



# TYLER UNION®

Quality Waterworks Products



## WATERWORKS CATALOG

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Product Warranty with Terms and Conditions of Sale located at [www.McWane.com](http://www.McWane.com)

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C153 DUCTILE IRON COMPACT FITTINGS

**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 4" (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.

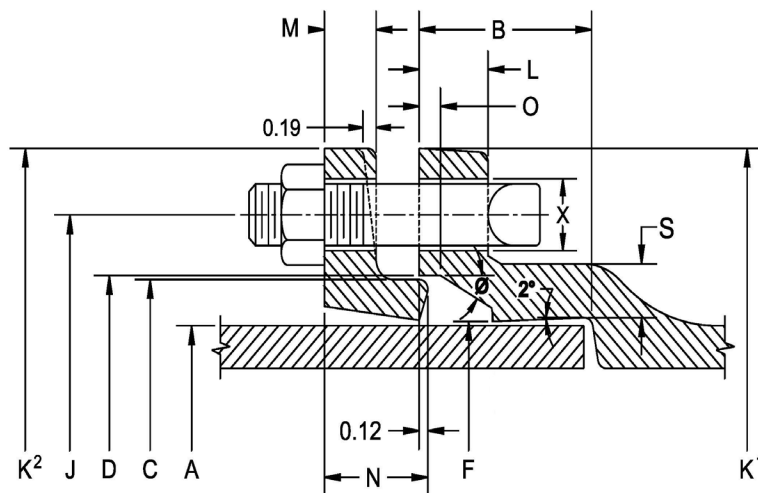
**NOTE:** Wyes over 12" are not pressure rated. Contact manufacturer for rating in your application.

**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.

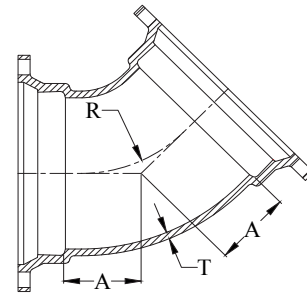
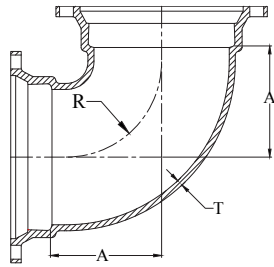
| Nominal Joint Dimensions in Inches |       |      |       |       |       |     |       |       |       |       |      |      |      |      |
|------------------------------------|-------|------|-------|-------|-------|-----|-------|-------|-------|-------|------|------|------|------|
| Size                               | A     | B    | C     | D     | F     | ø   | X     | J     | K1    | K2    | L    | M    | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 0.38 | 1.35 |
| 54                                 | 57.56 | 4.00 | 58.82 | 59.02 | 57.73 | 20° | 1 3/8 | 63.20 | 65.70 | 65.70 | 1.55 | 2.00 | 0.38 | 1.45 |
| 60                                 | 61.61 | 4.00 | 62.87 | 63.07 | 61.78 | 20° | 1 3/8 | 67.72 | 70.22 | 70.22 | 1.75 | 2.00 | 0.38 | 1.50 |
| 64                                 | 65.67 | 4.00 | 66.96 | 67.13 | 65.84 | 20° | 1 3/8 | 71.86 | 74.36 | 74.36 | 1.75 | 2.00 | 0.38 | 1.50 |

**NOTE:** For projects where product weights, specifications or dimensions are critical, advise upon order placement



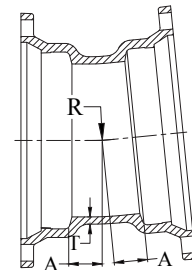
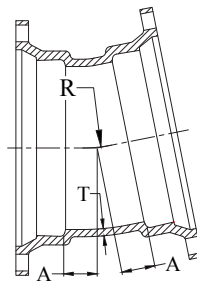
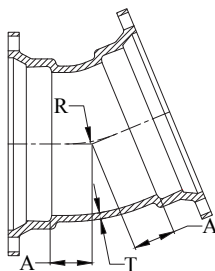
ANSI/AWWA  
C153 Mechanical Joint Fittings

**C153 DUCTILE IRON COMPACT FITTINGS**



| 90° Bends (1/4) |      |       |        |        | 45° Bends (1/8) |       |        |        |       |        |       |        |
|-----------------|------|-------|--------|--------|-----------------|-------|--------|--------|-------|--------|-------|--------|
| Domestic        |      |       | Import |        | Domestic        |       |        | Import |       |        |       |        |
| Size            | T    | A     | R      | Weight | T               | A     | Weight | A      | R     | Weight | A     | Weight |
| 3               | 0.34 | 3.50  | 2.50   | 26     | 0.33            | 3.50  | 19     | 2.00   | 2.41  | 17     | 1.50  | 16     |
| 4               | 0.35 | 4.00  | 3.00   | 26     | 0.34            | 4.00  | 24     | 2.50   | 3.56  | 22     | 2.00  | 22     |
| 6               | 0.37 | 6.00  | 5.00   | 45     | 0.36            | 5.00  | 39     | 3.50   | 7.25  | 38     | 3.00  | 32     |
| 8               | 0.39 | 7.00  | 6.00   | 62     | 0.38            | 6.50  | 57     | 4.00   | 8.44  | 51     | 3.50  | 46     |
| 10              | 0.41 | 7.50  | 6.50   | 89     | 0.40            | 7.50  | 89     | 5.00   | 10.88 | 75     | 4.50  | 70     |
| 12              | 0.43 | 9.00  | 8.00   | 114    | 0.42            | 9.00  | 108    | 5.98   | 13.25 | 108    | 5.50  | 101    |
| 14              | 0.51 | 12.00 | 11.50  | 210    | 0.47            | 11.50 | 210    | 5.50   | 12.06 | 156    | 5.00  | 160    |
| 16              | 0.52 | 13.00 | 12.50  | 268    | 0.50            | 12.50 | 264    | 5.50   | 10.42 | 191    | 5.50  | 202    |
| 18              | 0.59 | 14.00 | 13.00  | 375    | 0.54            | 14.00 | 335    | 6.00   | 11.18 | 252    | 6.00  | 250    |
| 20              | 0.60 | 17.00 | 15.50  | 443    | 0.57            | 15.00 | 400    | 7.00   | 13.59 | 303    | 7.00  | 305    |
| 24              | 0.62 | 17.00 | 15.50  | 663    | 0.61            | 16.75 | 565    | 7.50   | 14.89 | 398    | 7.50  | 405    |
| 30              | 0.66 | 21.50 | 19.00  | 1005   | 0.66            | 21.50 | 930    | 10.50  | 9.31  | 850    | 10.50 | 780    |
| 36              | 0.74 | 24.50 | 22.00  | 1540   | 0.74            | 24.50 | 1450   | 11.50  | 21.73 | 1135   | 11.50 | 1135   |
| 42              | 0.82 | 29.25 | 26.70  | 2380   | 0.82            | 29.25 | 2205   | 14.00  | 27.76 | 1675   | 14.00 | 1610   |
| 48              | 0.90 | 33.25 | 30.80  | 3084   | 0.90            | 33.25 | 2990   | 15.00  | 30.17 | 2196   | 15.00 | 2090   |

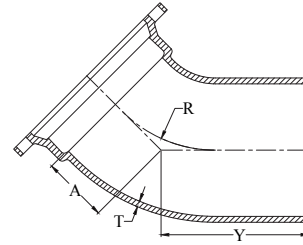
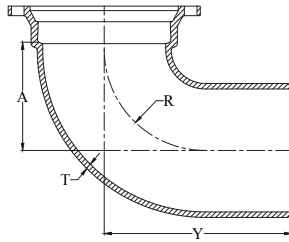
\*\*NOTE: Other sizes available, contact Tyler Union for information



| 22½° Bends (1/16) |       |       |        | 11¼° Bends (1/32) |        |      |        | 5 - 5/8 Bends (1/64) MJ x MJ |      |        |      |       |        |
|-------------------|-------|-------|--------|-------------------|--------|------|--------|------------------------------|------|--------|------|-------|--------|
| Domestic          |       |       | Import | Domestic          |        |      | Import | Import                       |      |        |      |       |        |
| Size              | A     | R     | Weight | A                 | Weight | A    | R      | Weight                       | A    | Weight | A    | R     | Weight |
| 3                 | 1.50  | 2.51  | 16     | 1.00              | 15     | 1.25 | 2.53   | 15                           | 1.00 | 14     | 1.25 | 5.08  | 16     |
| 4                 | 1.75  | 3.81  | 21     | 1.50              | 18     | 1.50 | 5.12   | 21                           | 1.30 | 16     | 1.50 | 7.61  | 18     |
| 6                 | 2.25  | 6.35  | 31     | 2.00              | 31     | 1.50 | 5.12   | 30                           | 1.50 | 30     | 1.50 | 10.15 | 29     |
| 8                 | 2.85  | 11.80 | 44     | 2.50              | 46     | 2.06 | 15.80  | 43                           | 1.80 | 42     | 1.75 | 12.69 | 45     |
| 10                | 3.35  | 14.35 | 67     | 3.00              | 64     | 2.32 | 18.36  | 58                           | 2.00 | 58     | 2.00 | 15.23 | 59     |
| 12                | 3.86  | 16.90 | 81     | 3.50              | 80     | 2.56 | 20.90  | 68                           | 2.30 | 67     | 2.30 | 17.77 | 82     |
| 14                | 3.93  | 17.25 | 139    | 3.75              | 136    | 2.59 | 21.25  | 123                          | 2.50 | 93     | 2.50 | 20.31 | 136    |
| 16                | 3.98  | 17.50 | 172    | 3.75              | 172    | 2.62 | 21.50  | 145                          | 2.50 | 148    | 2.50 | 20.31 | 157    |
| 18                | 4.50  | 15.11 | 275    | 4.50              | 255    | 3.00 | 16.52  | 205                          | 3.00 | 205    | 3.00 | 25.38 | 283    |
| 20                | 4.50  | 15.07 | 341    | 4.50              | 310    | 3.00 | 15.23  | 245                          | 3.00 | 245    | 3.00 | 25.38 | 374    |
| 24                | 4.50  | 15.51 | 333    | 4.50              | 366    | 3.00 | 16.10  | 304                          | 3.00 | 315    | 3.00 | 25.38 | 487    |
| 30                | 6.75  | 21.36 | 670    | 6.75              | 665    | 4.75 | 22.84  | 551                          | 4.80 | 600    | 3.75 | 32.97 | 600    |
| 36                | 7.75  | 26.39 | 978    | 7.75              | 960    | 5.00 | 25.38  | 870                          | 5.00 | 820    | 4.00 | 34.55 | 820    |
| 42                | 9.00  | 32.68 | 1352   | 9.00              | 1350   | 6.00 | 35.54  | 1163                         | 6.00 | 1180   | 5.00 | 42.71 | 1180   |
| 48                | 10.00 | 27.70 | 1757   | 10.00             | 1760   | 6.50 | 40.61  | 1474                         | 6.50 | 1475   | 5.50 | 47.35 | 1475   |

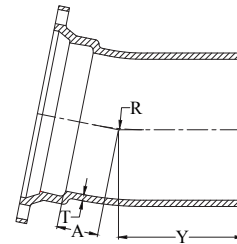
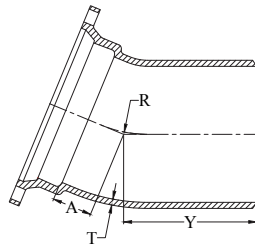
NOTE: Contact Tyler Union for details on 54" through 64" NOTE: For projects where product weights, specifications or dimensions are critical, advise upon order placement.

C153 DUCTILE IRON COMPACT FITTINGS

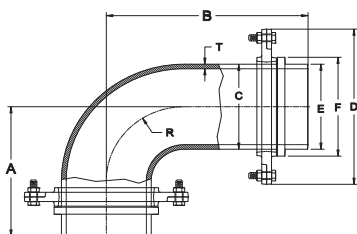


| 90° Bend MJ x PE (1/4) |      |       |       |       |        |        |       |       |        | 45° Bend MJ x PE (1/8) |       |       |        |        |       |        |
|------------------------|------|-------|-------|-------|--------|--------|-------|-------|--------|------------------------|-------|-------|--------|--------|-------|--------|
| Domestic               |      |       |       |       |        | Import |       |       |        | Domestic               |       |       |        | Import |       |        |
| Size                   | T    | A     | Y     | R     | Weight | T      | A     | Y     | Weight | A                      | Y     | R     | Weight | A      | Y     | Weight |
| 3                      | 0.34 | 3.50  | 9.00  | 2.50  | 17     | 0.33   | 3.25  | 8.50  | 16     | 2.00                   | 7.50  | 2.41  | 17     | 1.50   | 7.00  | 13     |
| 4                      | 0.35 | 4.00  | 9.50  | 3.00  | 26     | 0.34   | 4.00  | 9.50  | 22     | 2.50                   | 8.00  | 3.56  | 21     | 2.00   | 7.50  | 19     |
| 6                      | 0.37 | 6.00  | 11.50 | 5.00  | 41     | 0.36   | 5.00  | 11.50 | 41     | 3.20                   | 8.70  | 5.49  | 35     | 3.00   | 8.50  | 34     |
| 8                      | 0.39 | 7.50  | 13.00 | 7.00  | 64     | 0.38   | 6.50  | 12.50 | 58     | 4.00                   | 9.50  | 8.44  | 54     | 3.50   | 9.00  | 49     |
| 10                     | 0.41 | 9.50  | 15.00 | 9.00  | 89     | 0.40   | 7.50  | 13.00 | 83     | 5.00                   | 10.50 | 10.88 | 69     | 4.50   | 10.00 | 69     |
| 12                     | 0.43 | 9.00  | 14.40 | 6.00  | 121    | 0.42   | 9.00  | 14.50 | 114    | 6.00                   | 11.50 | 13.25 | 94     | 5.50   | 11.00 | 93     |
| 14                     | 0.51 | 12.00 | 20.00 | 11.50 | 221    | 0.47   | 11.50 | 19.50 | 197    | 5.50                   | 13.40 | 10.85 | 170    | 5.00   | 13.00 | 146    |
| 16                     | 0.52 | 13.00 | 21.00 | 12.50 | 261    | 0.50   | 12.50 | 20.50 | 248    | 6.00                   | 14.00 | 13.25 | 188    | 5.50   | 13.50 | 184    |
| 18                     | 0.59 | 15.50 | 23.50 | 14.00 | —      | 0.54   | 14.00 | 22.00 | 360    | 6.00                   | 14.00 | 11.18 | —      | 6.00   | 11.18 | 240    |
| 20                     | 0.60 | 15.00 | 23.00 | 13.50 | 400    | 0.57   | 15.00 | 22.50 | 390    | 7.00                   | 15.30 | 13.97 | 290    | 7.00   | 14.00 | 290    |
| 24                     | 0.62 | 17.00 | 25.00 | 15.50 | 600    | 0.61   | 17.00 | 25.00 | 575    | 7.50                   | 16.60 | 14.69 | 410    | 7.50   | 14.50 | 390    |
| 30                     | 0.68 | 21.50 | 30.50 | 19.00 | 865    | 0.66   | 21.50 | 30.50 | 865    | 10.50                  | 19.50 | 19.31 | 715    | 10.50  | 19.50 | 715    |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings



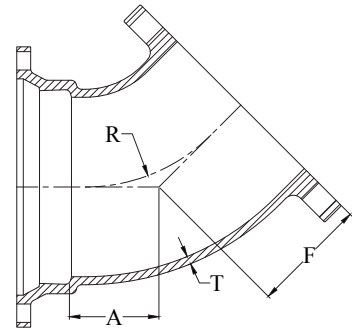
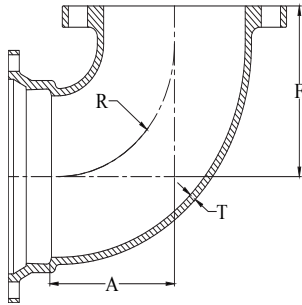
| 22 1/2° Bend MJ x PE (1/16) |      |       |       |        |        |       |        | 11 1/4° Bend MJ x PE (1/32) |       |       |        |        |       |        |
|-----------------------------|------|-------|-------|--------|--------|-------|--------|-----------------------------|-------|-------|--------|--------|-------|--------|
| Domestic                    |      |       |       |        | Import |       |        | Domestic                    |       |       |        | Import |       |        |
| Size                        | A    | Y     | R     | Weight | A      | Y     | Weight | A                           | Y     | R     | Weight | A      | Y     | Weight |
| 3                           | 1.50 | 7.00  | 2.51  | 15     | 1.00   | 6.50  | 12     | 1.25                        | 6.75  | 7.62  | 15     | 1.00   | 6.50  | 12     |
| 4                           | 1.75 | 7.25  | 3.81  | 17     | 1.50   | 7.00  | 18     | 1.50                        | 7.00  | 5.12  | 17     | 1.25   | 6.25  | 17     |
| 6                           | 2.25 | 7.75  | 6.35  | 28     | 2.00   | 7.50  | 29     | 1.50                        | 7.00  | 5.12  | 29     | 1.50   | 7.00  | 27     |
| 8                           | 2.84 | 8.34  | 11.80 | 44     | 2.50   | 8.00  | 43     | 2.05                        | 7.55  | 15.80 | 38     | 1.75   | 7.25  | 39     |
| 10                          | 3.35 | 8.85  | 14.35 | 64     | 3.00   | 8.50  | 61     | 2.31                        | 7.81  | 18.36 | 52     | 2.00   | 7.50  | 52     |
| 12                          | 3.50 | 9.00  | 12.70 | 77     | 3.50   | 9.00  | 79     | 2.56                        | 8.06  | 20.90 | 86     | 2.25   | 7.75  | 69     |
| 14                          | 3.93 | 11.93 | 17.25 | 121    | 3.75   | 11.25 | 133    | 2.59                        | 10.59 | 21.25 | 134    | 2.50   | 10.50 | 118    |
| 16                          | 3.98 | 11.98 | 17.50 | 167    | 3.75   | 11.75 | 166    | 2.62                        | 10.62 | 21.50 | 161    | 2.50   | 10.50 | 136    |
| 18                          | 4.50 | 12.50 | 15.11 | —      | 4.50   | 12.50 | 248    | 3.00                        | 11.00 | 16.52 | —      | 3.00   | 11.00 | 248    |
| 20                          | 7.00 | 14.00 | 35.19 | 290    | 7.00   | 14.00 | 300    | 7.00                        | 14.00 | 21.07 | 290    | 7.00   | 14.00 | 300    |
| 24                          | 9.00 | 17.66 | 37.69 | 345    | 7.50   | 14.50 | 395    | 9.00                        | 26.12 | 12.00 | 475    | 7.50   | 14.50 | 400    |
| 30                          | 6.75 | 15.75 | 21.36 | 600    | 6.75   | 15.75 | 600    | 4.75                        | 13.75 | 22.84 | 535    | 4.75   | 13.75 | 535    |



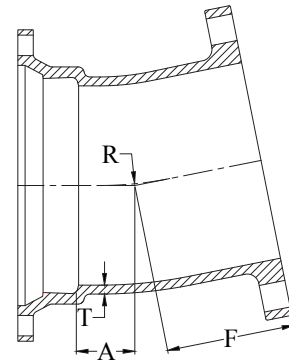
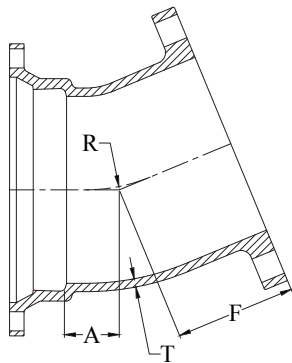
| 90° Swivel x Swivel Hydrant Ell |      |       |       |      |       |      |      |      |          |
|---------------------------------|------|-------|-------|------|-------|------|------|------|----------|
| Size                            | T    | A     | B     | C    | D     | E    | F    | R    | **Weight |
| 6                               | 0.37 | 10.50 | 15.50 | 6.90 | 11.20 | 6.81 | 7.98 | 6.00 | 68       |

NOTE: \*\*Weight includes two swivel glands.

**C153 DUCTILE IRON COMPACT FITTINGS**

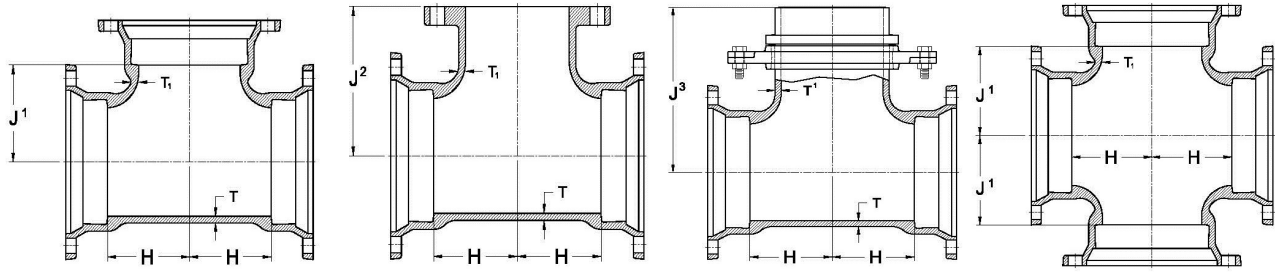


| 90° Bend MJ x FE (1/4) |      |       |       |       |        |      |       |       |        | 45° Bends MJ x FE (1/8) |       |       |        |        |       |        |
|------------------------|------|-------|-------|-------|--------|------|-------|-------|--------|-------------------------|-------|-------|--------|--------|-------|--------|
| Domestic               |      |       |       |       | Import |      |       |       |        | Domestic                |       |       |        | Import |       |        |
| Size                   | T    | A     | R     | F     | Weight | T    | A     | F     | Weight | A                       | F     | R     | Weight | A      | F     | Weight |
| 3                      | 0.34 | 3.50  | 2.50  | 5.50  | 21     | 0.34 | 4.00  | 5.50  | 21     | —                       | —     | —     | —      | —      | —     | —      |
| 4                      | 0.35 | 4.00  | 3.00  | 6.50  | 33     | 0.35 | 4.50  | 6.50  | 36     | 2.50                    | 4.00  | 3.56  | 34     | 2.50   | 4.00  | 24     |
| 6                      | 0.37 | 6.00  | 5.00  | 8.00  | 49     | 0.37 | 6.00  | 8.00  | 51     | 3.25                    | 5.00  | 5.49  | 39     | 3.25   | 5.00  | 37     |
| 8                      | 0.39 | 7.50  | 7.00  | 9.00  | 67     | 0.39 | 7.00  | 9.00  | 83     | 4.25                    | 5.50  | 7.93  | 54     | 3.75   | 5.50  | 71     |
| 10                     | 0.41 | 9.50  | 9.00  | 11.00 | 106    | 0.41 | 7.50  | 11.00 | 109    | 5.00                    | 6.50  | 9.76  | 84     | 4.75   | 6.50  | 103    |
| 12                     | 0.43 | 10.50 | 10.00 | 12.00 | 148    | 0.43 | 9.25  | 12.00 | 150    | 6.00                    | 7.50  | 12.19 | 112    | 5.75   | 7.50  | 151    |
| 14                     | 0.51 | 12.00 | 11.50 | 14.00 | 217    | 0.51 | 11.50 | 14.00 | 275    | 5.50                    | 8.50  | 10.85 | 181    | 5.00   | 7.50  | 207    |
| 16                     | 0.52 | 13.00 | 12.50 | 15.00 | 297    | 0.52 | 12.50 | 15.00 | 335    | 5.50                    | 9.00  | 10.42 | 218    | 5.75   | 8.00  | 311    |
| 18                     | 0.59 | 15.50 | 14.00 | 19.00 | —      | 0.54 | 14.50 | 16.50 | —      | 6.50                    | 10.00 | 12.36 | —      | 6.50   | 8.50  | —      |
| 20                     | 0.60 | 15.00 | 15.50 | 18.50 | —      | 0.57 | 15.00 | 18.00 | —      | 7.00                    | 10.50 | 13.59 | —      | 7.50   | 9.50  | —      |
| 24                     | 0.62 | 17.00 | 15.50 | 20.50 | —      | 0.62 | 16.75 | 22.00 | 618    | 7.50                    | 11.00 | 14.89 | —      | 8.00   | 11.00 | 575    |
| 30                     | 0.68 | 21.50 | 19.00 | 26.00 | —      | 0.68 | 21.50 | 26.00 | 1014   | 10.50                   | 15.00 | 9.31  | —      | 10.50  | 15.00 | 794    |



| 22 1/2° Bend MJ x FE (1/16) |      |       |       |        |      |      |        | 11 1/4° Bends MJ x FE (1/32) |      |       |        |        |      |        |
|-----------------------------|------|-------|-------|--------|------|------|--------|------------------------------|------|-------|--------|--------|------|--------|
| Domestic                    |      |       |       | Import |      |      |        | Domestic                     |      |       |        | Import |      |        |
| Size                        | A    | F     | R     | Weight | A    | F    | Weight | A                            | F    | R     | Weight | A      | F    | Weight |
| 3                           | —    | —     | —     | —      | —    | —    | —      | —                            | —    | —     | —      | —      | —    | —      |
| 4                           | 1.75 | 4.00  | 3.81  | 21     | 1.50 | 7.00 | 32     | 1.50                         | 7.00 | 5.12  | 20     | 1.50   | 4.00 | 28     |
| 6                           | 2.25 | 5.00  | 5.35  | 32     | 2.00 | 7.50 | 41     | 1.50                         | 7.00 | 5.12  | 29     | 1.75   | 5.00 | 40     |
| 8                           | 2.84 | 5.50  | 7.62  | 46     | 2.50 | 8.00 | 64     | 2.05                         | 7.55 | 15.80 | 42     | 2.00   | 5.50 | 53     |
| 10                          | 3.35 | 6.50  | 10.16 | 78     | 3.00 | 8.50 | 92     | 2.31                         | 7.81 | 18.36 | 58     | 2.25   | 6.50 | 88     |
| 12                          | 3.50 | 7.50  | 12.70 | 106    | 3.50 | 9.00 | 132    | 2.56                         | 8.06 | 20.90 | 85     | 2.50   | 7.50 | 114    |
| 14                          | —    | —     | —     | —      | —    | —    | —      | —                            | —    | —     | —      | —      | —    | —      |
| 16                          | —    | —     | —     | —      | —    | —    | —      | —                            | —    | —     | —      | —      | —    | —      |
| 18                          | 4.50 | 15.11 | 8.00  | —      | —    | —    | —      | 3.00                         | 6.50 | 16.52 | —      | —      | —    | —      |
| 20                          | 4.50 | 15.07 | 8.00  | —      | —    | —    | —      | 3.00                         | 6.50 | 15.23 | —      | —      | —    | —      |
| 24                          | 4.50 | 15.51 | 8.00  | —      | —    | —    | —      | 3.00                         | 6.50 | 16.10 | —      | —      | —    | —      |
| 30                          | 6.75 | 21.36 | 11.25 | —      | —    | —    | —      | 4.75                         | 7.25 | 22.84 | —      | —      | —    | —      |

C153 DUCTILE IRON COMPACT FITTINGS

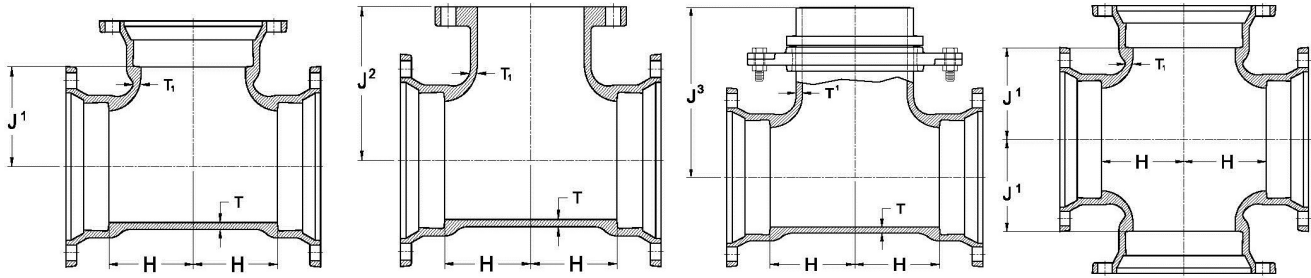


|       |      | MJ Tee   |       |       |       |       | MJxFE Tee |         |         |       | MJxSwivel Tee |      |       |       | Cross  |       |
|-------|------|----------|-------|-------|-------|-------|-----------|---------|---------|-------|---------------|------|-------|-------|--------|-------|
|       |      | Domestic |       |       |       |       | Weight    |         |         |       | Import        |      |       |       | Weight |       |
| Size  | T    | T1       | H     | J1    | J2    | J3    | MJ        | MJ x FE | †MJ x S | 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  | —     | 37        | 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  | 5.00  | 42     | —     |
| 6x4   | 0.37 | 0.35     | 5.00  | 6.00  | 8.00  | —     | 52        | 57      | —       | 62    | 0.36          | 0.34 | 4.00  | 5.00  | 46     | 57    |
| 6     | 0.37 | 0.37     | 6.00  | 6.00  | 8.00  | 10.50 | 62        | 69      | 61      | 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     | 5.00  | 6.50  | 9.00  | —     | 68        | 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        | 87      | 74      | 98    | 0.38          | 0.36 | 5.00  | 6.50  | 72     | 74    |
| 8     | 0.39 | 0.39     | 6.50  | 6.50  | 9.00  | 11.50 | 89        | 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     | 84    |
| 10x6  | 0.41 | 0.37     | 5.50  | 7.50  | 11.00 | 13.00 | 99        | 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       | 133     | 132     | 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 | 14.00 | 16.00 | 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 | —     | 337       | 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 | —     | —     | 445       | —       | —       | —     | 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     | 7.00  | 14.00 | 16.00 | 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 | —     | —     | 417       | —       | —       | —     | 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 | —     | —     | 530       | —       | —       | —     | 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    | —     |

NOTE: Contact TU Inside Sales representative for MJ Crosses larger than 16 inch. †MJxSwl Weights include swivel gland

\*\*NOTE: Other sizes available, contact Tyler Union for information.

C153 DUCTILE IRON COMPACT FITTINGS

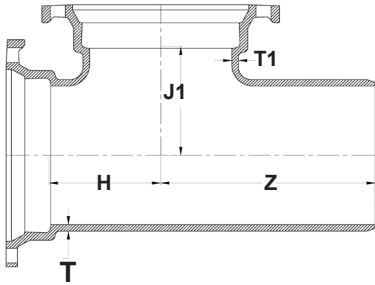


| MJ Tee   |      |      |       | MJxFE Tee |       |       | MJxSwivel Tee |         |         |      | Cross  |       |       |      |       |
|----------|------|------|-------|-----------|-------|-------|---------------|---------|---------|------|--------|-------|-------|------|-------|
| Domestic |      |      |       | Weight    |       |       | Import        |         |         |      | Weight |       |       |      |       |
| Size     | T    | T1   | *H    | *J1       | *J2   | *J3   | MJ            | MJ x FE | †MJ x S | 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     | —     | —     | 740           | —       | —       | 0.61 | 0.57   | 14.00 | 16.00 | 660  | 1589  |
| 24       | 0.62 | 0.62 | 16.00 | 16.00     | —     | —     | 844           | —       | —       | 0.61 | 0.61   | 16.00 | 16.00 | 720  | —     |
| 30x6     | 0.66 | 0.36 | 8.00  | 20.00     | —     | —     | 700           | —       | —       | 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          | —       | —       | 0.66 | 0.66   | 20.00 | 20.00 | 1323 | 1840  |
| 36x6     | 0.74 | 0.36 | 7.00  | 23.50     | —     | —     | 630           | —       | —       | 0.74 | 0.36   | 8.00  | 23.50 | 685  | —     |
| 36x8     | 0.74 | 0.38 | 9.00  | 23.50     | —     | —     | 739           | —       | —       | 0.74 | 0.38   | 8.50  | 23.50 | 739  | —     |
| 36x10    | 0.74 | 0.47 | 10.00 | 23.50     | —     | —     | 739           | —       | —       | 0.74 | 0.40   | 10.00 | 23.50 | 830  | 882   |
| 36x12    | 0.74 | 0.49 | 10.00 | 23.50     | —     | —     | 959           | —       | —       | 0.74 | 0.42   | 12.50 | 23.50 | 959  | —     |
| 36x14    | 0.74 | 0.56 | 12.50 | 23.50     | —     | —     | 1103          | —       | —       | 0.74 | 0.47   | 10.00 | 23.50 | 1146 | —     |
| 36x16    | 0.74 | 0.57 | 12.50 | 23.50     | —     | —     | 1385          | —       | —       | 0.74 | 0.50   | 12.50 | 23.50 | 1190 | —     |
| 36x18    | 0.74 | 0.59 | 13.00 | 23.50     | —     | —     | 1400          | —       | —       | 0.74 | 0.54   | 12.50 | 23.50 | 1410 | —     |
| 36x20    | 0.74 | 0.60 | 15.00 | 23.50     | —     | —     | 1521          | —       | —       | 0.74 | 0.57   | 12.50 | 23.50 | 1365 | —     |
| 36x24    | 0.74 | 0.61 | 16.00 | 23.50     | —     | —     | 1533          | —       | —       | 0.74 | 0.61   | 16.00 | 23.50 | 1446 | 1785  |
| 36x30    | 0.74 | 0.66 | 20.00 | 23.50     | —     | —     | 2270          | —       | —       | 0.74 | 0.66   | 20.00 | 23.50 | 1675 | —     |
| 36       | 0.74 | 0.74 | 23.50 | 23.50     | —     | —     | 1910          | —       | —       | 0.74 | 0.74   | 23.50 | 23.50 | 2015 | 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.

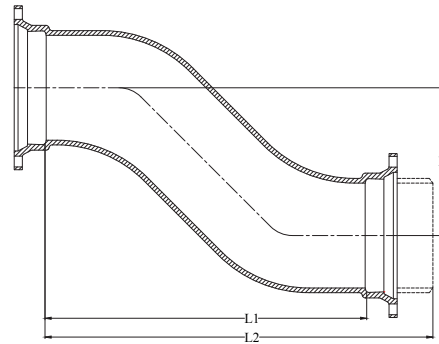
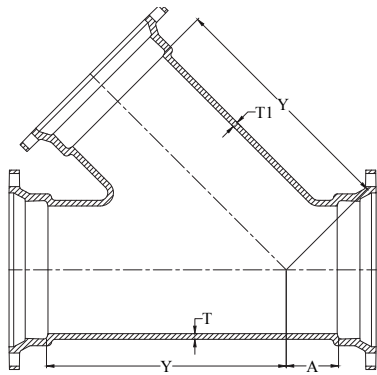


C153 DUCTILE IRON COMPACT FITTINGS



| MJxPExMJ TEES |      |      |      |      |       |        |        |      |       |       |       |        |
|---------------|------|------|------|------|-------|--------|--------|------|-------|-------|-------|--------|
| Domestic      |      |      |      |      |       |        | Import |      |       |       |       |        |
| Size          | T    | T1   | *H   | *J1  | *Z    | Weight | T      | T1   | *H    | *J1   | *Z    | Weight |
| 6             | 0.37 | 0.37 | 5.00 | 5.00 | 11.50 | 57     | 0.37   | 0.37 | 8.00  | 8.00  | 16.00 | 57     |
| 8x6           | 0.39 | 0.37 | 5.50 | 6.50 | 11.50 | 79     | 0.39   | 0.37 | 9.00  | 9.00  | 17.00 | 79     |
| 8             | 0.39 | 0.39 | 6.50 | 6.50 | 12.50 | 81     | 0.38   | 0.38 | 9.00  | 9.00  | 17.00 | 77     |
| 10            | 0.41 | 0.41 | 7.50 | 7.50 | 13.00 | 133    | 0.40   | 0.40 | 11.00 | 11.00 | 19.00 | 120    |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings

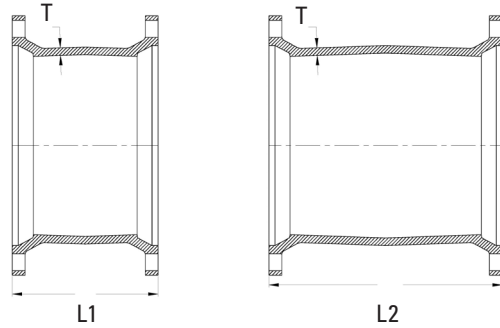
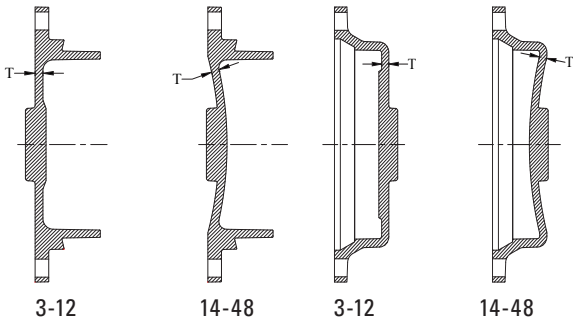


| WYES/LATERAL |      |       |      |      |         |
|--------------|------|-------|------|------|---------|
| Size         | *A   | *Y    | T    | T1   | Weights |
| 3            | 2.50 | 7.50  | 0.34 | 0.34 | 36      |
| 4x3          | 2.00 | 8.50  | 0.35 | 0.34 | 39      |
| 4            | 2.50 | 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 | 16.00 | 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 | 129     |
| 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 | 269     |
| 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 | 471     |
| 16           | 6.50 | 28.00 | 0.52 | 0.52 | 635     |

\*Not in AWWA C153. "A" & "Y" are approximate dim.

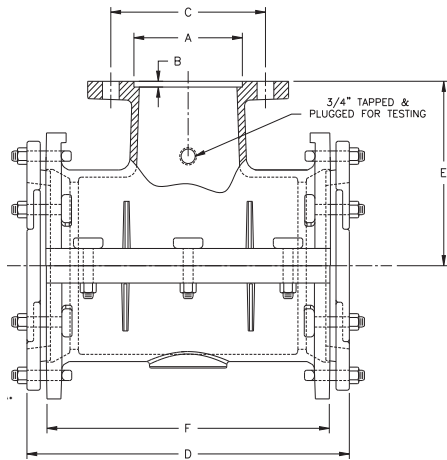
| OFFSETS (MJ x MJ) or (MJxPE) |       |       |       |         |         |
|------------------------------|-------|-------|-------|---------|---------|
| Import                       |       |       |       | Weights |         |
| Size                         | D     | L1    | L2    | MJ x MJ | MJ x PE |
| 3                            | 6.00  | 9.00  | 14.50 | 23      | 29      |
| 3                            | 12.00 | 15.00 | 20.50 | 34      | 39      |
| 3                            | 18.00 | 21.00 | 26.50 | 40      | 48      |
| 3                            | 24.00 | 27.00 | 32.50 | 47      | 53      |
| 4                            | 6.00  | 10.00 | 15.50 | 32      | 44      |
| 4                            | 12.00 | 6.00  | 21.50 | 42      | 54      |
| 4                            | 18.00 | 22.00 | 27.50 | 56      | 65      |
| 4                            | 24.00 | 28.00 | 33.50 | 65      | 72      |
| 6                            | 6.00  | 12.00 | 17.50 | 55      | 54      |
| 6                            | 12.00 | 18.00 | 23.50 | 72      | 68      |
| 6                            | 18.00 | 24.00 | 29.50 | 88      | 96      |
| 6                            | 24.00 | 30.00 | 35.50 | 111     | 117     |
| 8                            | 6.00  | 13.00 | 18.50 | 79      | 78      |
| 8                            | 12.00 | 19.00 | 24.50 | 103     | 110     |
| 8                            | 18.00 | 25.00 | 30.50 | 128     | 124     |
| 10                           | 6.00  | 15.00 | 20.50 | 112     | 130     |
| 10                           | 12.00 | 21.00 | 26.50 | 148     | 172     |
| 10                           | 18.00 | 27.00 | 32.50 | 176     | 189     |
| 12                           | 6.00  | 17.00 | 22.50 | 157     | -       |
| 12                           | 12.00 | 23.00 | 28.50 | 174     | 198     |
| 12                           | 18.00 | 29.00 | 34.50 | 210     | 270     |
| 12                           | 24.00 | 35.00 | 40.50 | 298     | 334     |
| 12                           | 30.00 | 41.00 | 46.50 | 283     | 205     |

**C153 DUCTILE IRON COMPACT FITTINGS**



| SOLID & TAPPED PLUGS & CAPS |      |          |        |      |        |        |      |
|-----------------------------|------|----------|--------|------|--------|--------|------|
| Domestic                    |      |          |        |      | Import |        |      |
| Size                        | T    | Max. Tap | Weight |      | T      | Weight |      |
|                             |      |          | Plugs  | Caps |        | Plugs  | Caps |
| 3                           | 0.46 | 2        | 9      | 8    | 0.33   | 8      | 8    |
| 4                           | 0.46 | 2        | 9      | 10   | 0.34   | 10     | 9    |
| 6                           | 0.46 | 2        | 13     | 18   | 0.36   | 16     | 15   |
| 8                           | 0.46 | 2        | 25     | 26   | 0.38   | 26     | 22   |
| 10                          | 0.56 | 2        | 36     | 32   | 0.40   | 36     | 32   |
| 12                          | 0.56 | 2        | 47     | 46   | 0.42   | 46     | 42   |
| 14                          | 0.62 | 2        | 76     | 85   | 0.47   | 75     | 66   |
| 16                          | 0.62 | 2        | 98     | 94   | 0.50   | 95     | 92   |
| 18                          | 0.65 | 2        | 138    | 121  | 0.54   | 121    | 114  |
| 20                          | 0.66 | 2        | 158    | 149  | 0.57   | 135    | 125  |
| 24                          | 0.68 | 2        | 202    | 232  | 0.61   | 296    | 198  |
| 30                          | 0.66 | 2        | 426    | 345  | 0.66   | 355    | 345  |
| 36                          | 0.74 | 2        | 560    | 626  | 0.74   | 688    | 628  |
| 42                          | 0.82 | 2        | 1091   | 723  | 0.82   | -      | -    |
| 48                          | 0.90 | 2        | 1455   | 974  | 0.90   | -      | -    |

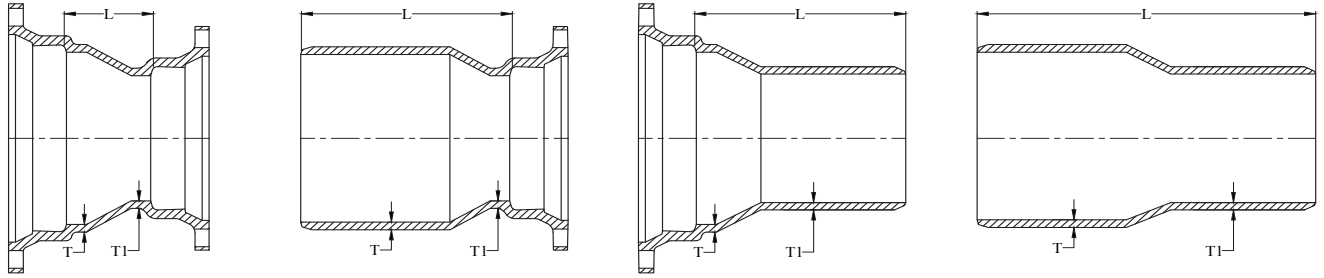
| SOLID SLEEVES |      |       |       |        |      |        |       |       |        |      |
|---------------|------|-------|-------|--------|------|--------|-------|-------|--------|------|
| Domestic      |      |       |       |        |      | Import |       |       |        |      |
| Size          | T    | L1    | L2    | Weight |      | T      | L1    | L2    | Weight |      |
|               |      |       |       | Short  | Long |        |       |       | Short  | Long |
| 3             | 0.34 | 7.50  | 12.00 | 13     | 22   | 0.33   | 7.50  | 12.00 | 12     | 17   |
| 4             | 0.35 | 7.50  | 12.00 | 19     | 25   | 0.34   | 7.50  | 12.00 | 15     | 20   |
| 6             | 0.37 | 7.50  | 12.00 | 28     | 37   | 0.36   | 7.50  | 12.00 | 23     | 29   |
| 8             | 0.39 | 7.50  | 12.00 | 38     | 49   | 0.38   | 7.50  | 12.00 | 31     | 45   |
| 10            | 0.41 | 7.50  | 12.00 | 48     | 68   | 0.40   | 7.50  | 12.00 | 45     | 61   |
| 12            | 0.43 | 7.50  | 12.00 | 58     | 81   | 0.42   | 7.50  | 12.00 | 56     | 76   |
| 14            | 0.56 | 9.50  | 15.00 | 107    | 153  | 0.47   | 9.50  | 15.00 | 94     | 128  |
| 16            | 0.57 | 9.50  | 15.00 | 116    | 174  | 0.50   | 9.50  | 15.00 | 118    | 159  |
| 18            | 0.68 | 9.50  | 15.00 | 154    | 207  | 0.54   | 9.00  | 15.00 | 145    | 200  |
| 20            | 0.69 | 9.50  | 15.00 | 200    | 249  | 0.57   | 9.00  | 15.00 | 173    | 236  |
| 24            | 0.75 | 9.50  | 15.00 | 232    | 323  | 0.61   | 9.00  | 15.00 | 226    | 306  |
| 30            | 0.74 | 15.00 | 24.00 | 549    | 640  | 0.66   | 15.00 | 24.00 | 472    | 634  |
| 36            | 0.74 | 15.00 | 24.00 | 725    | 868  | 0.74   | 15.00 | 24.00 | 673    | 889  |
| 42            | 0.82 | -     | 24.00 | -      | 1146 | 0.82   | 15.00 | 24.00 | 887    | 1150 |
| 48            | 0.90 | -     | 24.00 | -      | 1431 | 0.90   | 15.00 | 24.00 | 1136   | 1435 |



| TAPPING SLEEVE FOR CAST IRON/DUCTILE IRON |        |       |       |       |       |       |       |       |        |  |
|---|--------|-------|-------|-------|-------|-------|-------|-------|--------|--|
| Size                                      | A      | B     | C     | D     | E     | F     | Min.  | Max   | Weight |  |
| 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 | 11.00 | 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    |  |

Note: Visit [www.tylerunion.com](http://www.tylerunion.com) for assembly instructions.  
Tapping sleeve is assembled with gland and gasket.

