.74	25.50	27.08	27.00	1.02	1.44	0.69	0.57	7/8	3/4x4-1/2	14
24	25.80	3.50	26.90	27.04	25.94	30.00	31.58	31.50	1.02	1.56	0.75	0.61	7/8	3/4x5	16
30	32.00	4.50	33.29	33.46	32.17	36.88	39.12	39.12	1.31	2.00	0.82	0.66	1-1/8	1x6	20
36	38.30	4.50	39.59	39.76	38.47	43.75	46.00	46.00	1.45	2.00	1.00	0.74	1-1/8	1x6	24
42	44.50	4.50	45.79	45.96	44.67	50.62	53.12	53.12	1.45	2.00	1.25	0.82	1-3/8	1-1/4x6-1/2	28
48	50.80	4.50	52.09	52.26	50.97	57.50	60.00	60.00	1.45	2.00	1.35	0.90	1-3/8	1-1/4x6-1/2	32
54	Available on Request														
60	Available on Request														
64	Available on Request														

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24U – Mechanical Joint Tapping Sleeve
For Ductile Iron, Cast Iron, and
C900 PVC Pipe
Revised 3/2017

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☐ **DOMESTIC**

SUBMITTAL: Mechanical Joint Tapping Sleeve

(Current revisions for the noted Standards apply)

SIZES: 6" - 12" PVC/Ductile pipe per ANSI/AWWA C900 or C151 & Cast iron pipe as provided. Comes with 4"-12" side flanged outlet & 3/4" tap on the branch.

STANDARDS: Mechanical and *Flanged joints comply with applicable requirements of ANSI/AWWA C153/21.53 and ASME/ANSI B16.1. Ductile iron Mechanical Joint Tapping Sleeves are produced in accordance with Tyler Union manufacturer's standard.
***Note:** Recess dimensions are per Manufacturer's standardization Society standard practice SP-60. Meets the requirements of MSS SP-111

MATERIAL: Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.

PRESSURE RATING: Rated at 250 psi.

DEFLECTION: Deflection is not recommended

GASKETS: SBR Mechanical Joint and Split gaskets are per ASTM D2000 – AA and ANSI/AWWA C111/21.11, armor tipped with coiled brass wire spring.

NSF-61 & NSF372: Meets all requirements including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.

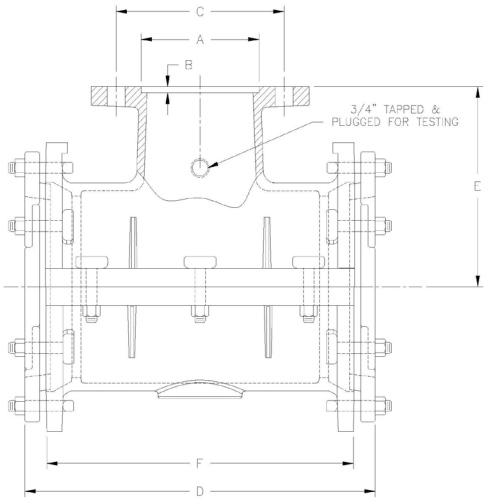
ASPHALT COATING: Per ANSI/AWWA C104/A21.4 and ANSI/AWWA C153/A21.53.

CEMENT LINING: Tapping Sleeves are unlined to ensure they fit over the pipe being tapped.

FLANGE: ASME/ANSI B16.1, Class 125

FASTENERS: High strength low alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242

INSTALLATION: Install per Tyler Union instructions below.



1. Clean pipe, insert side gasket into back half of gasket grooves. Make sure ends are flush with or slightly protrude into the end gasket seating area.
2. Bolt sleeve halves together and trim side gaskets as necessary. MAKE SURE SLEEVE WILL ROTATE FREELY ON PIPE.
3. Install end gaskets, locating cut ends 90° from side gasket If pipe is maximum OD, stretch gasket to make certain cut ends match with no gap in between.
4. Install glands and bolts-rotate sleeve to desired position. Be sure pipe is centered inside the sleeve.
5. Tighten gland bolts alternately, using 80 to 90 ft-lb.
6. After assembly, PRESSURE TEST ALL JOINTS BEFORE TAPPING. If additional tightening is required, release pressure and relax tension on gland bolts before tightening side bolts.

NOMINAL JOINT DIMENSIONS IN INCHES

Size	A	B	C	D	E	F	Pipe OD Range	DI
6x4	5.016	0.250	7.50	15.75	8.00	12.75	6.85 - 7.15	104
6	7.016	0.312	9.50	15.75	8.00	12.75	6.85 - 7.15	108
8x4	5.016	0.250	7.50	16.50	9.00	13.38	9.00-9.35	134
8x6	7.016	0.312	9.50	16.50	9.00	13.38	9.00-9.35	140
8	9.016	0.312	11.75	16.50	9.00	13.38	9.00-9.35	148
10x4	5.016	0.250	7.50	24.00	11.00	20.75	11.04-11.45	236
10x6	7.016	0.312	9.50	24.00	11.00	20.75	11.04-11.45	240
10x8	9.016	0.312	11.75	24.00	11.00	20.75	11.04-11.45	246
10	11.016	0.312	14.25	24.00	11.00	20.75	11.04-11.45	257
12x4	5.016	0.250	7.50	26.50	12.00	23.25	13.14-13.56	273
12x6	7.016	0.312	9.50	26.50	12.00	23.25	13.14-13.56	286
12x8	9.016	0.312	11.75	26.50	12.00	23.25	13.14-13.56	292
12x10	11.016	0.312	14.25	26.50	12.00	23.25	13.14-13.56	303
12	13.016	0.312	17.00	26.50	12.00	23.25	13.14-13.56	320

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25U - ANSI/AWWA C153/A21.53
Union-Tite Compact
Ductile Iron Fittings
Revised 3/2017

☐ **DOMESTIC** ☐ **NON-DOMESTIC**

SUBMITTAL: C153 UNION-TITE PRODUCT

(Current revisions for the noted Standards apply)

SIZES: 4" - 24"

STANDARDS: ANSI/AWWA C153/A21.53, NFPA13/24, 4"-12" UL listed & approved (File - Tyler Union)

MATERIAL: Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.