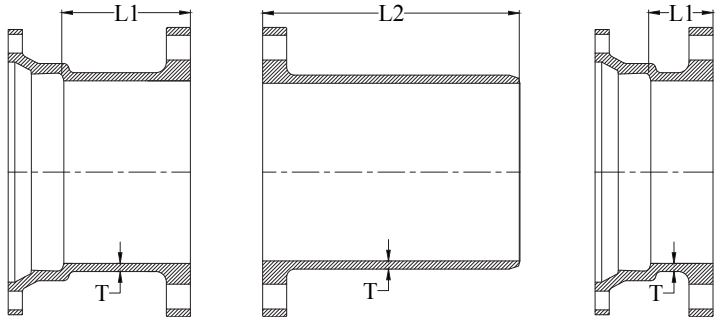
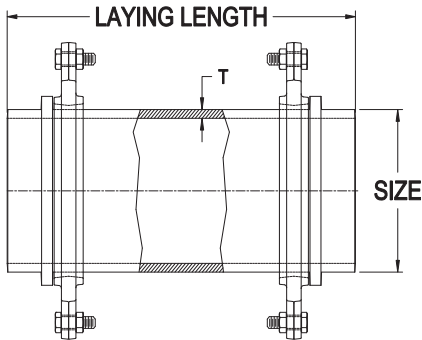
C153 DUCTILE IRON COMPACT FITTINGS



| Size  | MJxMJ |      | PExMJ-SEB |       |       |       |        |     |     |     | MJ-LEBxPE |      |       |       | PExPE |        |        |      |      |      |  |  |
|-------|-------|------|-----------|-------|-------|-------|--------|-----|-----|-----|-----------|------|-------|-------|-------|--------|--------|------|------|------|--|--|
|       |       |      | Domestic  |       |       |       |        |     |     |     | Import    |      |       |       |       |        |        |      |      |      |  |  |
|       | T     | T1   | MJ        | SEB   | LEB   | PE    | Weight |     |     |     | T         | T1   | MJ    | SEB   | LEB   | PE     | Weight |      |      |      |  |  |
| 4x3   | 0.35  | 0.34 | 3.00      | 8.50  | 8.50  | 14.00 | 18     | 17  | 17  | 18  | 0.34      | 0.33 | 3.00  | 8.50  | 8.50  | 14.00  | 18     | 17   | 18   | 14   |  |  |
| 6x3   | 0.37  | 0.34 | 5.00      | 10.50 | 10.50 | 16.00 | 28     | 25  | 27  | 20  | 0.36      | 0.33 | 5.00  | 10.50 | 10.50 | 16.00  | 22     | 24   | 19   | 16   |  |  |
| 6x4   | 0.37  | 0.35 | 4.00      | 9.50  | 9.50  | 15.00 | 28     | 26  | 27  | 26  | 0.36      | 0.34 | 4.00  | 9.50  | 9.50  | 15.00  | 24     | 25   | 25   | 22   |  |  |
| 8x4   | 0.39  | 0.35 | 5.00      | 10.50 | 10.50 | 16.00 | 36     | 34  | 36  | 33  | 0.38      | 0.34 | 5.00  | 10.50 | 10.50 | 16.00  | 32     | 30   | 34   | 30   |  |  |
| 8x6   | 0.39  | 0.37 | 4.00      | 9.50  | 9.50  | 15.00 | 39     | 38  | 39  | 30  | 0.38      | 0.36 | 4.00  | 9.50  | 9.50  | 15.00  | 36     | 35   | 32   | 30   |  |  |
| 10x4  | 0.41  | 0.35 | 7.00      | 12.50 | 12.50 | 18.00 | 53     | 46  | 51  | -   | 0.40      | 0.34 | 7.00  | 12.50 | 12.50 | 18.00  | 46     | 43   | 43   | 46   |  |  |
| 10x6  | 0.41  | 0.37 | 5.00      | 10.50 | 10.50 | 16.00 | 59     | 48  | 52  | 49  | 0.40      | 0.36 | 5.00  | 10.50 | 10.50 | 16.00  | 47     | 46   | 42   | 46   |  |  |
| 10x8  | 0.41  | 0.39 | 4.00      | 9.50  | 9.50  | 15.00 | 54     | 52  | 52  | 47  | 0.40      | 0.38 | 4.00  | 9.50  | 9.50  | 15.00  | 50     | 42   | 50   | 47   |  |  |
| 12x4  | 0.43  | 0.35 | 9.00      | 14.50 | 14.50 | 20.00 | 67     | 61  | 68  | 60  | 0.42      | 0.34 | 9.00  | 14.50 | 14.50 | 20.00  | 58     | 60   | 60   | 58   |  |  |
| 12x6  | 0.43  | 0.37 | 7.00      | 12.50 | 12.50 | 18.00 | 64     | 58  | 66  | 54  | 0.42      | 0.36 | 7.00  | 12.50 | 12.50 | 18.00  | 58     | 58   | 58   | 57   |  |  |
| 12x8  | 0.43  | 0.39 | 5.00      | 10.50 | 10.50 | 16.00 | 57     | 62  | 65  | 60  | 0.42      | 0.38 | 5.00  | 10.50 | 10.50 | 16.00  | 57     | 54   | 55   | 54   |  |  |
| 12x10 | 0.43  | 0.41 | 4.00      | 9.50  | 9.50  | 15.00 | 63     | 61  | 65  | 57  | 0.42      | 0.40 | 4.00  | 9.50  | 9.50  | 15.00  | 61     | 59   | 59   | 54   |  |  |
| 14x6  | 0.51  | 0.44 | 9.00      | 17.00 | 14.50 | 22.50 | 104    | 107 | 112 | -   | 0.47      | 0.36 | 9.00  | 16.90 | 14.50 | 22.30  | 100    | 100  | 104  | 93   |  |  |
| 14x8  | 0.51  | 0.45 | 7.00      | 15.00 | 12.50 | 20.50 | 104    | 107 | 108 | -   | 0.47      | 0.38 | 7.00  | 14.90 | 12.40 | 20.30  | 100    | 98   | 98   | 94   |  |  |
| 14x10 | 0.51  | 0.46 | 5.00      | 13.00 | 10.50 | 18.50 | 100    | 102 | 100 | -   | 0.47      | 0.40 | 5.00  | 12.90 | 10.40 | 18.30  | 100    | 94   | 92   | 90   |  |  |
| 14x12 | 0.51  | 0.47 | 4.00      | 12.00 | 9.50  | 17.50 | 100    | 101 | 100 | 100 | 0.47      | 0.42 | 4.00  | 11.90 | 9.40  | 17.30  | 100    | 90   | 92   | 88   |  |  |
| 16x6  | 0.52  | 0.45 | 11.00     | 19.00 | 16.50 | 24.50 | 132    | 131 | 141 | 128 | 0.50      | 0.36 | 11.00 | 18.90 | 16.50 | 24.30  | 124    | 125  | 136  | 93   |  |  |
| 16x8  | 0.52  | 0.46 | 9.00      | 17.00 | 14.50 | 22.50 | 136    | 128 | 136 | 136 | 0.50      | 0.38 | 9.00  | 16.90 | 14.40 | 22.30  | 124    | 121  | 128  | 119  |  |  |
| 16x10 | 0.52  | 0.47 | 7.00      | 15.00 | 12.50 | 20.50 | 128    | 124 | 128 | 123 | 0.50      | 0.40 | 7.00  | 15.00 | 12.50 | 20.50  | 124    | 105  | 123  | 119  |  |  |
| 16x12 | 0.52  | 0.48 | 5.00      | 13.00 | 10.50 | 18.50 | 120    | 123 | 119 | 11  | 0.50      | 0.42 | 5.00  | 12.90 | 10.50 | 18.30  | 112    | 109  | 108  | 99   |  |  |
| 16x14 | 0.52  | 0.51 | 4.00      | 12.00 | 12.00 | 20.00 | 140    | 139 | 138 | 133 | 0.50      | 0.47 | 4.00  | 12.00 | 12.00 | 19.70  | 140    | 126  | 132  | 129  |  |  |
| 18x8  | 0.59  | 0.45 | 14.00     | 22.00 | 19.50 | 27.50 | 201    | 180 | 195 | -   | 0.54      | 0.38 | 13.00 | 20.00 | 19.50 | 27.40  | 190    | 170  | 195  | 170  |  |  |
| 18x10 | 0.59  | 0.47 | 12.00     | 20.00 | 17.50 | 25.50 | 196    | 180 | 185 | -   | 0.54      | 0.40 | 10.00 | 18.00 | 17.40 | 25.50  | 195    | 165  | 185  | 160  |  |  |
| 18x12 | 0.59  | 0.49 | 10.00     | 18.00 | 15.50 | 23.50 | 175    | 170 | 190 | -   | 0.54      | 0.42 | 7.00  | 15.50 | 14.00 | 19.50  | 180    | 150  | 175  | 150  |  |  |
| 18x14 | 0.59  | 0.56 | 8.00      | 16.00 | 16.00 | 24.00 | 180    | 181 | 200 | -   | 0.54      | 0.47 | 6.00  | 15.00 | 15.00 | 23.00  | 190    | 175  | 190  | 160  |  |  |
| 18x16 | 0.59  | 0.57 | 7.00      | 15.00 | 15.00 | 23.00 | 194    | 180 | 190 | -   | 0.54      | 0.50 | 5.00  | 12.50 | 12.50 | 18.00  | 195    | 170  | 190  | 145  |  |  |
| 20x10 | 0.60  | 0.47 | 14.00     | 22.00 | 19.40 | 27.50 | 225    | 210 | 210 | -   | 0.57      | 0.40 | 14.00 | 22.00 | 19.00 | 27.50  | 220    | 200  | 210  | 180  |  |  |
| 20x12 | 0.60  | 0.49 | 12.00     | 20.00 | 17.50 | 25.50 | 214    | 208 | 210 | -   | 0.57      | 0.42 | 12.00 | 17.50 | 16.00 | 21.50  | 205    | 170  | 205  | 190  |  |  |
| 20x14 | 0.60  | 0.56 | 10.00     | 18.00 | 17.80 | 26.00 | 208    | 198 | 205 | -   | 0.57      | 0.47 | 10.00 | 18.00 | 17.90 | 26.00  | 200    | 190  | 205  | 195  |  |  |
| 20x16 | 0.60  | 0.57 | 8.00      | 16.00 | 15.80 | 24.00 | 225    | 215 | 222 | -   | 0.57      | 0.50 | 7.00  | 13.50 | 13.50 | 19.00  | 200    | 200  | 185  | 170  |  |  |
| 20x18 | 0.60  | 0.59 | 7.00      | 15.00 | 15.00 | 23.00 | 233    | 220 | -   | -   | 0.57      | 0.54 | 4.00  | 12.00 | 12.00 | 20.00  | 225    | 200  | 215  | 190  |  |  |
| 24x12 | 0.62  | 0.49 | 16.00     | 24.00 | 21.40 | 29.50 | 320    | 302 | 300 | -   | 0.61      | 0.42 | 16.00 | 21.50 | 21.00 | 22.50  | 305    | 275  | 290  | 240  |  |  |
| 24x14 | 0.62  | 0.56 | 14.00     | 22.00 | 21.80 | 30.00 | 314    | 325 | 322 | -   | 0.61      | 0.47 | 14.00 | 22.00 | 21.90 | 25.00  | 306    | 310  | 315  | 295  |  |  |
| 24x16 | 0.62  | 0.57 | 12.00     | 20.00 | 19.80 | 28.00 | 325    | 319 | 340 | -   | 0.61      | 0.50 | 12.00 | 17.50 | 17.50 | 23.00  | 320    | 285  | 285  | 285  |  |  |
| 24x18 | 0.62  | 0.59 | 10.00     | 18.00 | 18.00 | 26.00 | 325    | 310 | -   | -   | 0.61      | 0.54 | 10.00 | 18.00 | 18.00 | 21.00  | 305    | 300  | 310  | 290  |  |  |
| 24x20 | 0.62  | 0.60 | 8.00      | 16.00 | 16.00 | 24.00 | 315    | 305 | -   | -   | 0.61      | 0.57 | 7.00  | 13.50 | 13.50 | 14.00  | 300    | 270  | 275  | 240  |  |  |
| 30x16 | 0.66  | 0.50 | 30.00     | 39.00 | -     | -     | 475    | 565 | -   | -   | 0.66      | 0.50 | 30.00 | 39.00 | 39.00 | 48.00  | 633    | 565  | 623  | 555  |  |  |
| 30x18 | 0.66  | 0.54 | 28.00     | 37.00 | -     | -     | 495    | 590 | -   | -   | 0.66      | 0.54 | 28.00 | 37.00 | 37.00 | 46.00  | 658    | 590  | 635  | 567  |  |  |
| 30x20 | 0.66  | 0.57 | 24.00     | 33.00 | -     | -     | 525    | 560 | -   | -   | 0.66      | 0.57 | 24.00 | 33.00 | 33.00 | 42.00  | 628    | 560  | 603  | 535  |  |  |
| 30x24 | 0.66  | 0.61 | 10.00     | 24.50 | -     | -     | 478    | 495 | -   | -   | 0.66      | 0.61 | 10.00 | 24.50 | 24.50 | 33.50  | 478    | 495  | 526  | 458  |  |  |
| 36x16 | 0.74  | 0.50 | 30.00     | -     | -     | -     | 789    | 890 | -   | -   | 0.74      | 0.50 | 30.00 | 27.00 | -     | -      | 1016   | 595  | -    | -    |  |  |
| 36x20 | 0.74  | 0.57 | 36.00     | 45.00 | -     | -     | 970    | 874 | -   | -   | 0.74      | 0.57 | 36.00 | 45.00 | 45.00 | 54.00  | 975    | 874  | 950  | 849  |  |  |
| 36x24 | 0.74  | 0.61 | 19.00     | 33.00 | -     | -     | 770    | 746 | -   | -   | 0.74      | 0.61 | 19.00 | 33.00 | 33.00 | 42.00  | 770    | 746  | 810  | 709  |  |  |
| 36x30 | 0.74  | 0.66 | 15.50     | 24.50 | -     | -     | 838    | 725 | -   | -   | 0.74      | 0.66 | 15.50 | 24.50 | 24.50 | 725.00 | 650    | 33.5 | 758  | 657  |  |  |
| 42x30 | 0.82  | 0.74 | 20.00     | -     | -     | -     | 1067   | -   | -   | -   | 0.82      | 0.66 | 20.00 | 29.00 | 29.00 | 38.00  | 1083   | 931  | 1015 | 863  |  |  |
| 42x36 | 0.82  | 0.74 | 15.50     | -     | -     | -     | 1116   | -   | -   | -   | 0.82      | 0.74 | 15.50 | 24.50 | 24.50 | 33.50  | 1114   | 962  | 1013 | 861  |  |  |
| 48x30 | 0.90  | 0.66 | 40.00     | -     | -     | -     | 1852   | -   | -   | -   | 0.90      | 0.66 | 40.00 | 49.00 | 49.00 | 58.00  | 1779   | 1594 | 1711 | 1526 |  |  |
| 48x36 | 0.90  | 0.74 | 28.00     | -     | -     | -     | 1632   | -   | -   | -   | 0.90      | 0.74 | 28.00 | 37.00 | 37.00 | 46.00  | 1641   | 1456 | 1540 | 1355 |  |  |
| 48x42 | 0.90  | 0.82 | 15.50     | -     | -     | -     | 1486   | -   | -   | -   | 0.90      | 0.82 | 15.50 | 24.50 | 24.50 | 33.50  | 1426   | 1241 | 1274 | 1089 |  |  |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings

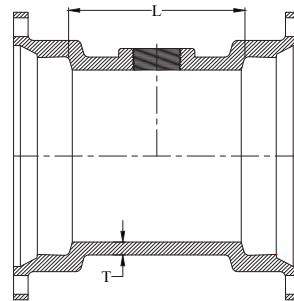
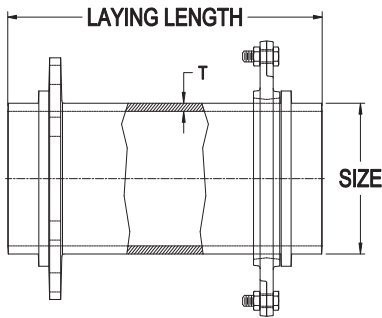
**C153 DUCTILE IRON COMPACT FITTINGS**



| SWIVEL X SWIVEL ADAPTER |                |        |
|-------------------------|----------------|--------|
| Size by Laying Length   | Wall Thickness | Weight |
| 6x12                    | 0.37           | 48     |
| 6x18                    | 0.37           | 49     |
| 6x24                    | 0.37           | 68     |

Adapter weights include swivel glands.

| Size | DOMESTIC MJxFE |         | FExPE  |        | NON-DOMESTIC MJxFE |        |       |
|------|----------------|---------|--------|--------|--------------------|--------|-------|
|      | Domestic       | Weights | Import | Weight | Import             | Weight |       |
|      | T              | L1      | L2     | MJxFE  | FExPE              | L1     | MJxFE |
| 3    | 0.34           | 6.00    | 12.00  | 18     | ...                |        |       |
| 4    | 0.35           | 6.00    | 12.00  | 26     | 23                 | 3.50   | 24    |
| 6    | 0.37           | 6.00    | 12.00  | 36     | 35                 | 3.50   | 37    |
| 8    | 0.39           | 6.00    | 12.00  | 55     | 43                 | 3.50   | 51    |
| 10   | 0.41           | 6.00    | 12.00  | 69     | 59                 | 3.50   | 70    |
| 12   | 0.43           | 6.00    | 12.00  | 88     | 88                 | 3.50   | 101   |
| 14   | 0.51           | 6.00    | 12.00  | 127    | -                  | 6.00   | 128   |
| 16   | 0.52           | 6.00    | 12.00  | 161    | 149                | 6.00   | 158   |
| 18   | 0.56           | 6.00    | -      | 173    | -                  | 6.00   | 176   |
| 20   | 0.60           | 6.00    | -      | 275    | -                  | 6.00   | 267   |
| 24   | 0.62           | 6.00    | -      | 271    | -                  | 6.00   | 288   |
| 30   | 0.66           | 7.00    | -      | 514    | -                  | 7.00   | 557   |
| 36   | 0.74           | 8.00    | -      | 770    | -                  | 8.00   | 798   |

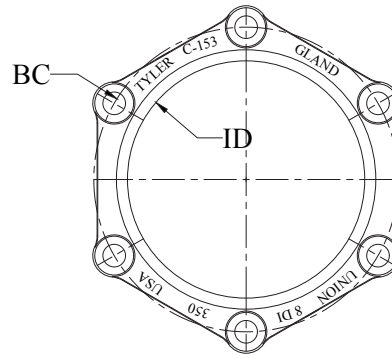
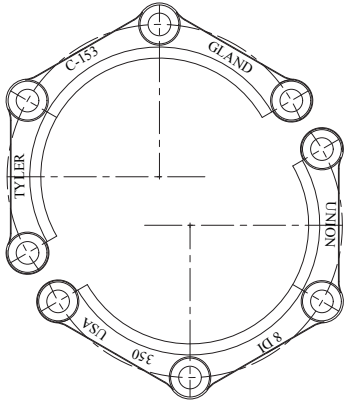


| SWIVEL X SOLID ADAPTER WITH SWIVEL GLAND |                |          |        |
|--|----------------|----------|--------|
| Size by Laying Length                    | Wall Thickness | Weight   |        |
|  |                | Domestic | Import |
| 6x13                                     | 0.37           | 46       | 51     |
| 6x18                                     | 0.37           | 64       | 61     |
| 6x24                                     | 0.37           | 75       | 74     |
| 8x12                                     | 0.39           | 63       | 67     |

Adapter weights include swivel glands.

| MJ TAPPED TEE (2" TAP) |      |      |          |          |        |
|------------------------|------|------|----------|----------|--------|
| Size                   | T    | L    | Max. Tap | Domestic | Import |
| 3                      | 0.34 | 6.00 | 2        | 22       | 20     |
| 4                      | 0.35 | 6.00 | 2        | 30       | 24     |
| 6                      | 0.37 | 6.00 | 2        | 44       | 35     |
| 8                      | 0.39 | 6.00 | 2        | 50       | 54     |
| 10                     | 0.41 | 6.00 | 2        | 92       | 68     |
| 12                     | 0.43 | 6.00 | 2        | 165      | 83     |
| 16                     | 0.52 | 6.00 | 2        | 177      | 162    |

C153 DUCTILE IRON COMPACT FITTINGS



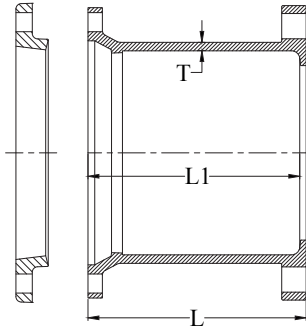
| MJ COMPACT SPLIT REPAIR GLANDS |                            |                    |               |
|--------------------------------|----------------------------|--------------------|---------------|
| Size                           | Inside Diameter (+.07-.03) | Bolt Circle (+.06) | Weight (lbs.) |
| 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         | 3      | 18   | 22     |
| 4         | 4      | 20   | 32     |
| 6         | 5      | 24   | 37     |
| 8         | 6      | 30   | 85     |
| 10        | 9      | 36   | 115    |
| 12        | 10     | 42   | 180    |
| 14        | 17     | 48   | 275    |
| 16        | 21     | —    | —      |

| MJ ACCESSORY KITS AND WEIGHTS |     |           |             |                    |                               |                  |
|-------------------------------|-----|-----------|-------------|--------------------|-------------------------------|------------------|
| Size                          | No. | Bolt Size | Bolt Length | Bolt Torque ft-lbs | Wt. of Gland, Bolt 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                           | 4.8              |
| 6                             | 6   | 3/4       | 3 1/2       | 75-90              | 9.8                           | 6.9              |
| 8                             | 6   | 3/4       | 4           | 75-90              | 11.3                          | 9.05             |
| 10                            | 8   | 3/4       | 4           | 75-90              | 15.6                          | 11.1             |
| 12                            | 8   | 3/4       | 4           | 75-90              | 17.3                          | 13.2             |
| 14                            | 10  | 3/4       | 4 1/2       | 75-90              | 26.5                          | 15.3             |
| 16                            | 12  | 3/4       | 4 1/2       | 75-90              | 31.9                          | 17.4             |
| 18                            | 12  | 3/4       | 4 1/2       | 75-90              | 36.2                          | 19.5             |
| 20                            | 14  | 3/4       | 4 1/2       | 75-90              | 42.2                          | 21.6             |
| 24                            | 16  | 3/4       | 5           | 75-90              | 54.2                          | 25.8             |
| 30                            | 20  | 1         | 6           | 100-120            | 224                           | 32               |
| 36                            | 24  | 1         | 6           | 100-120            | 179.7                         | 38.3             |
| 42                            | 28  | 1 1/4     | 6 1/2       | 120-150            | 382                           | 44.5             |
| 48                            | 32  | 1 1/4     | 6 1/2       | 120-150            | 463                           | 50.8             |
| 54                            | 36  | 1 1/4     | 6 1/2       | 120-150            | —                             | 57.56            |
| 60                            | 36  | 1 1/4     | 6 1/2       | 120-150            | —                             | 61.61            |
| 64                            | 38  | 1 1/4     | 6 1/2       | 120-150            | —                             | 65.67            |

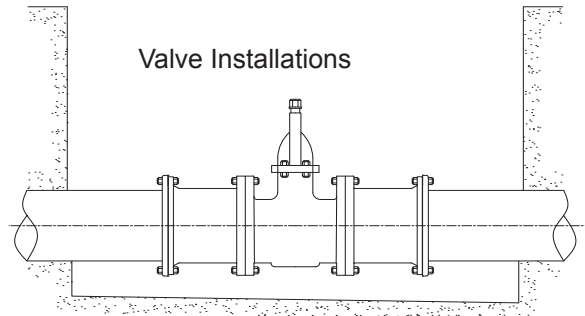
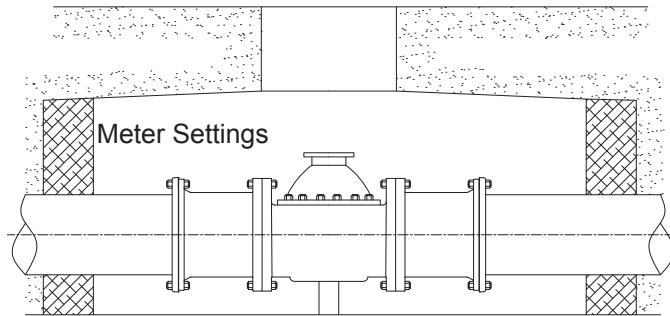
**C153 DUCTILE IRON COMPACT FITTINGS**



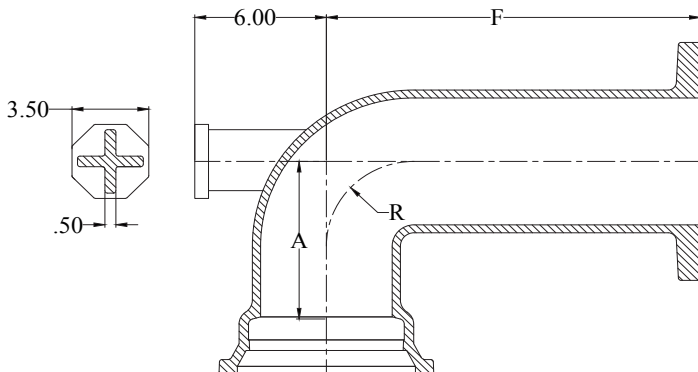
| MJxFE<br>Cutting-In Sleeve with Dual Purpose Accessories |                  |       |      |      |                        |
|--|------------------|-------|------|------|------------------------|
| Size   | For Pipe Size    | L     | L1   | T    | Shipping Wt. Assembled |
| 4  | 4.80–5.00 O.D.   | 10.00 | 9.50 | 0.35 | 33                     |
| 6  | 6.90–7.10 O.D.   | 10.00 | 9.50 | 0.37 | 50                     |
| 8  | 9.05–9.30 O.D.   | 10.00 | 9.50 | 0.39 | 67                     |
| 10   | 11.10–11.40 O.D. | 10.00 | 9.50 | 0.41 | 122                    |
| 12   | 13.20–13.50 O.D. | 10.00 | 9.50 | 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**



| MJ HYDRANT BURY |      |       |      |
|-----------------|------|-------|------|
| Size            | A    | F     | R    |
| 6x30            | 7.50 | 30.00 | 4.00 |
| 6x36            | 7.50 | 36.00 | 4.00 |
| 6x42            | 7.50 | 42.00 | 4.00 |
| 6x48            | 7.50 | 48.00 | 4.00 |

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

C110 DUCTILE IRON FULL BODY FITTINGS

## 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.

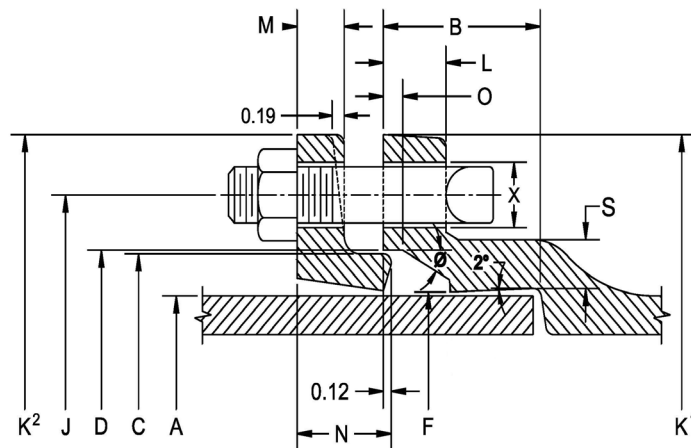
**NOTE:** EXCEPTIONS: Mechanical joint fittings with flanged branches and 14” and larger caps and plugs are rated for water pressure of 250 PSI.

**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.

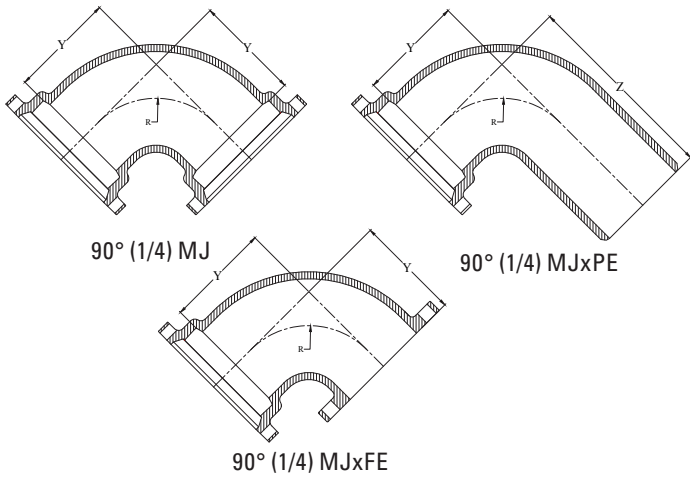
| Nominal Joint Dimensions in Inches |       |      |       |       |       |          |       |       |       |       |      |      |      |      |      |
|------------------------------------|-------|------|-------|-------|-------|----------|-------|-------|-------|-------|------|------|------|------|------|
| Size                               | A     | B    | C     | D     | F     | $\sigma$ | 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

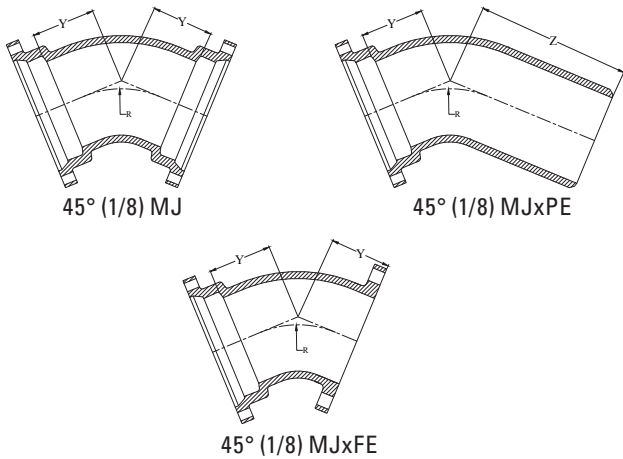
**C110 DUCTILE IRON FULL BODY FITTINGS**



90° (1/4) MJ

90° (1/4) MJxPE

90° (1/4) MJxFE

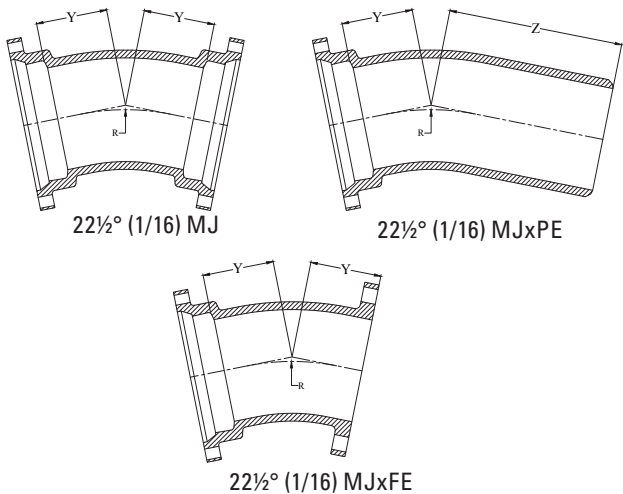


45° (1/8) MJ

45° (1/8) MJxPE

45° (1/8) MJxFE

\*Not included in ASSA C110.



22½° (1/16) MJ

22½° (1/16) MJxPE

22½° (1/16) MJxFE

**90° (1/4) BENDS**

| Size | Domestic |       |       |        |       |       | Import |       |
|------|----------|-------|-------|--------|-------|-------|--------|-------|
|      | R        | Y     | Z     | Weight |       |       | Weight |       |
|      |          |       |       | MJxMJ  | MJxPE | MJxFE | MJ     | MJxPE |
| *2   | 2.30     | 3.30  | —     | 16     | —     | —     | —      | —     |
| 3    | 4.00     | 5.50  | 13.50 | 26     | 36    | —     | 35     | 35    |
| 4    | 4.50     | 6.50  | 14.50 | 56     | 53    | 47    | 55     | 50    |
| 6    | 6.00     | 8.00  | 16.00 | 88     | 80    | 75    | 88     | 97    |
| 8    | 7.00     | 9.00  | 17.00 | 123    | 119   | 118   | 136    | 153   |
| 10   | 9.00     | 11.00 | 19.00 | 182    | 181   | 170   | 190    | 190   |
| 12   | 10.00    | 12.00 | 20.00 | 280    | 252   | 246   | 255    | 255   |
| 14   | 11.50    | 14.00 | 22.00 | 380    | —     | —     | 400    | —     |
| 16   | 12.50    | 15.00 | 23.00 | 552    | —     | 465   | 480    | 410   |
| 18   | 14.00    | 16.50 | 24.50 | 625    | 600   | 591   | 641    | 577   |
| 20   | 15.50    | 18.00 | 26.00 | 862    | 775   | —     | 725    | 650   |
| 24   | 18.50    | 22.00 | 30.00 | 1423   | 1301  | 1150  | 1020   | 985   |
| 30   | 21.50    | 25.00 | 33.00 | 1942   | 1920  | —     | 1843   | 1585  |
| 36   | 24.50    | 28.00 | 36.00 | 2629   | 2310  | —     | 2513   | 2310  |
| 42   | 27.50    | 31.00 | —     | 3410   | —     | —     | 3410   | —     |
| 48   | 30.50    | 34.00 | —     | 4595   | —     | —     | 4595   | —     |

**45° (1/8) BENDS**

| Size | Domestic |       |       |        |       |       | Import |       |
|------|----------|-------|-------|--------|-------|-------|--------|-------|
|      | R        | Y     | Z     | Weight |       |       | Weight |       |
|      |          |       |       | MJ     | MJxFE | MJxPE | MJ     | MJxPE |
| *2   | 1.96     | 1.80  | —     | 12     | —     | —     | —      | —     |
| 3    | 3.62     | 3.00  | 11.00 | 30     | —     | —     | 30     | 30    |
| 4    | 4.81     | 4.00  | 12.00 | 53     | 48    | 45    | 49     | 48    |
| 6    | 7.25     | 5.00  | 13.00 | 77     | 60    | 69    | 77     | 81    |
| 8    | 8.44     | 5.50  | 13.50 | 110    | 107   | 111   | 117    | 123   |
| 10   | 10.88    | 6.50  | 14.50 | 156    | 148   | 167   | 155    | 168   |
| 12   | 13.25    | 7.50  | 15.50 | 214    | 215   | 196   | 223    | 215   |
| 14   | 12.06    | 7.50  | 15.50 | 300    | —     | —     | 270    | —     |
| 16   | 13.25    | 8.00  | 16.00 | 391    | —     | 349   | 335    | 320   |
| 18   | 14.50    | 8.50  | 16.50 | 527    | 416   | 455   | 467    | 395   |
| 20   | 16.88    | 9.50  | 17.50 | 631    | 543   | 537   | 527    | 500   |
| 24   | 18.12    | 11.00 | 19.00 | 880    | 1099  | 825   | 754    | 715   |
| 30   | 27.75    | 15.00 | 23.00 | 1898   | —     | 1510  | 1451   | 1275  |
| 36   | 35.00    | 18.00 | 26.00 | 2372   | —     | 1930  | 2176   | 1930  |
| 42   | 42.25    | 21.00 | —     | 3020   | —     | —     | 2955   | —     |
| 48   | 49.50    | 24.00 | —     | 4170   | —     | —     | 4080   | —     |

**22 1/2° (1/16) BENDS**

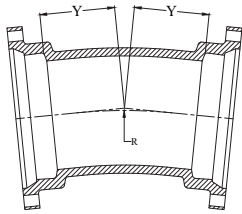
| Size | Domestic |       |       |        |        |       | Import |       |
|------|----------|-------|-------|--------|--------|-------|--------|-------|
|      | R        | Y     | Z     | Weight |        |       | Weight |       |
|      |          |       |       | MJ     | MJxFE* | MJxPE | MJ     | MJxPE |
| 3    | 7.56     | 3.00  | 11.00 | 30     | —      | —     | 30     | —     |
| 4    | 10.06    | 4.00  | 12.00 | 52     | —      | —     | 51     | 45    |
| 6    | 15.06    | 5.00  | 13.00 | 77     | 71     | 70    | 75     | 70    |
| 8    | 17.62    | 5.50  | 13.50 | 110    | 107    | 163   | 108    | 108   |
| 10   | 22.62    | 6.50  | 14.50 | 156    | 155    | 163   | 159    | 160   |
| 12   | 27.62    | 7.50  | 15.50 | 214    | 215    | 212   | 199    | 220   |
| 14   | 25.12    | 7.50  | 15.50 | 300    | —      | —     | 275    | —     |
| 16   | 27.62    | 8.00  | 16.00 | 391    | 344    | 334   | 318    | 325   |
| 18   | 30.19    | 8.50  | 16.50 | 527    | 422    | 423   | 430    | 405   |
| 20   | 35.19    | 9.50  | 17.50 | 631    | —      | 575   | 545    | 505   |
| 24   | 37.69    | 11.00 | 19.00 | 880    | 800    | 930   | 758    | 725   |
| 30   | 57.81    | 15.00 | 23.00 | 1898   | —      | 1540  | 1400   | 1400  |
| 36   | 72.88    | 18.00 | 26.00 | 2372   | —      | 1970  | 2121   | 1970  |
| 42   | 88.00    | 21.00 | —     | 3020   | —      | —     | 3020   | —     |
| 48   | 103.06   | 24.00 | —     | 4170   | —      | —     | 4170   | —     |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings

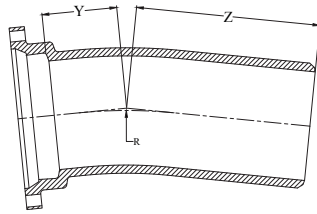




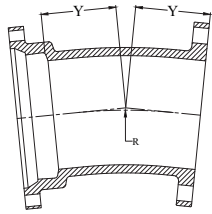
C110 DUCTILE IRON FULL BODY FITTINGS



11¼° (1/32) MJ



11¼° (1/32) MJxPE

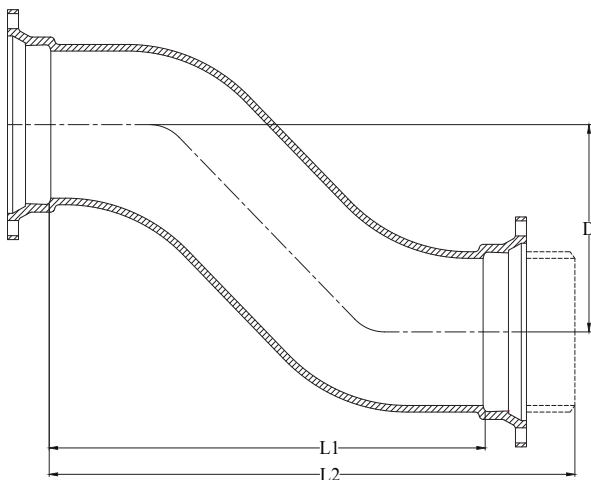
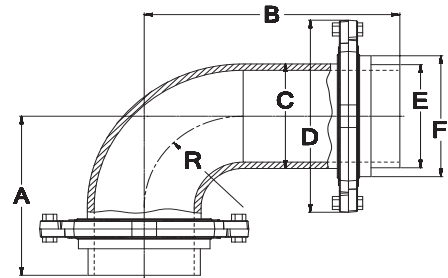


11¼° (1/32) MJxFE

| 11 1/4° (1/32) BENDS |        |       |       |          |       |       |        |       |
|----------------------|--------|-------|-------|----------|-------|-------|--------|-------|
| Size                 | R      | Y     | Z     | Domestic |       |       | Import |       |
|                      |        |       |       | Weight   |       |       | Weight |       |
|                      |        |       |       | MJ       | MJxFE | MJxPE | MJ     | MJxPE |
| 3                    | 15.25  | 3.00  | 11.00 | 30       | —     | —     | 29     | —     |
| 4                    | 20.31  | 4.00  | 12.00 | 52       | —     | 45    | 51     | —     |
| 6                    | 30.50  | 5.00  | 13.00 | 65       | 71    | 70    | 75     | —     |
| 8                    | 35.50  | 5.50  | 13.50 | 104      | 105   | 105   | 108    | 105   |
| 10                   | 45.69  | 6.50  | 14.50 | 171      | —     | —     | 160    | —     |
| 12                   | 55.81  | 7.50  | 15.50 | 221      | 215   | —     | 220    | —     |
| 14                   | 50.75  | 7.50  | 15.50 | 305      | —     | —     | 275    | —     |
| 16                   | 55.81  | 8.00  | 16.00 | 405      | 345   | —     | 345    | —     |
| 18                   | 60.94  | 8.50  | 16.50 | 525      | 422   | —     | 450    | —     |
| 20                   | 71.06  | 9.50  | 17.50 | 644      | —     | —     | 540    | —     |
| 24                   | 76.12  | 11.00 | 19.00 | 996      | 800   | 972   | 762    | 730   |
| 30                   | 116.75 | 15.00 | 23.00 | 1410     | —     | 1305  | 1407   | 1305  |
| 36                   | 147.25 | 18.00 | 26.00 | 2397     | —     | 2185  | 2161   | 1980  |
| 42                   | 177.69 | 21.00 | —     | 3035     | —     | —     | 3740   | —     |
| 48                   | 208.12 | 24.00 | —     | 4190     | —     | —     | 4190   | —     |

| 90° (1/4) SWIVEL X SWIVEL BENDS |                |       |       |      |       |      |       |      |         |
|---------------------------------|----------------|-------|-------|------|-------|------|-------|------|---------|
| Size                            | Wall Thickness | A     | B     | C    | D     | E    | F     | R    | *Weight |
| 6                               | 0.55           | 10.50 | 15.50 | 7.10 | 11.12 | 6.90 | 8.02  | 6.00 | 106     |
| 8                               | 0.60           | 11.50 | 16.50 | 9.20 | 13.37 | 9.05 | 10.17 | 7.00 | 156     |

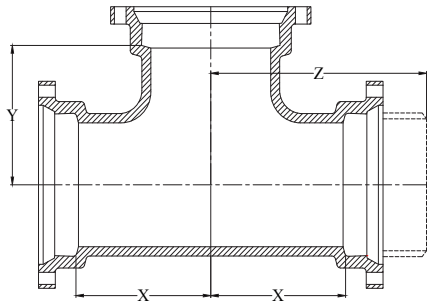
NOTE: Includes 2 swivel glands.  
\*Not included in AWWA C110.