PRESSURE RATING: *Flanged fittings rated at 250 psi. Mechanical joints 2" – 24" rated at 350 psi and 30" – 48" at 250 psi.
*Note: With rubber annular ring flange gasket, 2" – 24" Flanged fittings can be rated at 350 psi.
Note: Wyes over 12" are not pressure rated. Contact Tyler Union for rating in your application.

DEFLECTION: Joint deflection 5° max for 2"– 12" and 3° max for 14"– 48". Reduces by 50% at nominal pipe & fitting diameters

NSF-61 & NSF372: Meets all requirements including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.

ASPHALT COATING: Per ANSI/AWWA C104/A21.4 and ANSI/AWWA C153/A21.53.

CEMENT LINING: Per ANSI/AWWA C104/A21.4, with double cement lining.

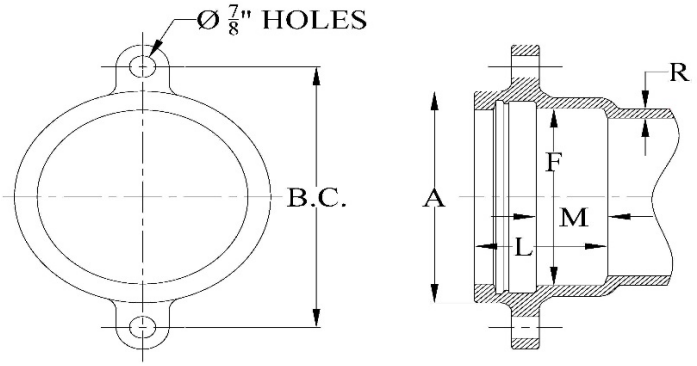
EPOXY COATING: Fusion bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.

BARE FITTINGS: Available upon request.

FASTENERS: High strength low alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242

RESTRAINING LUGS: *Lugs provided on 16" and smaller fittings. Lug pattern accommodates most grip type restraints.
***NOTE:** With sufficient lead time to adapt tooling, restraining lugs are available on 18"-24" fittings.

INSTALLATION: Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51 or AWWA C900/905. Designed for use with TYTON® and McWane Sure Stop® gaskets. Contact Tyler Union regarding the installation or use of other gasket types and/or gasket manufacturers.



NOMINAL JOINT DIMENSIONS IN INCHES

Size Inches	Pipe Diameter	A Dia.	F Dia.	B.C. Dia.	L Dim.	M Dim.	R Dim.
4	4.80	6.38	5.04	7.88	4.16	2.25	0.35
6	6.90	8.52	7.14	10.50	4.29	2.25	0.37
8	9.05	10.90	9.32	12.88	4.78	2.25	0.39
10	11.10	12.91	11.37	14.69	4.98	2.25	0.41
12	13.20	15.12	13.47	17.19	4.98	2.25	0.43
14	15.30	18.12	15.64	19.00	5.40	2.25	0.51
16	17.40	20.32	17.74	21.40	5.40	2.25	0.52
18	19.50	22.52	19.83	....	5.40	2.25	0.59
20	21.60	24.29	21.94	....	5.40	2.25	0.60
24	25.80	29.14	26.14	....	5.65	2.50	0.62

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26U - ANSI/AWWA C110/A21.10
Companion/Threaded Flange
Ductile Iron Fittings
Revised 2/2017

☐ **DOMESTIC** ☐ **NON-DOMESTIC**

SUBMITTAL: COMPANION FLANGE

(Current revisions for the noted Standards apply)

SIZES: 2" - 64" (Contact Tyler Union for 54" – 64" flange fitting information)

STANDARDS: ANSI/AWWA C110/A21.10, NFPA 13/24, ASME B16.1, ANSI/AWWA C115/A21.15

MATERIAL: Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.

PRESSURE RATING: Flanged fittings *2" – 48" rated at 250 psi. 54" – 64" rated at 150psi.

DEFLECTION: Deflection is "not" recommended for flange joint due to the rigidity of the joint.

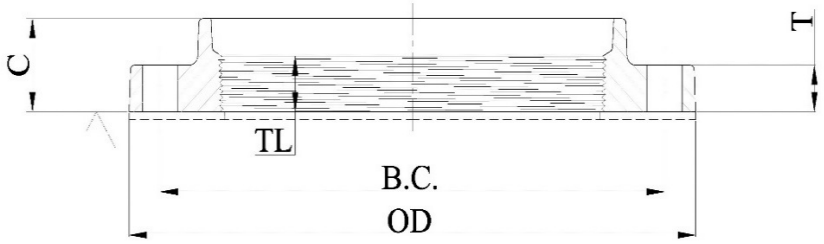
COATING: Asphaltic or Primer per ANSI/AWWA C104/A21.4, Standard primer is Tnemec Pota Pox N140-1211. Contact Tyler Union for additional coating options.

BARE FITTINGS: Available upon request.

THREADS: Tapered Pipe Threads as per NPT ANSI B1.20.1. Available for Ductile Pipe as well as Steel Pipe
NOTE: Please specify pipe type upon order placement

FLANGES: ANSI Class 125 per ASME B16.1 and ANSI/AWWA C111/A21.11. Bolt holes shall straddle the center line
NOTE: Class 125 ASME B16.1 are not compatible with Class 250 Flanges
NOTE: Class 250 ASME B16.1 fittings are available upon request

INSTALLATION: Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51.



COMPANION FLANGE DETAILS IN INCHES								BOLTS	
Size Inches	Diameter DI Pipe	Flange O.D.	B.C. Diameter	Flange Thickness T	Flange Height C	Thread Length TL	Bolt Hole Diameter	Size	Qty
2	2.51	6.00	4.75	0.62	1.25	1.060	0.750	5/8 x 2-1/4	4
3	3.96	7.50	6.00	0.75	1.75	1.060	0.750	5/8 x 2-1/4	4
4	4.80	9.00	7.50	0.94	1.87	1.190	0.750	5/8 x 3	8
6	6.90	11.00	9.50	1.00	2.06	1.380	0.875	3/4 x 3-1/2	8
8	9.05	13.50	11.75	1.12	2.30	1.560	0.875	3/4 x 3-1/2	8
10	11.10	16.00	14.25	1.19	2.50	1.750	1.000	7/8 x 4	12
12	13.20	19.00	17.00	1.25	2.62	2.000	1.000	7/8 x 4	12
14	15.30	21.00	18.75	1.38	2.70	2.010	1.125	1 x 4-1/2	12
16	17.40	23.50	21.25	1.44	2.70	2.250	1.125	1 x 4-1/2	16
18	19.50	25.00	22.75	1.56	2.82	2.450	1.250	1-1/8 x 5	16
20	21.60	27.50	25.00	1.69	2.93	2.620	1.250	1-1/8 x 5	20
24	25.80	32.00	29.50	1.88	3.17	2.960	1.375	1-1/4 x 5-1/2	20
30	32.00	38.75	36.00	2.12	4.00	3.370	1.375	1-1/4 x 5-1/2	28
36	38.30	46.00	42.75	2.38	5.00	4.000	1.625	1-1/2 x 7	32
42	44.50	53.00	49.50	2.62	5.12	4.500	1.625	1-1/2 x 7-1/2	36
48	50.80	59.50	56.00	2.75	5.50	5.120	1.625	1-1/2 x 8	44
54	Available on Request								
60	Available on Request								
64	Available on Request								

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27U - ADAPTER FLANGE
AWWA C111/A21.11
Revised 2/2017

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☐ **DOMESTIC** ☐ **NON-DOMESTIC**

SUBMITTAL: DUCTILE IRON ADAPTER FLANGE

(Current revisions for the noted Standards apply)

SIZES: 3" - 12" – Recommended for use with Class 53 – Class 56 ductile iron pipe.

STANDARDS: ANSI/AWWA C110/A21.10, ANSI/AWWA C111/A21.11, UL listed, and FM approved

MATERIAL: Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.

PRESSURE RATING: Flanged fittings 3" – 10" rated at 250 psi and 12" rated at 150psi.

DEFLECTION: Max joint deflection 2°, reduces by 50% at nominal pipe and fitting diameters.

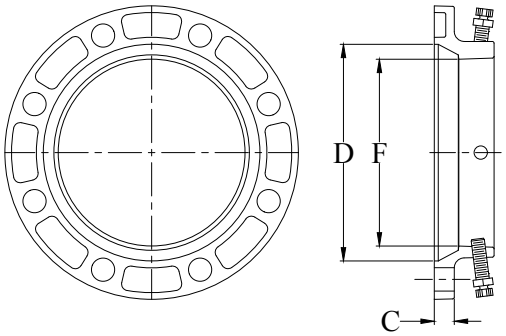
NSF-61 & NSF372: Meets all requirements including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.

COATING: Tnemec Pota Pox N140-1211.

BOLTS: ANSI/AWWA C110/A21.10 and ANSI/AWWA C111/A21.11; for assembly use AWWA C110 length hex head bolts. The torque head bolts are socket head and with Type C knurled cup points, 4140 grade alloy steel that is heat treated to a Rockwell "C" 45/53 case harness and shipped assembled in the adapter. Torque head will break off at 80-90 ft-lb.

INSTALLATION:

1. Place adapter flange and the gasket over the plain end of the pipe with the small side of the MJ gasket facing the flange side of the adapter flange.
2. Place the pipe end against the flange to be joined and slip the MJ gasket into place against the flange. Make sure the gasket is evenly seated against the flange.
3. Slide the adapter flange into position against the small (tapered) side of the MJ gasket and align the bolt holes. Insert the bolts and finger tighten the nuts to maintain position and alignment.
4. Snug up all nuts evenly, alternating 180°, tighten the nuts to a torque of: 60 ft-lb for 3" and 90 ft-lb for 4" – 12".
5. Snug set screws evenly, alternating 180°, tighten set screws to 80-90 ft-lb.



Adapter Flange

Size	Rated Working Pressure	No. of Set Screws	Bolt Circle	D.I. Pipe O.D. +.06 / -.06	D +.06 -.04	F +.07 -.03	C	Weight
3	250	4	6.00	3.96	4.94	4.06	.94	7
4	250	4	7.50	4.80	6.02	4.90	1.00	10
6	250	8	9.50	6.90	8.12	7.00	1.06	14
8	250	8	11.75	9.05	10.27	9.15	1.12	22
10	250	12	14.25	11.10	12.34	11.20	1.19	30
12	150	12	17.00	13.20	14.44	13.30	1.25	40

All set screws are 5/8" 80lb. torque head.
Note: Recommended for class 53 - class 56 wall thickness D.I. pipe.

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TYLER UNION®
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28U - ANSI/AWWA C110/A21.10
Class 125 Flange Joint Full Body
Ductile Iron Fittings
Revised 3/2017

☐ **DOMESTIC** ☐ **NON-DOMESTIC**

SUBMITTAL: C110 FLANGE JOINT CLASS 125 PRODUCT

(Current revisions for the noted Standards apply)

SIZES: 2" - 64" (Contact Tyler Union for 54" – 64" flange fitting information)

STANDARDS: ANSI/AWWA C110/A21.10, NFPA 13/24, ASME B16.1, 3" - 12" UL listed and FM approved

MATERIAL: Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.

PRESSURE RATING: *Flanged fittings *2" – 48" rated at 250 psi. 54" – 64" rated at 150psi.
*Note: With rubber annular ring flange gasket, 2" – 24" flanged fittings can be rated at 350 psi.

DEFLECTION: Deflection is "not" recommended for flange joint due to the rigidity of the joint.

NSF-61 & NSF372: Meets all requirements including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.

COATING: Asphaltic or Primer per ANSI/AWWA C104/A21.4, Standard primer is Tnemec Pota Pox N140-1211. Contact Tyler Union for additional coating options.

CEMENT LINING: Per ANSI/AWWA C104/A21.4, with double cement lining.

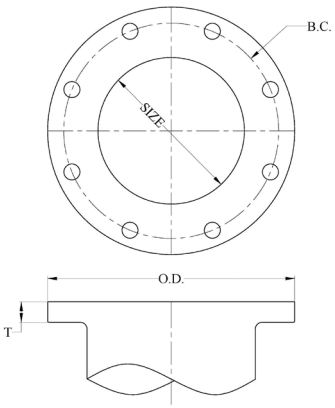
EPOXY COATING: Fusion bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.

BARE FITTINGS: Available upon request.

FLANGES: ANSI Class 125 per ASME B16.1 and ANSI/AWWA C111/A21.11. Bolt holes shall straddle the center line
NOTE: Class 125 ASME B16.1 are not compatible with Class 250 Flanges
NOTE: Class 250 ASME B16.1 fittings are available upon request.

FASTNERS: High strength low alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242

INSTALLATION: Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51.