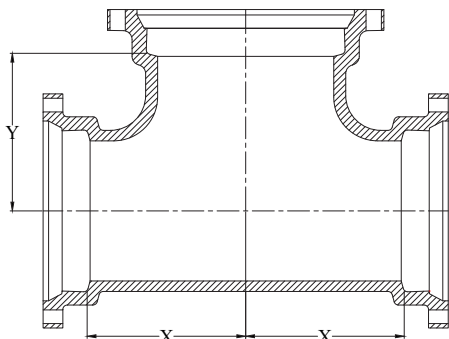
| OFFSETS |       |       |       |         |         |
|---------|-------|-------|-------|---------|---------|
| Size    | D     | L     | L2    | Weight  |         |
|         |       |       |       | MJ X MJ | MJ X PE |
| 4       | 6.00  | 19.00 | 27.00 | —       | 82      |
| 4       | 12.00 | 22.00 | 30.00 | 85      | 80      |
| 4       | 18.00 | 30.00 | 38.00 | 105     | —       |
| 4       | 24.00 | 26.00 | 34.00 | 126     | 125     |
| 6       | 6.00  | 20.00 | 28.00 | 114     | 105     |
| 6       | 12.00 | 26.00 | 34.00 | 148     | 143     |
| 6       | 18.00 | 33.00 | 41.00 | 188     | 176     |
| 6       | 24.00 | 24.00 | 32.00 | 182     | 160     |
| 8       | 6.00  | 21.00 | 29.00 | 177     | 155     |
| 8       | 12.00 | 28.00 | 36.00 | 231     | 195     |
| 8       | 18.00 | 35.00 | 43.00 | 287     | 282     |
| 8       | 24.00 | 36.00 | 44.00 | 280     | 285     |
| 10      | 12.00 | 30.00 | 38.00 | 347     | 280     |
| 10      | 18.00 | 38.00 | 46.00 | 340     | 340     |
| 10      | 24.00 | 38.00 | 46.00 | 420     | —       |
| 12      | 12.00 | 37.00 | 45.00 | 420     | 420     |
| 12      | 18.00 | 48.00 | 56.00 | 520     | 520     |
| 12      | 24.00 | 48.00 | 56.00 | 649     | 630     |
| 16      | 12.00 | 40.00 | 48.00 | 715     | —       |
| 16      | 18.00 | 50.00 | 58.00 | 850     | 830     |
| 20      | 12.00 | 40.00 | 48.00 | 1025    | —       |
| 20      | 18.00 | 48.00 | 60.00 | 1362    | —       |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings

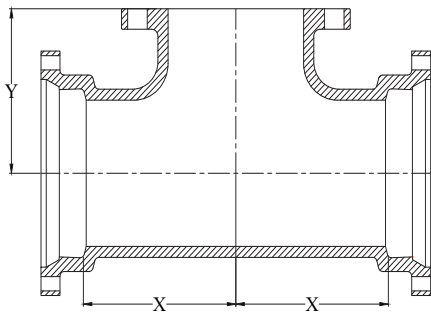
**C110 DUCTILE IRON FULL BODY FITTINGS**



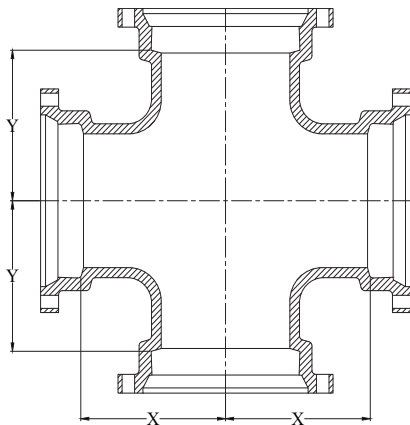
MJ Tees and MJxPExMJ Tees



MJ Bullhead Tees



MJxFE Tees

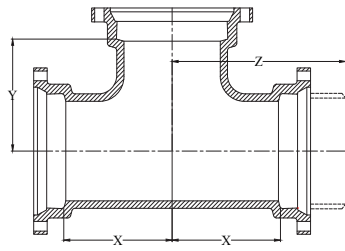


Cross

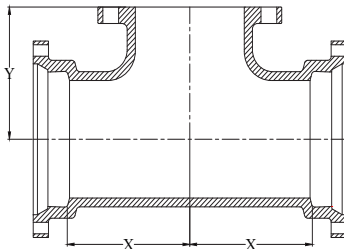
| TEES AND CROSSES |        |       |       |       |      |          |          |       |
|------------------|--------|-------|-------|-------|------|----------|----------|-------|
| Size Run         | Branch | X     | Y     | Z     | MJ   | Weight   |          |       |
|                  |        |       |       |       |      | MJXPEXMJ | MJXMJXFE | Cross |
| 2                | 2      | 3.25  | 3.25  | —     | 21   | —        | —        | —     |
| 3                | 2      | 3.25  | 3.25  | —     | 45   | —        | —        | —     |
| 3                | 3      | 5.50  | 5.50  | 13.50 | 58   | —        | —        | —     |
| 4                | 2      | 4.80  | 4.80  | 14.50 | 68   | —        | 49       | —     |
| 4                | 3      | 6.50  | 6.50  | 14.50 | 77   | —        | —        | —     |
| 4                | 4      | 6.50  | 6.50  | 14.50 | 78   | 75       | 76       | —     |
| 4                | 6      | 8.00  | 8.00  | —     | 112  | —        | —        | —     |
| 6                | 2      | 8.00  | 8.00  | —     | 78   | —        | —        | —     |
| 6                | 3      | 8.00  | 8.00  | 16.00 | 98   | —        | —        | —     |
| 6                | 4      | 8.00  | 8.00  | 16.00 | 110  | —        | 109      | —     |
| 6                | 6      | 8.00  | 8.00  | 16.00 | 119  | 120      | 141      | 160   |
| 6                | 8      | 9.00  | 9.00  | —     | 158  | —        | —        | —     |
| 8                | 3      | 9.00  | 9.00  | 17.00 | 155  | —        | —        | —     |
| 8                | 4      | 9.00  | 9.00  | 17.00 | 157  | —        | 150      | 185   |
| 8                | 6      | 9.00  | 9.00  | 17.00 | 175  | 170      | 182      | 205   |
| 8                | 8      | 9.00  | 9.00  | 17.00 | 199  | 180      | 194      | 255   |
| 10               | 4      | 11.00 | 11.00 | 19.00 | —    | —        | 229      | —     |
| 10               | 6      | 11.00 | 11.00 | 19.00 | 258  | —        | 264      | 285   |
| 10               | 8      | 11.00 | 11.00 | 19.00 | 268  | —        | 245      | 310   |
| 10               | 10     | 11.00 | 11.00 | 19.00 | 300  | 250      | —        | 380   |
| 12               | 4      | 12.00 | 12.00 | 20.00 | 318  | 315      | 323      | —     |
| 12               | 6      | 12.00 | 12.00 | 20.00 | 325  | 325      | 335      | 360   |
| 12               | 8      | 12.00 | 12.00 | 20.00 | 335  | 335      | 372      | 371   |
| 12               | 10     | 12.00 | 12.00 | 20.00 | 392  | 390      | —        | 486   |
| 12               | 12     | 12.00 | 12.00 | 20.00 | 396  | 396      | 476      | —     |
| 14               | 12     | 14.00 | 14.00 | 22.00 | 540  | 560      | —        | —     |
| 14               | 14     | 14.00 | 14.00 | 22.00 | 585  | 570      | —        | 779   |
| 16               | 4      | 15.00 | 15.00 | 23.00 | 580  | 580      | 575      | —     |
| 16               | 6      | 15.00 | 15.00 | 23.00 | 615  | 590      | 605      | 650   |
| 16               | 8      | 15.00 | 15.00 | 23.00 | 625  | 605      | 615      | 675   |
| 16               | 10     | 15.00 | 15.00 | 23.00 | 645  | 620      | —        | —     |
| 16               | 12     | 15.00 | 15.00 | 23.00 | 627  | 640      | 651      | —     |
| 16               | 16     | 15.00 | 15.00 | 23.00 | 740  | 720      | 730      | 895   |
| 18               | 6      | 13.00 | 15.50 | —     | 710  | —        | 707      | —     |
| 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 | —        | 1795     | 1965  |
| 24               | 24     | 22.00 | 22.00 | —     | 1947 | —        | —        | 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 | —        | 3080     | 3180  |
| 30               | 30     | 25.00 | 25.00 | —     | 2275 | —        | 2430     | 3640  |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings

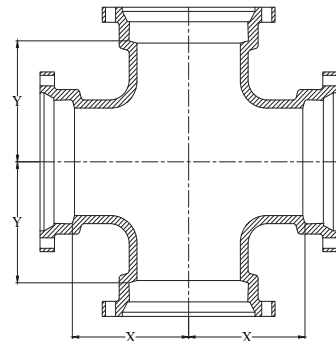
C110 DUCTILE IRON FULL BODY FITTINGS



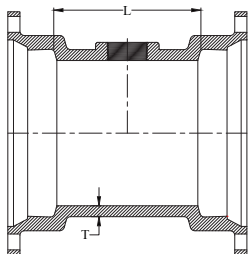
MJ Tees AND MJxPExMJ Tees



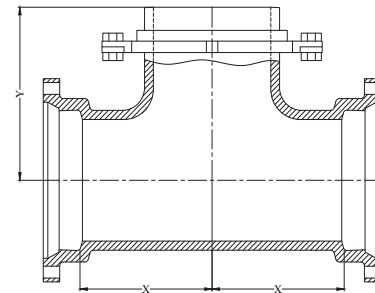
MJxFE Tees



Cross



MJ Tapped Tees (2" TAP)



MJxMJxSwivel Tees

| TEES AND CROSSES (Continued) |        |       |       |   |      |          |          |       |
|------------------------------|--------|-------|-------|---|------|----------|----------|-------|
| Size Run                     | Branch | X     | Y     | Z | MJ   | Weight   |          |       |
|                              |        |       |       |   |      | MJXPEXMJ | MJXMJXFE | 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 | —        | —        | 4370  |
| 36                           | 18     | 20.00 | 26.00 | — | 2610 | —        | —        | 3420  |
| 36                           | 20     | 20.00 | 26.00 | — | 2635 | —        | 2660     | 3455  |
| 36                           | 24     | 20.00 | 26.00 | — | 2792 | —        | —        | 3495  |
| 36                           | 30     | 28.00 | 28.00 | — | 3545 | —        | —        | 3535  |
| 36                           | 36     | 28.00 | 28.00 | — | 3450 | —        | —        | 3590  |
| 42                           | 12     | 23.00 | 30.00 | — | 3555 | —        | —        | 3690  |
| 42                           | 14     | 23.00 | 30.00 | — | 3575 | —        | —        | 4815  |
| 42                           | 16     | 23.00 | 30.00 | — | 3595 | —        | —        | 6430  |
| 42                           | 18     | 23.00 | 30.00 | — | 3615 | —        | —        | 6920  |
| 42                           | 20     | 23.00 | 30.00 | — | 3640 | —        | —        | 4665  |
| 42                           | 24     | 23.00 | 30.00 | — | 3690 | —        | —        | 4695  |
| 42                           | 30     | 31.00 | 31.00 | — | 4650 | —        | —        | 4735  |
| 42                           | 36     | 31.00 | 31.00 | — | 4880 | —        | —        | 4775  |
| 42                           | 42     | 31.00 | 31.00 | — | 6320 | —        | —        | 4825  |
| 48                           | 12     | 26.00 | 34.00 | — | 4870 | —        | —        | —     |
| 48                           | 14     | 26.00 | 34.00 | — | 4885 | —        | —        | —     |
| 48                           | 16     | 26.00 | 34.00 | — | 4905 | —        | —        | —     |
| 48                           | 18     | 26.00 | 34.00 | — | 4925 | —        | —        | —     |
| 48                           | 20     | 26.00 | 34.00 | — | 4950 | —        | —        | —     |
| 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  |

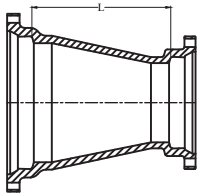
| MJ TAPPED TEE (2" TAP) |          |          |        |      |        |          |        |
|------------------------|----------|----------|--------|------|--------|----------|--------|
| size                   | Domestic |          |        | T    | Import |          |        |
|                        | L        | Max. Tap | Weight |      | L      | Max. Tap | Weight |
| 3                      | 8.00     | 2        | 40     | 0.33 | 6.00   | 2        | 18     |
| 4                      | 8.00     | 2        | 51     | 0.34 | 6.00   | 2        | 24     |
| 6                      | 8.00     | 2        | 73     | 0.36 | 6.00   | 2        | 42     |
| 8                      | 8.00     | 2        | 104    | 0.38 | 6.00   | 2        | 52     |
| 10                     | 8.00     | 2        | 130    | 0.40 | 6.00   | 2        | 64     |
| 12                     | 8.00     | 2        | 180    | 0.42 | 6.00   | 2        | 81     |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings

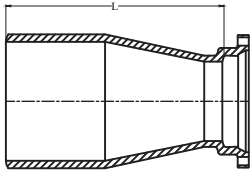
| MJ X MJ X SWIVEL TEE |       |       |        |
|----------------------|-------|-------|--------|
| Size                 | X     | Y     | Weight |
| 6                    | 8.00  | 10.50 | 150    |
| 8x6                  | 9.00  | 11.50 | 199    |
| 8                    | 9.00  | 11.50 | 210    |
| 10x6                 | 11.00 | 13.50 | 267    |
| 12x6                 | 12.00 | 14.50 | 346    |
| 16x6                 | 15.00 | 17.50 | 619    |
| 16x8                 | 15.00 | 17.50 | 649    |
| 30x6                 | 18.00 | 24.50 | 2070   |

All weights shown include the swivel gland.

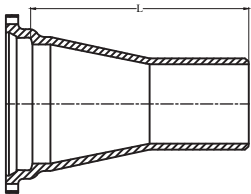
C110 DUCTILE IRON FULL BODY FITTINGS



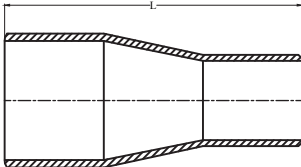
MJ x MJ



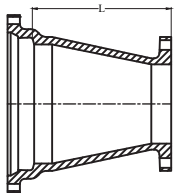
PE x MJ-SEB



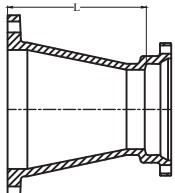
MJ-LEB x PE



PE x PE



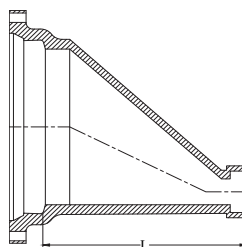
MJ x FE



FE x MJ

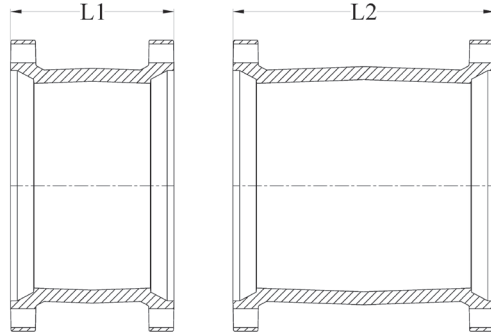
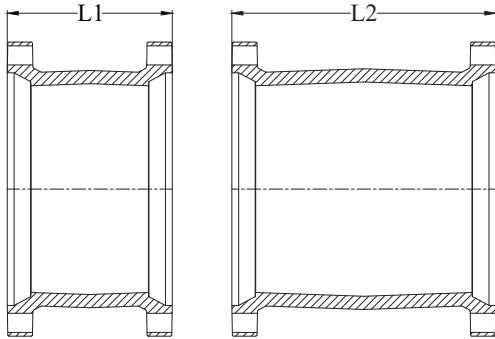
| REDUCERS |                   |     |        |         |         |         |        |        |        |         |         |         |
|----------|-------------------|-----|--------|---------|---------|---------|--------|--------|--------|---------|---------|---------|
| Size     | Laying Length (L) |     |        |         |         |         | Weight |        |        |         |         |         |
|          | MJ                | SEB | MJ-LEB | PE x PE | FE x MJ | MJ x FE | MJ     | MJ-SEB | MJ-LEB | PE x PE | FE x MJ | MJ x FE |
| * 3x2    | 6                 | 14  | 14     | —       | —       | —       | 24     | 24     | 24     | —       | —       | —       |
| * 4x2    | 7                 | 15  | 15     | —       | —       | —       | 31     | 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      | 94     | 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      | —       | —       | 1225   | 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   | —      | —      | —       | —       | —       |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings



| MJxFIPT Eccentric Reducer |    |        |
|---------------------------|----|--------|
| Size                      | L  | Weight |
| 6x2                       | 13 | 51     |
| 8x2                       | 15 | 71     |

C110 DUCTILE IRON FULL BODY FITTINGS



| SOLID SLEEVES |           |       |        |       |        |
|---------------|-----------|-------|--------|-------|--------|
| Size          | Pipe O.D. | L1    | Weight | L2    | Weight |
| *2            | 2.50      | 8.00  | 13     | 12.00 | 18     |
| 3             | 4.00      | 7.50  | 25     | 12.00 | 36     |
| 4             | 4.80      | 7.50  | 35     | 12.00 | 47     |
| 6             | 6.90      | 7.50  | 45     | 12.00 | 65     |
| 8             | 9.10      | 7.50  | 65     | 12.00 | 90     |
| 10            | 11.10     | 7.50  | 85     | 12.00 | 108    |
| 12            | 13.20     | 7.50  | 120    | 12.00 | 136    |
| 16            | 17.40     | 9.50  | 206    | 15.00 | 289    |
| 18            | 19.50     | 9.50  | 246    | 15.00 | 282    |
| 20            | 21.60     | 9.50  | 275    | 15.00 | 336    |
| 24            | 25.80     | 9.50  | 360    | 15.00 | 459    |
| 30            | 32.00     | 15.00 | 745    | 24.00 | 1220   |
| 36            | 38.30     | 15.00 | 1047   | 24.00 | 1502   |
| 42            | 44.50     | 15.00 | 1312   | 24.00 | 1550   |
| 48            | 50.80     | 15.00 | 1585   | 24.00 | 1940   |

| *DUO PURPOSE SLEEVE |             |      |        |       |        |
|---------------------|-------------|------|--------|-------|--------|
| Size                | Pipe O.D.   | L1   | Weight | L2    | Weight |
| 4                   | 4.80/5.00   | 7.50 | 33     | 12.00 | 44     |
| 6                   | 6.90/7.10   | 7.50 | 46     | 12.00 | 67     |
| 8                   | 9.05/9.30   | 7.50 | 65     | 12.00 | 88     |
| 10                  | 11.10/11.40 | -    | -      | 12.00 | 111    |
| †12                 | 13.20/13.50 | -    | -      | 12.00 | 221    |
| †16                 | 17.40/17.80 | -    | -      | 15.00 | 385    |

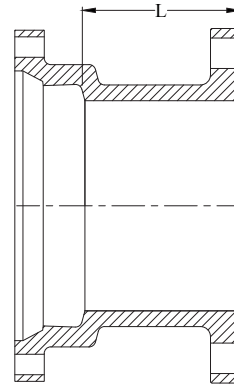
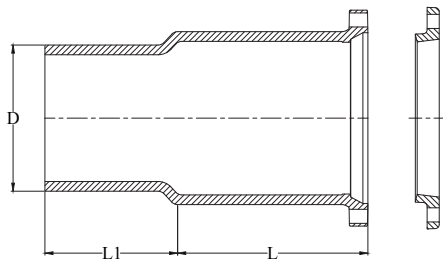
All sizes use MJ DUO purpose Gland.

\* Not included in AWWA C110.

† 12" and 16" are sold assembled.

NOTE: Sizes 4"-10" Use standard MJ Gasket;

12" and 16" require special gaskets.

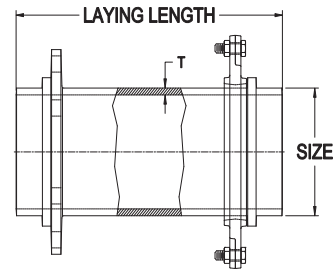
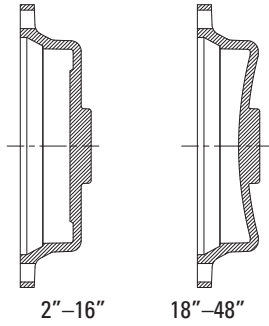
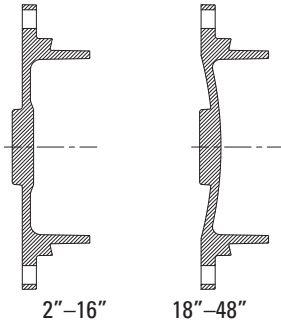


| * MJ x PE DUAL-PURPOSE CUTTING-IN SLEEVE |                    |       |      |       |            |                  |
|--|--------------------|-------|------|-------|------------|------------------|
| Size                                     | For use on pipe OD | L     | L1   | D     | Gland only | Gland and sleeve |
| 4  | 4.80-5.00          | 12.00 | 8.00 | 4.80  | 6.0        | 72               |
| 6  | 6.90-7.10          | 12.00 | 8.00 | 6.90  | 10.0       | 94               |
| 8  | 9.05-9.30          | 12.00 | 8.00 | 9.05  | 16.0       | 122              |
| 10                                       | 11.10-11.40        | 12.00 | 8.00 | 11.10 | 25.0       | 175              |
| 12                                       | 13.20-13.50        | 12.00 | 8.00 | 13.20 | 30.0       | 235              |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings

| ADAPTERS MJxFE |       |        |
|----------------|-------|--------|
| Size           | L     | Weight |
| 3              | 8.00  | 30     |
| 4              | 8.00  | 42     |
| 6              | 8.00  | 57     |
| 8              | 8.00  | 88     |
| 10             | 8.00  | 120    |
| 12             | 8.00  | 150    |
| 16             | 8.00  | 257    |
| 18             | 8.00  | 304    |
| 20             | 8.00  | 372    |
| 24             | 8.00  | 488    |
| 30             | 10.00 | 682    |
| 36             | 10.00 | 1070   |

**C110 DUCTILE IRON FULL BODY FITTINGS**



| PLUGS |        |
|-------|--------|
| 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   |

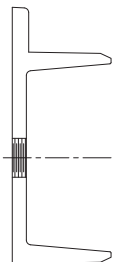
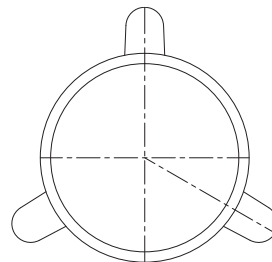
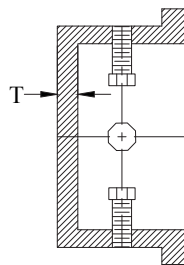
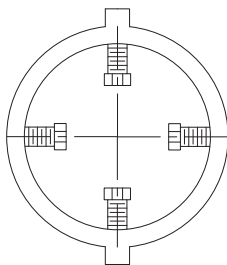
† Dished  
 \* Not included in AWWA C110.  
 Note: Optional 2" tap in the center.

| CAPS |        |
|------|--------|
| Size | Weight |
| *2   | 6      |
| 3    | 10     |
| 4    | 18     |
| 6    | 34     |
| 8    | 46     |
| 10   | 58     |
| 12   | 86     |
| 16   | 178    |
| †18  | 215    |
| †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.

| SWIVEL x SOLID ADAPTER |           |     |
|------------------------|-----------|-----|
| Size X Laying Length   | Pipe O.D. | L   |
| 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       |

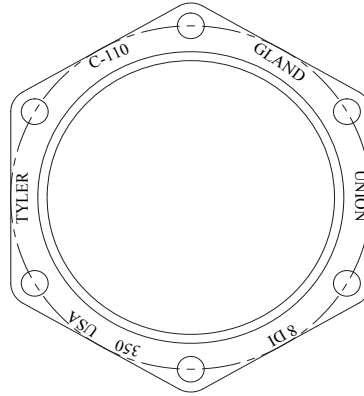
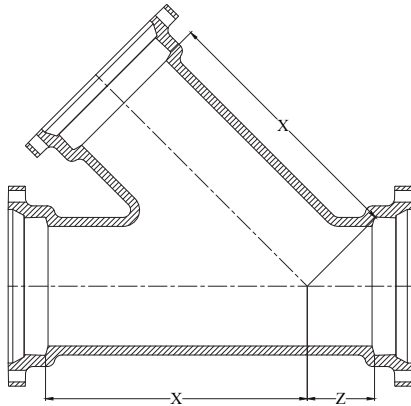
\*Weights do not include accessories.  
 \*\* Not included in AWWA C110.  
 TYTON is a registered trademark of U.S Pipe and Foundry company.

| 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.



C110 DUCTILE IRON FULL BODY FITTINGS



| WYES / LATERALS |        |            |       |        |
|-----------------|--------|------------|-------|--------|
| Size            |        | Dimensions |       | Weight |
| Run             | Branch | X          | Z     |        |
| 3               | 3      | 10.00      | 3.00  | 60     |
| 4               | 4      | 12.00      | 3.00  | 90     |
| 6               | 4      | 14.50      | 3.50  | 130    |
| 6               | 6      | 14.50      | 3.50  | 145    |
| 8               | 4      | 17.50      | 4.50  | 190    |
| 8               | 6      | 17.50      | 4.50  | 205    |
| 8               | 8      | 17.50      | 4.50  | 230    |
| 10              | 6      | 20.50      | 5.00  | 330    |
| 10              | 8      | 20.50      | 5.00  | 310    |
| 10              | 10     | 20.50      | 5.50  | 435    |
| 12              | 8      | 24.50      | 5.50  | 505    |
| 12              | 12     | 24.50      | 5.50  | 490    |
| 14              | 6      | 27.00      | 6.00  | 626    |
| 16              | 16     | 30.00      | 6.50  | 1079   |
| 18              | 8      | 32.00      | 7.00  | 1073   |
| 18              | 10     | 32.00      | 7.00  | 975    |
| 18              | 12     | 32.00      | 7.00  | 1015   |
| 18              | 16     | 32.00      | 7.00  | 1135   |
| 18              | 18     | 32.00      | 7.00  | 1130   |
| 20              | 10     | 35.00      | 8.00  | 1220   |
| 20              | 12     | 35.00      | 8.00  | 1260   |
| 20              | 16     | 35.00      | 8.00  | 1375   |
| 20              | 20     | 35.00      | 8.00  | 1525   |
| 24              | 24     | 40.50      | 9.00  | 2372   |
| 30              | 30     | 49.00      | 10.00 | 3670   |
| 36              | 24     | 54.00      | 15.00 | 5390   |
| 36              | 36     | 60.00      | 19.50 | 6335   |
| 42              | 24     | 60.00      | 12.00 | 6810   |
| 42              | 30     | 63.00      | 12.00 | 7210   |
| 42              | 36     | 66.00      | 12.00 | 8355   |
| 42              | 42     | 71.00      | 15.00 | 9900   |
| 48              | 48     | 77.00      | 16.00 | 13150  |

\* Not included in AWWA C-110.

| MJ GLANDS |        |
|-----------|--------|
| Size      | Weight |
| 2         | 3      |
| 3         | 4      |
| 4         | 6      |
| 6         | 10     |
| 8         | 16     |
| 10        | 19     |
| 12        | 26     |
| 14        | 34     |
| 16        | 54     |
| 18        | 52     |
| 20        | 73     |
| 24        | 91     |
| 30        | 90     |
| 36        | 127    |
| 42        | 279    |
| 48        | 341    |

| MJ ACCESSORY KITS AND WEIGHTS |     |           |             |                    |                                |                  |
|-------------------------------|-----|-----------|-------------|--------------------|--------------------------------|------------------|
| size                          | No. | Bolt Size | Bolt Length | Bolt Torque ft/lbs | 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            |

## C153 DUCTILE IRON COMPACT FITTINGS

### SAMPLE SPECIFICATIONS

(Current ANSI/AWWA revisions apply)

Push-On joint ductile iron fittings size 4” through 24” 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.

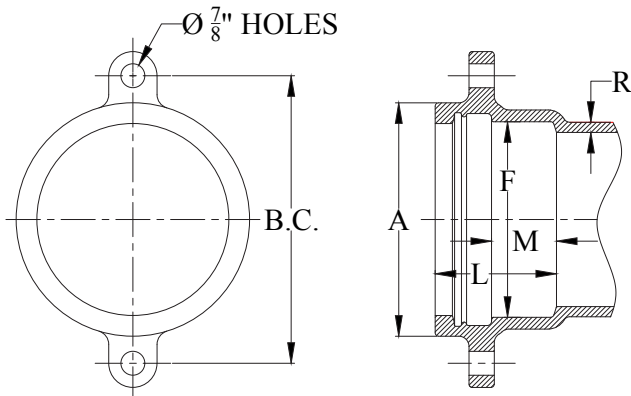
**NOTE:** Standard restraining lugs are provided on sizes 4” through 16” ONLY. Restraining lugs are available on 18” through 24” fittings, provided sufficient time is available to make tooling adaptations.

**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).

**NOTE:** TYTON is a registered trademark of U.S. Pipe and Foundry Company.

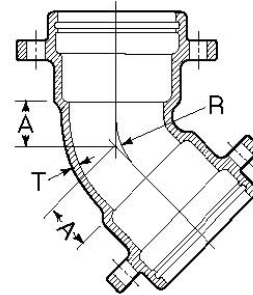
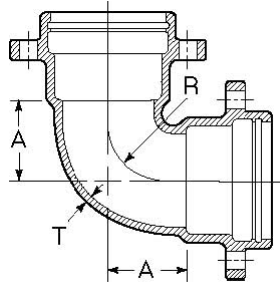


ANSI/AWWA C153 Push-On Joint Fittings

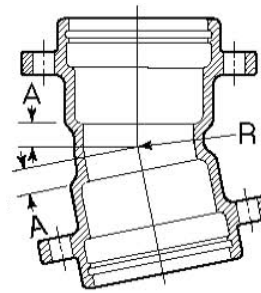
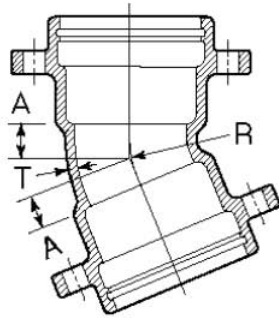
| Nominal Joint Dimensions in Inches |       |       |       |      |      |      |
|------------------------------------|-------|-------|-------|------|------|------|
| Size                               | F     | A     | B.C.  | L    | M    | R    |
| 4                                  | 5.04  | 6.38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



**C153 DUCTILE IRON COMPACT FITTINGS**



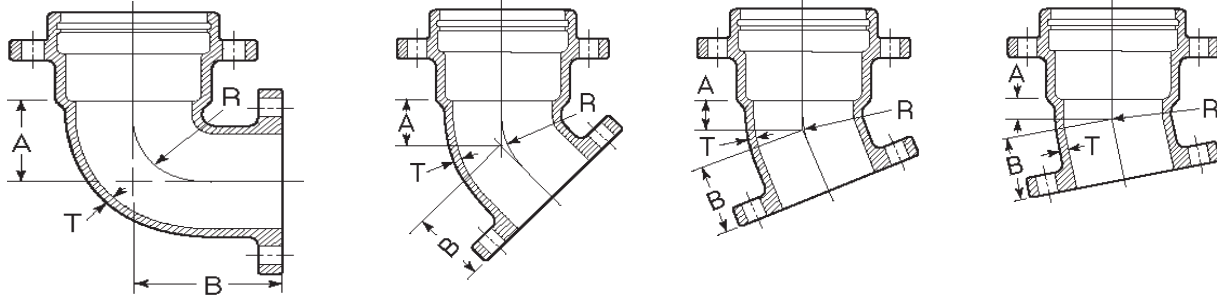
| 90° (1/4) UT Bends |      |       |       |        |        | 45° (1/8) UT Bends |          |       |        |        |  |
|--------------------|------|-------|-------|--------|--------|--------------------|----------|-------|--------|--------|--|
| Domestic           |      |       |       |        | Import |                    | Domestic |       |        | Import |  |
| Size               | T    | A     | R     | Weight | T      | Weight             | A        | R     | Weight | Weight |  |
| 4                  | 0.35 | 4.00  | 3.87  | 24     | 0.34   | 25                 | 2.00     | 3.31  | 26     | 22     |  |
| 6                  | 0.37 | 5.00  | 5.37  | 51     | 0.36   | 39                 | 3.00     | 5.72  | 42     | 32     |  |
| 8                  | 0.39 | 6.50  | 6.37  | 80     | 0.38   | 57                 | 3.50     | 6.93  | 66     | 46     |  |
| 10                 | 0.41 | 7.50  | 8.36  | 121    | 0.40   | 89                 | 4.50     | 9.34  | 101    | 70     |  |
| 12                 | 0.43 | 9.00  | 9.36  | 151    | 0.42   | 108                | 5.50     | 11.75 | 128    | 86     |  |
| 14                 | 0.51 | 11.50 | 10.98 | 254    | 0.47   | 210                | 5.00     | 10.85 | 143    | 160    |  |
| 16                 | 0.52 | 12.50 | 12.00 | 328    | 0.50   | 264                | 5.50     | 12.02 | 225    | 202    |  |
| 18                 | 0.59 | 14.00 | 14.00 | 482    | 0.54   | 335                | 6.00     | 12.36 | 209    | 250    |  |
| 20                 | 0.60 | 15.00 | 15.50 | 340    | 0.57   | 400                | 7.00     | 13.59 | 397    | 305    |  |
| 24                 | 0.62 | 16.75 | 15.59 | 674    | 0.61   | 565                | 7.50     | 14.69 | 492    | 405    |  |



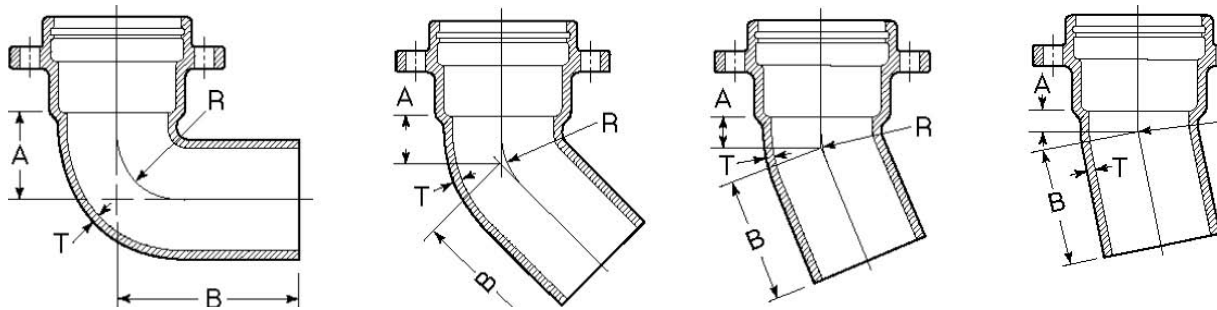
| 22½° (1/16) UT Bends |       |          |        |
|----------------------|-------|----------|--------|
|                      |       | Domestic | Import |
| A                    | R     | Weight   | Weight |
| 1.50                 | 4.38  | 18       | 18     |
| 2.00                 | 8.16  | 39       | 31     |
| 2.50                 | 9.40  | 64       | 46     |
| 3.00                 | 13.17 | 67       | 64     |
| 3.50                 | 14.42 | 111      | 80     |
| 3.75                 | 13.82 | 162      | 136    |
| 3.75                 | 14.97 | 195      | 172    |
| 4.50                 | 30.19 | 209      | 255    |
| 4.50                 | 35.19 | 414      | 310    |
| 4.50                 | 37.69 | 596      | 412    |

| 11¼° (1/32) UT Bends |       |          |        |
|----------------------|-------|----------|--------|
|                      |       | Domestic | Import |
| A                    | R     | Weight   | Weight |
| 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                 | 16.5  | 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    |

**C153 DUCTILE IRON COMPACT FITTINGS**



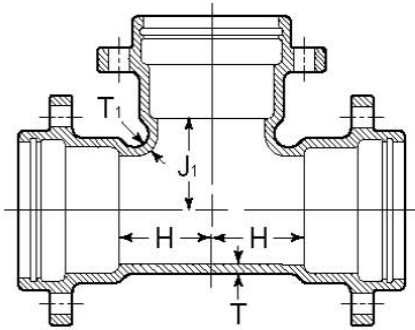
| 90° (1/4)<br>UT x FE Bends |      |       |       |       |        | 45° (1/8)<br>UT x FE Bends |      |       |        | 22 1/2° (1/16)<br>UT x FE Bends |      |       |        | 11 1/4° (1/32)<br>UT x FE Bends |      |       |        |
|----------------------------|------|-------|-------|-------|--------|----------------------------|------|-------|--------|---------------------------------|------|-------|--------|---------------------------------|------|-------|--------|
| Size                       | T    | A     | B     | R     | Weight | A                          | B    | R     | Weight | A                               | B    | R     | Weight | A                               | B    | R     | Weight |
| 4                          | 0.35 | 4.50  | 6.50  | 3.87  | 31     | 2.00                       | 4.00 | 3.31  | 21     | 1.50                            | 3.50 | 4.38  | 25     | 1.25                            | 3.30 | 6.77  | 24     |
| 6                          | 0.37 | 6.00  | 7.00  | 5.37  | 49     | 3.00                       | 5.00 | 5.72  | 42     | 2.25                            | 4.30 | 8.16  | 44     | 1.50                            | 3.50 | 9.38  | 30     |
| 8                          | 0.39 | 7.00  | 9.00  | 6.37  | 74     | 3.50                       | 5.50 | 6.93  | 60     | 2.50                            | 4.50 | 9.40  | 64     | 1.75                            | 3.75 | 11.48 | 61     |
| 10                         | 0.41 | 9.00  | 10.00 | 8.36  | 130    | 4.50                       | 6.50 | 9.34  | 93     | 3.00                            | 5.30 | 13.17 | 90     | 2.00                            | 4.00 | 13.95 | 80     |
| 12                         | 0.43 | 10.00 | 12.00 | 9.36  | 158    | 5.50                       | 7.50 | 11.75 | 122    | 3.50                            | 5.50 | 14.42 | 112    | 2.25                            | 4.30 | 16.50 | 94     |
| 14                         | 0.51 | 12.00 | 15.50 | 10.98 | 231    | 5.50                       | 8.50 | 10.85 | 162    | 3.75                            | 6.80 | 13.82 | 174    | 2.60                            | 5.75 | 14.26 | 170    |
| 16                         | 0.52 | 13.00 | 16.50 | 12.00 | 233    | 6.00                       | 9.50 | 12.02 | 275    | 4.00                            | 7.50 | 14.97 | 228    | 2.60                            | 6.10 | 15.23 | 228    |



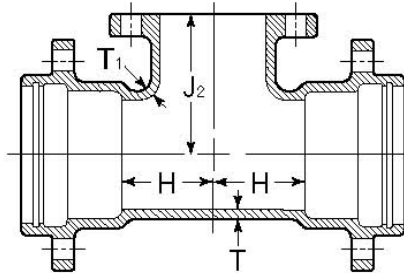
| 90° (1/4)<br>UT x PE Bends |      |      |      |      |        | 45° (1/8)<br>UT x PE Bends |      |      |        | 22 1/2° (1/16)<br>UT x PE Bends |      |      |        | 11 1/4° (1/32)<br>UT x PE Bends |      |       |        |
|----------------------------|------|------|------|------|--------|----------------------------|------|------|--------|---------------------------------|------|------|--------|---------------------------------|------|-------|--------|
| Size                       | T    | A    | B    | R    | Weight | A                          | B    | R    | Weight | A                               | B    | R    | Weight | A                               | B    | R     | Weight |
| 4                          | 0.35 | 4.50 | 6.50 | 3.87 | 31     | 2.00                       | 8.00 | 3.31 | 21     | -                               | -    | -    | -      | -                               | -    | -     | -      |
| 6                          | 0.37 | 6.00 | 7.00 | 5.37 | 49     | 3.00                       | 9.00 | 5.72 | 38     | 2.25                            | 8.10 | 8.16 | 35     | 1.50                            | 7.30 | 9.38  | 36     |
| 8                          | 0.39 | -    | -    | -    | -      | 3.50                       | 9.50 | 6.93 | 60     | 2.50                            | 8.30 | 9.40 | 57     | 1.75                            | 7.55 | 11.48 | 55     |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings

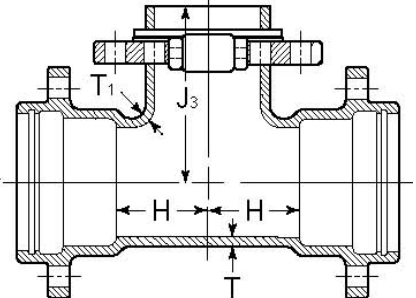
**C153 DUCTILE IRON COMPACT FITTINGS**



UTxUT Tee



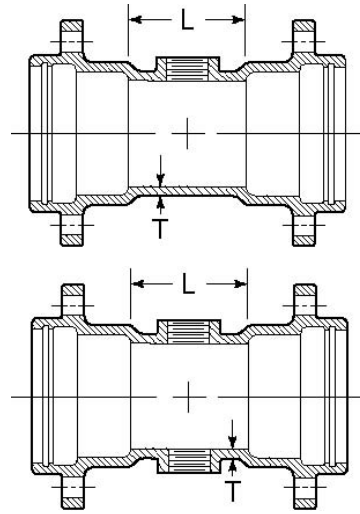
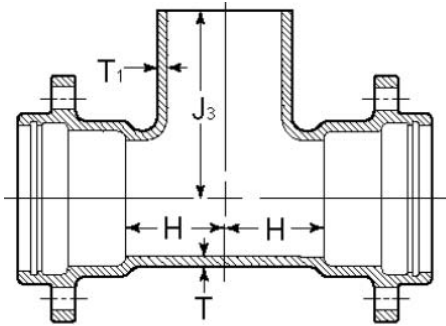
UTxFE Tee