	FLANGE DETAILS IN INCHES					BOLTS	
Size Inches	Diameter DI Pipe	Flange O.D.	B.C. Diameter	Flange Thickness T	Bolt Hole Diameter	Size	Qty
2	2.51	6.00	4.75	0.62	0.750	5/8 x 2-1/4	4
3	3.96	7.50	6.00	0.75	0.750	5/8 x 2-1/4	4
4	4.80	9.00	7.50	0.94	0.750	5/8 x 3	8
6	6.90	11.00	9.50	1.00	0.875	3/4 x 3-1/2	8
8	9.05	13.50	11.75	1.12	0.875	3/4 x 3-1/2	8
10	11.10	16.00	14.25	1.19	1.000	7/8 x 4	12
12	13.20	19.00	17.00	1.25	1.000	7/8 x 4	12
14	15.30	21.00	18.75	1.38	1.125	1 x 4-1/2	12
16	17.40	23.50	21.25	1.44	1.125	1 x 4-1/2	16
18	19.50	25.00	22.75	1.56	1.250	1-1/8 x 5	16
20	21.60	27.50	25.00	1.69	1.250	1-1/8 x 5	20
24	25.80	32.00	29.50	1.88	1.375	1-1/4 x 5-1/2	20
30	32.00	38.75	36.00	2.12	1.375	1-1/4 x 5-1/2	28
36	38.30	46.00	42.75	2.38	1.625	1-1/2 x 7	32
42	44.50	53.00	49.50	2.62	1.625	1-1/2 x 7-1/2	36
48	50.80	59.50	56.00	2.75	1.625	1-1/2 x 8	44
54	Available on Request						
60	Available on Request						
64	Available on Request						

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28U-B - ANSI/AWWA C110/A21.10
Class 250 Flange Joint Full Body
Ductile Iron Fittings
Revised 2/2017

☐ **DOMESTIC** ☐ **NON-DOMESTIC**

SUBMITTAL: C110 FLANGE JOINT CLASS 250 PRODUCT

(Current revisions for the noted Standards apply)

SIZES: 2" - 48"

STANDARDS: ANSI/AWWA C110/A21.10, NFPA 13/24, ASME B16.1

MATERIAL: Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.

PRESSURE RATING: *Flanged fittings *2" – 48" rated at 250 psi.
*Note: With rubber annular ring flange gasket, 2" – 24" flanged fittings can be rated at 350 psi.

DEFLECTION: Deflection is "not" recommended for flange joint due to the rigidity of the joint.

NSF-61 & NSF372: Meets all requirements including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.

COATING: Asphaltic or Primer per ANSI/AWWA C104/A21.4, Standard primer is Tnemec Pota Pox N140-1211. Contact Tyler Union for additional coating options.

CEMENT LINING: Per ANSI/AWWA C104/A21.4, with double cement lining.

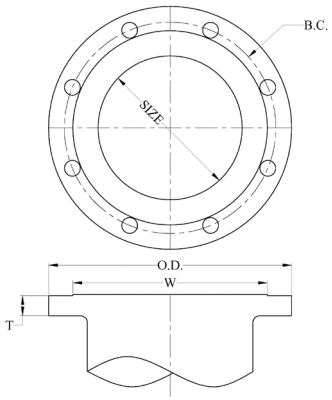
EPOXY COATING: Fusion bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.

BARE FITTINGS: Available upon request.

FLANGES: ANSI Class 250 per ASME B16.1 and ANSI/AWWA C111/A21.11. Bolt holes shall straddle the center line
NOTE: Class 250 ASME B16.1 are not compatible with Class 125 Flanges
NOTE: Class 250 ASME B16.1 fittings are available upon request.

FASTNERS: High strength low alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242

INSTALLATION: Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51.



CLASS 250 FLANGE DETAILS IN INCHES **BOLTS**

Size Inch	Diameter DI Pipe	Flange O.D.	W (Raised Face)	B.C. Diameter	Flange Thickness T	Bolt Hole Diameter	Size	Qty
2	2.51	6.50	4.19	5.00	0.88	0.75	5/8 x 3	8
3	3.96	8.25	5.69	6.62	1.12	0.875	3/4 x 3-1/2	8
4	4.80	10.00	6.94	7.88	1.25	0.875	3/4x4	8
6	6.90	12.50	9.69	10.62	1.44	0.875	3/4 x 4	12
8	9.05	15.00	11.94	13.00	1.62	1.000	7/8 x4-1/2	12
10	11.10	17.50	14.06	15.25	1.88	1.125	1.0x5-1/2	16
12	13.20	20.50	16.44	17.75	2.00	1.250	1-1/8 x5-1/2	16
14	15.30	23.00	18.94	20.25	2.12	1.250	1-1/8 x 6	20
16	17.40	25.50	21.06	22.50	2.25	1.375	1-1/4x 6-1/2	20
18	19.50	28.00	23.31	24.75	2.38	1.375	1-1/4 x 6-1/2	24
20	21.60	30.50	25.56	27.00	2.50	1.375	1-1/4 x7	24
24	25.80	36.00	30.31	32.00	2.75	1.625	1-1/2 x 7-1/2	24
30	32.00	43.00	37.19	39.25	3.00	2.000	1-3/4 x 8-1/2	28
36	38.30	50.00	43.69	46.00	3.38	2.250	2x9-1/2	32
42	44.50	57.00	50.44	52.75	3.69	2.250	2x10	36
48	50.80	65.00	58.44	60.75	4.00	2.250	2x11	40

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☐ **DOMESTIC** ☐ **NON-DOMESTIC**

SUBMITTAL: BOLTS AND NUTS FOR MECHANICAL JOINTS

(Current revisions for the noted Standards apply)

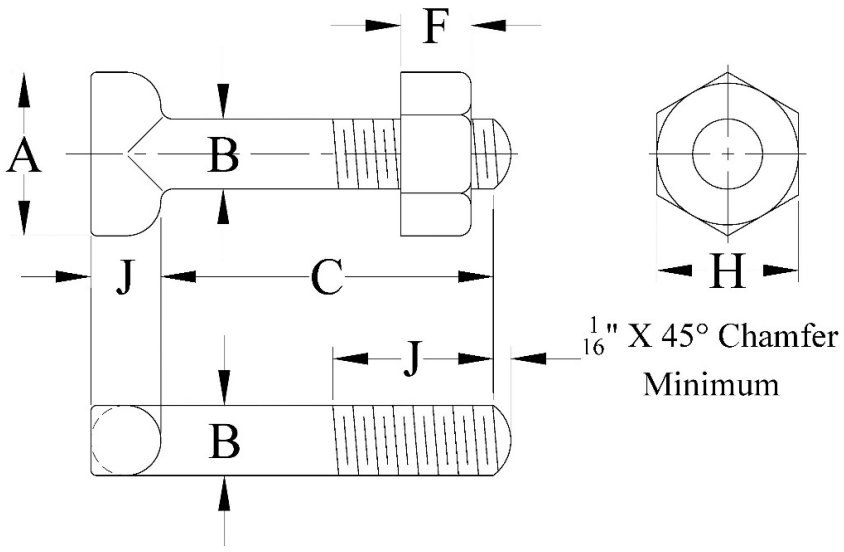
SIZES: 5/8 X 3 through 1 – 1/4 X 8 - 1/2

STANDARDS: ANSI/AWWA C111/A21.11

MATERIAL: ASTM A242 High Strength Low Alloy Steel. Also Available in ANSI 304 or ANSI 316 AISI Stainless Steel.

COATING: Standard nuts and bolts are not coated. Flouropolymer coating is available upon request. Flouropolymer is Fluorokote #1 (blue for Low Alloy Steel)

FASTENERS: High strength low alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242



T-HEAD LOW ALLOY WEATHERING AND AISI STAINLESS STEEL FASTENER DIMENSION IN INCHES									
Size Inches	A ± 0.05	B + 0.03 / - 0.074	C + 0.25 / - 0.06	F	H	J +0.15 / -0.03	R Max	D*	Threads Per Inch E**
5/8 x 3	1.5	0.625	3.00	0.625	1.062	0.625	0.312	2.00	11
3/4 x 3-1/2	1.75	0.750	3.50	0.750	1.250	0.750	0.375	2.50	10
3/4 x 4	1.75	0.750	4.00	0.750	1.250	0.750	0.375	3.00	10
3/4 x 4-1/2	1.75	0.750	4.50	0.750	1.250	0.750	0.375	3.00	10
3/4 x 5	1.75	0.750	5.00	0.750	1.250	0.750	0.375	3.00	10
1 x 6	1.75	1.000	6.00	1.000	1.625	1.000	0.500	3.00	8
1 x 7-1/2	2.25	1.000	7.50	1.000	1.625	1.000	0.625	4.50	8
1-1/4 x 6-1/2	2.50	1.250	6.50	1.250	2.000	1.250	0.750	3.50	7
1-1/4 x 8-1/2	2.50	1.250	8.50	1.250	2.000	1.250	0.750	4.00	7

NOTES:

1. Dimension B is unthreaded shank.
2. Draft, when required to be 6° maximum, may be deducted from bolt head dimensions, and radius may be changed to suit draft.
3. Gates, if required, may protrude a maximum of 1/8" above the top of the bolt head
4. Chamfer is optional if threads are rolled.
5. If threads are rolled, the body diameter may be reduced to the approximate pitch diameter of the thread.

Note: Tolerance +3/-0 thread.

Note: Number of threads per inch – coarse-thread series (ANSI/ASME B1.1), Class 2A, external fit UNC2A and class 2B, UNC2B (ANSI/ASME B1.2).

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SUBMITTAL: GASKETS

(Current revisions for the noted Standards apply)

Tyler Union Waterworks provides that our *Mechanical and Push-On joint gaskets and dimensions conform to the specifications in ANSI/AWWA C111/A21.11 (current revision). Markings include size, mold number, gasket manufacturer's mark, country where molded, and product identification letters. No markings are placed on sealing surfaces per the AWWA C111 standard.

*Note: Push-On and Mechanical Joint transition gasket design standards and markings are not addressed by ANSI/AWWA C111/A21.11 (current revision). Transition gaskets provided by Tyler Union follow the material testing standards and specifications established for ANSI/AWWA C111/A21.11 gaskets.

Gasket material is vulcanized styrene butadiene rubber (SBR). Purchaser may request special application elastomers (EPDM, Nitrile, Neoprene & FKM) which will be identified on all documentation and corresponding gaskets. Gaskets are free of foreign materials, porous areas, or other defects that make them unfit for the intended use.

Tyler Union gaskets are manufactured under quality control standards and procedures that are maintained by the gasket supplier. Appropriate documentation is maintained by the manufacturer and available for review upon request. Properties and test methods for SBR, EPDM, Nitrile, Neoprene and FKM gaskets are as provided.

Property	ASTM Test Method	Required Value
Hardness, Shore “A”	D2240-86	75 (+-5)
Minimum Tensile	D412-87	1500 psi (10MPa)
Minimum Elongation	D412-87	150 %
Minimum Aging	D572-88	60 %
Maximum Compression Set	D395-89, Method B	20 %
Resistance to surface Ozone cracking	D1149-86	No cracking

Tyler Union's approved suppliers maintain a quality assurance program that is reviewed and updated on an ongoing basis to ensure product quality. Tyler Union's gasket suppliers submit gaskets for testing and provide materials for testing to Underwriters Laboratories, Inc. Tyler Union's gasket providers are recognized under the component program (UL 194/ UL 157) of Underwriters Laboratories, Inc.. Tyler Union UL approved gaskets meet NSF-61, NSF-372 and Annex G.

Tyler Union provides that our Mechanical and Push-On joint gaskets for potable or wastewater projects will perform as designed when selected per the chart provided and installed per AWWA C600-10.

SBR (Styrene Butadiene rubber)(Buna-S) Not Recommended for Hydrocarbon Service	20°F to180°F	Suitable for water, wastewater, most moderate chemicals, wet or dry organic acids, alcohols, ketones, and aldehydes
EPDM (Ethylene Propylene) Not Recommended for Hydrocarbon Service	-10°F to 250°F	Ideal for water, wastewater, ozone, & strong oxidizing chemicals May be used on steam and air within its temperature range
CR (Neoprene)	-10°F to 200°F	Recommended for moderate chemicals and acids, oil fats, greases, many solvents and air with hydrocarbons. Will not support combustion
NBR (Nitrile)(Buna-N)(Hycar)	-40°F to 250°F	Ideally suited for gasoline, petroleum products, hydrocarbons, water, mineral and vegetable oils
*FKM (Fluoroelastomer) *Check with Customer Service for availability	10°F to 425°F	Ideally suited for hydrocarbons, acids, vegetable oils & petroleum
Gasket Types Offered:		(1)Mechanical Joint std.(2) Push-On Joint std.(3)Mechanical Joint DUO (4)Mechanical & Push-on Joint Transition(5)Push-on Restraining (6)Mechanical Joint Armor Tip Conductivity(7)Compact tapping Sleeve

Unless other wise requested by the purchaser upon order placement, all gaskets provided will be of our standard SBR material.