UTxSwivel Tee

| TEES  |      |      |       |       |       |       |         |             |         |         |  |
|-------|------|------|-------|-------|-------|-------|---------|-------------|---------|---------|--|
| Size  | T    | T1   | H     | J1    | J2    | J3    | Weight  |             |         |         |  |
|       |      |      |       |       |       |       | UT x UT | UT x Flange | UT x PE | Crosses |  |
| 6x4   | 0.00 | 0.00 | 5.00  | 6.00  | 8.00  | —     | 68      | 56          | —       | —       |  |
| 8x4   | 0.00 | 0.00 | 5.00  | 7.00  | 9.00  | —     | 73      | 89          | —       | —       |  |
| 8x6   | 0.00 | 0.00 | 6.00  | 7.00  | 9.00  | 11.00 | 96      | 101         | 100     | 88      |  |
| 8     | 0.00 | 0.00 | 7.00  | 7.00  | 9.00  | 11.00 | 116     | 117         | 110     | —       |  |
| 10x4  | 0.00 | 0.00 | 6.00  | 9.00  | 11.00 | —     | 102     | 115         | —       | 117     |  |
| 10x6  | 0.00 | 0.00 | 7.00  | 9.00  | 11.00 | 13.00 | 113     | 128         | 130     | 156     |  |
| 10x8  | 0.00 | 0.00 | 8.00  | 9.00  | 11.00 | 13.00 | 145     | 145         | 156     | 116     |  |
| 10    | 0.00 | 0.00 | 9.00  | 9.00  | 11.00 | —     | 155     | 158         | —       | —       |  |
| 12x4  | 0.00 | 0.00 | 6.00  | 10.00 | 12.00 | —     | 119     | 138         | —       | —       |  |
| 12x6  | 0.00 | 0.00 | 7.00  | 10.00 | 12.00 | 14.00 | 141     | 148         | 162     | —       |  |
| 12x8  | 0.00 | 0.00 | 8.00  | 10.00 | 12.00 | 14.00 | 177     | 170         | 158     | —       |  |
| 12x10 | 0.00 | 0.00 | 9.00  | 10.00 | 12.00 | —     | 160     | 162         | —       | 240     |  |
| 12    | 0.00 | 0.00 | 10.00 | 10.00 | 12.00 | —     | 217     | 183         | —       | —       |  |
| 14x6  | 1.00 | 0.00 | 7.00  | 11.00 | 13.00 | 14.00 | 176     | 212         | 202     | 241     |  |
| 14x10 | 1.00 | 0.00 | 9.00  | 11.00 | 13.00 | —     | 195     | 246         | —       | 189     |  |
| 14x12 | 1.00 | 0.00 | 10.00 | 11.00 | 13.00 | —     | 196     | 296         | —       | 204     |  |
| 14    | 1.00 | 1.00 | 11.00 | 11.00 | 14.00 | —     | 209     | 321         | —       | 222     |  |
| 16x6  | 1.00 | 0.00 | 7.00  | 12.00 | 14.00 | 15.00 | 266     | 160         | 229     | 239     |  |
| 16x8  | 1.00 | 0.00 | 8.00  | 12.00 | 14.00 | 15.00 | 292     | 270         | 292     | 270     |  |
| 16x10 | 1.00 | 0.00 | 9.00  | 12.00 | 14.00 | —     | 232     | 330         | —       | 234     |  |
| 16x12 | 1.00 | 0.00 | 10.00 | 12.00 | 14.00 | —     | 239     | 321         | —       | 323     |  |
| 16x14 | 1.00 | 1.00 | 11.00 | 12.00 | 15.00 | —     | 349     | 342         | —       | 268     |  |
| 16    | 1.00 | 1.00 | 12.00 | 12.00 | 15.00 | —     | 261     | 355         | —       | 274     |  |
| 18x6  | 1.00 | 0.00 | 7.00  | 13.00 | 15.00 | 16.00 | 348     | 301         | 348     | 322     |  |
| 18x8  | 1.00 | 0.00 | 8.00  | 13.00 | 15.00 | 16.00 | 325     | 319         | 324     | 317     |  |
| 18x10 | 1.00 | 0.00 | 9.00  | 13.00 | 15.00 | —     | 344     | 337         | —       | —       |  |
| 18x14 | 1.00 | 1.00 | 11.00 | 13.00 | 16.00 | —     | 342     | 393         | —       | —       |  |
| 18x16 | 1.00 | 1.00 | 12.00 | 13.00 | 16.00 | —     | 362     | 420         | —       | —       |  |
| 20x6  | 1.00 | 0.00 | 7.00  | 14.00 | 16.00 | 18.00 | 355     | 341         | 400     | —       |  |
| 20x10 | 1.00 | 0.00 | 9.00  | 14.00 | 16.00 | —     | 369     | 420         | —       | —       |  |
| 20x14 | 1.00 | 1.00 | 11.00 | 14.00 | 18.00 | —     | 484     | 474         | —       | —       |  |
| 20x16 | 1.00 | 1.00 | 12.00 | 14.00 | 18.00 | —     | 610     | 498         | —       | —       |  |
| 20x18 | 1.00 | 1.00 | 13.00 | 14.00 | 18.00 | —     | 539     | —           | —       | —       |  |
| 24x6  | 1.00 | 0.00 | 7.00  | 16.00 | 18.00 | 20.00 | 385     | 512         | 525     | —       |  |
| 24x10 | 1.00 | 0.00 | 9.00  | 16.00 | 18.00 | —     | 478     | 468         | —       | —       |  |
| 24x12 | 1.00 | 0.00 | 10.00 | 16.00 | 18.00 | —     | 663     | 503         | —       | —       |  |
| 24x14 | 1.00 | 1.00 | 11.00 | 16.00 | 20.00 | —     | 542     | 531         | —       | —       |  |
| 24x16 | 1.00 | 1.00 | 12.00 | 16.00 | 20.00 | —     | 566     | 555         | —       | —       |  |
| 24x18 | 1.00 | 1.00 | 13.00 | 16.00 | —     | —     | 593     | —           | —       | —       |  |
| 24x20 | 1.00 | 1.00 | 15.00 | 17.00 | —     | —     | 628     | —           | —       | —       |  |
| 24    | 1.00 | 1.00 | 17.00 | 17.00 | —     | —     | 884     | —           | —       | —       |  |

### C153 DUCTILE IRON COMPACT FITTINGS

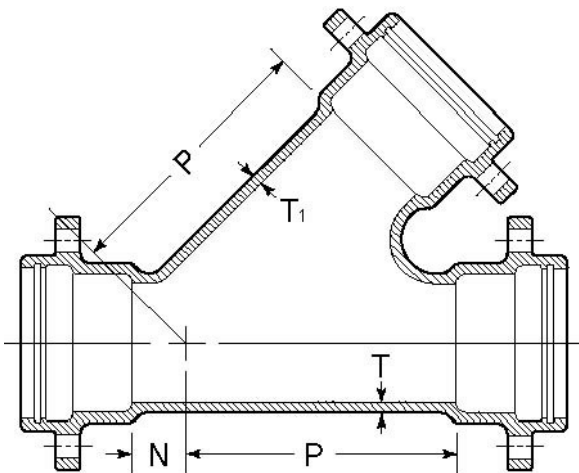


| UT X UT X PE TEES |        |      |       |      |       |        |
|-------------------|--------|------|-------|------|-------|--------|
| Size              |        | T    | T1    | H    | J3    | Weight |
| Run               | Branch |      |       |      |       |        |
| 6                 | 6      | 0.37 | 0.37  | 6.00 | 11.50 | 60     |
| 8                 | 6      | 0.39 | 37.00 | 6.00 | 12.50 | 80     |
| 12                | 6      | 0.43 | 0.37  | 7.00 | 15.50 | 140    |

Tyler Union does not recommend the use of wedge action restraints on plain end fittings

| TAPPED TEES / CROSSES |      |      |      |       |  |
|-----------------------|------|------|------|-------|--|
| Size                  | A    | B    | C    | D     |  |
| 4                     | 0.35 | 3.00 | 6.00 | 27.00 |  |
| 6                     | 0.37 | 3.50 | 6.00 | 38.00 |  |
| 8                     | 0.39 | 3.50 | 6.00 | 59.00 |  |
| 10                    | 0.41 | 3.50 | 6.00 | 72.00 |  |
| 12                    | 0.43 | 3.50 | 6.00 | 92.00 |  |

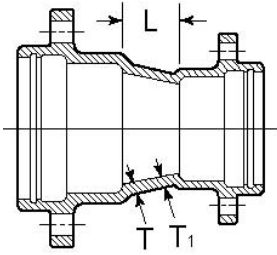
### WYES



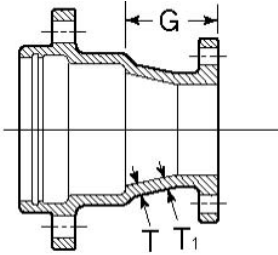
| UT WYE |      |      |       |      |        |
|--------|------|------|-------|------|--------|
| Size   | T    | T1   | P     | N    | Weight |
| 8x4    | 0.39 | 0.35 | 13.50 | 0.00 | 89     |
| 10x4   | 0.41 | 0.35 | 15.00 | 0.00 | 141    |
| 10x6   | 0.41 | 0.37 | 16.00 | 1.00 | 151    |
| 10x8   | 0.41 | 0.39 | 17.00 | 2.50 | 175    |
| 10     | 0.41 | 0.41 | 18.00 | 4.00 | 200    |
| 12x4   | 0.43 | 0.35 | 16.50 | 0.00 | 178    |
| 12x6   | 0.43 | 0.37 | 18.50 | 1.50 | 201    |
| 12x8   | 0.43 | 0.39 | 18.50 | 1.50 | 224    |
| 12x10  | 0.43 | 0.41 | 20.00 | 3.00 | 240    |
| 12     | 0.43 | 0.43 | 20.00 | 5.00 | 289    |
| 14x6   | 0.51 | 0.44 | 19.50 | 0.00 | 236    |
| 14x8   | 0.51 | 0.45 | 21.00 | 1.50 | 255    |
| 14x10  | 0.51 | 0.46 | 22.50 | 3.00 | 325    |
| 14     | 0.51 | 0.51 | 25.00 | 6.00 | 475    |
| 16x6   | 0.52 | 0.45 | 21.00 | 0.00 | 281    |
| 16x8   | 0.52 | 0.46 | 22.50 | 0.50 | 304    |
| 16x12  | 0.52 | 0.48 | 25.00 | 3.50 | 346    |
| 16     | 0.52 | 0.52 | 28.00 | 6.50 | 380    |



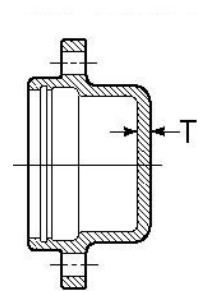
C153 DUCTILE IRON COMPACT FITTINGS



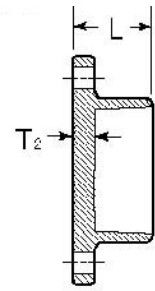
UTxUT Reducer



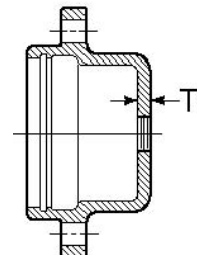
UTxFE Reducer



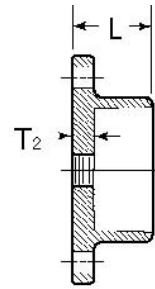
Solid Cap



Solid Plug



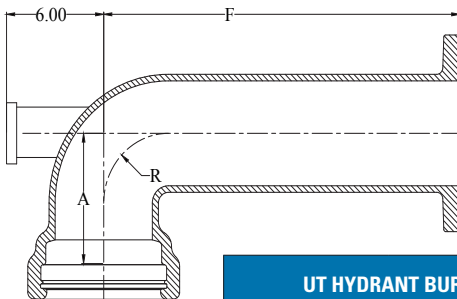
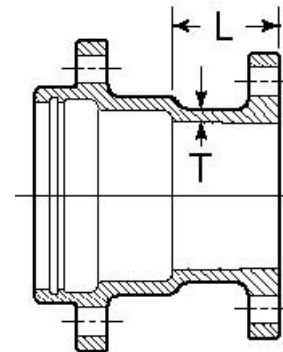
Tapped Cap



Tapped Plug

| REDUCERS |      |      |       |       |         |             |
|----------|------|------|-------|-------|---------|-------------|
| Size     | T    | T1   | L     | G     | Weight  |             |
|          |      |      |       |       | UT x UT | UT x Flange |
| 6x4      | 0.37 | 0.35 | 4.00  | 6.00  | 32      | 32          |
| 8x4      | 0.39 | 0.35 | 5.00  | 7.00  | 46      | 46          |
| 8x6      | 0.39 | 0.37 | 4.00  | 6.00  | 49      | 47          |
| 10x4     | 0.41 | 0.35 | 7.00  | 9.00  | 47      | 55          |
| 10x6     | 0.41 | 0.37 | 5.00  | 7.00  | 47      | 59          |
| 10x8     | 0.41 | 0.39 | 4.00  | 6.00  | 53      | 61          |
| 12x4     | 0.43 | 0.35 | 9.00  | 11.00 | 74      | 78          |
| 12x6     | 0.43 | 0.37 | 7.00  | 9.00  | 58      | 75          |
| 12x8     | 0.43 | 0.39 | 5.00  | 7.00  | 74      | 74          |
| 12x10    | 0.43 | 0.41 | 4.00  | 6.00  | 82      | 95          |
| 14x6     | 0.51 | 0.44 | 9.00  | 11.00 | 84      | 121         |
| 14x8     | 0.51 | 0.45 | 7.00  | 9.00  | 85      | 128         |
| 14x10    | 0.51 | 0.46 | 5.00  | 7.00  | 87      | 127         |
| 14x12    | 0.51 | 0.47 | 4.00  | 6.00  | 104     | 144         |
| 16x6     | 0.52 | 0.45 | 11.00 | 13.00 | 94      | 133         |
| 16x8     | 0.52 | 0.46 | 9.00  | 11.00 | 104     | 141         |
| 16x10    | 0.52 | 0.47 | 7.00  | 9.00  | 130     | 158         |
| 16x12    | 0.52 | 0.48 | 5.00  | 7.00  | 152     | 172         |
| 16x14    | 0.52 | 0.51 | 4.00  | 6.00  | 139     | 196         |
| 18x8     | 0.59 | 0.45 | 14.00 | 16.00 | 142     | 157         |
| 18x10    | 0.59 | 0.47 | 12.00 | 14.00 | 151     | 175         |
| 18x12    | 0.59 | 0.49 | 10.00 | 12.00 | 167     | 215         |
| 18x14    | 0.59 | 0.56 | 8.00  | 11.50 | 217     | 234         |
| 18x16    | 0.59 | 0.57 | 7.00  | 10.50 | 202     | 246         |
| 20x10    | 0.60 | 0.47 | 14.00 | 16.00 | 180     | 234         |
| 20x12    | 0.60 | 0.49 | 12.00 | -     | 205     | -           |
| 20x14    | 0.60 | 0.56 | 10.00 | 13.50 | 233     | 249         |
| 20x16    | 0.60 | 0.57 | 8.00  | 11.50 | 250     | 272         |
| 20x18    | 0.60 | 0.59 | 7.00  | -     | 248     | -           |
| 24x12    | 0.62 | 0.49 | 16.00 | 18.00 | 246     | 262         |
| 24x14    | 0.62 | 0.56 | 14.00 | 17.50 | 281     | 315         |
| 24x16    | 0.62 | 0.57 | 12.00 | 15.50 | 380     | 328         |
| 24x18    | 0.62 | 0.59 | 10.00 | -     | 390     | -           |
| 24x20    | 0.62 | 0.60 | 8.00  | -     | 421     | -           |

| UT CAPS & PLUGS |      |      |      |        |      |
|-----------------|------|------|------|--------|------|
| Size            | T1   | T2   | L    | Weight |      |
|                 |      |      |      | Cap    | Plug |
| 4               | 0.48 | 0.50 | 5.30 | 15     | 8.0  |
| 6               | 0.48 | 0.50 | 5.30 | 20     | 23.0 |
| 8               | 0.51 | 0.50 | 5.30 | 35     | 32.0 |
| 10              | 0.53 | 0.60 | 5.30 | 50     | 38.0 |
| 12              | 0.55 | 0.60 | 5.30 | 75     | 49.0 |



UT HYDRANT BURY

| Size | A    | F     | R    |
|------|------|-------|------|
| 6x42 | 7.50 | 42.00 | 4.00 |

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

| UT x Flange ADAPTER |      |      |        |
|---------------------|------|------|--------|
| Size                | T1   | T2   | Weight |
| 4                   | 0.00 | 6.00 | 28     |
| 6                   | 0.00 | 6.00 | 36     |
| 8                   | 0.00 | 6.00 | 54     |
| 10                  | 0.00 | 6.00 | 71     |
| 12                  | 0.00 | 6.00 | 102    |
| 14                  | 1.00 | 7.00 | 113    |
| 16                  | 1.00 | 7.00 | 115    |
| 20                  | 1.00 | 6.00 | 295    |

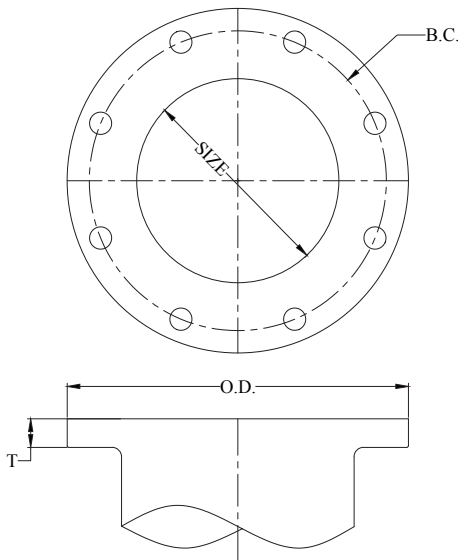
**C110 DUCTILE IRON FULL BODY FITTINGS**

**SAMPLE SPECIFICATIONS**

(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 .

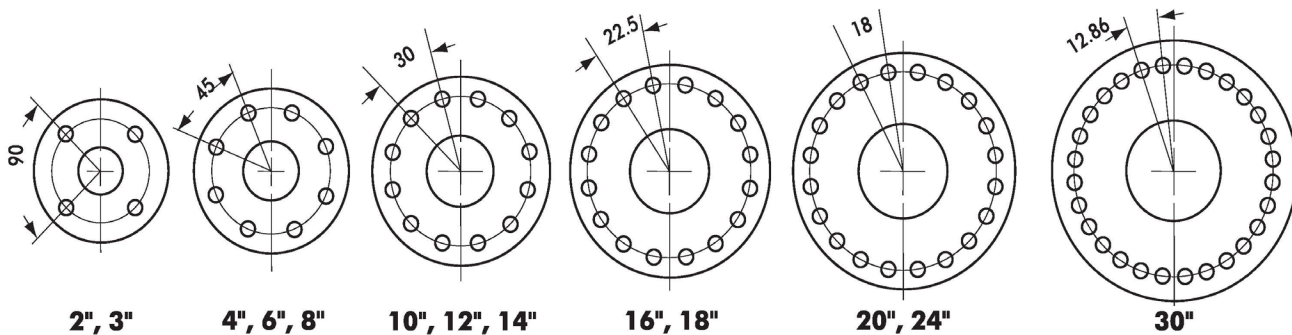
**NOTE:** Fittings are available prime coated, bare or epoxy coated. All coated fittings meet requirements of NSF-61, NSF-372 and Annex G. Interiors of fittings shall be lined and seal coated in accordance with ANSI/AWWA C104/A21.4. Installation of fittings shall be per AWWA C110.



ANSI/AWWA C110 Class 125 Flange Fittings

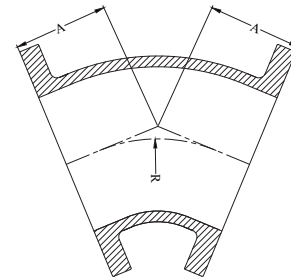
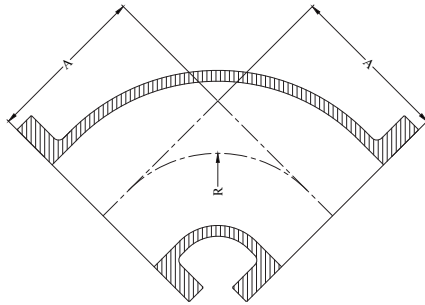
| FLANGE DETAILS         |             |               |                    |                    |                 |                       |
|------------------------|-------------|---------------|--------------------|--------------------|-----------------|-----------------------|
| Nominal Pipe Size 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               | 0.750              | 4               | 5/8 x 2 1/4           |
| 3                      | 7.50        | 6.00          | 0.75               | 0.750              | 4               | 5/8 x 2 1/2           |
| 4                      | 9.00        | 7.50          | 0.94               | 0.750              | 8               | 5/8 x 3               |
| 6                      | 11.00       | 9.50          | 1.00               | 0.880              | 8               | 3/4 x 3 1/2           |
| 8                      | 13.50       | 11.75         | 1.12               | 0.880              | 8               | 3/4 x 3 1/2           |
| 10                     | 16.00       | 14.25         | 1.19               | 1.000              | 12              | 7/8 x 4               |
| 12                     | 19.00       | 17.00         | 1.25               | 1.000              | 12              | 7/8 x 4               |
| 14                     | 21.00       | 18.75         | 1.38               | 1.130              | 12              | 1 x 4 1/2             |
| 16                     | 23.50       | 21.25         | 1.44               | 1.130              | 16              | 1 x 4 1/2             |
| 18                     | 25.00       | 22.75         | 1.56               | 1.250              | 16              | 1 1/8 x 5             |
| 20                     | 27.50       | 25.00         | 1.69               | 1.250              | 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               | 1.625              | 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                     | 66.25       | 62.75         | 3.00               | 2.00               | 44              | 1 3/4 x 8 1/2         |
| 60                     | 73.00       | 69.25         | 3.12               | 2.00               | 52              | 1 3/4 x 9             |
| 64                     | 80.00       | 76.00         | 3.38               | 2.00               | 52              | 1 3/4 x 9             |

Contact Tyler Union for 54”–64” flange fitting information.



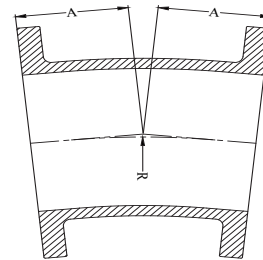
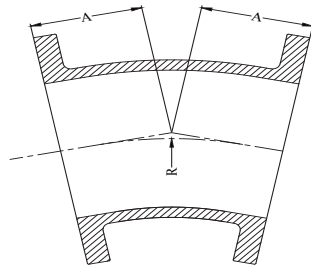
**NOTE:** Drilling templates are in multiples of four so that fittings may be made to face in any quarter. Bolt holes shall straddle the center line.

C110 DUCTILE IRON FULL BODY FITTINGS



| 90° (1/4) BENDS |       |       |          |        |
|-----------------|-------|-------|----------|--------|
| Size            | R     | A     | Domestic | Import |
|                 |       |       | Weight   | Weight |
| 2               | 3.00  | 4.50  | 14       | —      |
| 3               | 4.00  | 5.50  | 26       | 25     |
| 4               | 4.50  | 6.50  | 44       | 45     |
| 6               | 6.00  | 8.00  | 67       | 65     |
| 8               | 7.00  | 9.00  | 115      | 105    |
| 10              | 9.00  | 11.00 | 159      | 165    |
| 12              | 10.00 | 12.00 | 244      | 235    |
| 14              | 11.50 | 14.00 | 341      | 290    |
| 16              | 12.50 | 15.00 | 455      | 370    |
| 18              | 14.00 | 16.50 | 527      | 450    |
| 20              | 15.50 | 18.00 | 878      | 580    |
| 24              | 18.50 | 22.00 | 1085     | 900    |
| 30              | 21.50 | 25.00 | 1427     | 1430   |
| 36              | 24.50 | 28.00 | 2135     | 2135   |
| 42              | 27.50 | 31.00 | 3055     | 3055   |
| 48              | 30.50 | 34.00 | 4095     | 4095   |

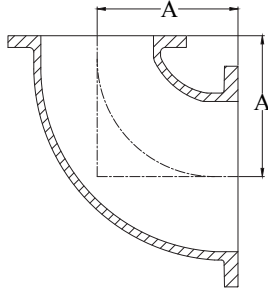
| 45° (1/8) BENDS |       |       |          |        |
|-----------------|-------|-------|----------|--------|
| Size            | R     | A     | Domestic | Import |
|                 |       |       | Weight   | Weight |
| 2               | —     | —     | —        | —      |
| 3               | 3.62  | 3.00  | 20       | 20     |
| 4               | 4.81  | 4.00  | 36       | 40     |
| 6               | 7.25  | 5.00  | 57       | 55     |
| 8               | 8.44  | 5.50  | 105      | 90     |
| 10              | 10.88 | 6.50  | 127      | 130    |
| 12              | 13.25 | 7.50  | 149      | 195    |
| 14              | 12.06 | 7.50  | 260      | 220    |
| 16              | 13.25 | 8.00  | 322      | 280    |
| 18              | 14.50 | 8.50  | 371      | 325    |
| 20              | 16.88 | 9.50  | 485      | 430    |
| 24              | 18.12 | 11.00 | 742      | 630    |
| 30              | 27.75 | 15.00 | 1355     | 1120   |
| 36              | 35.00 | 18.00 | 1755     | 1755   |
| 42              | 42.25 | 21.00 | 2600     | 2600   |
| 48              | 49.50 | 24.00 | 3580     | 3580   |



| 22½° (1/16) BENDS |        |       |          |        |
|-------------------|--------|-------|----------|--------|
| Size              | R      | A     | Domestic | Import |
|                   |        |       | Weight   | Weight |
| 2                 | —      | —     | —        | —      |
| 3                 | 7.56   | 3.00  | 22       | 20     |
| 4                 | 10.06  | 4.00  | 35       | 40     |
| 6                 | 15.06  | 5.00  | 64       | 55     |
| 8                 | 17.62  | 5.50  | 90       | 90     |
| 10                | 22.62  | 6.50  | 130      | 135    |
| 12                | 27.67  | 7.50  | 199      | 205    |
| 14                | 25.12  | 7.50  | 281      | 225    |
| 16                | 27.62  | 8.00  | 315      | 285    |
| 18                | 30.19  | 8.50  | 402      | 335    |
| 20                | 35.19  | 9.50  | 543      | 435    |
| 24                | 37.69  | 11.00 | 528      | 640    |
| 30                | 57.81  | 15.00 | 1385     | 1135   |
| 36                | 72.88  | 18.00 | 1790     | 1790   |
| 42                | 88.00  | 21.00 | 2665     | 2663   |
| 48                | 103.06 | 24.00 | 3665     | 3665   |

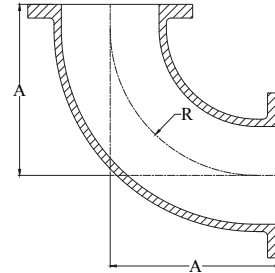
| 11¼° (1/32) BENDS |        |       |          |        |
|-------------------|--------|-------|----------|--------|
| Size              | R      | A     | Domestic | Import |
|                   |        |       | Weight   | Weight |
| 2                 | —      | —     | —        | —      |
| 3                 | 15.25  | 3.00  | 20       | 20     |
| 4                 | 20.31  | 4.00  | 40       | 40     |
| 6                 | 30.50  | 5.00  | 56       | 55     |
| 8                 | 35.50  | 5.50  | 90       | 90     |
| 10                | 45.69  | 6.50  | 136      | 135    |
| 12                | 55.81  | 7.50  | 213      | 205    |
| 14                | 50.75  | 7.50  | 261      | 225    |
| 16                | 55.81  | 8.00  | 315      | 285    |
| 18                | 60.94  | 8.50  | 385      | 335    |
| 20                | 71.06  | 9.50  | 505      | 435    |
| 24                | 76.12  | 11.00 | 760      | 645    |
| 30                | 116.75 | 15.00 | 1395     | 1150   |
| 36                | 147.25 | 18.00 | 1805     | 1805   |
| 42                | 177.69 | 21.00 | 2680     | 2680   |
| 48                | 208.12 | 24.00 | 3695     | 3695   |

C110 DUCTILE IRON FULL BODY FITTINGS



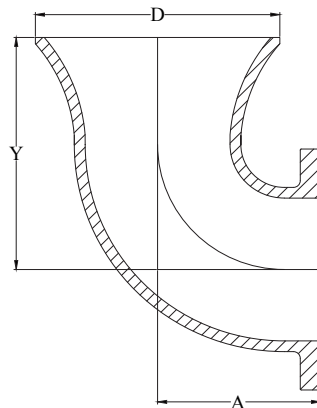
| 90° REDUCING BEND (1/4) |       |        |
|-------------------------|-------|--------|
| Size                    | A     | Weight |
| 4x3                     | 6.50  | 35     |
| 6x4                     | 8.00  | 65     |
| 8x4                     | 9.00  | 88     |
| 8x6                     | 9.00  | 96     |
| 10x6                    | 11.00 | 126    |
| 10x8                    | 11.00 | 151    |
| 12x6                    | 12.00 | 172    |
| 12x8                    | 12.00 | 191    |
| 12x10                   | 12.00 | 218    |
| 14x6                    | 14.00 | 230    |
| 14x8                    | 14.00 | 240    |
| 16x10                   | 15.00 | 280    |

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



| 90° LONG RADIUS BEND (1/4) |       |       |        |
|----------------------------|-------|-------|--------|
| Size                       | R     | A     | Weight |
| 3                          | 6.25  | 7.75  | 32     |
| 4                          | 7.00  | 9.00  | 46     |
| 6                          | 9.50  | 11.50 | 83     |
| 8                          | 12.00 | 14.00 | 140    |
| 10                         | 14.50 | 16.50 | 252    |
| 12                         | 17.00 | 19.00 | 310    |
| 14                         | 19.00 | 21.50 | 475    |
| 16                         | 21.50 | 24.00 | 630    |
| 18                         | —     | 26.50 | 840    |
| 20                         | —     | 29.00 | 1080   |
| 24                         | —     | 34.00 | 1640   |

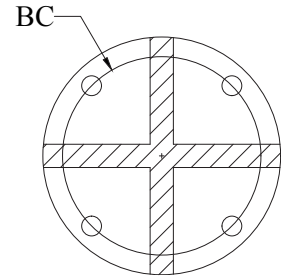
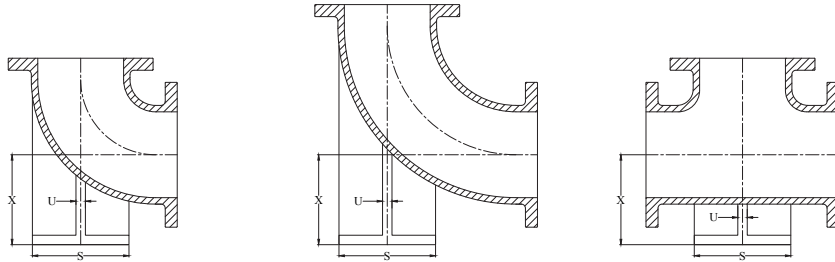
\*Not included in AWWA C110. Contact Tyler Union for sizes not shown.



| FLANGE AND FLARE 90° BEND (1/4) |       |       |       |        |
|---------------------------------|-------|-------|-------|--------|
| Size                            | D     | A     | Y     | Weight |
| 3                               | 8.00  | 5.50  | 8.50  | 26     |
| 4                               | 9.00  | 6.50  | 9.50  | 39     |
| 6                               | 11.00 | 8.00  | 12.00 | 73     |
| 8                               | 14.00 | 9.00  | 13.00 | 110    |
| 10                              | 16.00 | 11.00 | 15.00 | 171    |
| 12                              | 19.00 | 12.00 | 16.00 | 253    |
| 14                              | 21.00 | 14.00 | 21.50 | 450    |
| 16                              | 24.00 | 15.00 | 23.00 | 545    |
| 18                              | 25.00 | 16.50 | 24.50 | 675    |
| 20                              | 28.00 | 18.00 | 26.00 | 860    |
| 24                              | 32.00 | 22.00 | 30.00 | 1195   |
| 30                              | 39.00 | 25.00 | 38.00 | 2070   |
| 36                              | 48.00 | 28.00 | 38.00 | 2900   |



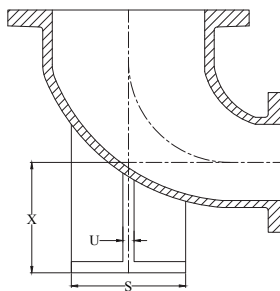
C110 DUCTILE IRON FULL BODY FITTINGS



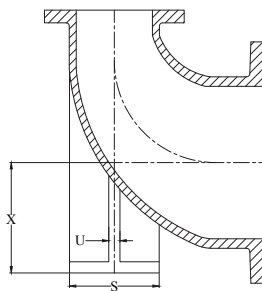
| 90° BASE BENDS |       |       | 90° LONG RADIUS BASE BEND |                   | BASE TEES |         |      |      |
|----------------|-------|-------|---------------------------|-------------------|-----------|---------|------|------|
| Size           | X     | S     | U                         | Support Pipe size | Weight    |         |      |      |
|                |       |       |                           |                   | 90°       | 90° L R | Tee  | 90°  |
| 3              | 4.88  | 5.00  | 0.50                      | 1.50              | 38        | 41      | 47   | 35   |
| 4              | 5.50  | 6.00  | 0.50                      | 2.00              | 50        | 60      | 76   | 55   |
| 6              | 7.00  | 7.00  | 0.62                      | 2.50              | 83        | 100     | 115  | 85   |
| 8              | 8.38  | 9.00  | 0.88                      | 4.00              | 142       | 180     | 195  | 145  |
| 10             | 9.75  | 9.00  | 0.88                      | 4.00              | 210       | 315     | 315  | 145  |
| 12             | 11.25 | 11.00 | 1.00                      | 6.00              | 300       | 427     | 450  | 300  |
| 14             | 12.50 | 11.00 | 1.00                      | 6.00              | 400       | 580     | 570  | 360  |
| 16             | 13.75 | 11.00 | 1.00                      | 6.00              | 505       | 740     | 710  | 445  |
| 18             | 15.00 | 13.50 | 1.12                      | 8.00              | 645       | —       | 900  | 565  |
| 20             | 16.00 | 13.50 | 1.12                      | 8.00              | 805       | —       | 1125 | 700  |
| 24             | 18.50 | 13.50 | 1.12                      | 8.00              | 1215      | —       | 1927 | 1030 |
| 30             | 23.00 | 16.00 | 1.15                      | 10.00             | 1945      | —       | —    | 1625 |
| 36             | 26.00 | 19.00 | 1.15                      | 12.00             | 2395      | 2895    | —    | 2385 |
| 42             | 30.00 | 23.50 | 1.28                      | —                 | —         | —       | —    | 3465 |
| 48             | 34.00 | 25.00 | 1.42                      | —                 | —         | —       | —    | 4610 |

| BASE DRILLING DETAILS |       |                    |             |
|-----------------------|-------|--------------------|-------------|
| Size                  | BC    | Bolt Hole Diameter | No of Holes |
| 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           |

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



Base Under Large End

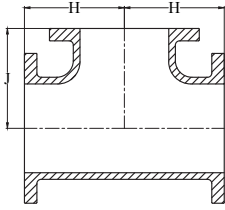


Base Under Small End

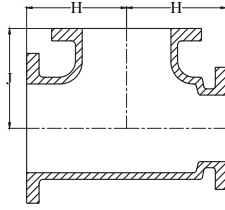
| BASE |       |       |      |        |
|------|-------|-------|------|--------|
| Size | X     | S     | U    | Weight |
| 4x3  | 5.50  | 6.00  | 0.50 | 45     |
| 6x4  | 7.00  | 8.50  | 0.62 | 75     |
| 8x4  | 8.38  | 9.00  | 0.88 | 118    |
| 8x6  | 8.38  | 9.00  | 0.88 | 135    |
| 10x6 | 9.75  | 9.00  | 0.88 | 175    |
| 10x8 | 9.75  | 9.00  | 0.88 | 184    |
| 12x6 | 11.25 | 11.00 | 1.00 | 230    |
| 12x8 | 11.25 | 11.00 | 1.00 | 255    |

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

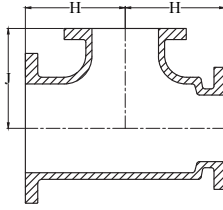
**C110 DUCTILE IRON FULL BODY FITTINGS**



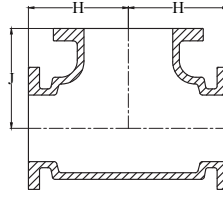
Straight Tees, Reducing on Branch Tees



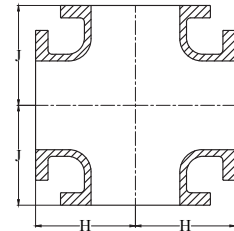
\*Reducing on Run



\*Reducing on Run and Branch



\*Bullhead Tees



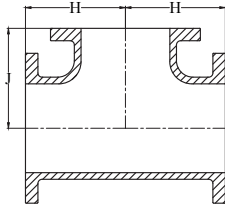
Straight and Reducing Crosses

| TEES AND CROSSES |     |        |       |       |                 |       |               |       |  |
|------------------|-----|--------|-------|-------|-----------------|-------|---------------|-------|--|
| Sizes            |     |        |       |       | Domestic Weight |       | Import Weight |       |  |
| Run              | Run | Branch | H     | J     | Tee             | Cross | Tee           | Cross |  |
| 2                | 2   | 2      | 5.00  | 4.50  | 20              | —     | —             | —     |  |
| 3                | 3   | 2      | 5.50  | 5.50  | 35              | —     | —             | —     |  |
| 3                | 3   | 3      | 5.50  | 5.50  | 42              | 51    | 40            | 50    |  |
| 4                | 3   | 3      | 6.50  | 5.50  | 53              | —     | —             | —     |  |
| 4                | 4   | 2      | 6.50  | 6.50  | 55              | —     | —             | —     |  |
| 4                | 4   | 3      | 6.50  | 6.50  | 54              | 76    | 60            | 70    |  |
| 4                | 4   | 4      | 6.50  | 6.50  | 60              | —     | 65            | 80    |  |
| 4                | 4   | 6      | 8.00  | 8.00  | 88              | —     | —             | —     |  |
| *6               | 4   | 4      | 8.00  | 8.00  | 85              | —     | —             | —     |  |
| 6                | 6   | 8      | 9.00  | 9.00  | 90              | 112   | 85            | 95    |  |
| 6                | 6   | 4      | 8.00  | 8.00  | 90              | 141   | 90            | 110   |  |
| 6                | 6   | 6      | 8.00  | 8.00  | 98              | 125   | 95            | 120   |  |
| *8               | 6   | 4      | 9.00  | 9.00  | 130             | —     | —             | —     |  |
| *8               | 6   | 8      | 9.00  | 9.00  | 154             | —     | —             | —     |  |
| 8                | 8   | 3      | 9.00  | 9.00  | 128             | 140   | —             | —     |  |
| 8                | 8   | 4      | 9.00  | 9.00  | 155             | 155   | 140           | 155   |  |
| 8                | 8   | 6      | 9.00  | 9.00  | 148             | 172   | 145           | 165   |  |
| 8                | 8   | 8      | 9.00  | 9.00  | 179             | 195   | 155           | 195   |  |
| *8               | 8   | 10     | 11.00 | 11.00 | 225             | —     | —             | —     |  |
| *8               | 8   | 12     | 12.00 | 12.00 | 277             | —     | —             | —     |  |
| *†10             | 6   | 6      | 13.00 | 13.00 | 278             | —     | —             | —     |  |
| *†10             | 8   | 6      | 13.00 | 13.00 | 298             | —     | —             | —     |  |
| *†10             | 8   | 8      | 13.00 | 13.00 | 278             | —     | —             | —     |  |
| *†10             | 8   | 10     | 13.00 | 13.00 | 325             | —     | —             | —     |  |
| 10               | 10  | 4      | 11.00 | 11.00 | 239             | 220   | 205           | 220   |  |
| 10               | 10  | 6      | 11.00 | 11.00 | 215             | 242   | 215           | 240   |  |
| 10               | 10  | 8      | 11.00 | 11.00 | 254             | 294   | 225           | 265   |  |
| 10               | 10  | 10     | 11.00 | 11.00 | 265             | —     | 270           | 330   |  |
| 10               | 10  | 12     | 12.00 | 12.00 | 337             | —     | —             | —     |  |
| *†12             | 6   | 6      | 14.00 | 14.00 | 346             | —     | —             | —     |  |
| *†12             | 6   | 8      | 14.00 | 14.00 | 362             | —     | —             | —     |  |
| *†12             | 8   | 6      | 14.00 | 14.00 | 355             | —     | —             | —     |  |
| *12              | 8   | 8      | 14.00 | 14.00 | 375             | —     | —             | —     |  |
| *12              | 8   | 12     | 14.00 | 14.00 | 420             | —     | —             | —     |  |
| *†12             | 10  | 6      | 14.00 | 14.00 | 390             | —     | —             | —     |  |
| 12               | 10  | 8      | 14.00 | 14.00 | 400             | —     | —             | —     |  |
| 12               | 10  | 10     | 14.00 | 14.00 | 420             | —     | —             | —     |  |
| 12               | 10  | 12     | 14.00 | 14.00 | 440             | —     | —             | —     |  |

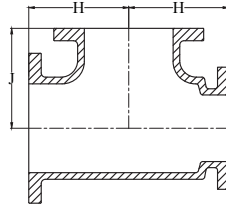
\* Not included in AWWA C110.

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

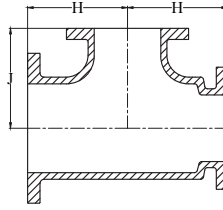
C110 DUCTILE IRON FULL BODY FITTINGS



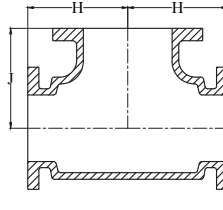
Straight Tees, Reducing on Branch Tees



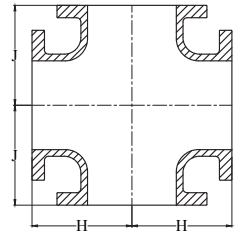
\*Reducing on Run



\*Reducing on Run and Branch



\*Bullhead Tees

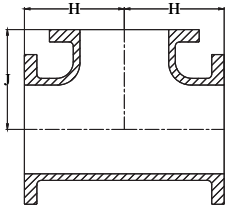


Straight and Reducing Crosses

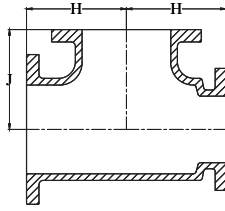
| TEES AND CROSSES |     |        |       |       |                 |       |               |       |
|------------------|-----|--------|-------|-------|-----------------|-------|---------------|-------|
| Sizes            |     |        |       |       | Domestic Weight |       | Import Weight |       |
| Run              | Run | Branch | H     | J     | Tee             | Cross | Tee           | Cross |
| 12               | 12  | 4      | 12.00 | 12.00 | 322             | 310   | 290           | —     |
| 12               | 12  | 6      | 12.00 | 12.00 | 297             | 326   | 295           | —     |
| 12               | 12  | 8      | 12.00 | 12.00 | 346             | 351   | 310           | —     |
| 12               | 12  | 10     | 12.00 | 12.00 | 394             | 415   | 360           | —     |
| 12               | 12  | 12     | 12.00 | 12.00 | 369             | 438   | 385           | —     |
| *14              | 14  | 4      | 14.00 | 14.00 | 410             | —     | —             | —     |
| 14               | 14  | 6      | 14.00 | 14.00 | 420             | 450   | 375           | —     |
| 14               | 14  | 8      | 14.00 | 14.00 | 435             | 475   | 390           | —     |
| 14               | 14  | 10     | 14.00 | 14.00 | 450             | —     | 400           | —     |
| 14               | 14  | 12     | 14.00 | 14.00 | 470             | 555   | 425           | —     |
| *14              | 14  | 14     | 14.00 | 14.00 | 500             | 595   | 435           | —     |
| *16              | *14 | 4      | 15.00 | 15.00 | 525             | —     | —             | —     |
| 16               | *16 | 6      | 15.00 | 15.00 | 573             | 565   | 465           | 490   |
| 16               | 16  | 8      | 15.00 | 15.00 | 555             | 590   | 475           | 520   |
| 16               | 16  | 10     | 15.00 | 15.00 | 565             | 620   | 495           | 555   |
| 16               | 16  | 12     | 15.00 | 15.00 | 590             | 665   | 520           | 605   |
| 16               | 16  | 14     | 15.00 | 15.00 | 610             | —     | 530           | 620   |
| 16               | 16  | 16     | 15.00 | 15.00 | 635             | 755   | 550           | 665   |
| 18               | 18  | 6      | 13.00 | 15.50 | 780             | —     | 480           | 505   |
| 18               | 18  | 8      | 13.00 | 15.50 | 609             | —     | 495           | 535   |
| 18               | 18  | 10     | 13.00 | 15.50 | 585             | —     | 510           | 560   |
| 18               | 18  | 12     | 13.00 | 15.50 | 638             | 706   | 535           | 610   |
| 18               | 18  | 14     | 16.50 | 16.50 | 808             | —     | 630           | 720   |
| 18               | 18  | 16     | 16.50 | 16.50 | 760             | —     | 650           | 765   |
| 18               | 18  | 18     | 16.50 | 16.50 | 865             | 915   | 665           | 795   |
| 20               | 20  | 6      | 14.00 | 17.00 | 773             | —     | 610           | 635   |
| 20               | 20  | 8      | 14.00 | 17.00 | 720             | —     | 620           | 665   |
| 20               | 20  | 10     | 14.00 | 17.00 | 735             | —     | 635           | 685   |
| 20               | 20  | 12     | 14.00 | 17.00 | 816             | 820   | 660           | 735   |
| 20               | 20  | 14     | 14.00 | 17.00 | 770             | —     | 665           | 745   |
| 20               | 20  | 16     | 18.00 | 18.00 | 950             | 1065  | 810           | 915   |
| 20               | 20  | 18     | 18.00 | 18.00 | 965             | —     | 820           | 945   |
| 20               | 20  | 20     | 18.00 | 18.00 | 1005            | 1175  | 855           | 1015  |
| 24               | 24  | 6      | 15.00 | 19.00 | 1089            | —     | 845           | 875   |
| 24               | 24  | 8      | 15.00 | 19.00 | 1060            | —     | 860           | 895   |
| 24               | 24  | 10     | 15.00 | 19.00 | 1020            | —     | 88            | 930   |
| 24               | 24  | 12     | 15.00 | 19.00 | 1125            | 1100  | 890           | 960   |
| 24               | 24  | 14     | 15.00 | 19.00 | 1050            | 1125  | 900           | 975   |
| 24               | 24  | 16     | 15.00 | 19.00 | 1070            | 1160  | 915           | 1010  |
| 24               | 24  | 18     | 22.00 | 22.00 | 1534            | —     | 1220          | 1365  |
| 24               | 24  | 20     | 22.00 | 22.00 | 1510            | 1695  | 1255          | 1430  |
| 24               | 24  | 24     | 22.00 | 22.00 | 1685            | 1850  | 1330          | 1570  |

\* Not included in AWWA C110.