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Quality Waterworks Products

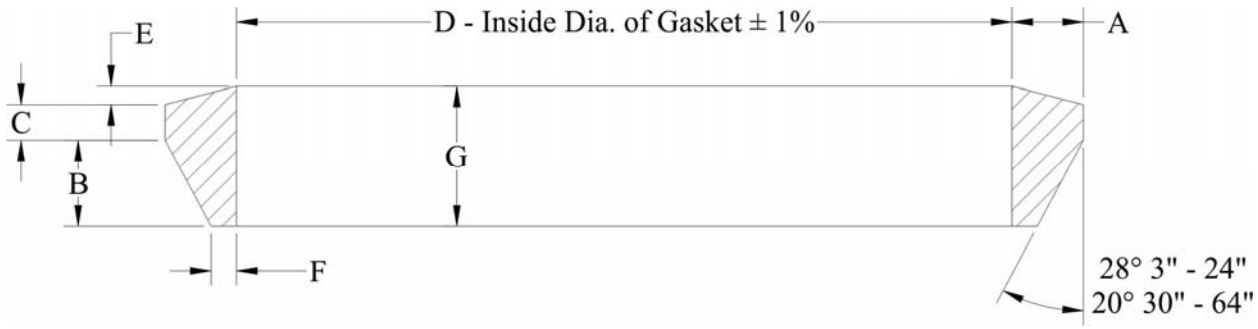
30U – Standard Mechanical & Push-On Joint Gaskets (SBR, NBR, EPDM, Neoprene, FKM)
Revised 2/2017

Mechanical Joint Gaskets

ANSI/AWWA C111/A21.11-12
*MJ Tru-Lock Gaskets 30" – 48" inch

Pipe Size	Pipe OD	A ±0.01''	B	C	D ±1%	E ±0.01%	F ±0.01''	G ±0.02''
**2	2.50	0.48	0.62	0.31	2.48	0.12	0.15	1.05
3	3.96	0.48	0.62	0.31	3.86	0.12	0.15	1.05
4	4.80	0.62	0.75	0.31	4.68	0.16	0.22	1.22
6	6.90	0.62	0.75	0.31	6.73	0.16	0.22	1.22
8	9.05	0.62	0.75	0.31	8.85	0.16	0.22	1.22
10	11.10	0.62	0.75	0.31	10.87	0.16	0.22	1.22
12	13.20	0.62	0.75	0.31	12.95	0.16	0.22	1.22
14	15.30	0.62	0.75	0.31	14.99	0.16	0.22	1.22
16	17.40	0.62	0.75	0.31	17.07	0.16	0.22	1.22
18	19.50	0.62	0.75	0.31	19.13	0.16	0.22	1.22
20	21.60	0.62	0.75	0.31	21.20	0.16	0.22	1.22
24	25.80	0.62	0.75	0.31	25.34	0.16	0.22	1.22
30	32.00	0.73	1.00/*.50	.38/*.50	31.47	0.16	.37/*.55	1.54/*1.16
36	38.30	0.73	1.00/*.50	.38/*.50	37.67	0.16	.37/*.55	1.54/*1.16
42	44.50	0.73	1.00/*.50	.38/*.50	43.78	0.16	.37/*.55	1.54/*1.16
48	50.80	0.73	1.00/*.50	.38/*.50	49.98	0.16	.37/*.55	1.54/*1.16

** Not included in AWWA C111. Manufacture's Standard does not meet AWWA C111



** Mechanical Joint Transition Gasket Dimensions in Inches

Pipe Size	A ± 0.01"	B	C	D ±1%	E	F ± 0.01"	G ± 0.02"
2	0.57	0.62	0.31	2.28	0.16	0.24	1.08
3	0.70	0.62	0.31	3.45	0.16	0.37	1.11
4	0.77	0.75	0.31	4.43	0.16	0.37	1.26
6	0.76	0.75	0.31	6.53	0.16	0.36	1.25
8	0.82	0.75	0.31	8.50	0.16	0.42	1.27
10	0.79	0.75	0.31	10.59	0.16	0.39	1.26
12	0.84	0.75	0.31	12.56	0.16	0.44	1.28

** Not included in AWWA C111. Manufacture's Standard does not meet AWWA C111

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TYLER UNION®
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31U – Non- Domestic Standard Duty Valve and Service Boxes and Components
Revised 3/2017

SUBMITTAL: STANDARD VALVE BOXES

(Current revisions for the noted Standards apply)

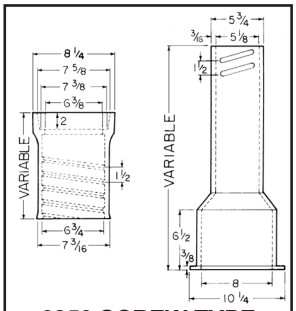
SIZES: Adjustable Slip and Screw type with standard assembly lengths ranging from 19" - 72" (Lengths noted do not include the addition of risers, extensions, and/or bases). See the catalog or List Price guide for accessories, lids, bases, risers, meter covers, etc.

STANDARDS: Produced with Class 35 cast iron in accordance with and meeting all applicable terms and provisions of ASTM A48. All Tyler Union valve boxes when properly installed are suitable for use in conjunction with projects utilizing American Association of State Highway and Transportation Officials (AASHTO) standards and provisions.