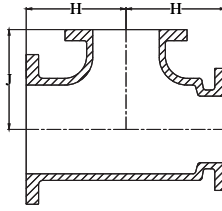
**C110 DUCTILE IRON FULL BODY FITTINGS**



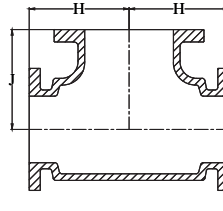
Straight Tees, Reducing on Branch Tees



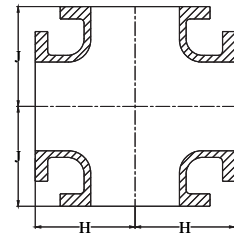
\*Reducing on Run



\*Reducing on Run and Branch



\*Bullhead Tees



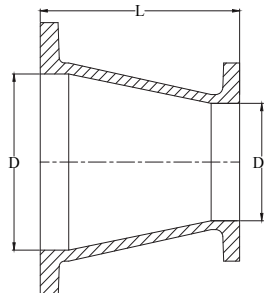
Straight and Reducing Crosses

| TEES AND CROSSES |     |        |       |       |                 |       |               |       |
|------------------|-----|--------|-------|-------|-----------------|-------|---------------|-------|
| Sizes            |     |        |       |       | Domestic Weight |       | Import Weight |       |
| Run              | Run | Branch | H     | J     | Tee             | Cross | Tee           | Cross |
| 30               | 30  | 6      | 18.00 | 23.00 | 1725            | —     | —             | —     |
| 30               | 30  | 8      | 18.00 | 23.00 | —               | —     | 1490          | 1565  |
| 30               | 30  | 10     | 18.00 | 23.00 | —               | —     | 1490          | 1565  |
| 30               | 30  | 12     | 18.00 | 23.00 | 1801            | —     | 1490          | 1565  |
| 30               | 30  | 14     | 18.00 | 23.00 | —               | —     | 1490          | 1570  |
| 30               | 30  | 16     | 18.00 | 23.00 | —               | —     | 1505          | 1605  |
| 30               | 30  | 18     | 18.00 | 23.00 | 1852            | —     | 1515          | 1615  |
| 30               | 30  | 20     | 18.00 | 23.00 | —               | —     | 1540          | 1670  |
| 30               | 30  | 24     | 25.00 | 25.00 | 2475            | 2695  | 2025          | 2245  |
| 30               | 30  | 30     | 25.00 | 25.00 | 2615            | 2985  | 2150          | 2500  |
| 36               | 36  | 12     | 20.00 | 26.00 | —               | —     | 2170          | 2240  |
| 36               | 36  | 14     | 20.00 | 26.00 | —               | —     | 2175          | 2240  |
| 36               | 36  | 16     | 20.00 | 26.00 | —               | —     | 2185          | 2270  |
| 36               | 36  | 18     | 20.00 | 26.00 | —               | —     | 2190          | 2280  |
| 36               | 36  | 20     | 20.00 | 26.00 | —               | —     | 2210          | 2325  |
| 36               | 36  | 24     | 20.00 | 26.00 | 2255            | —     | 2255          | 2405  |
| 36               | 36  | 30     | 28.00 | 28.00 | 3000            | —     | 3000          | 3300  |
| 36               | 36  | 36     | 28.00 | 28.00 | 3160            | 6740  | 3160          | 3620  |
| 42               | 42  | 12     | 23.00 | 30.00 | —               | —     | 3165          | 3200  |
| 42               | 42  | 14     | 23.00 | 30.00 | —               | —     | 3170          | 3200  |
| 42               | 42  | 16     | 23.00 | 30.00 | —               | —     | 3180          | 3270  |
| 42               | 42  | 18     | 23.00 | 30.00 | —               | —     | 3185          | 3300  |
| 42               | 42  | 20     | 23.00 | 30.00 | —               | —     | 3205          | 3320  |
| 42               | 42  | 24     | 23.00 | 30.00 | 3245            | —     | 3245          | 3395  |
| 42               | 42  | 30     | 31.00 | 31.00 | 4125            | —     | 4125          | 4375  |
| 42               | 42  | 36     | 31.00 | 31.00 | 5360            | —     | 5360          | 5720  |
| 42               | 42  | 42     | 31.00 | 31.00 | 5580            | —     | 5585          | 6155  |
| 48               | 48  | 12     | 26.00 | 34.00 | —               | —     | 4315          | 4390  |
| 48               | 48  | 14     | 26.00 | 34.00 | —               | —     | 4315          | 4385  |
| 48               | 48  | 16     | 26.00 | 34.00 | —               | —     | 4330          | 4415  |
| 48               | 48  | 18     | 26.00 | 34.00 | —               | —     | 4330          | 4420  |
| 48               | 48  | 20     | 26.00 | 34.00 | —               | —     | 4350          | 4460  |
| 48               | 48  | 24     | 26.00 | 34.00 | 4385            | —     | 4385          | 4535  |
| 48               | 48  | 30     | 26.00 | 34.00 | 4455            | —     | 4455          | 4670  |
| 48               | 48  | 36     | 34.00 | 34.00 | 5555            | —     | 5555          | 5880  |
| 48               | 48  | 42     | 34.00 | 34.00 | 7195            | —     | 7195          | 9630  |
| 48               | 48  | 48     | 34.00 | 34.00 | 7385            | —     | 7385          | 8005  |

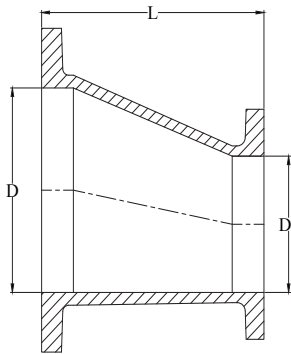
\* Not included in AWWA C110.

C110 DUCTILE IRON FULL BODY FITTINGS

| CONCENTRIC REDUCER |       |       |          |        |
|--------------------|-------|-------|----------|--------|
|                    |       |       | Domestic | Import |
| D                  | D1    | L     | Weight   | Weight |
| 3.00               | 2.00  | 6.00  | 17       | —      |
| 4.00               | 2.00  | 7.00  | 23       | —      |
| 4.00               | 3.00  | 7.00  | 29       | 30     |
| 6.00               | 2.00  | 9.00  | 30       | —      |
| 6.00               | 3.00  | 9.00  | 44       | 40     |
| 6.00               | 4.00  | 9.00  | 46       | 45     |
| 6.00               | 5.00  | 9.00  | 56       | —      |
| 8.00               | 3.00  | 11.00 | 61       | 65     |
| 8.00               | 4.00  | 11.00 | 63       | —      |
| 8.00               | 5.00  | 11.00 | 70       | —      |
| 8.00               | 6.00  | 11.00 | 75       | 75     |
| 10.00              | 4.00  | 12.00 | 98       | 85     |
| 10.00              | 6.00  | 12.00 | 107      | 90     |
| 10.00              | 8.00  | 12.00 | 116      | 110    |
| 12.00              | 4.00  | 14.00 | 119      | 120    |
| 12.00              | 6.00  | 14.00 | 130      | 130    |
| 12.00              | 8.00  | 14.00 | 152      | 145    |
| 12.00              | 10.00 | 14.00 | 178      | 170    |
| 14.00              | 6.00  | 16.00 | 165      | 155    |
| 14.00              | 8.00  | 16.00 | 185      | 175    |
| 14.00              | 10.00 | 16.00 | 205      | 190    |
| 14.00              | 12.00 | 16.00 | 235      | 220    |
| 16.00              | 6.00  | 18.00 | 210      | 190    |
| 16.00              | 8.00  | 18.00 | 230      | 210    |
| 16.00              | 10.00 | 18.00 | 255      | 235    |
| 16.00              | 12.00 | 18.00 | 285      | 265    |
| 16.00              | 14.00 | 18.00 | 315      | 280    |
| 18.00              | 8.00  | 19.00 | 265      | 240    |
| 18.00              | 10.00 | 19.00 | 290      | 265    |
| 18.00              | 12.00 | 19.00 | 320      | 295    |
| 18.00              | 14.00 | 19.00 | 350      | 310    |
| 18.00              | 16.00 | 19.00 | 405      | 340    |
| 20.00              | 10.00 | 20.00 | 418      | —      |
| 20.00              | 12.00 | 20.00 | 465      | 345    |
| 20.00              | 14.00 | 20.00 | 430      | 355    |
| 20.00              | 16.00 | 20.00 | 445      | 390    |
| 20.00              | 18.00 | 20.00 | 470      | 410    |
| 24.00              | 12.00 | 24.00 | 608      | 480    |
| 24.00              | 14.00 | 24.00 | 565      | 490    |
| 24.00              | 16.00 | 24.00 | 610      | 525    |
| 24.00              | 18.00 | 24.00 | 645      | 550    |
| 24.00              | 20.00 | 24.00 | 695      | 590    |
| 30.00              | 16.00 | 30.00 | 945      | —      |
| 30.00              | 18.00 | 30.00 | 970      | 810    |
| 30.00              | 20.00 | 30.00 | 1144     | 870    |
| 30.00              | 24.00 | 30.00 | 1155     | 970    |
| 36.00              | 20.00 | 36.00 | —        | 1230   |
| 36.00              | 24.00 | 36.00 | —        | 1345   |
| 36.00              | 30.00 | 36.00 | —        | 1555   |
| 42.00              | 24.00 | 42.00 | 1810     | 1820   |
| 42.00              | 30.00 | 42.00 | 2060     | 2060   |
| 42.00              | 36.00 | 42.00 | —        | 2345   |
| 48.00              | 30.00 | 48.00 | 2615     | 2625   |
| 48.00              | 36.00 | 48.00 | 2940     | 2950   |
| 48.00              | 42.00 | 48.00 | 3320     | 3320   |



Concentric Reducer

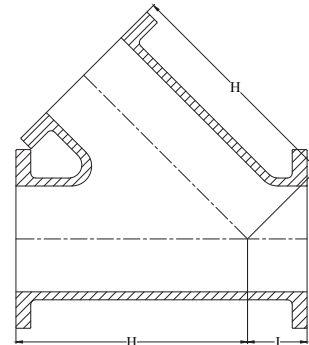
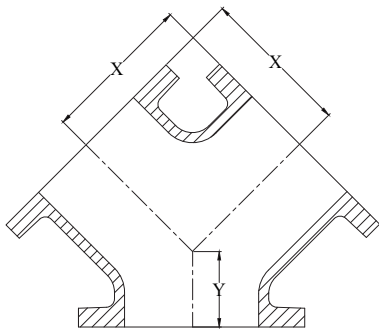


Eccentric Reducer

| *ECCENTRIC REDUCER |       |       |          |        |
|--------------------|-------|-------|----------|--------|
|                    |       |       | Domestic | Import |
| D                  | D1    | L     | Weight   | Weight |
| 4.00               | 3.00  | 7.00  | 30       | —      |
| 6.00               | 3.00  | 9.00  | 45       | —      |
| 6.00               | 4.00  | 9.00  | 52       | 45     |
| 8.00               | 4.00  | 11.00 | 70       | —      |
| 8.00               | 6.00  | 11.00 | 80       | —      |
| 10.00              | 4.00  | 12.00 | 95       | —      |
| 10.00              | 6.00  | 12.00 | 98       | —      |
| 10.00              | 8.00  | 12.00 | 123      | —      |
| 12.00              | 4.00  | 14.00 | 120      | —      |
| 12.00              | 6.00  | 14.00 | 135      | —      |
| 12.00              | 8.00  | 14.00 | 149      | —      |
| 12.00              | 10.00 | 14.00 | 177      | —      |
| 14.00              | 6.00  | 16.00 | 165      | —      |
| 14.00              | 8.00  | 16.00 | 185      | —      |
| 14.00              | 10.00 | 16.00 | 205      | —      |
| 14.00              | 12.00 | 16.00 | 294      | —      |
| 16.00              | 6.00  | 18.00 | 210      | —      |
| 16.00              | 8.00  | 18.00 | 230      | —      |
| 16.00              | 10.00 | 18.00 | 255      | —      |
| 16.00              | 12.00 | 18.00 | 285      | —      |
| 16.00              | 14.00 | 18.00 | 315      | —      |
| 18.00              | 8.00  | 19.00 | 265      | —      |
| 18.00              | 10.00 | 19.00 | 290      | —      |
| 18.00              | 12.00 | 19.00 | 306      | —      |
| 18.00              | 14.00 | 19.00 | 350      | —      |
| 18.00              | 16.00 | 19.00 | 385      | —      |
| 20.00              | 10.00 | 20.00 | 350      | —      |
| 20.00              | 12.00 | 20.00 | 370      | —      |
| 20.00              | 14.00 | 20.00 | 402      | —      |
| 20.00              | 16.00 | 20.00 | 449      | —      |
| 20.00              | 18.00 | 20.00 | 455      | —      |
| 24.00              | 12.00 | 24.00 | 535      | —      |
| 24.00              | 14.00 | 24.00 | 570      | —      |
| 24.00              | 16.00 | 24.00 | 614      | —      |
| 24.00              | 18.00 | 24.00 | 645      | —      |
| 24.00              | 20.00 | 24.00 | 695      | —      |
| 30.00              | 16.00 | 30.00 | 778      | —      |
| 30.00              | 18.00 | 30.00 | 810      | —      |
| 30.00              | 20.00 | 30.00 | 870      | —      |
| 30.00              | 24.00 | 30.00 | 970      | —      |
| 36.00              | 24.00 | 36.00 | 1425     | —      |
| 36.00              | 30.00 | 36.00 | 2120     | —      |
| 42.00              | 24.00 | 42.00 | 2340     | —      |
| 42.00              | 30.00 | 42.00 | 2060     | —      |
| 42.00              | 36.00 | 42.00 | 2345     | —      |
| 48.00              | 30.00 | 48.00 | 2625     | —      |
| 48.00              | 36.00 | 48.00 | 2950     | —      |
| 48.00              | 42.00 | 48.00 | 3320     | —      |

\*Eccentric Reducers not included in AWWA C110.

C110 DUCTILE IRON FULL BODY FITTINGS

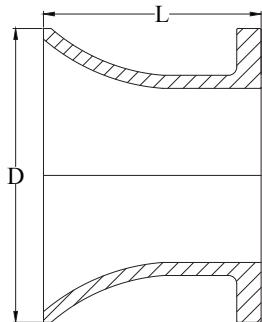


| *TRUE WYES |        |       |      |          |
|------------|--------|-------|------|----------|
| Sizes      |        |       |      | Domestic |
| Stem       | Branch | X     | Y    | Weight   |
| 4          | 4      | 6.50  | 3.00 | 49       |
| 6          | 4      | 8.00  | 3.50 | 75       |
| 6          | 6      | 8.00  | 3.50 | 84       |
| 8          | 6      | 9.00  | 4.50 | 134      |
| 8          | 8      | 9.00  | 4.50 | 125      |
| 10         | 6      | 8.00  | 5.00 | 140      |
| 10         | 8      | 9.00  | 5.00 | 155      |
| 10         | 10     | 11.00 | 5.00 | 220      |
| 12         | 8      | 9.00  | 5.50 | 210      |
| 12         | 10     | 11.00 | 5.50 | 240      |
| 12         | 12     | 12.00 | 5.50 | 315      |
| 16         | 16     | 13.00 | 6.50 | 520      |

\*Not included in AWWA C110.

| *WYES / LATERALS |        |       |       |          |
|------------------|--------|-------|-------|----------|
| Sizes            |        |       |       | Domestic |
| Run              | Branch | H     | J     | Tee      |
| 3                | 3      | 10.00 | 3.00  | 49       |
| 4                | 3      | 12.00 | 3.00  | 68       |
| 4                | 4      | 12.00 | 3.00  | 76       |
| 6                | 4      | 14.50 | 3.50  | 106      |
| 6                | 6      | 14.50 | 3.50  | 131      |
| 8                | 4      | 17.50 | 4.50  | 153      |
| 8                | 6      | 17.50 | 4.50  | 188      |
| 8                | 8      | 17.50 | 4.50  | 201      |
| 10               | 4      | 20.50 | 5.00  | 232      |
| 10               | 6      | 20.50 | 5.00  | 288      |
| 10               | 8      | 20.50 | 5.00  | 333      |
| 10               | 10     | 20.50 | 5.00  | 300      |
| 12               | 4      | 24.50 | 5.50  | 355      |
| 12               | 6      | 24.50 | 5.50  | 370      |
| 12               | 8      | 24.50 | 5.50  | 395      |
| 12               | 10     | 24.50 | 5.50  | 420      |
| 12               | 12     | 24.50 | 5.50  | 460      |
| 14               | 6      | 27.00 | 6.00  | 500      |
| 14               | 8      | 27.00 | 6.00  | 525      |
| 14               | 10     | 27.00 | 6.00  | 555      |
| 14               | 12     | 27.00 | 6.00  | 600      |
| 14               | 14     | 27.00 | 6.00  | 640      |
| 16               | 6      | 30.00 | 6.50  | 655      |
| 16               | 8      | 30.00 | 6.50  | 680      |
| 16               | 10     | 30.00 | 6.50  | 715      |
| 16               | 12     | 30.00 | 6.50  | 755      |
| 16               | 14     | 30.00 | 6.50  | 800      |
| 16               | 16     | 30.00 | 6.50  | 850      |
| 18               | 8      | 32.00 | 7.00  | 820      |
| 18               | 10     | 32.00 | 7.00  | 855      |
| 18               | 12     | 32.00 | 7.00  | 1003     |
| 18               | 14     | 32.00 | 7.00  | 940      |
| 18               | 16     | 32.00 | 7.00  | 990      |
| 18               | 18     | 32.00 | 7.00  | 1035     |
| 20               | 10     | 35.00 | 8.00  | 1095     |
| 20               | 12     | 35.00 | 8.00  | 1130     |
| 20               | 14     | 35.00 | 8.00  | 1170     |
| 20               | 16     | 35.00 | 8.00  | 1220     |
| 20               | 20     | 35.00 | 8.00  | 1345     |
| 24               | 24     | 40.50 | 9.00  | 2020     |
| 36               | 36     | 60.00 | 19.50 | 5740     |

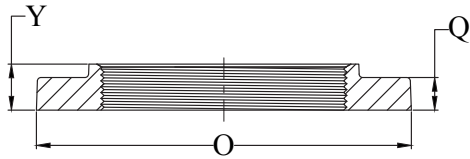
\*Not included in AWWA C110.



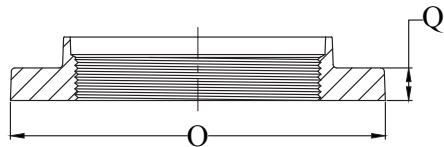
| *FLANGE x FLARE PIECE |       |       |        |
|-----------------------|-------|-------|--------|
| Size                  | D     | L     | Weight |
| 3                     | 7.00  | 8.00  | 21     |
| 4                     | 9.00  | 8.00  | 30     |
| 6                     | 11.00 | 8.00  | 44     |
| 8                     | 14.00 | 10.00 | 75     |
| 10                    | 16.00 | 10.50 | 113    |
| 12                    | 19.00 | 12.00 | 155    |
| 14                    | 21.00 | 16.00 | 225    |
| 16                    | 24.00 | 16.00 | 330    |
| 18                    | 25.00 | 16.00 | 355    |
| 20                    | 28.00 | 16.00 | 465    |
| 24                    | 32.00 | 16.00 | 598    |
| 30                    | 39.00 | 24.00 | 900    |
| 36                    | 46.00 | 24.00 | 1200   |

\*Not included in AWWA C110.

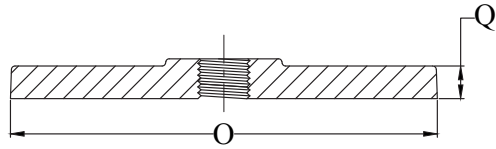
C110 DUCTILE IRON FULL BODY FITTINGS



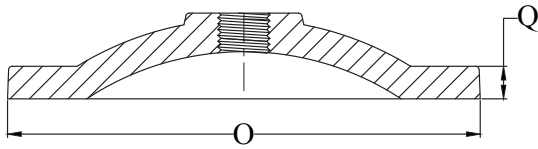
Flange for Steel Pipe  
Reducing Flange for Steel Pipe



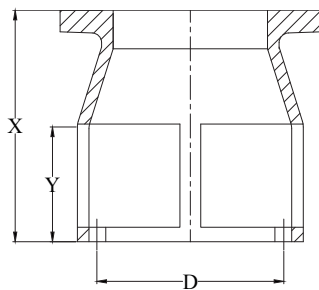
Flange for DI Pipe  
Reducing Flange for DI Pipe



Under 12" Blind Flange  
with Optional 2" Tap



12" and Larger Blind Flange  
with Optional 2" Tap



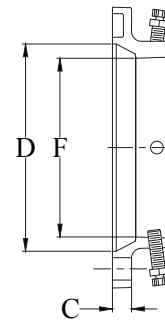
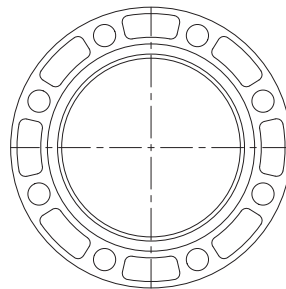
| *FLANGE SLUDGE SHOE |       |       |      |                 |
|---------------------|-------|-------|------|-----------------|
| Size                | D     | X     | Y    | Domestic Weight |
| 3                   | 5.75  | 12.00 | 6.00 | 28              |
| 4                   | 7.00  | 12.00 | 6.00 | 35              |
| 6                   | 7.87  | 12.00 | 6.00 | 45              |
| 8                   | 10.12 | 12.00 | 6.00 | 69              |
| 10                  | 12.25 | 12.00 | 6.00 | 88              |
| 12                  | 15.25 | 12.00 | 6.00 | 120             |

\*Not included in AWWA C110.

| FLANGES |       |      |      |       |                 |               |                 |               |                 |               |
|---------|-------|------|------|-------|-----------------|---------------|-----------------|---------------|-----------------|---------------|
| Size    | Sizes |      |      |       | Domestic Weight | Import Weight | Domestic Weight | Import Weight | Domestic Weight | Import Weight |
|         | O     | Q    | Y    | Z     | Steel           | Steel         | DI              | DI            | Blind           | Blind         |
| 2       | 6.00  | 0.62 | 1.00 | 4.75  | 4               | -             | -               | -             | -               | -             |
| 2½      | 7.00  | 0.69 | 1.13 | 5.50  | 6               | -             | -               | -             | -               | -             |
| 3       | 7.50  | 0.75 | 1.19 | 6.00  | 9               | -             | 6               | 7             | 8               | 9             |
| 4       | 9.00  | 0.94 | 1.31 | 7.50  | 15              | -             | 13              | 12            | 14              | 16            |
| 6       | 11.00 | 1.00 | 1.56 | 9.50  | 20              | -             | 19              | 17            | 27              | 25            |
| 8       | 13.50 | 1.12 | 1.75 | 11.75 | 31              | -             | 29              | 26            | 38              | 38            |
| 10      | 16.00 | 1.19 | 1.94 | 14.25 | 50              | -             | 36              | 38            | 55              | 66            |
| 12      | 19.00 | 1.25 | 2.19 | -     | 63              | -             | 61              | 57            | 73              | 85            |
| 14      | 21.00 | 1.38 | 2.25 | -     | -               | -             | 59              | 61            | 116             | 120           |
| 16      | 23.50 | 1.44 | 2.50 | -     | -               | -             | 78              | 83            | 153             | 145           |
| 18      | 25.00 | 1.56 | 2.69 | -     | -               | -             | 98              | 98            | 176             | 179           |
| 20      | 27.50 | 1.69 | 2.88 | -     | -               | -             | 103             | 110           | 215             | 244           |
| 24      | 32.00 | 1.88 | 3.25 | -     | -               | -             | 147             | 145           | 348             | 364           |
| 30      | 38.75 | 2.12 | -    | -     | -               | -             | 255             | 212           | 615             | 546           |
| 36      | 46.00 | 2.38 | -    | -     | -               | -             | 360             | 324           | 900             | 958           |
| 42      | 53.00 | 2.62 | -    | -     | -               | -             | 535             | 533           | 1300            | 1300          |
| 48      | 59.50 | 2.75 | -    | -     | -               | -             | 650             | 646           | 1620            | 1740          |

| DI REDUCING FLANGE<br>THREADED FOR STEEL PIPE |            |                 |
|---|------------|-----------------|
| Size  | Tap x O.D. | Domestic 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<br>FOR DUCTILE IRON PIPE |            |        |
|--|------------|--------|
| Size   | Tap x O.D. | Weight |
| 4x3  | 3x9        | 16     |
| 6x4  | 4x11       | 25     |
| 8x4  | 4x13.5     | 40     |
| 8x6  | 6x13.5     | 35     |
| 10x8   | 8x16       | 50     |
| 12x8   | 8x19       | 85     |



| ADAPTER FLANGE |                        |                   |             |                                   |             |             |      |                 |               |
|----------------|------------------------|-------------------|-------------|-----------------------------------|-------------|-------------|------|-----------------|---------------|
| Size           | Rated Working Pressure | No. of Set Screws | Bolt Circle | Ductile Iron Pipe OD +.06 or -.06 | D +.06 -.04 | F +.07 -.03 | C    | Domestic Weight | Import Weight |
| 3.00           | 250                    | 4                 | 6.00        | 3.96                              | 4.94        | 4.06        | 0.94 | 7               | 6.5           |
| 4.00           | 250                    | 4                 | 7.50        | 4.80                              | 6.02        | 4.90        | 1.00 | 8               | 8             |
| 6.00           | 250                    | 8                 | 9.50        | 6.90                              | 8.12        | 7.00        | 1.06 | 12              | 12            |
| 8.00           | 250                    | 8                 | 11.75       | 9.05                              | 10.27       | 9.15        | 1.12 | 18              | 18            |
| 10.00          | 250                    | 12                | 14.25       | 11.10                             | 12.34       | 11.20       | 1.19 | 28              | 28            |
| 12.00          | 150                    | 12                | 17.00       | 13.20                             | 14.44       | 13.30       | 1.25 | 40              | 34            |

All set screws are 5/8" 80lb. torque head.

Note: Recommended for class 53-class 56 wall thickness D.I. pipe.

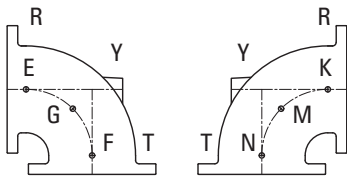
C110 DUCTILE IRON FULL BODY FITTINGS

TAP LOCATIONS

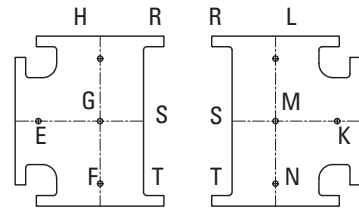
Fittings can be supplied with tap sizes and located to ANSI B16.1 and MSS-SP-45. Specify fitting size, tap location by letter (refer to drawings below) and tap size by NPT dimension, on order.

**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.

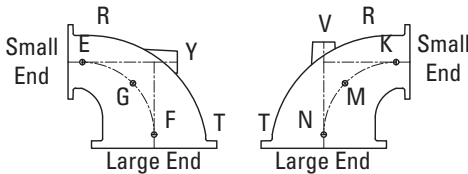
| TAP LOCATIONS |                      |
|---------------|----------------------|
| Fitting Size  | Max Tap Without Boss |
| 3             | 1/2                  |
| 4-6           | 3/4                  |
| 8             | 1 1/4                |
| 10-16         | 1 1/2                |
| 18-36      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



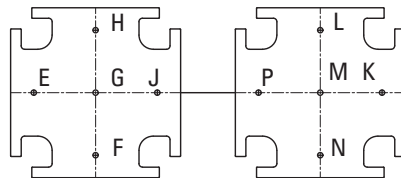
90° Bend, Straight Size



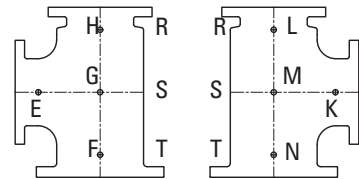
Tee, Straight Size



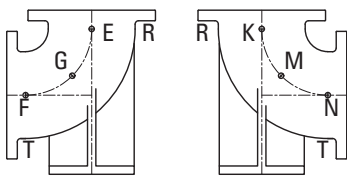
90° Bend, Reducing Size



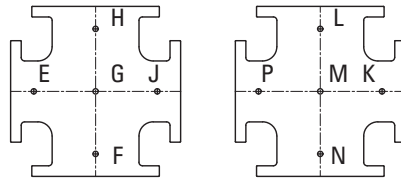
Cross, Straight Size



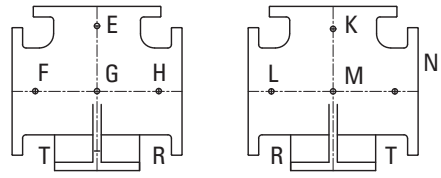
Tee, Reducing Size



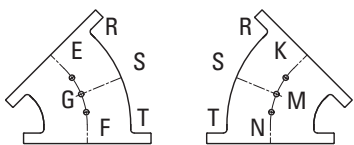
Base 90° Bend Elbow



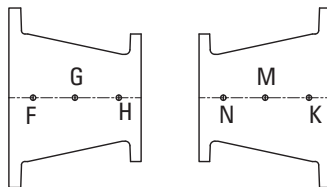
Cross, Reducing Size



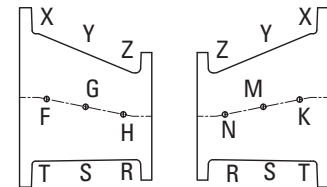
Base Tee



45° Bend



Concentric Reducer



Eccentric Reducer



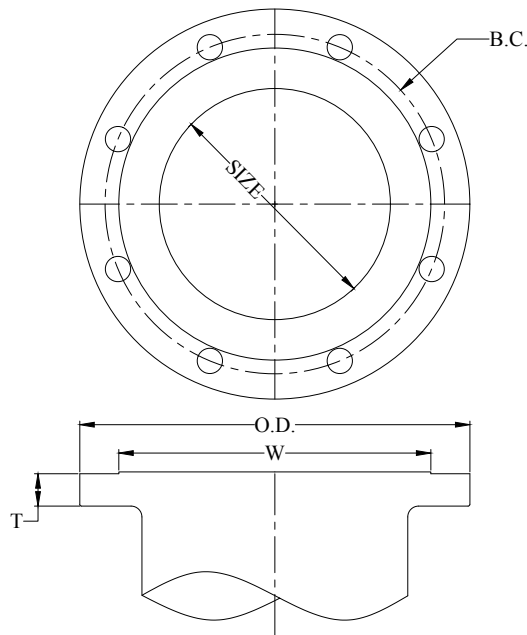
**C110 DUCTILE IRON FULL BODY FITTINGS**

**SAMPLE SPECIFICATIONS**

(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.

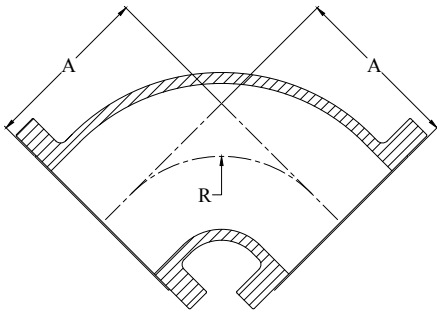
NOTE: Fittings are available prime coated, bare or epoxy coated. All coated fittings meet requirements of NSF-61, NSF-372 and Annex G. Interiors of fittings shall be lined and seal coated in accordance with ANSI/AWWA C104/A21.4. Cement mortar lining for Ductile Iron Pipe and fittings for potable water unless otherwise specified. Installation of fittings shall be per AWWA C110.



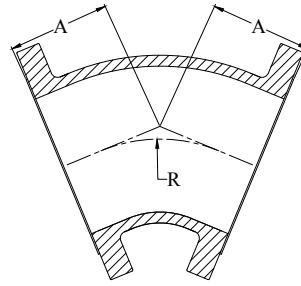
| ANSI / AWWA C110 CLASS 250 FLANGE FITTINGS FLANGE DETAILS |             |                 |                     |                    |                    |                 |                       |
|---|-------------|-----------------|---------------------|--------------------|--------------------|-----------------|-----------------------|
| Nominal Pipe Size Inch                                    | Flange O.D. | W (Raised Face) | Dia. of Bolt Circle | Flange Thickness T | Bolt Hole Diameter | Number of Bolts | Bolt Dia. and Lengths |
| 2   | 6.50        | 4.19            | 5.00                | 0.88               | 0.750              | 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               | 2.000              | 28              | 1 3/4 x 8 1/2         |
| 36  | 50.00       | 43.69           | 46.00               | 3.38               | 2.250              | 32              | 2 x 11                |
| 42  | 57.00       | 50.44           | 52.75               | 3.69               | 2.250              | 36              | 2 x 11                |
| 48  | 65.00       | 58.44           | 60.75               | 4.00               | 2.250              | 40              | 2 x 11                |

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

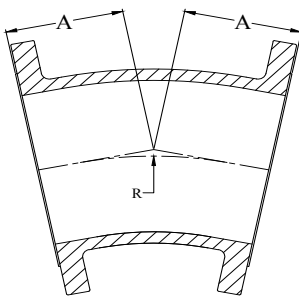
**C110 DUCTILE IRON FULL BODY FITTINGS**



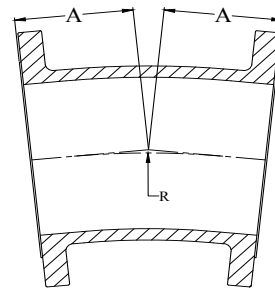
| 90° (1/4) BENDS |       |       |
|-----------------|-------|-------|
| Size            | R     | A     |
| 2               | 3.00  | 4.50  |
| 3               | 4.00  | 6.00  |
| 4               | 4.50  | 7.00  |
| 6               | 6.00  | 8.50  |
| 8               | 7.00  | 10.00 |
| 10              | 9.00  | 11.50 |
| 12              | 10.00 | 13.00 |
| 14              | 11.50 | 15.00 |
| 16              | 12.50 | 16.50 |
| 18              | 14.00 | 18.00 |
| 20              | 15.50 | 19.50 |
| 24              | 18.50 | 22.50 |
| 30              | 21.50 | 27.50 |



| 45° (1/8) BENDS |       |       |
|-----------------|-------|-------|
| Size            | R     | A     |
| 3               | 3.62  | 3.50  |
| 4               | 4.81  | 4.50  |
| 6               | 7.25  | 5.50  |
| 8               | 8.44  | 6.00  |
| 10              | 10.88 | 7.00  |
| 12              | 13.25 | 8.00  |
| 14              | 12.06 | 8.50  |
| 16              | 13.25 | 9.50  |
| 18              | 14.5  | 10.00 |
| 20              | 16.88 | 10.50 |
| 24              | 18.12 | 12.00 |
| 30              | 27.75 | 15.00 |

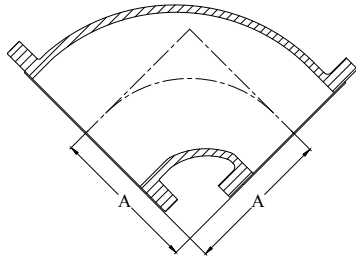


| 22 1/2° (1/16) BENDS |       |      |
|----------------------|-------|------|
| Size                 | R     | A    |
| 3                    | 7.56  | 3.50 |
| 4                    | 10.06 | 4.50 |
| 6                    | 15.06 | 5.50 |
| 8                    | 17.62 | 6.00 |
| 10                   | 22.62 | 7.00 |
| 12                   | 27.62 | 8.00 |



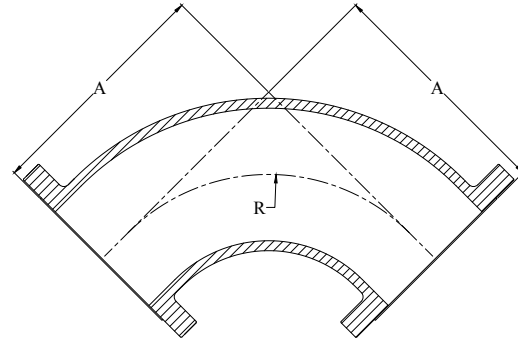
| 11 1/4° (1/32) BENDS |       |      |
|----------------------|-------|------|
| Size                 | R     | A    |
| 3                    | 15.25 | 3.50 |
| 4                    | 20.31 | 4.50 |
| 6                    | 30.50 | 5.50 |
| 8                    | 35.30 | 6.00 |
| 10                   | 45.69 | 7.00 |
| 12                   | 55.81 | 8.00 |

**C110 DUCTILE IRON FULL BODY FITTINGS**



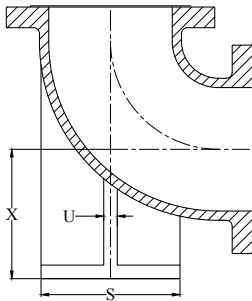
| *90° REDUCING BEND (1/4) |       |                 |
|--------------------------|-------|-----------------|
| Size                     | A     | Domestic Weight |
| 4x3                      | 6.50  | 35              |
| 6x4                      | 8.00  | —               |
| 8x4                      | 9.00  | —               |
| 8x6                      | 9.00  | —               |
| 10x6                     | 11.00 | —               |
| 10x8                     | 10.00 | —               |
| 12x6                     | 12.00 | —               |
| 12x8                     | 12.00 | —               |
| 12x10                    | 12.00 | —               |
| 14x3                     | 14.00 | —               |
| 14x8                     | 14.00 | —               |

\*Not included in AWWA C110.

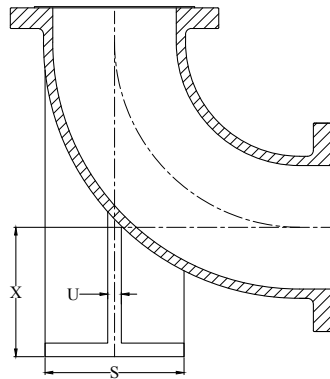


| *90° REDUCING BEND (1/4) |       |       |                 |
|--------------------------|-------|-------|-----------------|
| Size                     | R     | A     | Domestic Weight |
| 3                        | 6.25  | 7.75  | 32              |
| 4                        | 7.00  | 9.00  | —               |
| 6                        | 9.50  | 11.50 | —               |
| 8                        | 14.00 | 14.00 | —               |
| 10                       | 16.50 | 16.50 | —               |
| 12                       | 17.00 | 19.00 | —               |
| 14                       | 19.00 | 21.50 | —               |
| 16                       | 21.50 | 24.00 | —               |
| 18                       | —     | 26.50 | —               |
| 20                       | —     | 29.00 | —               |
| 24                       | —     | 34.00 | —               |

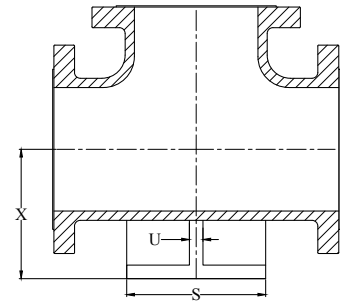
\*Not included in AWWA C110.