INSTALLATION: Per AWWA M44, Manual of Water Supply Practices

COATING: The asphaltic bituminous coating is applied to a minimum thickness of 1.5 mil and the coating once dry is neither brittle when cold or sticky when exposed to the sun

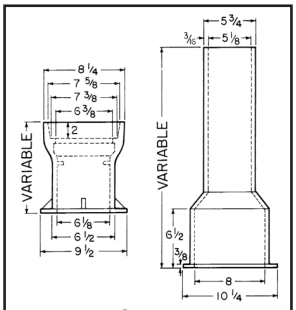
For 4" - 12" Valves
5-1/4" Shaft, Screw Type



6850 SCREW TYPE
VALVE BOX
Cast Iron - 2 piece

Components	Extension Height
10T + 15B	19-22
10T + 24B	27-32
16T + 24B	27-37
16T + 30B	33-43
16T + 36B	39-50
26T + 30B	36-52
26T + 36B	39-60
26T + 24B + #60 Ext	53-71
26T + 36B + #60 Ext	64-82

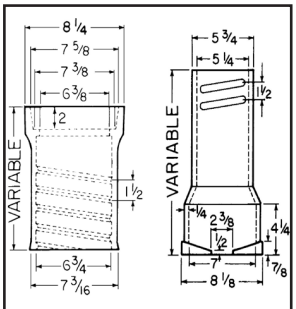
For 4" - 12" Valves
5-1/4" Shaft, Slip Type



6855 SLIP TYPE
VALVE BOX
Cast Iron - 2 piece

Components	Extension Height
10T + 15B	19-22
10T + 24B	27-32
16T + 24B	27-37
16T + 30B	33-43
16T + 36B	39-50
26T + 30B	36-52
26T + 36B	39-60
26T + 24B + #60 Ext	53-71
26T + 36B + #60 Ext	64-82

For 3" - 20" Valves
5-1/4" Shaft, Screw Type



6860 SCREW TYPE
VALVE BOX
Cast Iron - 3 piece

Components	Extension Height
10T + 12B	27-37
10T + 18B	33-42
16T + 24B	39-49
16T + 30B	45-54
16T + 36B	51-60
26T + 30B	45-66
26T + 36B	51-72
16T + 24B + #60 Ext	63-72
26T + 24B + #60 Ext	63-84
26T + 36B + #60 Ext	74-94

NOTE: Base Required, Order Separately

T = Top B = Bottom Ext = Extension

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Elmer: 701 Kenyon Ave.● Elmer, New Jersey 03318
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Oxford: 1800 Greenbrier Dear Road ●Anniston, AL 36207

TYLER UNION®
Quality Waterworks Products

32U – Heavy Duty Valve and Service Boxes and Components
Revised 3/2017

☐ **DOMESTIC** ☐ **NON-DOMESTIC**

SUBMITTAL: HEAVY DUTY VALVE BOXES

(Current revisions for the noted Standards apply)

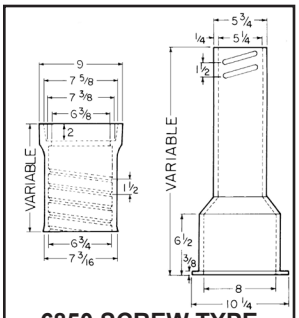
SIZES: Adjustable Slip and Screw type with standard assembly lengths ranging from 19” - 72” (Lengths noted do not include the addition of risers, extensions, and/or bases). See the catalog or List Price guide for accessories, lids, bases, risers, meter covers, etc.

STANDARDS: Produced with Class 35 cast iron in accordance with and meeting all applicable terms and provisions of ASTM A48. All Tyler Union valve boxes when properly installed are suitable for use in conjunction with projects utilizing American Association of State Highway and Transportation Officials (AASHTO) standards and provisions.

INSTALLATION: Per AWWA M44, Manual of Water Supply Practices

COATING: The asphaltic bituminous coating is applied to a minimum thickness of 1.5 mil and the coating once dry is neither brittle when cold or sticky when exposed to the sun

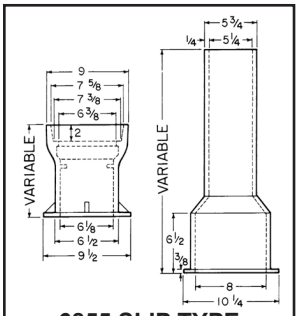
For 4” - 12” Valves
5-1/4” Shaft, Screw Type



6850 SCREW TYPE
VALVE BOX
Cast Iron - 2 piece

Components	Extension Height
10T + 15B	19-22
10T + 24B	27-32
16T + 24B	27-37
16T + 30B	33-43
16T + 36B	39-50
26T + 30B	36-52
26T + 36B	39-60
26T + 24B + #60 Ext	53-71
26T + 36B + #60 Ext	64-82

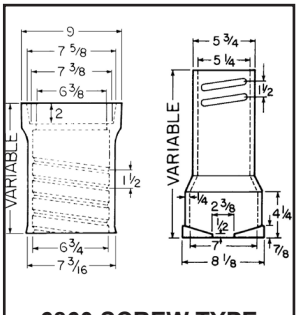
For 4” - 12” Valves
5-1/4” Shaft, Slip Type



6855 SLIP TYPE
VALVE BOX
Cast Iron - 2 piece

Components	Extension Height
10T + 15B	19-22
10T + 24B	27-32
16T + 24B	27-37
16T + 30B	33-43
16T + 36B	39-50
26T + 30B	36-52
26T + 36B	39-60
26T + 24B + #60 Ext	53-71
26T + 36B + #60 Ext	64-82

For 3” - 20” Valves
5-1/4” Shaft, Screw Type

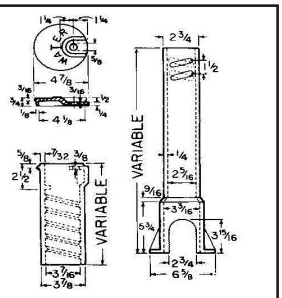


6860 SCREW TYPE
VALVE BOX
Cast Iron - 3 piece

Components	Extension Height
10T + 12B	27-37
10T + 18B	33-42
16T + 24B	39-49
16T + 30B	45-54
16T + 36B	51-60
26T + 30B	45-66
26T + 36B	51-72
16T + 24B + #60 Ext	63-72
26T + 24B + #60 Ext	63-84
26T + 36B + #60 Ext	74-94

NOTE: Base Required, Order Separately

For 1/2” to 2”
Curbstops

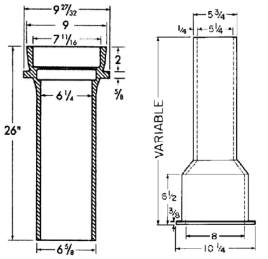


6500 SCREW TYPE
CURB/SERVICE BOX

Components	Extension Height
12T + 12B	15-21
12T + 15B	18-24
15T + 15B	21-27
15T + 21B	24-33
15T + 27B	30-39
18T + 27B	30-42
18T + 33B	36-48
24T + 33B	36-54
24T + 39B	45-60
30T + 39B	41-64