90° Base Bends

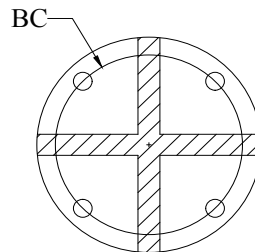


90° Long Radius Base Bends



Base Tees

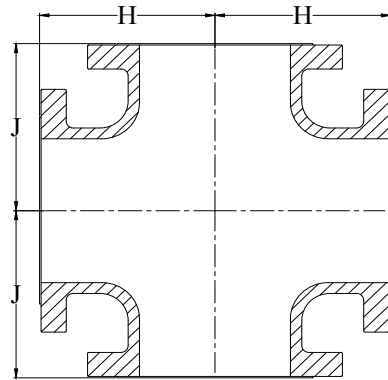
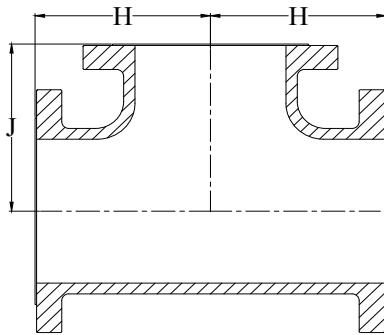
| BASE BENDS / LONG RADIUS BENDS / BASE TEES |       |       |      |                   |
|--|-------|-------|------|-------------------|
| Size                                       | X     | S     | U    | Support Pipe size |
| 3  | 5.25  | 6.12  | 0.62 | 1.5               |
| 4  | 6.00  | 6.50  | 0.50 | 2                 |
| 6  | 7.50  | 7.50  | 0.75 | 2.5               |
| 8  | 9.00  | 10.00 | 0.88 | 4                 |
| 10   | 10.50 | 10.00 | 0.88 | 4                 |
| 12   | 12.00 | 10.50 | 1.00 | 6                 |
| 14   | 13.50 | 12.50 | 1.12 | 6                 |
| 16   | 14.75 | 12.50 | 1.12 | 6                 |
| 18   | 16.25 | 15.00 | 1.12 | 8                 |
| 20   | 17.88 | 15.00 | 1.25 | 8                 |
| 24   | 20.75 | 17.50 | 1.25 | 8                 |
| 30   | 23.00 | 16.00 | 1.15 | 10                |
| 36   | 26.00 | 19.00 | 1.15 | 10                |



| BASE DRILLING DETAILS |       |                    |             |
|-----------------------|-------|--------------------|-------------|
| 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 | 7/8                | 4           |
| 20                    | 13.00 | 7/8                | 4           |
| 24                    | 15.25 | 1 1/8              | 4           |

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

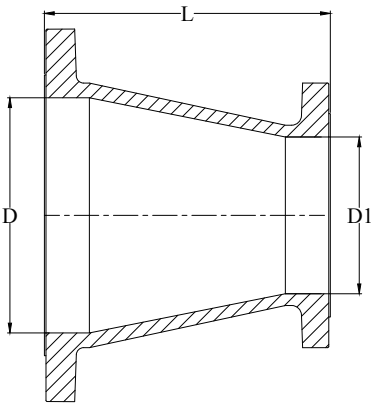
**C110 DUCTILE IRON FULL BODY FITTINGS**



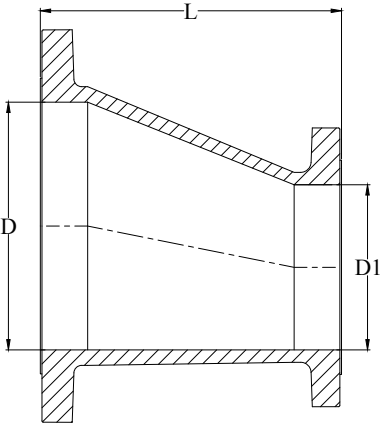
| TEES & CROSSES |     |        |       |       |                 |       |
|----------------|-----|--------|-------|-------|-----------------|-------|
| Size           |     |        |       |       | Domestic Weight |       |
| Run            | Run | Branch | H     | J     | Tee             | Cross |
| 2              | 2   | 2      | 5.00  | 5.00  | —               | —     |
| 3              | 3   | 2      | 6.00  | 6.00  | —               | —     |
| 3              | 3   | 3      | 6.00  | 6.00  | 60              | —     |
| 4              | 4   | 3      | 7.00  | 7.00  | —               | —     |
| 4              | 4   | 4      | 7.00  | 7.00  | 87              | 118   |
| *6             | 6   | 2      | 8.50  | 8.50  | —               | —     |
| 6              | 6   | 3      | 8.50  | 8.50  | —               | —     |
| 6              | 6   | 4      | 8.50  | 8.50  | —               | —     |
| 6              | 6   | 6      | 8.50  | 8.50  | —               | —     |
| 8              | 8   | 3      | 10.00 | 10.00 | —               | —     |
| 8              | 8   | 4      | 10.00 | 10.00 | —               | —     |
| 8              | 8   | 6      | 10.00 | 10.00 | —               | —     |
| 8              | 8   | 8      | 10.00 | 10.00 | —               | —     |
| 10             | 10  | 4      | 11.50 | 11.50 | —               | —     |
| 10             | 10  | 6      | 11.50 | 11.50 | —               | —     |
| 10             | 10  | 8      | 11.50 | 11.50 | —               | —     |
| 10             | 10  | 10     | 11.50 | 11.50 | —               | —     |
| 12             | 12  | 4      | 13.00 | 13.00 | —               | —     |
| 12             | 12  | 6      | 13.00 | 13.00 | —               | —     |
| 12             | 12  | 8      | 13.00 | 13.00 | —               | —     |
| 12             | 12  | 10     | 13.00 | 13.00 | —               | —     |
| 12             | 12  | 12     | 13.00 | 13.00 | —               | —     |
| *14            | 14  | 4      | 15.00 | 15.00 | —               | —     |
| 14             | 14  | 6      | 15.00 | 15.00 | —               | —     |
| 14             | 14  | 8      | 15.00 | 15.00 | —               | —     |
| 14             | 14  | 10     | 15.00 | 15.00 | —               | —     |
| 14             | 14  | 12     | 15.00 | 15.00 | —               | —     |
| 14             | 14  | 14     | 15.00 | 15.00 | —               | —     |
| *16            | 16  | 4      | 16.50 | 16.50 | —               | —     |
| 16             | 16  | 6      | 16.50 | 16.50 | —               | —     |
| 16             | 16  | 8      | 16.50 | 16.50 | —               | —     |
| 16             | 16  | 10     | 16.50 | 16.50 | —               | —     |
| 16             | 16  | 12     | 16.50 | 16.50 | —               | —     |
| 16             | 16  | 14     | 16.50 | 16.50 | —               | —     |
| 16             | 16  | 16     | 16.50 | 16.50 | —               | —     |

| TEES & CROSSES |     |        |       |       |                 |       |
|----------------|-----|--------|-------|-------|-----------------|-------|
| Size           |     |        |       |       | Domestic Weight |       |
| Run            | Run | Branch | H     | J     | Tee             | Cross |
| 18             | 18  | 6      | 14.00 | 17.00 | —               | —     |
| 18             | 18  | 8      | 14.00 | 17.00 | —               | —     |
| 18             | 18  | 10     | 14.00 | 17.00 | —               | —     |
| 18             | 18  | 12     | 14.00 | 17.00 | —               | —     |
| 18             | 18  | 14     | 18.00 | 18.00 | —               | —     |
| 18             | 18  | 16     | 18.00 | 18.00 | —               | —     |
| 18             | 18  | 18     | 18.00 | 18.00 | —               | —     |
| 20             | 20  | 6      | 15.50 | 18.50 | —               | —     |
| 20             | 20  | 8      | 15.50 | 18.50 | —               | —     |
| 20             | 20  | 10     | 15.50 | 18.50 | —               | —     |
| 20             | 20  | 12     | 15.50 | 18.50 | —               | —     |
| 20             | 20  | 14     | 15.50 | 18.50 | —               | —     |
| 20             | 20  | 16     | 19.50 | 19.50 | —               | —     |
| 20             | 20  | 18     | 19.50 | 19.50 | —               | —     |
| 20             | 20  | 20     | 19.50 | 19.50 | —               | —     |
| 24             | 24  | 6      | 17.00 | 21.50 | —               | —     |
| 24             | 24  | 8      | 17.00 | 21.50 | —               | —     |
| 24             | 24  | 10     | 17.00 | 21.50 | —               | —     |
| 24             | 24  | 12     | 17.00 | 21.50 | —               | —     |
| 24             | 24  | 14     | 17.00 | 21.50 | —               | —     |
| 24             | 24  | 16     | 17.00 | 21.50 | —               | —     |
| 24             | 24  | 18     | 22.50 | 22.50 | —               | —     |
| 24             | 24  | 20     | 22.50 | 22.50 | —               | —     |
| 24             | 24  | 24     | 22.50 | 22.50 | —               | —     |
| *30            | 30  | 6      | 20.50 | 25.50 | —               | —     |
| 30             | 30  | 12     | 20.50 | 25.50 | —               | —     |
| 30             | 30  | 18     | 20.50 | 25.50 | —               | —     |
| 30             | 30  | 24     | 27.50 | 27.50 | —               | —     |
| 30             | 30  | 30     | 27.50 | 27.50 | —               | —     |

C110 DUCTILE IRON FULL BODY FITTINGS



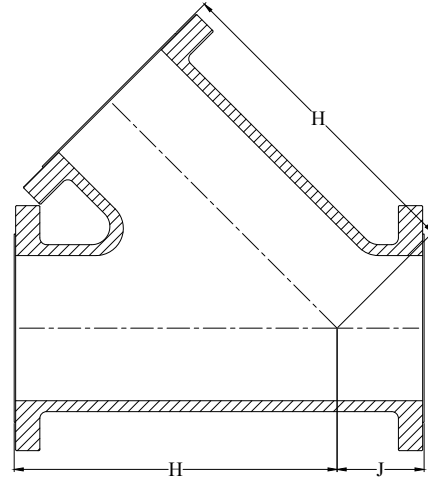
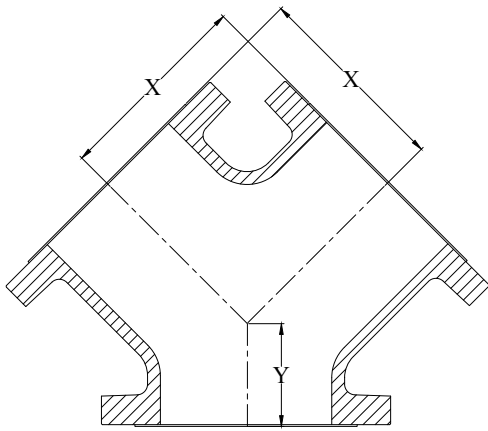
| CONCENTRIC REDUCER |       |       |
|--------------------|-------|-------|
| Size               |       |       |
| D                  | D1    | L     |
| 3.00               | 2.00  | 6.00  |
| 4.00               | 2.00  | 7.00  |
| 4.00               | 3.00  | 7.00  |
| 6.00               | 2.00  | 9.00  |
| 6.00               | 3.00  | 9.00  |
| 6.00               | 4.00  | 9.00  |
| 6.00               | 5.00  | 9.00  |
| 8.00               | 3.00  | 11.00 |
| 8.00               | 4.00  | 11.00 |
| 8.00               | 5.00  | 11.00 |
| 8.00               | 6.00  | 11.00 |
| 10.00              | 4.00  | 12.00 |
| 10.00              | 6.00  | 12.00 |
| 10.00              | 8.00  | 12.00 |
| 12.00              | 4.00  | 14.00 |
| 12.00              | 6.00  | 14.00 |
| 12.00              | 8.00  | 14.00 |
| 12.00              | 10.00 | 14.00 |
| 14.00              | 6.00  | 16.00 |
| 14.00              | 8.00  | 16.00 |
| 14.00              | 10.00 | 16.00 |
| 14.00              | 12.00 | 16.00 |
| 16.00              | 6.00  | 18.00 |
| 16.00              | 8.00  | 18.00 |
| 16.00              | 10.00 | 18.00 |
| 16.00              | 12.00 | 18.00 |
| 16.00              | 14.00 | 18.00 |
| 18.00              | 8.00  | 19.00 |
| 18.00              | 10.00 | 19.00 |
| 18.00              | 12.00 | 19.00 |
| 18.00              | 14.00 | 19.00 |
| 18.00              | 16.00 | 19.00 |
| 20.00              | 10.00 | 20.00 |
| 20.00              | 12.00 | 20.00 |
| 20.00              | 14.00 | 20.00 |
| 20.00              | 16.00 | 20.00 |
| 20.00              | 18.00 | 20.00 |
| 24.00              | 12.00 | 24.00 |
| 24.00              | 14.00 | 24.00 |
| 24.00              | 16.00 | 24.00 |
| 24.00              | 18.00 | 24.00 |
| 24.00              | 20.00 | 24.00 |
| 30.00              | 16.00 | 30.00 |
| 30.00              | 18.00 | 30.00 |
| 30.00              | 20.00 | 30.00 |
| 30.00              | 24.00 | 30.00 |



| *ECCENTRIC REDUCER |       |       |
|--------------------|-------|-------|
| Size               |       |       |
| D                  | D1    | L     |
| 4.00               | 3.00  | 7.00  |
| 6.00               | 3.00  | 9.00  |
| 6.00               | 4.00  | 9.00  |
| 8.00               | 4.00  | 11.00 |
| 8.00               | 6.00  | 11.00 |
| 10.00              | 4.00  | 12.00 |
| 10.00              | 6.00  | 12.00 |
| 10.00              | 8.00  | 12.00 |
| 12.00              | 4.00  | 14.00 |
| 12.00              | 6.00  | 14.00 |
| 12.00              | 8.00  | 14.00 |
| 12.00              | 10.00 | 14.00 |
| 14.00              | 6.00  | 16.00 |
| 14.00              | 8.00  | 16.00 |
| 14.00              | 10.00 | 16.00 |
| 14.00              | 12.00 | 16.00 |
| 16.00              | 6.00  | 18.00 |
| 16.00              | 8.00  | 18.00 |
| 16.00              | 10.00 | 18.00 |
| 16.00              | 12.00 | 18.00 |
| 16.00              | 14.00 | 18.00 |
| 18.00              | 8.00  | 19.00 |
| 18.00              | 10.00 | 19.00 |
| 18.00              | 12.00 | 19.00 |
| 18.00              | 14.00 | 19.00 |
| 18.00              | 16.00 | 19.00 |
| 20.00              | 10.00 | 20.00 |
| 20.00              | 12.00 | 20.00 |
| 20.00              | 14.00 | 20.00 |
| 20.00              | 16.00 | 20.00 |
| 20.00              | 18.00 | 20.00 |
| 24.00              | 12.00 | 24.00 |
| 24.00              | 14.00 | 24.00 |
| 24.00              | 16.00 | 24.00 |
| 24.00              | 18.00 | 24.00 |
| 24.00              | 20.00 | 24.00 |
| 30.00              | 16.00 | 30.00 |
| 30.00              | 18.00 | 30.00 |
| 30.00              | 20.00 | 30.00 |
| 30.00              | 24.00 | 30.00 |

\*Eccentric Reducers not included in AWWA C110.

**C110 DUCTILE IRON FULL BODY FITTINGS**



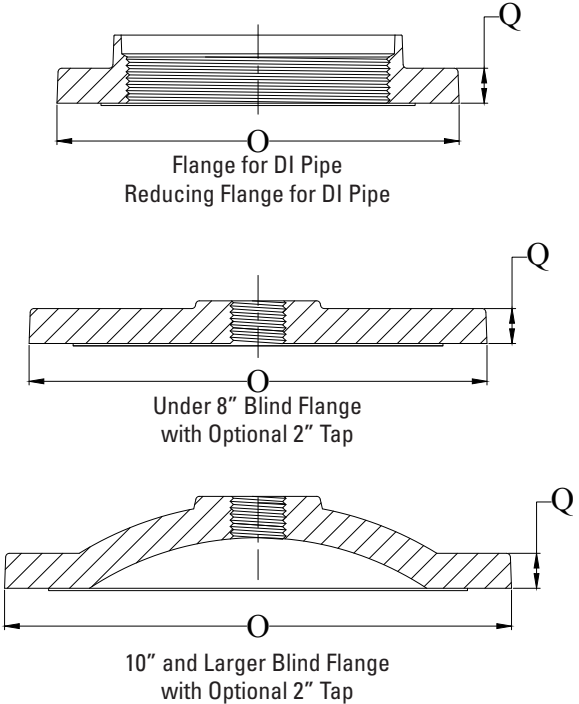
| *TRUE WYES |        |       |      |
|------------|--------|-------|------|
| Size       |        |       |      |
| Stem       | Branch | x     | y    |
| 4          | 4      | 6.50  | 3.00 |
| 6          | 4      | 8.00  | 3.50 |
| 6          | 6      | 8.00  | 3.50 |
| 8          | 6      | 9.00  | 4.50 |
| 8          | 8      | 9.00  | 4.50 |
| 10         | 6      | 8.00  | 5.00 |
| 10         | 8      | 9.00  | 5.00 |
| 10         | 10     | 11.00 | 5.00 |
| 12         | 8      | 9.00  | 5.50 |
| 12         | 10     | 11.00 | 5.50 |
| 12         | 12     | 12.00 | 5.50 |
| 16         | 16     | 13.00 | 6.50 |

\*Not included in AWWA C110.

| *WYES / LATERALS |        |       |       |
|------------------|--------|-------|-------|
| Size             |        |       |       |
| Stem             | Branch | H     | J     |
| 3                | 3      | 11.00 | 3.00  |
| 4                | 3      | 13.50 | 3.00  |
| 4                | 4      | 13.50 | 3.00  |
| 6                | 4      | 17.50 | 4.00  |
| 6                | 6      | 17.50 | 4.00  |
| 8                | 4      | 20.50 | 5.00  |
| 8                | 6      | 20.50 | 5.00  |
| 8                | 8      | 20.50 | 5.00  |
| 10               | 4      | 24.00 | 5.50  |
| 10               | 6      | 24.00 | 5.50  |
| 10               | 8      | 24.00 | 5.50  |
| 10               | 10     | 24.00 | 5.50  |
| 12               | 4      | 27.50 | 6.00  |
| 12               | 6      | 27.50 | 6.00  |
| 12               | 8      | 27.50 | 6.00  |
| 12               | 10     | 27.50 | 6.00  |
| 12               | 12     | 27.50 | 6.00  |
| 14               | 6      | 31.00 | 6.50  |
| 14               | 8      | 31.00 | 6.50  |
| 14               | 10     | 31.00 | 6.50  |
| 14               | 12     | 31.00 | 6.50  |
| 14               | 14     | 31.00 | 6.50  |
| 16               | 6      | 34.50 | 7.50  |
| 16               | 8      | 34.50 | 7.50  |
| 16               | 10     | 34.50 | 7.50  |
| 16               | 12     | 34.50 | 7.50  |
| 16               | 14     | 34.50 | 7.50  |
| 16               | 16     | 34.50 | 7.50  |
| 18               | 8      | 37.50 | 8.00  |
| 18               | 10     | 37.50 | 8.00  |
| 18               | 12     | 37.50 | 8.00  |
| 18               | 14     | 37.50 | 8.00  |
| 18               | 16     | 37.50 | 8.00  |
| 18               | 18     | 37.50 | 8.00  |
| 20               | 20     | 40.50 | 8.50  |
| 24               | 24     | 47.50 | 10.00 |

\*Not included in AWWA C110.

C110 DUCTILE IRON FULL BODY FITTINGS

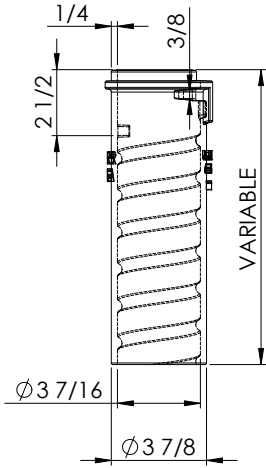


| FLANGES |       |      |
|---------|-------|------|
| Size    | O     | Q    |
| 2       | 6.00  | 0.62 |
| 3       | 7.50  | 0.75 |
| 4       | 9.00  | 0.94 |
| 6       | 11.00 | 1.00 |
| 8       | 13.50 | 1.12 |
| 10      | 16.00 | 1.19 |
| 12      | 19.00 | 1.25 |
| 14      | 21.00 | 1.38 |
| 16      | 23.50 | 1.44 |
| 18      | 25.00 | 1.56 |
| 20      | 27.50 | 1.69 |
| 24      | 32.00 | 1.88 |
| 30      | 38.80 | 2.12 |
| 36      | 46.00 | 2.38 |
| 42      | 53.00 | 2.62 |
| 48      | 59.50 | 2.75 |

### CAST IRON SCREW TYPE VALVE BOXES

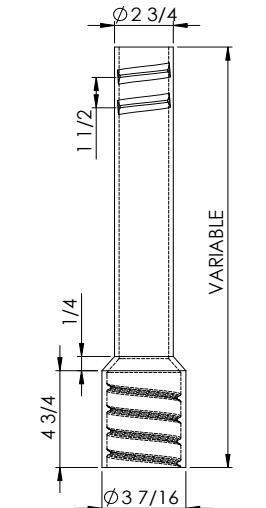
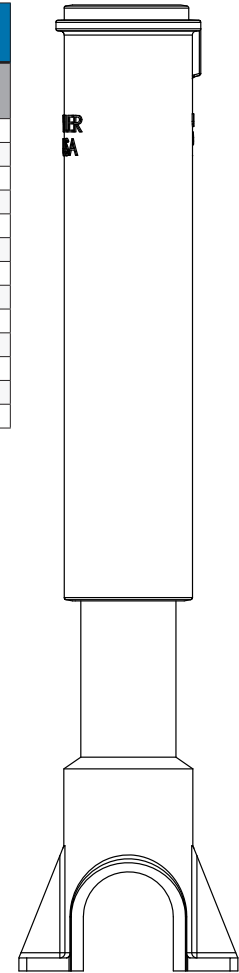
for 1 1/4" through 2" curbstops, enlarged base

Accommodates 2" curbstops, 2 1/2 shaft - screw type



| 6500 SERIES, SCREW TYPE ASSEMBLIES WITH WATER LID |            |        |                      |                    |        |
|---|------------|--------|----------------------|--------------------|--------|
| BOX (components)                                  | UPC 670610 | Weight | Extensions In inches | ** (ND) UPC 670610 | Weight |
| 89-A (12T & 12B)                                  | 146681     | 20     | 15-21                | 111863             | 20     |
| 90-8 (12T & 15B)                                  | 146742     | 21     | 18-24                | 111870             | 21     |
| 90-C (15T & 15B)                                  | 146803     | 22     | 21-27                | 111887             | 24     |
| 91-C (15T & 21B)                                  | 146865     | 24     | 24-33                | 111894             | 26     |
| 92-C (15T & 27B)                                  | 146926     | 26     | 30-39                | 111900             | 28     |
| 92-D (18T & 27B)                                  | 146988     | 28     | 30-42                | 111917             | 29     |
| 93-D (18T & 33B)                                  | 147046     | 32     | 36-48                | 111924             | 33     |
| 93-E (24T & 33B)                                  | 147114     | 37     | 36-54                | 111931             | 39     |
| 94-E (24T & 39B)                                  | 147183     | 41     | 42-60                | 111948             | 44     |
| 95-E (30T & 39B)                                  | 147251     | 44     | 41-64                | 111955             | 49     |
| 100-E (24T & 21B & #154 Ext)                      | 147312     | 50     | 54-72                | 111832             | 55     |
| 100-F (30T & 21B & #154 Ext)                      | 147381     | 53     | 54-78                | 111849             | 59     |
| 101-F (30T & 27B & #154 Ext)                      | 147459     | 55     | 60-84                | 111856             | 61     |

\*\* D=Domestic ND=Import

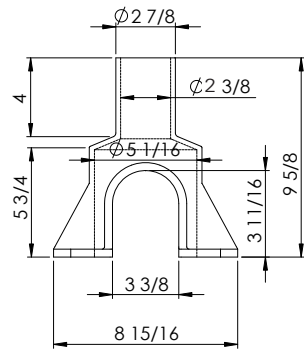
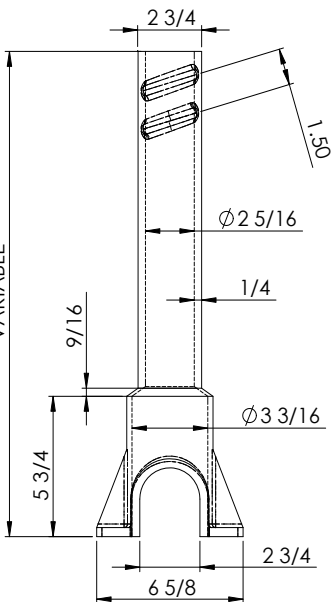


| TOP SECTION WITH WATER LID |                |        |                    |        |
|----------------------------|----------------|--------|--------------------|--------|
| Item                       | **D-UPC 670610 | Weight | ** (ND) UPC 670610 | Weight |
| 12T                        | 147510         | 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=Import

| BOTTOM ONLY |                |        |                    |        |
|-------------|----------------|--------|--------------------|--------|
| Item        | **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=Import



| 6500 PARTS                      |                |        |                    |        |                 |
|---------------------------------|----------------|--------|--------------------|--------|-----------------|
| Item                            | **D-UPC 670610 | Weight | ** (ND) UPC 670610 | Weight | Height Increase |
| 151 Extension                   | 144762         | 7      | 111962             | 9      | 9               |
| 152 Extension                   | 144779         | 12     | 111979             | 14     | 16              |
| 153 Extension                   | 144786         | 17     | 111786             | 21     | 28              |
| 154 Extension                   | 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 | 385518         | 4.5    | -                  | -      | -               |

\*\* D=Domestic ND=Import



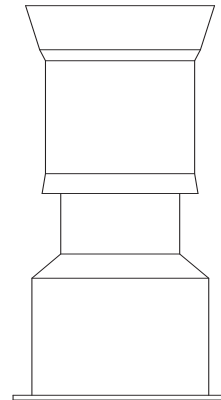
## CAST IRON TWO-PIECE VALVE BOXES for 4" through 12" valves, 5 1/4 shaft, screw type

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    |

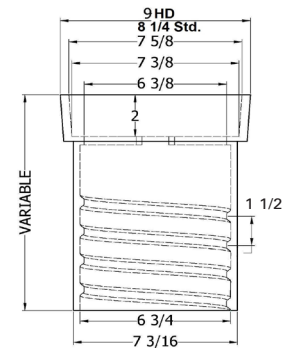
\*\* D = Domestic ND = Import HD = Heavy Duty Weight Std. = Standard Weight



6850 Assembly  
(Less Lid)

| 6850 INDIVIDUAL TOPS (LESS LID) |            |                      |        |                       |        |                        |        |
|---------------------------------|------------|----------------------|--------|-----------------------|--------|------------------------|--------|
| 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     |

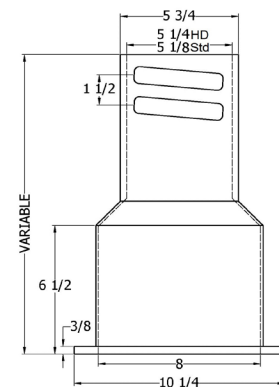
\*\* D = Domestic ND = Import HD = Heavy Duty Weight Std. = Standard Weight



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 = Import HD = Heavy Duty Weight Std. = Standard Weight



Bottom

See page 50 for extensions.

## CAST IRON TWO-PIECE VALVE BOXES

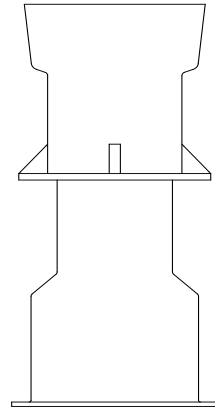
for 4" through 12" valves, 5 1/4 shaft, slip type

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)<br>UPC 670610 | ** (ND-HD)<br>UPC 670610 | Weight | ** (ND-Std.)<br>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    |

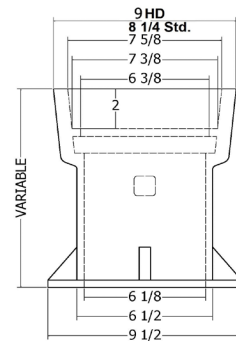
\*\* D = Domestic ND = Import HD = Heavy Duty Weight Std. = Standard Weight



6855 Assembly  
(Less Lid)

| 6855 INDIVIDUAL TOPS (LESS LID) |            |                         |        |                          |        |                            |        |
|---------------------------------|------------|-------------------------|--------|--------------------------|--------|----------------------------|--------|
| Box                             | Top Length | ** (D-HD)<br>UPC 670610 | Weight | ** (ND-HD)<br>UPC 670610 | Weight | ** (ND-Std.)<br>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 = Import HD = Heavy Duty Weight Std. = Standard Weight

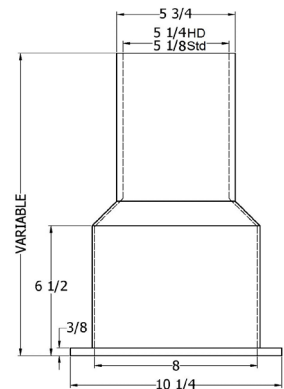


Top

| 6855 INDIVIDUAL BOTTOMS |               |                         |        |                          |        |                            |        |
|-------------------------|---------------|-------------------------|--------|--------------------------|--------|----------------------------|--------|
| Box                     | Bottom Length | ** (D-HD)<br>UPC 670610 | Weight | ** (ND-HD)<br>UPC 670610 | Weight | ** (ND-Std.)<br>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=Import 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.

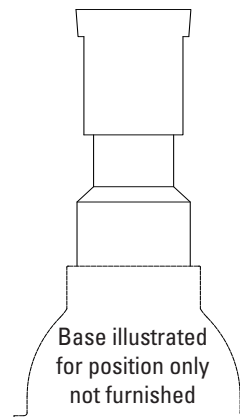
## CAST IRON THREE-PIECE VALVE BOXES for 3" through 20" valves, 5 1/4 shaft, screw type (Base required, order separately)

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)<br>UPC 670610 | ** (ND-HD)<br>UPC 670610 | Weight | ** (ND-Std.)<br>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    |

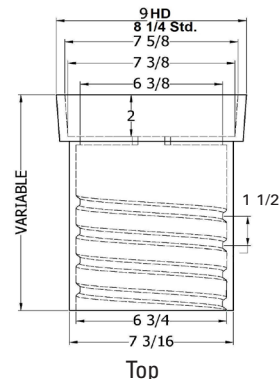
\*\* D = Domestic ND = Import HD = Heavy Duty Weight Std. = Standard Weight



6860 Assembly  
(Less Lid)

| 6860 INDIVIDUAL TOPS (LESS LID) |            |                         |        |                          |        |                            |        |
|---------------------------------|------------|-------------------------|--------|--------------------------|--------|----------------------------|--------|
| Box                             | TOP Length | ** (D-HD)<br>UPC 670610 | Weight | ** (ND-HD)<br>UPC 670610 | Weight | ** (ND-Std.)<br>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     |

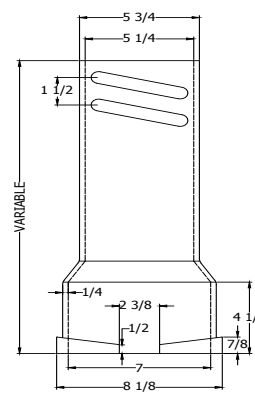
\*\* D = Domestic ND = Import HD = Heavy Duty Weight Std. = Standard Weight



Top

| 6860 INDIVIDUAL BOTTOMS |               |                         |        |                          |        |                            |        |
|-------------------------|---------------|-------------------------|--------|--------------------------|--------|----------------------------|--------|
| Box                     | Bottom Length | ** (D-HD)<br>UPC 670610 | Weight | ** (ND-HD)<br>UPC 670610 | Weight | ** (ND-Std.)<br>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     |

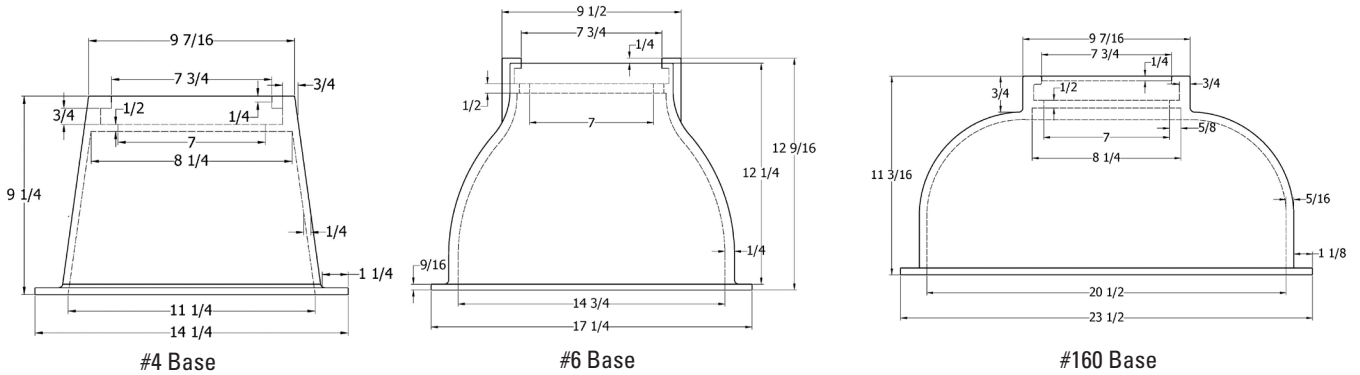
\*\* D=Domestic ND=Import HD=Heavy Duty Weight Std.=Standard Weight



Bottom

See page 50 for extensions.

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

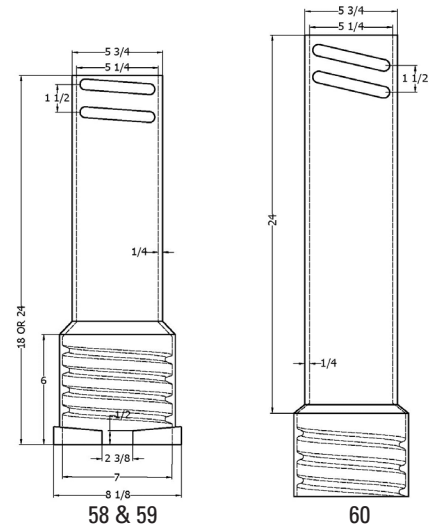


| 6860 BASES         |                         |        |                      |        |                           |        |
|--------------------|-------------------------|--------|----------------------|--------|---------------------------|--------|
| Item Description   | ** (D-HD)<br>UPC 670610 | Weight | ** (ND)UPC<br>670610 | Weight | ** (ND-Std)<br>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 = Import HD = Heavy Duty Weight Std. = Standard Weight

| 6850/60 EXTENSIONS |                 |                         |        |                          |        |                            |        |
|--------------------|-----------------|-------------------------|--------|--------------------------|--------|----------------------------|--------|
| Item/Description   | Height Increase | ** (D-HD)<br>UPC 670610 | Weight | ** (ND-HD)<br>UPC 670610 | Weight | ** (ND-Std.)<br>UPC 670610 | Weight |
| #58 Screw-Type     | 14              | 145141                  | 32     | 505594                   | 29     | 250517                     | 23     |
| #59 Screw-Type     | 18              | 145158                  | 30     | -                        | -      | 136958                     | 29     |
| #60 Screw-Type     | 24              | 145059                  | 39     | 502210                   | 36     | 112389                     | 29     |

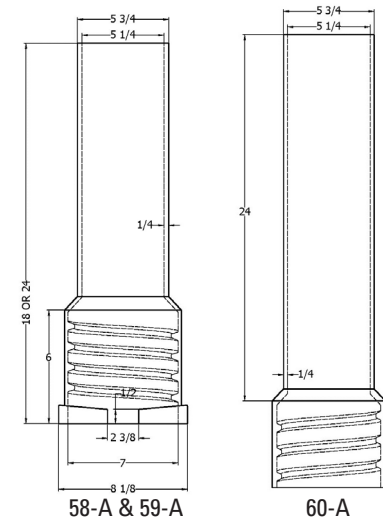
\*\* D = Domestic ND = Import HD = Heavy Duty Weight Std. = Standard Weight



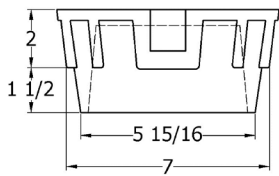
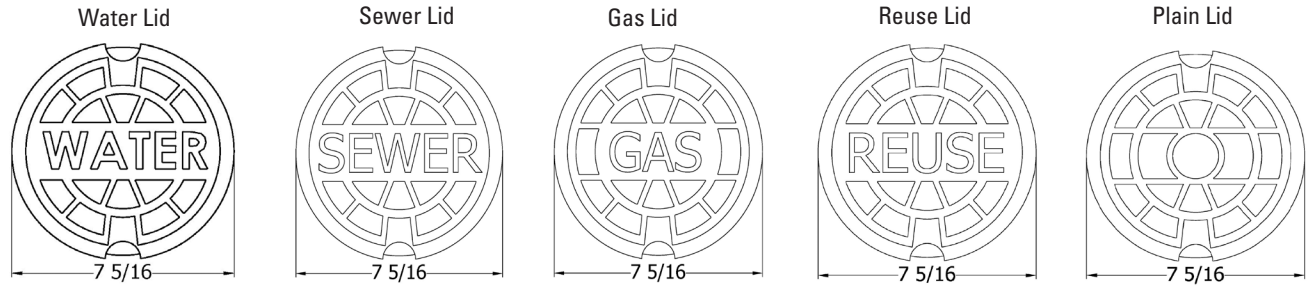
| 6855 EXTENSIONS  |                 |                         |        |                            |        |
|------------------|-----------------|-------------------------|--------|----------------------------|--------|
| Item/Description | Height Increase | ** (D-HD)<br>UPC 670610 | Weight | ** (ND-Std.)<br>UPC 670610 | Weight |
| #58-A Slip-Type  | 6-14            | 145233                  | 29     | 136637                     | 26     |
| #59-A Slip-Type  | 6-18            | 145240                  | 30     | 136644                     | 28     |
| #60-A Slip-Type  | 6-24            | 145066                  | 36     | 112198                     | 37     |

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

\*\* D = Domestic ND = Import HD = Heavy Duty Weight Std. = Standard Weight

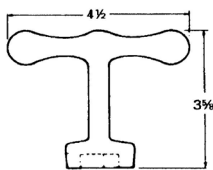
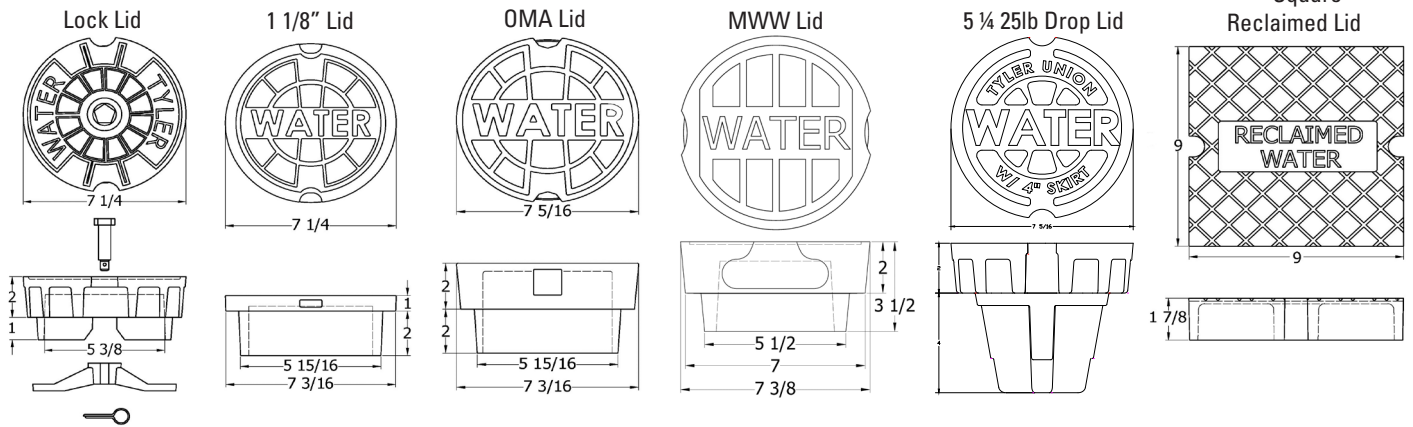


**DROP AND LOCK LIDS**



| *5 1/4 DROP LID  |                      |        |                    |        |         |
|------------------|----------------------|--------|--------------------|--------|---------|
| Item Description | ** (D-HD) UPC 670610 | Weight | ** (ND) UPC 670610 | Weight | Marking |
| 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 = Import HD = Heavy Duty Weight Std. = Standard Weight  
 \*Lids marked WATER will be shipped unless otherwise specified.



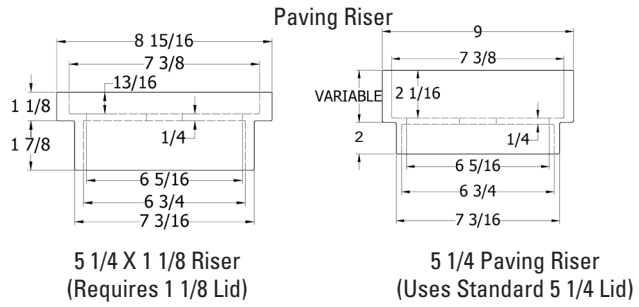
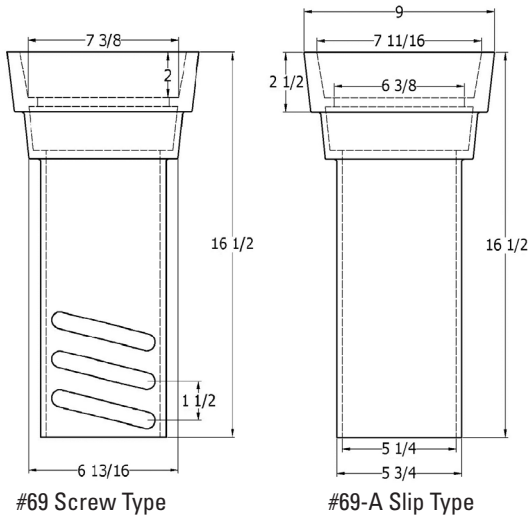
**Wrench**  
 Fits Standard Waterworks  
 Pentagon Head 27/32" Brass  
 Screws

| WRENCH      |            |        |
|-------------|------------|--------|
| Description | UPC 670610 | Weight |
| Wrench      | 144908     | 0.5    |

| SPECIALTY LIDS      |                      |        |                    |        |                 |
|---------------------|----------------------|--------|--------------------|--------|-----------------|
| Item Description    | ** (D-HD) UPC 670610 | Weight | ** (ND) UPC 670610 | Weight | Marking         |
| 5 1/4 Lock Lid      | 145462               | 11     | 136866             | 11     | WATER           |
| *1 1/8 Lid          | 145509               | 11     | 112532             | 9      | WATER           |
| 5 1/4 OMA Drop Lid  | 145370               | 12     | 136927             | 12     | WATER           |
| 5 1/4 MWW Drop Lid  | 145370               | 12     | 136880             | 12     | WATER           |
| 5 1/4 25lb Drop Lid | 145451               | 25     | 112632             | -      | 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.

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



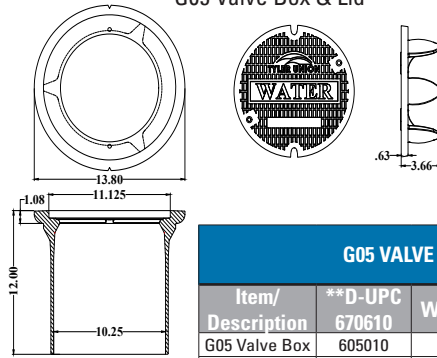
| RISERS                 |                 |                    |        |                 |        |
|------------------------|-----------------|--------------------|--------|-----------------|--------|
| Item / Description     | Height Increase | **D-HD) UPC 670610 | Weight | **ND-UPC 670610 | Weight |
| 5 1/4 x 1 Slip-In      | 1               | 533641             | 8      | -               | -      |
| *5 1/4 x 1 1/8 Slip-In | 1 1/8           | 145554             | 9      | 112549          | 8      |
| 5 1/4 x 1 1/2 Slip-In  | 1 1/2           | 533672             | 11     | -               | -      |
| 5 1/4 x 2 Slip-In      | 2               | 533689             | 13     | -               | -      |
| 5 1/4 x 2 1/4 Slip-In* | 2 1/4           | 145547             | 15     | 112556          | 14     |
| 5 1/4 x 3 Slip-In      | 3               | 533696             | 20     | -               | -      |
| 5 1/4 x 4 Slip-In      | 4               | 533702             | 28     | -               | -      |

\* Note: Works with 1 1/8 Lid #145509.  
 \*\* D = Domestic ND = Import

| ADJUSTABLE RISER       |                 |                   |        |                     |        |
|------------------------|-----------------|-------------------|--------|---------------------|--------|
| Item/Description       | Height Increase | *(D-HD)UPC 670610 | Weight | *(ND-HD) UPC 670610 | Weight |
| #69 Adjustable Riser   | 2 1/2"-9"       | 148197            | 32     | 112396              | 29     |
| #69-A Adjustable Riser | 2 1/2"-12"      | 148241            | 31     | 112204              | 29     |

\*\* D = Domestic ND = Import HD = Heavy Duty Weight

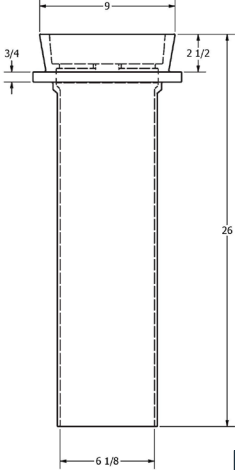
## G05 Valve Box & Lid



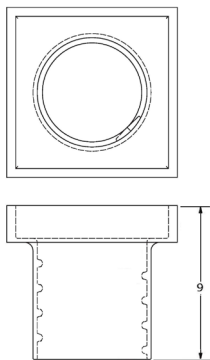
| G05 VALVE BOX & LID |                |        |                 |        |
|---------------------|----------------|--------|-----------------|--------|
| Item/Description    | **D-UPC 670610 | Weight | **ND-UPC 670610 | Weight |
| G05 Valve Box       | 605010         | 42     | 605005          | 42     |
| G05 Lid             | 502551         | 16     | 605000          | 16     |
| G05 Box & Lid       | 506011         | 58     | 605007          | 58     |

## Specialty Tops

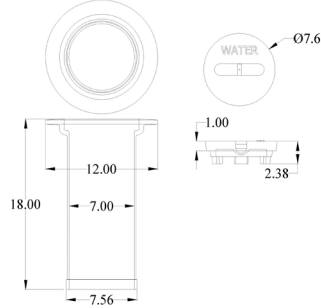
### 7126 Top (Uses Standard 5 1/4 Lids)



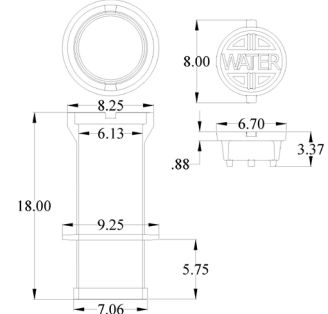
### Square Top



### 910 18T Top



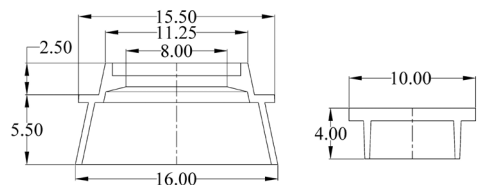
### 940 18T Top

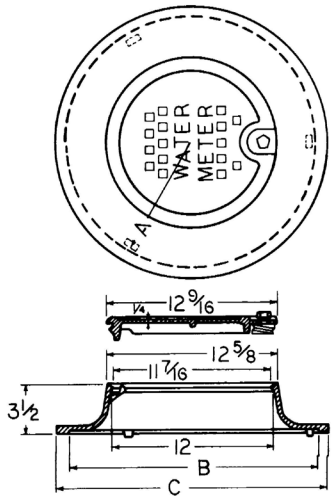


| SPECIALTY TOPS     |                |        |                 |        |
|--------------------|----------------|--------|-----------------|--------|
| Item/Description   | **D-UPC 670610 | Weight | **ND-UPC 670610 | Weight |
| 7126 26T Top       | 376774         | 42     | 481140          | 36     |
| *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 = Import \* Works with Square Lid #458982.

### Monument Box with Lid



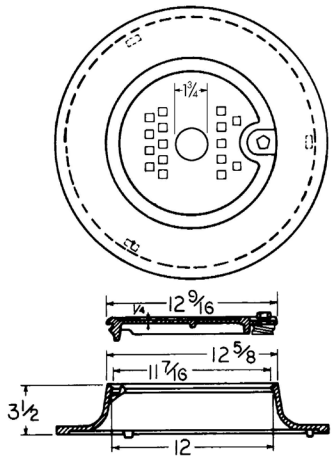


| 6150 & 6150 TR METER COVERS<br>CAST IRON |        |    |    |
|--|--------|----|----|
| Item/Description                         | A      | B  | C  |
| 18" 6150 Series                          | 8 3/4" | 18 | 20 |
| 20" 6150 Series                          | 9 3/4" | 20 | 22 |

| 6150 METER COVERS CAST IRON      |            |        |
|----------------------------------|------------|--------|
| Item/Description                 | UPC 670610 | Weight |
| 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 -L-18/20 Lid less lock      | 148593     | 14     |
| 6150-18 / 20 Lind 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 bolts (1 - 1/32"); \*B/S = small Head Bolts (27/32" Standard)

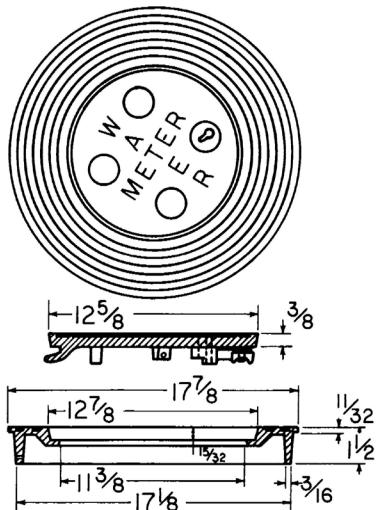
NOTE: The B/L & B/S pentagon head , screws use the same worm or locking gear.



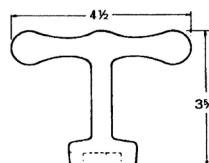
| 6150TR METER COVER CAST IRON     |            |        |
|----------------------------------|------------|--------|
| Item/Description                 | UPC 670610 | Weight |
| 6150-18 TR Ring & Lid B/L*       | 148531     | 39     |
| 6150-18 TR Ring & Lid B/S*       | 148524     | 39     |
| 6150-18/20 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     |
| 6150-20 Ring & Lid B/S*          | 148470     | 41     |

\*B/L = large head bolts (1 - 1/32"); \*B/S = small head bolts (27/32" Standard)

NOTE: The B/L & B/S pentagon head , screws use the same worm or 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      |            |        |
|-------------|------------|--------|
| Description | UPC 670610 | Weight |
| Wrench      | 144908     | 0.5    |

# MJ TUFGRIP® TLD

## SERIES 1000

### FOR DUCTILE IRON PIPE

#### A Proven Third-Generation Mechanical Joint Restraint



Tyler Union’s TUFGrip® restraint represents the culmination of 20 years of engineering and testing. As a third-generation restraint, TUFGrip is the best available technology in the waterworks market for use in restraining PVC, ductile and HDPE pipe.

### 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.

### 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 minimum 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

| 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. |  |
|                          |                 |                                     |                  |                                  |  |

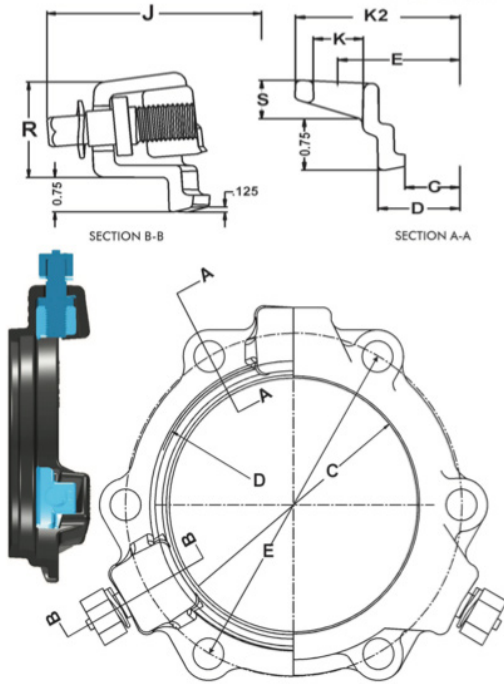


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 New Lenox, IL 60451

Grand Prairie, TX 75050  
 Anniston, AL 36207  
 Elmer, NJ 08318  
 Lithia Springs, GA 30122







| TUFGRIP® MJ Restraint Dimensions |       |       |       |       |       |       |      |      |
|----------------------------------|-------|-------|-------|-------|-------|-------|------|------|
| Size (In.)                       | 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   | 2.7  | 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 (In.) | Part # – Gland Only | Part # – Gland Only | Wedge Qty. | T-head Bolt Qty. | Bolt Size       | Gland weight (lbs.) | Weight (w/Acc.) | Pressure Rating | Pipe O.D. |
|------------|---------------------|---------------------|------------|------------------|-----------------|---------------------|-----------------|-----------------|-----------|
|            | Hybrid              | 100% Domestic       |            |                  |                 |                     |                 |                 |           |
| 3          | 540823              | 600900              | 2          | 4                | 5/8" x 3"       | 6.5                 | 10.5            | 350             | 3.96      |
| 4          | 515944              | 600905              | 2          | 4                | 3/4" x 3-1/2"   | 7.1                 | 11.8            | 350             | 4.80      |
| 6          | 515968              | 600910              | 3          | 6                | 3/4" x 4"       | 11.2                | 18.8            | 350             | 6.90      |
| 8          | 515975              | 600915              | 3          | 6                | 3/4" x 4"       | 13.1                | 20.3            | 350             | 9.05      |
| 10         | 515982              | 600920              | 6          | 8                | 3/4" x 4"       | 26.0                | 32.5            | 350             | 11.10     |
| 12         | 515999              | 600925              | 8          | 8                | 3/4" x 4"       | 31.5                | 40.4            | 350             | 13.20     |
| 14         | 516231              | 600930              | 10         | 10               | 3/4" x 4-1/2"   | 43.3                | 53.6            | 350             | 15.30     |
| 16         | 516255              | 600935              | 12         | 12               | 3/4" x 4-1/2"   | 54.1                | 66.3            | 350             | 17.40     |
| 18         | 516279              | 600940              | 12         | 12               | 3/4" x 4-1/2"   | 59.8                | 72.2            | 250             | 19.50     |
| 20         | 516293              | 600945              | 14         | 14               | 3/4" x 4-1/2"   | 69.8                | 83.8            | 250             | 21.60     |
| 24         | 516316              | 600950              | 16         | 16               | 3/4" x 5"       | 90.4                | 106.9           | 250             | 25.80     |
| 30         | 539759              | 600955              | 20         | 20               | 1" x 7-1/2"     | 248                 | 290             | 250             | 32.00     |
| 36         | 539764              | 600960              | 24         | 24               | 1" x 7-1/2"     | 277                 | 327             | 250             | 38.30     |
| 42         | 539695              | 600961              | 28         | 28               | 1-1/4" x 8-1/2" | 448                 | 512             | 250             | 44.50     |
| 48         | 539699              | 600962              | 32         | 32               | 1-1/4" x 8-1/2" | 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" 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" 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.



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STEPS 1 &amp; 2



STEP 3



STEPS 4 &amp; 5



STEPS 6 &amp; 7

## ASSEMBLY STEPS

### SERIES 1000 FOR DUCTILE IRON PIPE

1. Ensure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the black TUFGrip onto the pipe to be restrained. The TUFGrip 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.
4. Push the TUFGrip 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 TUFGrip 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 TUFGrip 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 half 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 half 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.



100% Domestic Available

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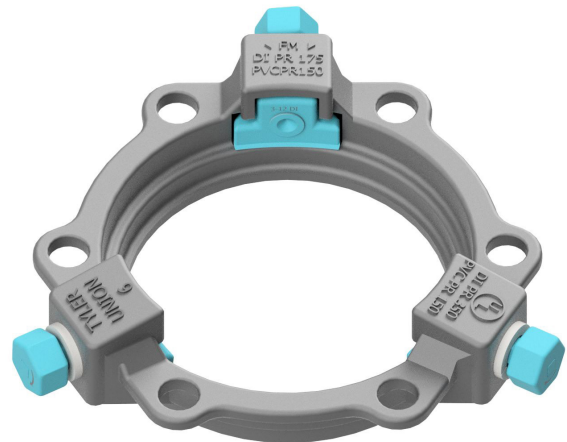


# MJ TUFGRIP® TLD

## SERIES 1000

### FOR DUCTILE IRON PIPE

#### A Proven Third-Generation Mechanical Joint Restraint



Tyler Union’s TUFGrip® restraint represents the culmination of 20 years of engineering and testing. As a third-generation restraint, TUFGrip is the best available technology in the waterworks market for use in restraining PVC, ductile and HDPE pipe.

### 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.

### SPECIFICATIONS

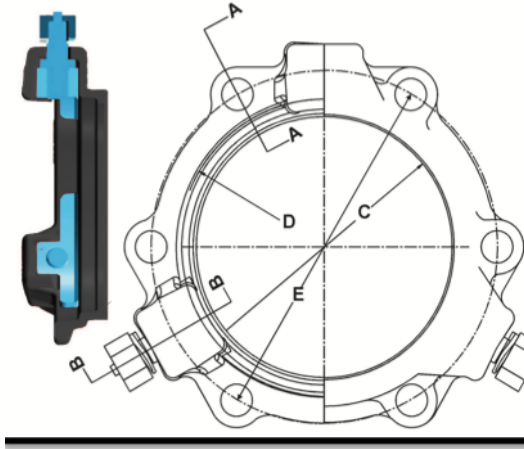
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- Proven for use on heavy wall. \*\*Schedule 40 or greater steel pipe in sizes 3”–12” and on all sizes 3”–16” when pipe O.D. and wall thickness conforms to C151. \*\*Note: IPS diameter steel pipe requires the use of an MJ Transition gasket.
- Restraint 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: TUFBond coating available upon request
- Gripping wedges are heat treated to a minimum 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.

| 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 (In.)                       | 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   | 2.7  | 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 (In.) | Part # – Gland Only | Wedge Qty. | T-head Bolt Qty. | Bolt Size       | Gland weight (lbs.) | Weight (w/Acc.) | Pressure Rating | Pipe O.D. |
|------------|---------------------|------------|------------------|-----------------|---------------------|-----------------|-----------------|-----------|
|            | Non-Domestic        |            |                  |                 |                     |                 |                 |           |
| 3          | 113805              | 2          | 4                | 5/8" x 3"       | 6.5                 | 10.5            | 350             | 3.96      |
| 4          | 113812              | 2          | 4                | 3/4" x 3-1/2"   | 7.1                 | 11.8            | 350             | 4.80      |
| 6          | 113829              | 3          | 6                | 3/4" x 4"       | 11.2                | 18.8            | 350             | 6.90      |
| 8          | 113836              | 3          | 6                | 3/4" x 4"       | 13.1                | 20.3            | 350             | 9.05      |
| 10         | 113843              | 6          | 8                | 3/4" x 4"       | 26.0                | 32.5            | 350             | 11.10     |
| 12         | 113850              | 8          | 8                | 3/4" x 4"       | 31.5                | 40.4            | 350             | 13.20     |
| 14         | 113867              | 10         | 10               | 3/4" x 4-1/2"   | 43.3                | 53.6            | 350             | 15.30     |
| 16         | 113874              | 12         | 12               | 3/4" x 4-1/2"   | 54.1                | 66.3            | 350             | 17.40     |
| 18         | 113898              | 12         | 12               | 3/4" x 4-1/2"   | 59.8                | 72.2            | 250             | 19.50     |
| 20         | 113904              | 14         | 14               | 3/4" x 4-1/2"   | 69.8                | 83.8            | 250             | 21.60     |
| 24         | 113911              | 16         | 16               | 3/4" x 5"       | 90.4                | 106.9           | 250             | 25.80     |
| 30         | 461289              | 20         | 20               | 1" x 7-1/2"     | 248                 | 290             | 250             | 32.00     |
| 36         | 461333              | 24         | 24               | 1" x 7-1/2"     | 277                 | 327             | 250             | 38.30     |
| 42         | 461319              | 28         | 28               | 1-1/4" x 8-1/2" | 448                 | 512             | 250             | 44.50     |
| 48         | 461326              | 32         | 32               | 1-1/4" x 8-1/2" | 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" were tested at 3° of deflection; all test were to 700 psi.
- The Series 1000 TUFGRIP 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.
- TUFGRIP 30"-48" 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.

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STEPS 1 &amp; 2



STEP 3



STEPS 4 &amp; 5



STEPS 6 &amp; 7

## ASSEMBLY STEPS

### SERIES 1000 FOR DUCTILE IRON PIPE

1. Ensure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the black TUFGRIP onto the pipe to be restrained. The TUFGRIP 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.
4. Push the TUFGRIP 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 TUFGRIP 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 TUFGRIP 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 half 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 half 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.

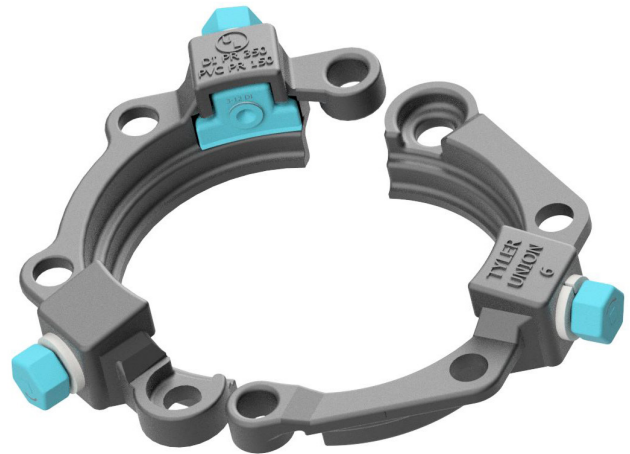
# MJ TUFGRIP™ TLD SPLIT

## SERIES 1000S

### FOR DUCTILE IRON PIPE

### A Proven Third-Generation Mechanical Joint Restraint

Tyler Union's TUFGrip™ restraint represents the culmination of 20 years of engineering and testing. As a third-generation restraint, TUFGrip is the best available technology in the waterworks market for use in restraining PVC, ductile and HDPE pipe.



### 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.

### 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.
- 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 minimum 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.**

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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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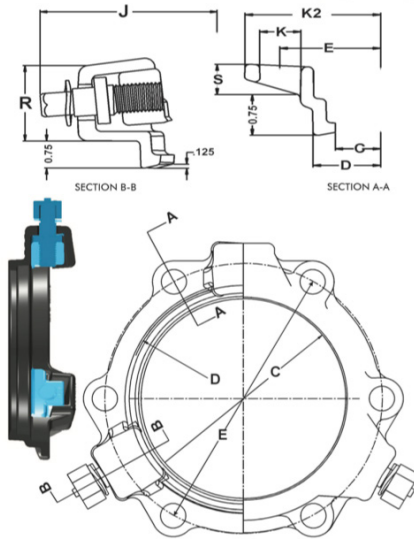
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# MJ TUFGRIP™ TLD SPLIT

## SERIES 1000s

FOR DUCTILE IRON PIPE



| MJ TUFGRIP™ TLD SPLIT DIMENSIONS |       |       |       |       |       |     |      |      |
|----------------------------------|-------|-------|-------|-------|-------|-----|------|------|
| Size (In.)                       | 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 (In.) | Part # – Gland Only |              | Wedge Qty. | T-head Bolt Qty. | Bolt Size     | Gland Weight (lbs.) | Weight (w/Acc.) | *Pressure Rating | Pipe O.D. (Inches) |
|------------|---------------------|--------------|------------|------------------|---------------|---------------------|-----------------|------------------|--------------------|
|            | Domestic            | Non-Domestic |            |                  |               |                     |                 |                  |                    |
| 4          | N/A                 | 495918       | 2          | 4                | 3/4" x 3-1/2" | 7.1                 | 11.8            | 350              | 4.80               |
| 6          | N/A                 | 495925       | 3          | 6                | 3/4" x 4"     | 11.2                | 18.8            | 350              | 6.90               |
| 8          | N/A                 | 495932       | 3          | 6                | 3/4" x 4"     | 13.1                | 20.3            | 350              | 9.05               |
| 10         | N/A                 | 495949       | 6          | 8                | 3/4" x 4"     | 26.0                | 32.5            | 350              | 11.10              |
| 12         | N/A                 | 495956       | 8          | 8                | 3/4" x 4"     | 31.5                | 40.4            | 350              | 13.20              |

\*Note: The pressure ratings are rated working water pressures for the restraint.

### \*\*ADDITIONAL SERIES 2000S SPLIT TLP-PVC MJ TUFGRIP™ RESTRAINT RATINGS

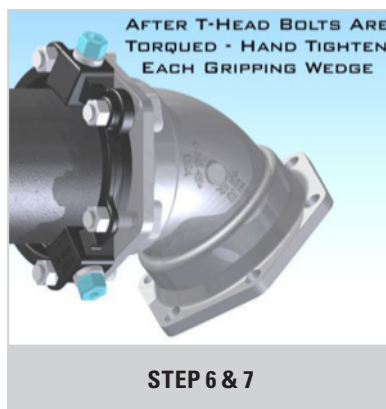
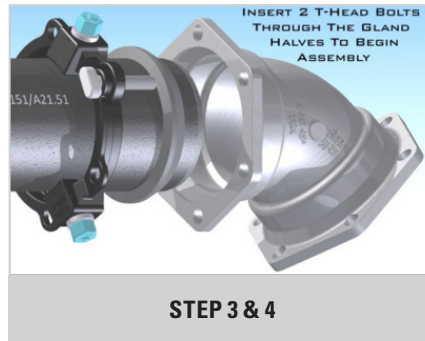
| Size (In.) | AWWA C900 |      |      | ASTM D2241 |       |       |
|------------|-----------|------|------|------------|-------|-------|
|            | DR14      | DR18 | DR25 | SDR17      | SDR21 | SDR26 |
| 4          | 305       | 235  | 150  | 250        | 200   | 160   |
| 6          | 305       | 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

### ISO 9001-2015 Registered

**STOP-LOOK:**

- The Series 1000S TUFGRIP 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



**ASSEMBLY STEPS – SERIES 1000S TLD SPLIT – FOR DUCTILE IRON PIPE**

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 TUFGrip 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.
5. With the two T-head bolts inserted through the restraint, push the TUFGrip lip extension evenly against the thick side of the MJ gasket. With the TUFGrip 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 TUFGrip 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 TUFGrip 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 TUFGrip 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 half turn in an alternating or star pattern until all torque limiting nuts twist off. **NEVER** turn a torque limiting nut more than half turn without turning the remaining torque nuts an equal amount!
9. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.



# MJ TUFGRIP® TLP

## SERIES 2000

### FOR PVC & PVCU PIPE

### A Proven Third-Generation Mechanical Joint Restraint

Tyler Union's TUFGrip® restraint represents culmination of 20 years of engineering and technology. As a third-generation restraint, TUFGrip is the most available technology in the waterworks market. It is used in restraining PVC, ductile and HDPE pipe.



### 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.**

### SPECIFICATIONS

- Proven to restrain plain end PVC pipe in diameters 3"–36", PVCU pipe in diameters 4"–12" and HDPE Pipe 3"–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, PVCU 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 PVCU/ D2241 PVC). **\*Note:** Refer to next page for C909 pipe applications.

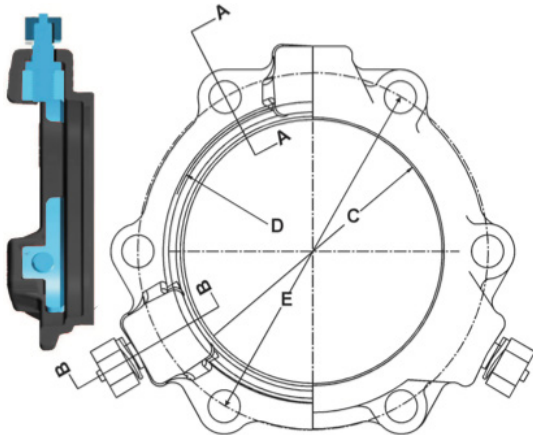
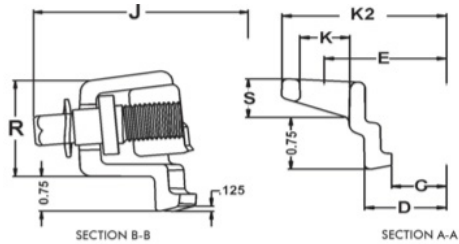
| ISO 9001-2015 Registered |                 | Listed with Underwriters Laboratory |                  | Factory Mutual Approved          |  |
|--------------------------|-----------------|-------------------------------------|------------------|----------------------------------|--|
| Product Source/Type      | Name of Project | Name of Contractor                  | Project Engineer | Spec. Section and/or Project No. |  |
|                          |                 |                                     |                  |                                  |  |



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| TUFGRIP® MJ Restraint Dimensions |       |       |       |       |       |       |      |      |
|----------------------------------|-------|-------|-------|-------|-------|-------|------|------|
| Size (In.)                       | 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   | 2.7  | 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 (In.) | Part # – Gland Only | Part # – Gland Only | Wedge Qty. | T-head Bolt Qty. | Bolt Size     | Gland weight (lbs.) | Weight (w/Acc.) | Pressure Rating | Pipe O.D.   |
|------------|---------------------|---------------------|------------|------------------|---------------|---------------------|-----------------|-----------------|-------------|
|            | Hybrid              | 100% Domestic       |            |                  |               |                     |                 |                 |             |
| 3          | CALL                | N/A                 | 2          | 4                | 5/8" x 3"     | 7.0                 | 11.0            | *305 / DR14     | 3.50        |
| 4          | 516002              | 601000              | 2          | 4                | 3/4" x 3-1/2" | 8.3                 | 12.2            | *305 / DR14     | 4.50-4.80   |
| 6          | 516019              | 601005              | 3          | 6                | 3/4" x 4"     | 12.4                | 18.3            | *305 / DR14     | 6.63-6.90   |
| 8          | 516026              | 601010              | 3          | 6                | 3/4" x 4"     | 14.9                | 20.8            | *305 / DR14     | 8.63-9.12   |
| 10         | 516033              | 601015              | 6          | 8                | 3/4" x 4"     | 25.7                | 33.4            | *305 / DR14     | 10.75-11.10 |
| 12         | 516040              | 601020              | 8          | 8                | 3/4" x 4"     | 34.1                | 42.0            | *305 / DR14     | 12.75-13.20 |
| 14         | 516248              | 601025              | 10         | 10               | 3/4" x 4-1/2" | 45.1                | 55.4            | *235 / DR18     | 15.30       |
| 16         | 516262              | 601030              | 12         | 12               | 3/4" x 4-1/2" | 56.2                | 68.4            | *235 / DR18     | 17.40       |
| 18         | 516286              | 601035              | 12         | 12               | 3/4" x 4-1/2" | 62.4                | 74.8            | *235 / DR25     | 19.50       |
| 20         | 516309              | 601040              | 14         | 14               | 3/4" x 4-1/2" | 72.9                | 86.9            | *235 / DR25     | 21.60       |
| 24         | 516323              | 601045              | 16         | 16               | 3/4" x 5"     | 93.2                | 109.8           | *235 / DR25     | 25.80       |
| 30         | CALL                | CALL                | 20         | 20               | 1" x 7-1/2"   | 251                 | 293             | *150 / DR25     | 32.00       |
| 36         | CALL                | CALL                | 24         | 24               | 1" x 7-1/2"   | 281                 | 331             | *125 / DR25     | 38.30       |

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

ISO 9001-2015 Registered

Listed with Underwriters Laboratory

Factory Mutual Approved

**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.
- TUFGRIP 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 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.
- TUFGRIP 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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**\*\*ADDITIONAL SERIES 2000 TLP-TUF GRIP® RESTRAINT RATINGS**

| Size (In.) | AWWA C900 |      |      | AWWA C905 |      |        | ASTM D2241 |       |       | HDPE* AWWA C906 |     |      |        |      |
|------------|-----------|------|------|-----------|------|--------|------------|-------|-------|-----------------|-----|------|--------|------|
|            | 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 PVCU restraint pressure rating is per the pressure rating listed on the pipe; **\*NOTE:** HDPE applications require a separate stiffener ring. 3"-16" for DI OD Pipe and 3"-12" for IPS Pipe; Assembly steps for (3"-12" ASTM D2241 IPS PVC), (4"-12" AWWA C909 PVCU), and (4"-36" AWWAC900/C905 PVC).



**INSTALLATION**

1. Ensure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the red TUFGRIP onto the beveled end of the pipe to be restrained. The TUFGRIP 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 TUFGRIP 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 TUFGRIP 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 TUFGRIP 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 PVCU 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 PVCU PIPE!**
6. **\*\*Hand-tighten** the torque limiting nuts attached to the TUFGRIP 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 half 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 half turn without turning the remaining torque nuts an equal amount! **\*\*NOTE:** For IPS and PVCU 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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# MJ TUFGRIP® TLP

## SERIES 2000

### FOR PVC & PVCU PIPE

### A Proven Third-Generation Mechanical Joint Restraint

Tyler Union's TUFGrip® restraint represents the culmination of 20 years of engineering and testing. As a third-generation restraint, TUFGrip is the best available technology in the waterworks market for use in restraining PVC, ductile and HDPE pipe.



### 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.**

### SPECIFICATIONS

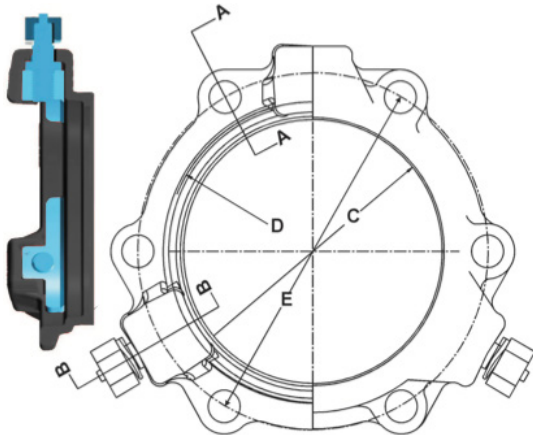
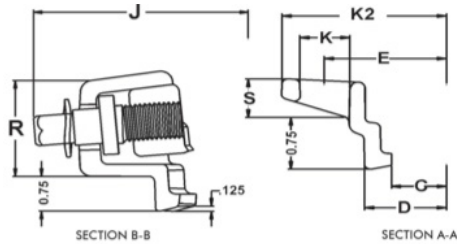
- Proven to restrain plain end PVC pipe in diameters 3"–36", PVCU pipe in diameters 4"–12" and HDPE Pipe 4"–16".
- Restraint design conforms to applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153 and ANSI/AWWA C110.
- Restraint engineered for securing plain end pipe to mechanical joint fittings 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, PVCU 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. Note: TUFBond Coating available upon request
- 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 PVCU/D2241 PVC). **\*Note:** Refer to next page for C909 pipe 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. |  |
|                          |                 |                                     |                  |                                  |  |

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| TUFGRIP® MJ Restraint Dimensions |       |       |       |       |       |       |      |      |
|----------------------------------|-------|-------|-------|-------|-------|-------|------|------|
| Size (In.)                       | 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   | 2.7  | 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 (In.) | Part # – Gland Only | Wedge Qty. | T-head Bolt Qty. | Bolt Size     | Gland weight (lbs.) | Weight (w/Acc.) | *Pressure Rating | Pipe O.D.   |
|------------|---------------------|------------|------------------|---------------|---------------------|-----------------|------------------|-------------|
|            | Non-Domestic        |            |                  |               |                     |                 |                  |             |
| 3          | 113928              | 2          | 4                | 5/8" x 3"     | 7.0                 | 11.0            | *305 / DR14      | 3.50        |
| 4          | 113935              | 2          | 4                | 3/4" x 3-1/2" | 8.3                 | 12.2            | *305 / DR14      | 4.50-4.80   |
| 6          | 113942              | 3          | 6                | 3/4" x 4"     | 12.4                | 18.3            | *305 / DR14      | 6.63-6.90   |
| 8          | 113959              | 3          | 6                | 3/4" x 4"     | 14.9                | 20.8            | *305 / DR14      | 8.63-9.12   |
| 10         | 113973              | 6          | 8                | 3/4" x 4"     | 25.7                | 33.4            | *305 / DR14      | 10.75-11.10 |
| 12         | 113980              | 8          | 8                | 3/4" x 4"     | 34.1                | 42.0            | *305 / DR14      | 12.75-13.20 |
| 14         | 113997              | 10         | 10               | 3/4" x 4-1/2" | 45.1                | 55.4            | *235 / DR18      | 15.30       |
| 16         | 114000              | 12         | 12               | 3/4" x 4-1/2" | 56.2                | 68.4            | *235 / DR18      | 17.40       |
| 18         | 114017              | 12         | 12               | 3/4" x 4-1/2" | 62.4                | 74.8            | *235 / DR25      | 19.50       |
| 20         | 114024              | 14         | 14               | 3/4" x 4-1/2" | 72.9                | 86.9            | *235 / DR25      | 21.60       |
| 24         | 114031              | 16         | 16               | 3/4" x 5"     | 93.2                | 109.8           | *235 / DR25      | 25.80       |
| 30         | 461302              | 20         | 20               | 1" x 7-1/2"   | 251                 | 293             | *150 / DR25      | 32.00       |
| 36         | 461357              | 24         | 24               | 1" x 7-1/2"   | 281                 | 331             | *125 / DR25      | 38.30       |

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

ISO 9001-2015 Registered

Listed with Underwriters Laboratory

Factory Mutual Approved

**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.
- TUFGRIP 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 PVC-O pipe upon order placement. Call for availability.
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651.
- TUFGRIP 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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**\*\*ADDITIONAL SERIES 2000 TLP-TUF GRIP® RESTRAINT RATINGS**

| Size (In.) | AWWA C900 |      |      | AWWA C905 |      |        | ASTM D2241 |       |       | HDPE* AWWA C906 |     |      |        |      |
|------------|-----------|------|------|-----------|------|--------|------------|-------|-------|-----------------|-----|------|--------|------|
|            | 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 PVCU restraint pressure rating is per the pressure rating listed on the pipe; **\*NOTE:** HDPE applications require a separate stiffener ring. 3"-16" for DI OD Pipe and 3"-12" for IPS Pipe; assembly steps for (3"-12" ASTM D2241 IPS PVC), (4"-12" AWWA C909 PVCU), and (4"-36" AWWAC900/C905 PVC).



**INSTALLATION**

1. Ensure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the red TUFGrip onto the beveled end of the pipe to be restrained. The TUFGrip 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 TUFGrip 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 TUFGrip 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 TUFGrip 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 PVCU 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 PVCU PIPE!**
6. **\*\*Hand-tighten** the torque limiting nuts attached to the TUFGrip 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 half 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 half turn without turning the remaining torque nuts an equal amount! **\*\*NOTE:** For IPS and PVCU 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.

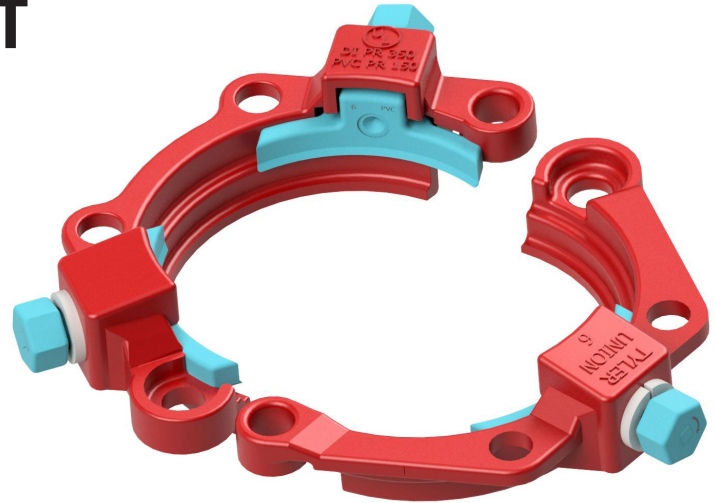
# MJ TUFGRIP® TLP SPLIT

## SERIES 2000S

### FOR PVC PIPE

#### A Proven Third-Generation Mechanical Joint Restraint

Tyler Union's TUFGrip® restraint represents the culmination of 20 years of engineering and testing. As a third-generation restraint, TUFGrip is the best available technology in the waterworks market for use in restraining PVC, ductile and HDPE pipe.



#### 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.**

#### 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 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).

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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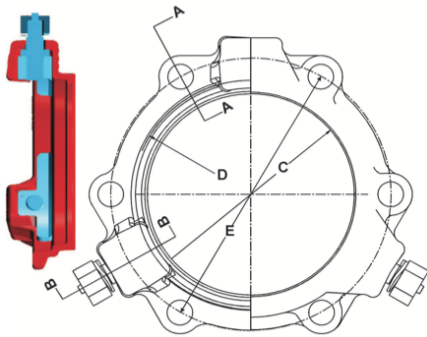
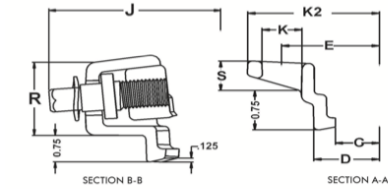
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# MJ TUFGRIP® TLP SPLIT

## SERIES 2000s

FOR PVC PIPE



| MJ TUFGRIP® TLP SPLIT DIMENSIONS |       |       |       |       |       |     |      |      |
|----------------------------------|-------|-------|-------|-------|-------|-----|------|------|
| Size (In.)                       | 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 (In.) | Part # – Gland Only |              | Wedge Qty. | T-head Bolt Qty. | Bolt Size     | Gland Weight (lbs.) | Weight (w/Acc.) | *Pressure Rating | Pipe O.D. (Inches) |
|------------|---------------------|--------------|------------|------------------|---------------|---------------------|-----------------|------------------|--------------------|
|            | Domestic            | Non-Domestic |            |                  |               |                     |                 |                  |                    |
| 4          | N/A                 | 537052       | 2          | 4                | 3/4" x 3-1/2" | 8.3                 | 12.2            | *305 / DR14      | 4.50-4.80          |
| 6          | N/A                 | 537069       | 3          | 6                | 3/4" x 4"     | 12.4                | 18.3            | *305 / DR14      | 6.63-6.90          |
| 8          | N/A                 | 537076       | 3          | 6                | 3/4" x 4"     | 14.9                | 20.8            | *305 / DR14      | 8.63-9.12          |
| 10         | N/A                 | 537083       | 6          | 8                | 3/4" x 4"     | 25.7                | 33.4            | *305 / DR14      | 10.75-11.10        |
| 12         | N/A                 | 537090       | 8          | 8                | 3/4" 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

| Size (In.) | AWWA C900 |      |      | ASTM D2241 |       |       |
|------------|-----------|------|------|------------|-------|-------|
|            | 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 are for ordinary water works restraint applications with transitory surges only.

### NOTES

**STOP-LOOK:**

- Piping system installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C65.
- TUFGRIP 4"-12" restraints shall meet the requirements of ASTM F1674, current revision.





## ASSEMBLY STEPS – SERIES 2000S TLP SPLIT – FOR PVC PIPE

1. Ensure 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 TUFGrip 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.
5. With the two T-head bolts inserted through the restraint, push the TUFGrip lip extension evenly against the thick side of the MJ gasket. With the TUFGrip 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 TUFGrip 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 TUFGrip 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 TUFGrip 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 half turn in an alternating or star pattern until all torque limiting nuts twist off. NEVER tighten a torque limiting nut more than half 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.

# TUFGRIP™ DUAL WEDGE®

## SERIES 1500

### FOR PVC, DUCTILE AND HDPE PIPE

#### A Proven Third-Generation Mechanical Joint Restraint

Tyler Union's TUFGrip™ restraint represents the culmination of 20 years of engineering and testing. As a third-generation restraint, TUFGrip is the best available technology in the waterworks market for use in restraining PVC, ductile and HDPE pipe.



#### 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.

#### 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 minimum 420 Brinell Hardness.
- Gripping wedge, wedge collar bolt and twist off torque limiting nut shall be e-coated.
- FM approved for 4"–16" 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 distinguish from traditional restraints.

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

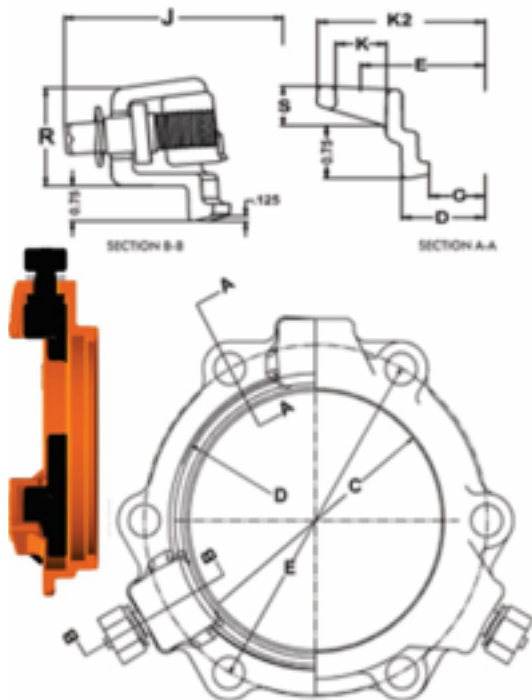
| Product Source/Type | Name of Project | Name of Contractor | Project Engineer | Spec. Section and/or Project No. |
|---------------------|-----------------|--------------------|------------------|----------------------------------|
|                     |                 |                    |    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



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| TUFGRIP™ MJ Restraint Dimensions |       |       |       |       |       |       |      |      |
|----------------------------------|-------|-------|-------|-------|-------|-------|------|------|
| Size (In.)                       | 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 |
| 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   | 2.7  | 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 (In.)                                     | Part # – Gland Only<br>100% Domestic | Wedge Qty. | T-head<br>Bolt Qty. | Bolt Size     | Gland<br>weight (lbs.) | Weight<br>(w/Acc.) | DI Pipe | C-900<br>C-905 | Pipe O.D. |
| 4  | 603000                               | 2          | 4                   | 3/4" x 3-1/2" | 7.1                    | 11.8               | 350     | *305/DR14      | 4.80      |
| 6  | 603005                               | 3          | 6                   | 3/4" x 4"     | 11.2                   | 18.8               | 350     | *305/DR14      | 6.90      |
| 8  | 603010                               | 3          | 6                   | 3/4" x 4"     | 13.1                   | 20.3               | 350     | *305/DR14      | 9.05      |
| 10   | 603015                               | 6          | 8                   | 3/4" x 4"     | 26.0                   | 32.5               | 350     | *305/DR14      | 11.10     |
| 12   | 603020                               | 8          | 8                   | 3/4" x 4"     | 31.5                   | 40.4               | 350     | *305/DR14      | 13.20     |
| 14   | 603025                               | 10         | 10                  | 3/4" x 4-1/2" | 43.3                   | 53.6               | 350     | *235/DR18      | 15.30     |
| 16   | 603030                               | 12         | 12                  | 3/4" x 4-1/2" | 54.1                   | 66.3               | 350     | *235/DR18      | 17.40     |
| 18   | 603035                               | 12         | 12                  | 3/4" x 4-1/2" | 59.8                   | 72.2               | 250     | *235/DR25      | 19.50     |
| 20   | 603040                               | 14         | 14                  | 3/4" x 4-1/2" | 69.8                   | 83.8               | 250     | *235/DR25      | 21.60     |
| 24   | 603045                               | 16         | 16                  | 3/4" 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, 4"–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 TUFGRIP 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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**\*\*SERIES 1500 TDW — TUF GRIP™ RESTRAINT RATINGS**

| Size (In.) | Ductile Pipe | AWWA C900 |      |      | AWWA C905 |      |        | AWWA C909 | ASTM D2241 |       |       | HDPE* AWWA C906 |     |      |        |      |
|------------|--------------|-----------|------|------|-----------|------|--------|-----------|------------|-------|-------|-----------------|-----|------|--------|------|
|            | 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 PVC0 restraint pressure rating is per the pressure.  
**NOTE:** HDPE applications require a separate stiffener ring, 4"–16" for DI OD pipe and 4"–12" for IPS OD pipe rating listed on the pipe.



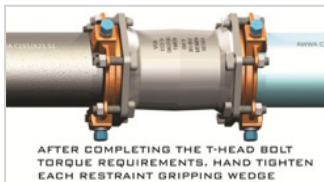
LUBRICATE GASKET AND PIPE AS PROVIDED AND FULLY INSERT PIPE AND GASKET INTO MJ FITTING HUB

**STEP 1 & 2**



INSERT AND HAND TIGHTEN T-HEAD BOLTS AND NUTS KEEPING PIPE STRAIGHT DURING INITIAL ASSEMBLY

**STEP 3**



AFTER COMPLETING THE T-HEAD BOLT TORQUE REQUIREMENTS, HAND TIGHTEN EACH RESTRAINT GRIPPING WEDGE

**STEP 4 & 5**



USING A WRENCH, ROTATE EACH TORQUE NUT 1/2 TURN CLOCKWISE UNTIL ALL TORQUE NUTS TWIST OFF

**STEP 6 & 7**

**INSTALLATION**

1. Ensure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the orange TUFGrip onto the beveled end of the pipe to be restrained. The TUFGrip 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 TUFGrip 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 TUFGrip 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 TUFGrip 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".
6. **NOTE:** The C909 PVC0 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 PVC0 PIPE!**
7. **\*\*Hand-tighten** the torque limiting nuts attached to the TUFGrip 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 half 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 half turn without turning the remaining torque nuts an equal amount! **\*\*NOTE:** For IPS and PVC0 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.
8. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.