NOTE: Enlarged Base Available

T = Top B = Bottom Ext = Extension



For 4” - 12” Valves
5-1/4 Shaft, Slip Type
7126 SLIP TYPE
VALVE BOX
Cast Iron - 2 Piece

Components	Extension Height
26T + 30B	36-52
26T + 36B	39-60

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37U - TU G05 SERIES
Valve Box and Lid
3/01/2017

☐ DOMESTIC ☐ NON-DOMESTIC

Tyler Union TU G05 Valve Box & Lid

Standards:

Produced in accordance with and meeting applicable terms and provisions of ASTM A-48. All Tyler Union valve boxes when properly installed are suitable for use in conjunction with projects utilizing American Association of State and Highway Transportation Officials (AASHTO) standards. AASHTO compliance with H20 and H40 traffic loading.

Installation:

Per AWWA M44, Manual of Water Supply Practices

Coating:

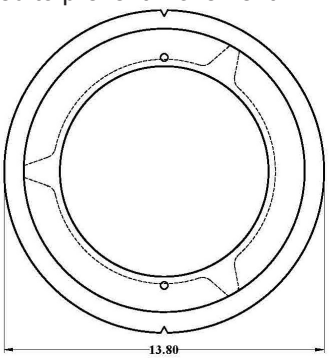
The asphaltic bituminous coating is applied to a minimum of 1.5 mil and the coating once dry is neither brittle when cold or sticky when exposed to the sun.

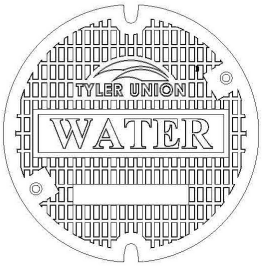
Features:

- Lid provided with longer tynes to prevent movement.
- Lids are available with “WATER”, “SEWER”, or blank marking.
- Specialty marking available in domestic only, contact Tyler Union for more details
- Available in an assembly or pieces sold individually.
- Straight body allows for easy assembly on AWWA C900 PVC Pipe.
- Valve Box ribs provided to prevent movement.
- No pre-cast required.

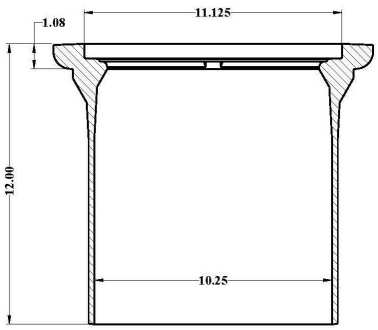
Weights:

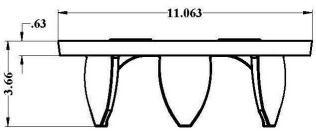
- Body: 42lbs.
- Lid: 16lbs.





*SEWER & Blank available upon request





*** Tyler Union Waterworks Contact Information***

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Dallas: 1201 Ave. S., Suite 100 • Grand Prarie, TX 75050
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Oxford: 1800 Greenbrier Dear Road • Anniston, AL 36207

TYLER UNION®

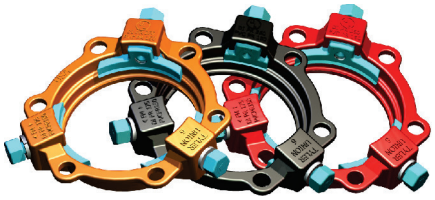
Quality Waterworks Products

Fittings / Coatings

- 2” - 64” ANSI/AWWA C153 Ductile Iron Mechanical Joint Fittings
- 4” - 24” ANSI/AWWA C153 Ductile Iron Union-Tite (Push-On) Fittings
- 2” - 48” ANSI/AWWA C110 Ductile Iron Mechanical Joint Fittings
- 2” - 64” ANSI/AWWA C110 Ductile Iron Flange Fittings
- 3” - 36” 250lb. Ductile Iron Flange Fittings
- 4” - 12” Ductile Iron Mechanical Joint Tapping Sleeve
- NSF 61 & NSF 372 Asphaltic Coating
- ANSI/AWWA C116 NSF 61 Fusion Bonded Epoxy Coating and Lining
- PROTECTO 401 Lining (Call for info)

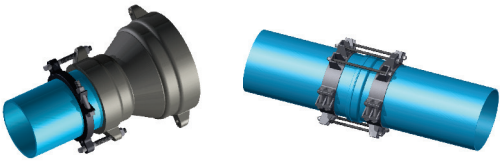
Mechanical Joint Accessories

- Mechanical Joint Accessory Kits (Gland, Gasket, T-head Bolts, and Nuts)
- Mechanical Joint Accessory Kits Less Gland (Gasket, T-head Bolts, and Nuts)
- Stainless Steel T-head Bolts and Nuts
- Fluoropolymer Coated T-head Bolts and Nuts



Wedge Restraints

- 3” - 48” Series 1000 TUF Grip™ Restraint for Ductile Iron Pipe
- 4” - 24” Series 1500 TUF Grip™ Dual Wedge Restraint for PVC, Ductile and HDPE Pipe
- 3” - 36” Series 2000 TUF Grip™ Restraint for PVC Pipe
- 3” - 24” Sure Stop 350® Gasket for Ductile Pipe
- 3” - 12” Sure Stop PVC® Gasket for PVC Pipe



Serrated Clamps

- 4” - 36” Series 3000PP Pipe to Pipe Clamp for PVC Pipe
- 4” - 36” Series 3000MJ Pipe to MJ Fitting Clamp for PVC Pipe
- 4” - 24” Series 3000PO Pipe to Push-on Fitting Clamp for PVC Pipe
- 4” - 16” Series 3000PS Pipe Stop for PVC Pipe

Municipal Castings

- Slip Type Valve Boxes
- Threaded Valve Boxes
- Extensions, Risers, and Water Lids
- Meter Boxes

Threaded Product

- 2” - 48” Xtra High Hub Threaded Companion Flange
- 2” - 48” Tapped Xtra High Hub Threaded Companion Flange
- 3” - 36” 250lb. Threaded Companion Flanges
- 3” - 48” MJ Thread-on Bell C110

Tyler Union
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