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# TUFGRIP™ DUAL WEDGE®

## SERIES 1500

### FOR PVC, DUCTILE AND HDPE PIPE

#### A Proven Third-Generation Mechanical Joint Restraint

Tyler Union's TUFGrip™ restraint represents the culmination of 20 years of engineering and testing. As a third generation restraint, TUFGrip is the best available technology in the waterworks market for use in restraining PVC, ductile and HDPE pipe.



#### 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.

#### SPECIFICATIONS

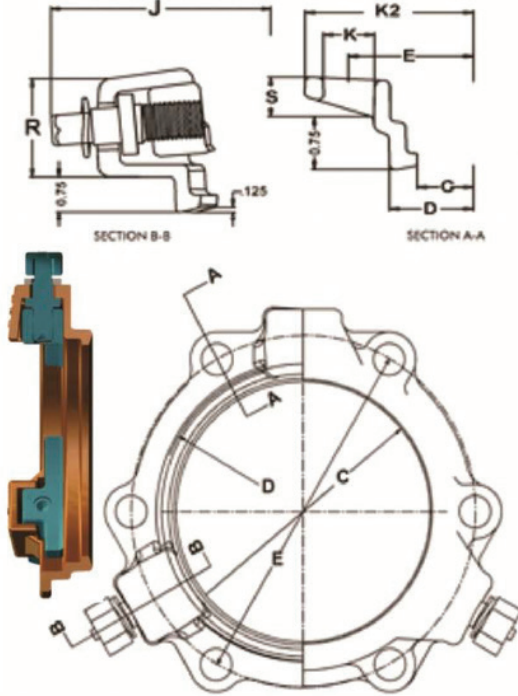
- Proven to restrain plain end PVC, ductile iron and HDPE pipe.  
**\*\*Note:** IPS diameter pipe requires the use of an MJ Transition gasket.
- Restraint design conforms with applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153 and ANSI/AWWA C110.
- Restraint engineered for securing plain end pipe 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 minimum 420 Brinell Hardness.
- Gripping wedge, wedge collar bolt and twist off torque limiting nut shall be e-coated.
- FM approved for 4"–16" 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 distinguish from traditional restraints.

| 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 (In.)                       | 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 |
| 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   | 2.7  | 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 (In.) | Part # – Gland Only Non-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          | 602000                           | 2          | 4                | 3/4" x 3-1/2" | 7.1                 | 11.8            | 350     | *305/DR14   | 4.80      |
| 6          | 602005                           | 3          | 6                | 3/4" x 4"     | 11.2                | 18.8            | 350     | *305/DR14   | 6.90      |
| 8          | 602010                           | 3          | 6                | 3/4" x 4"     | 13.1                | 20.3            | 350     | *305/DR14   | 9.05      |
| 10         | 602015                           | 6          | 8                | 3/4" x 4"     | 26.0                | 32.5            | 350     | *305/DR14   | 11.10     |
| 12         | 602020                           | 8          | 8                | 3/4" x 4"     | 31.5                | 40.4            | 350     | *305/DR14   | 13.20     |
| 14         | 602025                           | 10         | 10               | 3/4" x 4-1/2" | 43.3                | 53.6            | 350     | *235/DR18   | 15.30     |
| 16         | 602030                           | 12         | 12               | 3/4" x 4-1/2" | 54.1                | 66.3            | 350     | *235/DR18   | 17.40     |
| 18         | 602035                           | 12         | 12               | 3/4" x 4-1/2" | 59.8                | 72.2            | 250     | *235/DR25   | 19.50     |
| 20         | 602040                           | 14         | 14               | 3/4" x 4-1/2" | 69.8                | 83.8            | 250     | *235/DR25   | 21.60     |
| 24         | 602045                           | 16         | 16               | 3/4" 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, 4"–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 TUFGRIP 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.

**\*\*SERIES 1500 TDW-TUF GRIP™ RESTRAINT RATINGS**

| Size (In.) | Ductile Pipe | AWWA C900 |      |      |      | AWWA C905 |        |          | AWWA C909 | ASTM D2241 |       |       | HDPE* AWWA C906 |      |        |      |  |
|------------|--------------|-----------|------|------|------|-----------|--------|----------|-----------|------------|-------|-------|-----------------|------|--------|------|--|
|            | 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 PVC0 restraint pressure rating is per the pressure.  
**NOTE:** HDPE applications require a separate stiffener ring, 4"-16" for DI OD Pipe and 4"-12" for IPS OD pipe rating listed on the pipe.



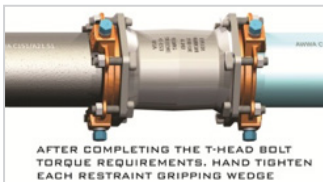
LUBRICATE GASKET AND PIPE AS PROVIDED AND FULLY INSERT PIPE AND GASKET INTO MJ FITTING HUB

**STEP 1 & 2**



INSERT AND HAND TIGHTEN T-HEAD BOLTS AND NUTS KEEPING PIPE STRAIGHT DURING INITIAL ASSEMBLY

**STEP 3**



AFTER COMPLETING THE T-HEAD BOLT TORQUE REQUIREMENTS, HAND TIGHTEN EACH RESTRAINT GRIPPING WEDGE

**STEP 4 & 5**



USING A WRENCH, ROTATE EACH TORQUE NUT 1/2 TURN CLOCKWISE UNTIL ALL TORQUE NUTS TWIST OFF

**STEP 6 & 7**

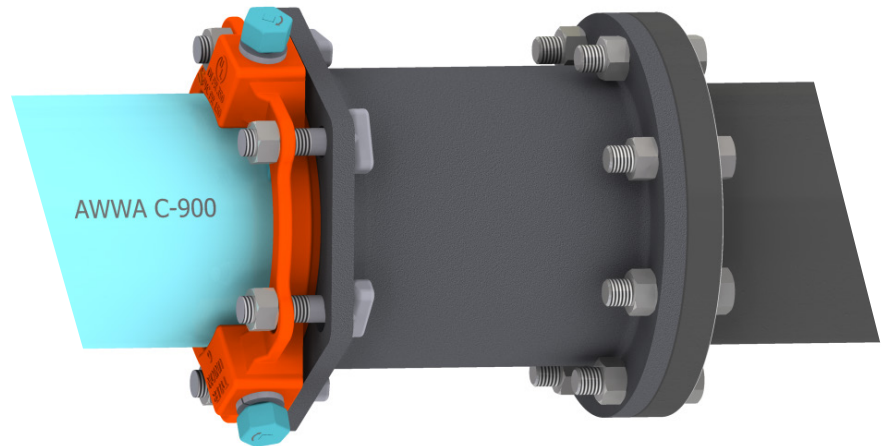
**INSTALLATION**

1. Ensure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the orange TUFGrip onto the beveled end of the pipe to be restrained. The TUFGrip 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 TUFGrip 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 TUFGrip 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 TUFGrip 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".
6. **NOTE:** The C909 PVC0 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 PVC0 PIPE!**
7. **\*\*Hand-tighten** the torque limiting nuts attached to the TUFGrip 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 half 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 half turn without turning the remaining torque nuts an equal amount! **\*\*NOTE:** For IPS and PVC0 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.
8. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.

# TUF FLANGE KIT

## SERIES 4000

### FOR PVC, DUCTILE AND HDPE PIPE



## FEATURES & ADVANTAGES

- No special tools required for assembly.
- Plain end pipe doesn't need to be square cut.
- 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.

## SPECIFICATIONS

- TUF FLANGE Kit restrains plain end PVC, ductile iron 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.
- Safety factor of 2:1. PVC and HDPE based on pipe pressure rating. PSI rating of 350 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.

ISO 9001-2015 Registered



100% Domestic Available

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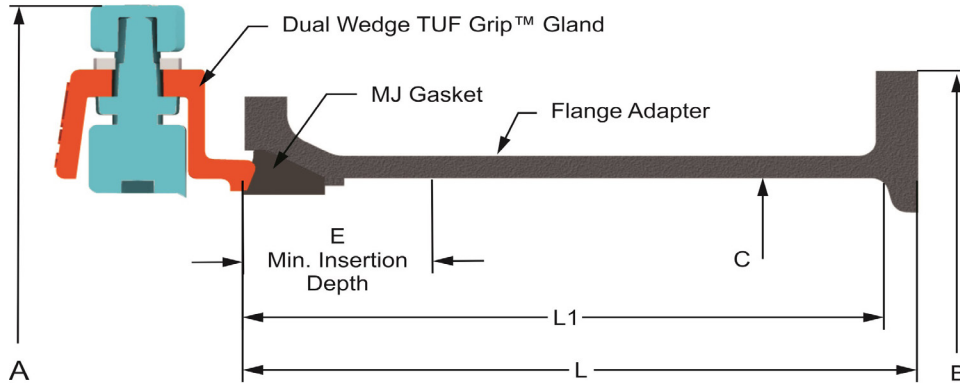




# TUF FLANGE KIT

## SERIES 4000

FOR PVC, DUCTILE, AND HDPE PIPE



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                | 3/4" x 3-1/2" | 45              |
| 6             | 6.63–6.90   | 12.77 | 11.0 | 7.45  | 2.5 | 10.0 | 9.5 | 6                | 3/4" x 4"     | 60              |
| 8             | 8.63–9.12   | 14.92 | 13.5 | 9.65  | 2.5 | 10.0 | 9.5 | 6                | 3/4" x 4"     | 75              |
| 10            | 10.75–11.10 | 16.97 | 16.0 | 11.81 | 2.5 | 10.0 | 9.5 | 8                | 3/4" x 4"     | 103             |
| 12            | 12.75–13.20 | 19.07 | 19.0 | 13.89 | 2.5 | 10.0 | 9.5 | 8                | 3/4" x 4"     | 130             |

\*SERIES 4000 TUF FLANGE™ Pressure Ratings

| Size (In.) | Ductile Pipe | AWWA C900 |      |      |          | AWWA C909 | HDPE** AWWA C906 |      |        |      |  |
|------------|--------------|-----------|------|------|----------|-----------|------------------|------|--------|------|--|
|            | C151/A21.51  | DR14      | DR18 | DR25 |          | DR7.3     | DR9              | DR11 | DR13.5 | DR17 |  |
| 4          | 350          | 305       | 235  | 165  | 235/150* | 254       | 200              | 160  | 128    | 100  |  |
| 6          | 350          | 305       | 235  | 165  | 235/150* | 254       | 200              | 160  | 128    | 100  |  |
| 8          | 350          | 305       | 235  | 165  | 235/150* | 254       | 200              | 160  | 128    | 100  |  |
| 10         | 350          | 305       | 235  | 165  | 235/150* | 254       | 200              | 160  | 128    | 100  |  |
| 12         | 350          | 305       | 235  | 165  | 235/150* | 254       | 200              | 160  | 128    | 100  |  |

\*Note: Pressure ratings for ordinary water works restraint application with transitory surges only.

\*Note: AWWA C909 PVC0 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.

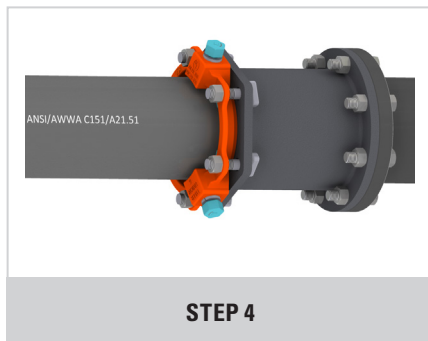


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## ASSEMBLY STEPS — SERIES 4000 TUF FLANGE™

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. 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 equipped 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 half 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 half turn without turning the remaining torque nuts an equal amount! **\*\*NOTE:** For PVC 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 assemblies are complete.



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# SERIES 3000PP RESTRAINT

## 33U – PVC PIPE TO PIPE BELL TO SPIGOT RESTRAINT

### KITS FOR 4"–36" APPLICATIONS: 4"–36" FOR DIOD & 4"–12" FOR IPS

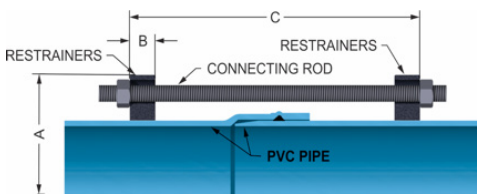
Revised 3/01/2017 (Current revisions for the noted Standards apply)

#### FEATURES & ADVANTAGES

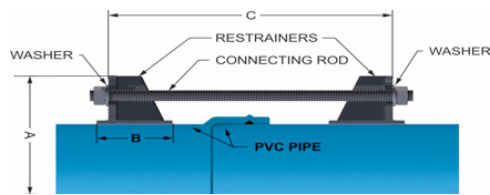
- Available in sizes 4"–36" (IPS PVC pipe restraints available in 4"–12" only).
- Restraints rated at the listed pressure on the PVC pipe with a 2:1 safety factor.
- Full 360° contact, no pipe distortion or point loading.
- To ease installation, restraints and pipe can be assembled outside the trench.
- 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. Restraints 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

#### SERIES 3000PP RESTRAINT DIMENSIONS AND WEIGHTS

| 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    |     |
| 4        | 4.80  | 462422 | 4.50  | 462477 | 9.12  | 1.12 | 12.0    | 2                         | 3/4 x 17 | 4  | 5/8 x 3-1/2   | 100 ft-lb | 15  |
| 6        | 6.90  | 462439 | 6.63  | 462484 | 11.12 | 1.12 | 13.0    | 2                         | 3/4 x 17 | 4  | 5/8 x 3-1/2   | 100 ft-lb | 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 ft-lb | 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 ft-lb | 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 ft-lb | 55  |
| 14       | 15.30   | 488033 | N/A   | N/A    | 22.54 | 4.00 | 24.0    | 6                         | 3/4 x 30 | 8  | 7/8 x 6-1/2   | 150 ft-lb | 138 |
| 16       | 17.40   | 488040 | N/A   | N/A    | 24.66 | 4.00 | 28.0    | 6                         | 3/4 x 30 | 8  | 7/8 x 6-1/2   | 150 ft-lb | 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 ft-lb | 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 8-1/2 | 200 ft-lb | 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 8-1/2 | 225 ft-lb | 407 |
| 30       | 32.00   | 498599 | N/A   | N/A    | 40.90 | 10.0 | 34.0    | 12                        | 1 x 40   | 16   | 1-1/8 x 8-1/2 | 250 ft-lb | 605 |
| 36       | 38.30   | 498605 | N/A   | N/A    | 48.00 | 10.0 | 34.0    | 12                        | 1 x 40   | 16   | 1-1/8 x 8-1/2 | 250 ft-lb | 670 |

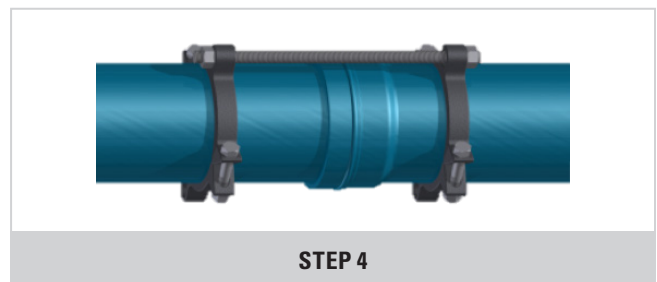
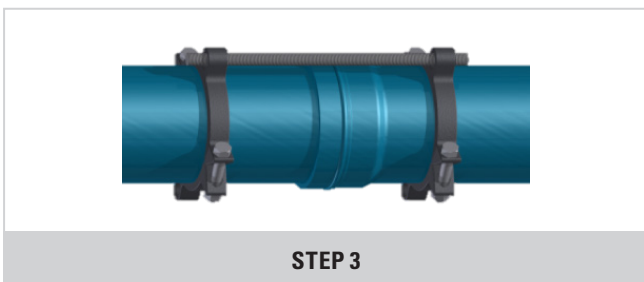
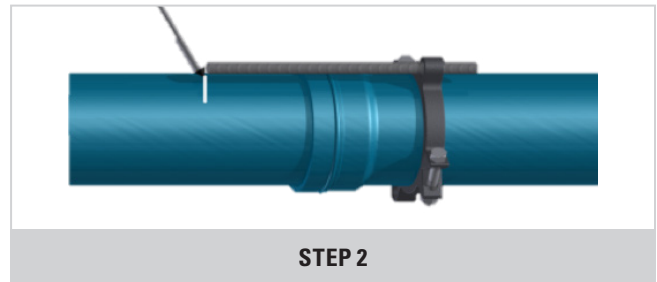
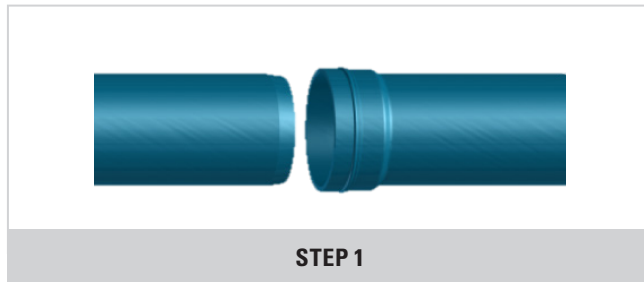
NOTE: Approximate dimensions and weights.

# SERIES 3000PP RESTRAINT

## 33U – PVC PIPE TO PIPE BELL TO SPIGOT RESTRAINT

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

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

### NOTE

- Suggested hex head bolt and nut \*torque recommendations for assembly of the 3000C restrainers is as provided.
- 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".

# SERIES 3000 PVC TO MJ RESTRAINT

## 34U – PVC PIPE TO MJ FITTING RESTRAINT

### KITS FOR 4"–36" APPLICATIONS: 4"–36" FOR DIOD & 4"–12" FOR IPS PIPE

Revised 3/01/2017 (Current revisions for the noted Standards apply)

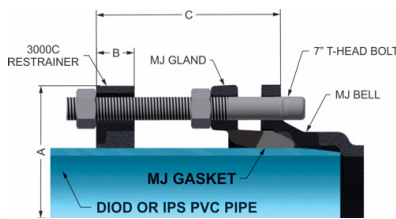
Restraint of AWWA C900/905 PVC pipe in sizes 4"–36" to Mechanical joint AWWA C153/C110 ductile iron fittings. Restraint of \*IPS diameter ASTM D2241 PVC pipe in sizes 4"–12" to Mechanical joint AWWA C153/C110 ductile iron fittings. **\*NOTE:** Transition gasket required for IPS diameter ASTM D2241 PVC 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 & ADVANTAGES

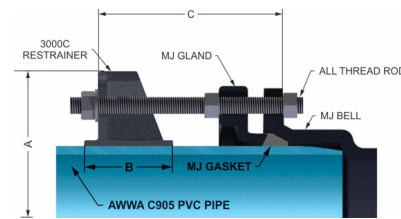
- Available for PVC sizes 4"–36" for both ductile iron outside diameter (DIOD) pipe or iron pipe size (IPS) outside diameter pipe.
- Restraints and fasteners rated at the listed pressure on the PVC pipe and restraint shall have a 2:1 safety factor.
- Full 360° contact, no pipe distortion or point loading.
- 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

#### SERIES 3000PP RESTRAINT DIMENSIONS AND WEIGHTS

| Nom 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 (Torque in ft-lb) |               |           | *Kit (lbs.) |
|----------|---|--------|---|--------|-------|-------|---------|---------------------------|----------|--|---------------|-----------|-------------|
|          | Pipe Dia.   | Part # | Pipe Dia.                                     | 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 3-1/2   | 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 3-1/2   | 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 6-1/2   | 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 6-1/2   | 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 8-1/2 | 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 8-1/2 | 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 8-1/2 | 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 8-1/2 | 250 ft-lb | 500         |

**NOTE:** Approximate dimensions and weights

# SERIES 3000 RESTRAINT

## 34U – PVC TO MJ RESTRAINT

KITS FOR 4"–36" APPLICATIONS:

4"–36" FOR DIOD & 4"–12" FOR IPS PIPE

Revised 3/01/2017

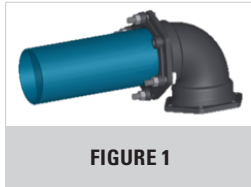


FIGURE 1

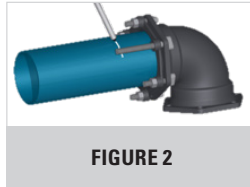


FIGURE 2

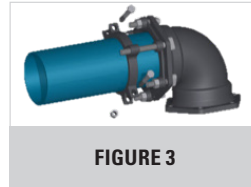


FIGURE 3



FIGURE 4

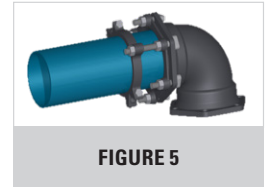


FIGURE 5

### INSTALLATION INSTRUCTIONS FOR SIZES 4"–12" SERIES 3000MJ

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



FIGURE 1



FIGURE 2



FIGURE 3



FIGURE 4

### INSTALLATION INSTRUCTIONS FOR SIZES 14"–36" SERIES 3000MJ

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.
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.
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").
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.

# SERIES 3000 PO TO PUSH-ON RESTRAINTS

## 35U — PVC PIPE TO PUSH-ON FITTING RESTRAINT KITS FOR 4"–12" APPLICATIONS: 4"–12" FOR DIOD & 4"–12" FOR IPS PIPE

Revised 3/01/2017 (Current revisions for the noted Standards apply)

Restrains AWWA C900 PVC pipe in sizes 4"–12" to Push-on AWWA C153 ductile iron fittings

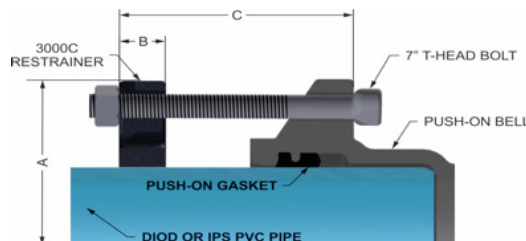
Restrains \*IPS diameter PVC pipe in sizes 4"–12" to Push-on AWWA C153 ductile iron fittings. **\*Transition gasket required**

### FEATURES & 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 DR14, \*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

| SERIES 3000PP RESTRAINT DIMENSIONS AND WEIGHTS |   |             |   |            |       |      |         |                        |         |  |             |           |             |
|--|---|-------------|---|------------|-------|------|---------|------------------------|---------|--|-------------|-----------|-------------|
| Nom 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 1/2 | 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 1/2 | 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 dimensions

# SERIES 3000 PO RESTRAINT

## 35U – PVC TO PUSH-ON RESTRAINT

KITS FOR 4"–12" APPLICATIONS:

4"–12" FOR DIOD & 4"–12" FOR IPS PIPE

Revised 3/01/2017

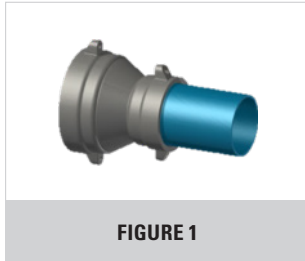


FIGURE 1

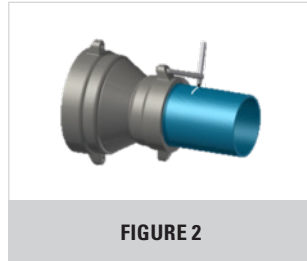


FIGURE 2

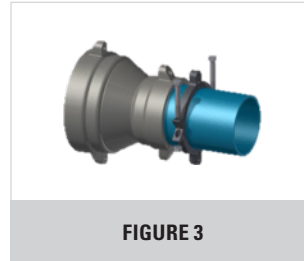


FIGURE 3

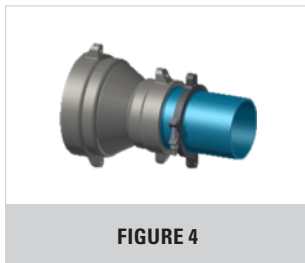


FIGURE 4

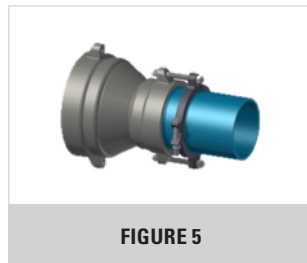


FIGURE 5

### INSTALLATION INSTRUCTIONS FOR SIZES 4" – 12" SERIES 3000PO:

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



# SURE STOP 350® GASKET

## INSTANT JOINT RESTRAINT

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).

| Sure Stop 350® Gasket Instant Joint Restraint |               |           |          |         |
|---|---------------|-----------|----------|---------|
| 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"  |

|                          |                                     |                         |
|--------------------------|-------------------------------------|-------------------------|
| 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. |
|---------------------|-----------------|--------------------|------------------|----------------------------------|
|                     |                 |                    |                  |                                  |

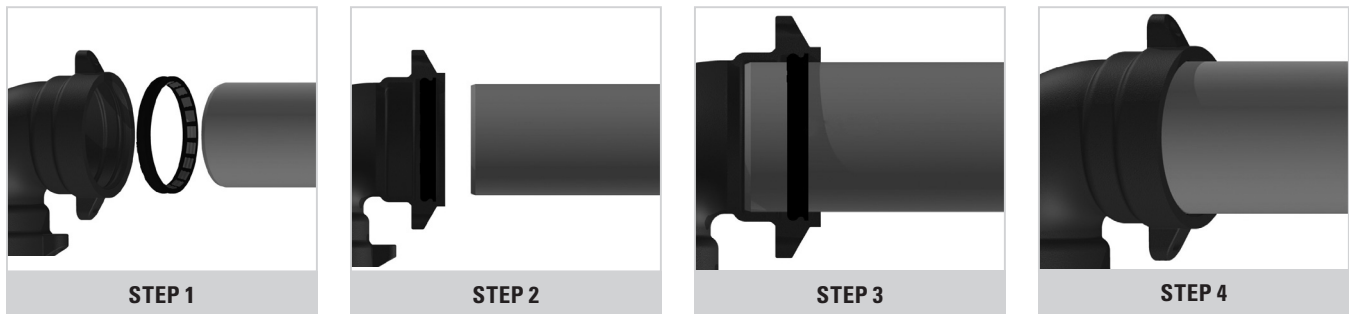


11910 CR 492 / Tyler, TX 75706 / (800) 527-8478  
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 1001 El Camino Ave. / Corona, CA 92879 / (866) 527-8471  
 Portland, OR 97203  
 New Lenox, IL 60451

Grand Prairie, TX 75050  
 Anniston, AL 36207  
 Elmer, NJ 08318  
 Lithia Springs, GA 30122



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



## INSTALLATION

1. For ductile iron applications utilizing TYTON pipe, valves, and fittings made to AWWA specifications.
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:
  - Ensure that the spigot end is properly beveled.
  - Mark the joint depth on the spigot so it is clear when the joint is fully inserted.
  - 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.



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# 20U – ANSI/AWWA C116/A21.16 PROTECTIVE FUSION-BONDED EPOXY FOR AWWA FITTINGS

Revised 1/2017 (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)   | Kerosene                               |
| 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.

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.

# 21U – ANSI/AWWA C104/A21.4 CEMENT-MORTAR-ASPHALTIC MATERIAL FOR DUCTILE IRON FITTINGS

Revised 3/2017 (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 762–1600mm | 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.

**21U – ANSI/AWWA C104/A21.4  
CEMENT-MORTAR-ASPHALTIC MATERIAL FOR  
DUCTILE IRON FITTINGS**

Revised 3/2017 (Current revisions for the noted Standards apply)

| 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.  |
| <p><b>** Note:</b> (1) In instances where seal coat is not used, cure cement as provided for 24 hours after application.<br/>                     (2) In cold weather the patched area should be protected from freezing.<br/>                     (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.</p> |

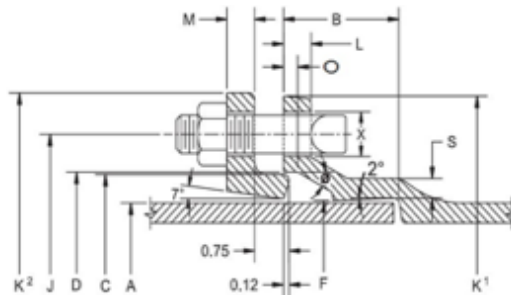
| Tyler Union Waterworks — Approved Field Repair for Asphaltic Coating of Interior and Exterior Fitting Surfaces  |
|---|
| 1. Paint repair to the fitting body or mechanical joint includes use of a hand steel bristle brush to remove loose corrosion. Wipe area free of dust or debris with a cloth suitable 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. |

# 22U – ANSI/AWWA C110/A21.10 MECHANICAL JOINT FULL BODY DUCTILE IRON FITTINGS

Revised 4/2018 (Current revisions for the noted Standards apply)

|                             |   |
|-----------------------------|---|
| <b>SIZES:</b>               | 2"–48"  |
| <b>STANDARDS:</b>           | ANSI/AWWA C110/A21.10, NFPA 13/24, 3"–12" UL listed and approved (File - Tyler Union)   |
| <b>MATERIAL:</b>            | Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.   |
| <b>PRESSURE RATING:</b>     | *Flanged fittings rated at 250 psi. Mechanical joints 2"–24" rated at 350 psi and 30"–48" at 250 psi. <b>*Note:</b> With rubber annular ring flange gasket, 2"–24" Flanged fittings can be rated at 350 psi. <b>Note:</b> Wyes over 12" are not pressure rated. Contact Tyler Union for rating in your application. |
| <b>DEFLECTION:</b>          | Joint deflection 5° max for 2"–12" and 3° max for 14"–48". Reduces by 50% at nominal pipe & fitting diameters.  |
| <b>NSF-61 &amp; NSF372:</b> | Meets all requirements, including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.   |
| <b>ASPHALT COATING:</b>     | Per ANSI/AWWA C104/A21.4 and ANSI/AWWA C110/A21.10.   |
| <b>CEMENT LINING:</b>       | Per ANSI/AWWA C104/A21.4, with double cement lining available upon request.   |
| <b>EPOXY COATING:</b>       | Fusion-bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.  |
| <b>BARE FITTINGS:</b>       | Available upon request.   |
| <b>FASTENERS:</b>           | High-strength low-alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242.   |
| <b>INSTALLATION:</b>        | Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51 or AWWA C900/905.   |



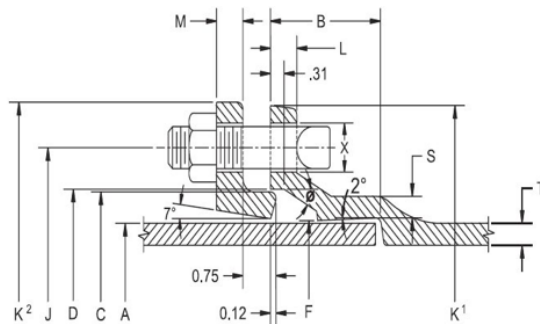
NOMINAL JOINT DIMENSIONS IN INCHES

| Size (In.) | A Dia. DI Pipe | B Hub Depth | C Dia. GLAND | D Dia. | F Dia. | Ø   | X     | J Dia. GLAND | K <sup>1</sup> Dia. | K <sup>2</sup> 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                     | 1.50 | 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         |

# 23U – ANSI/AWWA C153/A21.53 MECHANICAL JOINT COMPACT DUCTILE IRON FITTINGS

Revised 4/2018 (Current revisions for the noted Standards apply)

|                             |  |
|-----------------------------|--|
| <b>SIZES:</b>               | 2"–64" (2" not included in ANSI/AWWA C153 standard).   |
| <b>STANDARDS:</b>           | ANSI/AWWA C153/A21.53, NFPA13/24, 3"-16" UL and 3"-10" FM listed & approved (File - Tyler Union).  |
| <b>MATERIAL:</b>            | Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.  |
| <b>PRESSURE RATING:</b>     | *Flanged fittings rated at 250 psi. Mechanical joints 2"–24" rated at 350 psi and 30"–48" at 250 psi and 54"–64" at 150 psi. <b>*Note:</b> With rubber annular ring flange gasket, 2"–24" Flanged fittings can be rated at 350 psi. <b>Note:</b> Wyes over 12" are not pressure rated. Contact Tyler Union for rating in your application. |
| <b>DEFLECTION:</b>          | Joint deflection 5° max for 2"–12" and 3° max for 14"–48". Reduces by 50% at nominal pipe & fitting diameters.   |
| <b>NSF-61 &amp; NSF372:</b> | Meets all requirements, including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.  |
| <b>ASPHALT COATING:</b>     | Per ANSI/AWWA C104/A21.4 and ANSI/AWWA C153/A21.53.  |
| <b>CEMENT LINING:</b>       | Per ANSI/AWWA C104/A21.4, with double cement lining available upon request.  |
| <b>EPOXY COATING:</b>       | Fusion-bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.   |
| <b>BARE FITTINGS:</b>       | Available upon request.  |
| <b>FASTENERS:</b>           | High-strength low-alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242.  |
| <b>INSTALLATION:</b>        | Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51 or AWWA C900/905.  |



NOMINAL JOINT DIMENSIONS IN INCHES

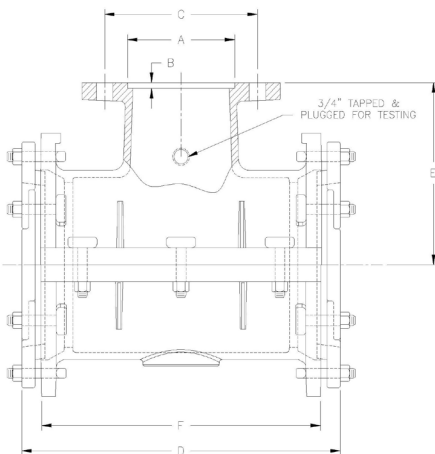
| Size (In.) | A Dia. DI Pipe | B Hub Depth | C Dia. GLAND | D Dia. | F Dia. | J Dia. GLAND | K¹ Dia. | K² Dia. GLAND | L    | M GLAND | S    | T    | X     | Bolt Size   | Qty. Bolts |
|------------|----------------|-------------|--------------|--------|--------|--------------|---------|---------------|------|---------|------|------|-------|-------------|------------|
| 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        | 20.25   | 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        | 22.50   | 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          | 4.00        | 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          | 4.00        | 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          | 4.00        | 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          | 4.00        | 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         | 57.56          | 4.00        | 58.82        | 59.02  | 57.73  | 63.20        | 65.70   | 65.70         | 1.55 | 2.00    | 1.45 | 0.9  | 1-3/8 | 1-1/4x6-1/2 | 36         |
| 60         | 61.61          | 4.00        | 62.87        | 63.07  | 61.78  | 67.72        | 70.22   | 70.22         | 1.75 | 2.00    | 1.50 | 0.94 | 1-3/8 | 1-1/4x6-1/2 | 36         |
| 64         | 65.67          | 4.00        | 66.96        | 67.13  | 65.84  | 71.86        | 74.36   | 74.36         | 1.75 | 2.00    | 1.50 | 0.99 | 1-3/8 | 1-1/4x6-1/2 | 38         |



# 24U – MECHANICAL JOINT TAPPING SLEEVE FOR DUCTILE IRON, CAST IRON AND C900 PVC PIPE

Revised 3/2017 (Current revisions for the noted Standards apply)

|                             |   |
|-----------------------------|---|
| <b>SIZES:</b>               | 6"–12" PVC/ductile pipe per ANSI/AWWA C900 or C151 and cast iron pipe as provided. Comes with 4"–12" side flanged outlet & 3/4" tap on the branch.  |
| <b>STANDARDS:</b>           | 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. |
| <b>MATERIAL:</b>            | Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.   |
| <b>PRESSURE RATING:</b>     | Rated at 250 psi.   |
| <b>DEFLECTION:</b>          | Deflection is not recommended.  |
| <b>GASKETS:</b>             | SBR Mechanical Joint and Split gaskets are per ASTM D2000 – AA and ANSI/AWWA C111/21.11, armor tipped with coiled brass wire spring.  |
| <b>NSF-61 &amp; NSF372:</b> | Meets all requirements, including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.   |
| <b>ASPHALT COATING:</b>     | Per ANSI/AWWA C104/A21.4 and ANSI/AWWA C153/A21.53.   |
| <b>CEMENT LINING:</b>       | Tapping Sleeves are unlined to ensure they fit over the pipe being tapped.  |
| <b>FLANGE:</b>              | ASME/ANSI B16.1, Class 125.   |
| <b>FASTENERS:</b>           | High-strength low-alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242.   |
| <b>INSTALLATION:</b>        | Install per Tyler Union instructions below.   |



| NOMINAL JOINT DIMENSIONS IN INCHES |        |       |       |       |       |       |               |     |
|------------------------------------|--------|-------|-------|-------|-------|-------|---------------|-----|
| Size (In.)                         | 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 |

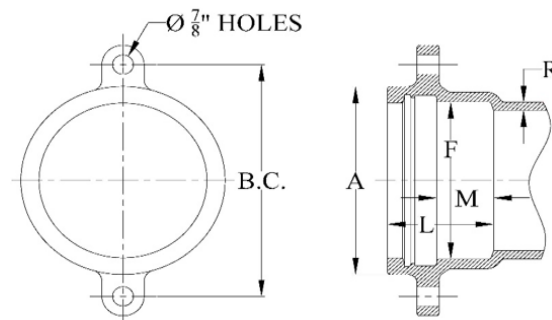
## INSTALLATION

- 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.
- Bolt sleeve halves together and trim side gaskets, as necessary. **MAKE SURE SLEEVE WILL ROTATE FREELY ON PIPE.**
- 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.
- Install glands and bolts—rotate sleeve to desired position. Be sure pipe is centered inside the sleeve.
- Tighten gland bolts alternately, using 80 to 90 ft-lb.
- 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.

# 25U – ANSI/AWWA C153/A21.53 UNION-TITE COMPACT DUCTILE IRON FITTINGS

Revised (Current revisions for the noted Standards apply)

|                             |  |
|-----------------------------|--|
| <b>SIZES:</b>               | 4"–24"   |
| <b>STANDARDS:</b>           | ANSI/AWWA C153/A21.53, NFPA13/24, 4"–12" UL listed & approved (File - Tyler Union).  |
| <b>MATERIAL:</b>            | Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.  |
| <b>PRESSURE RATING:</b>     | Union-Tite/Push-on Joints 4"–24" rated at 350 psi. *Flanged fittings rated at 250 psi. *Note: With rubber annular ring flange gasket, 4"–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. |
| <b>DEFLECTION:</b>          | Joint deflection 5° max for 4"–12" and 3° max for 14"–24". Reduces by 50% at nominal pipe & fitting diameters.   |
| <b>NSF-61 &amp; NSF372:</b> | Meets all requirements including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.   |
| <b>ASPHALT COATING:</b>     | Per ANSI/AWWA C104/A21.4 and ANSI/AWWA C153/A21.53.  |
| <b>CEMENT LINING:</b>       | Per ANSI/AWWA C104/A21.4, with double cement lining available upon request.  |
| <b>EPOXY COATING:</b>       | Fusion-bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.   |
| <b>BARE FITTINGS:</b>       | Available upon request.  |
| <b>FASTENERS:</b>           | High-strength low-alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242.  |
| <b>RESTRAINING LUGS:</b>    | *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.   |
| <b>INSTALLATION:</b>        | 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.                       |



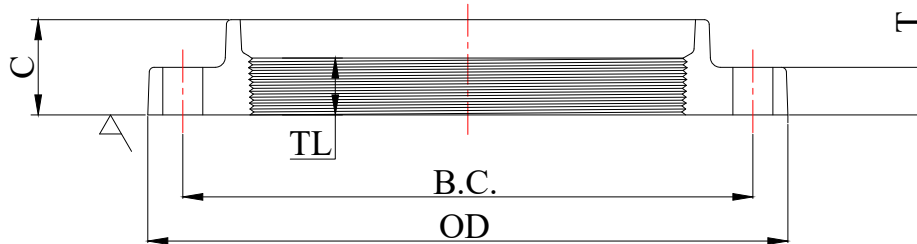
NOMINAL JOINT DIMENSIONS IN INCHES

| Size (In.) | Pipe Diameter | A Diam. | F Diam. | B.C. Diam. | L Diam. | M Diam. | R Diam. |
|------------|---------------|---------|---------|------------|---------|---------|---------|
| 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    |

# 26U – ANSI/AWWA C110/A21.10 COMPANION/ THREADED FLANGE DUCTILE IRON FITTINGS

Revised 2/2017 (Current revisions for the noted Standards apply)

|                         |   |
|-------------------------|---|
| <b>SIZES:</b>           | 2"–64"  |
| <b>STANDARDS:</b>       | ANSI/AWWA C110/A21.10, NFPA 13/24, ASME B16.1, ANSI/AWWA C115/A21.15.   |
| <b>MATERIAL:</b>        | Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.   |
| <b>PRESSURE RATING:</b> | Flanged fittings *2"–48" rated at 250 psi. 54"–64" rated at 150psi.   |
| <b>DEFLECTION:</b>      | Deflection is not recommended for flange joint due to the rigidity of the joint.  |
| <b>COATING:</b>         | Asphaltic or Primer per ANSI/AWWA C104/A21.4, Standard primer is Tnemec Pota Pox N140-1211. Contact Tyler Union for additional coating options.   |
| <b>BARE FITTINGS:</b>   | Available upon request.   |
| <b>THREADS:</b>         | Tapered Pipe Threads as per NPT ANSI B1.20.1. Available for Ductile Pipe as well as Steel Pipe.<br><b>NOTE: Please specify pipe type upon order placement.</b>  |
| <b>FLANGES:</b>         | ANSI Class 125 per ASME B16.1 and ANSI/AWWA C111/A21.11. Bolt holes shall straddle the center line.<br><b>NOTE: Class 125 ASME B16.1 are not compatible with Class 250 Flanges.</b><br><b>NOTE: Class 250 ASME B16.1 fittings are available upon request.</b> |
| <b>INSTALLATION:</b>    | Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51.  |

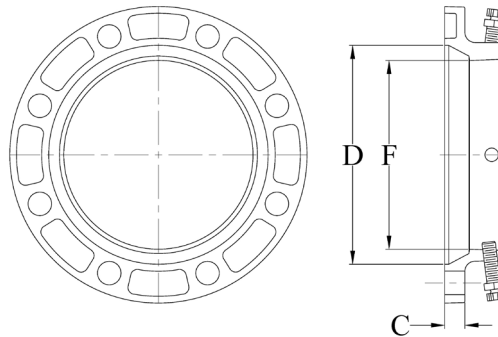


| COMPANION FLANGE DETAILS IN INCHES |                  |             |               |                    |                 |                  |                    |               |            |
|------------------------------------|------------------|-------------|---------------|--------------------|-----------------|------------------|--------------------|---------------|------------|
| Size (In.)                         | Diameter DI Pipe | Flange O.D. | B.C. Diameter | Flange Thickness T | Flange Height C | Thread Length TL | Bolt Hole Diameter | Bolt Size     | Qty. Bolts |
| 2                                  | 2.51             | 6.00        | 4.75          | 0.62               | 1.25            | 1.06             | 0.75               | 5/8 x 2-1/4   | 4          |
| 3                                  | 3.96             | 7.50        | 6.00          | 0.75               | 1.75            | 1.06             | 0.75               | 5/8 x 2-1/4   | 4          |
| 4                                  | 4.80             | 9.00        | 7.50          | 0.94               | 1.87            | 1.19             | 0.75               | 5/8 x 3       | 8          |
| 6                                  | 6.90             | 11.00       | 9.50          | 1.00               | 2.06            | 1.38             | 0.875              | 3/4 x 3-1/2   | 8          |
| 8                                  | 9.05             | 13.50       | 11.75         | 1.12               | 2.30            | 1.56             | 0.875              | 3/4 x 3-1/2   | 8          |
| 10                                 | 11.10            | 16.00       | 14.25         | 1.19               | 2.50            | 1.75             | 1.00               | 7/8 x 4       | 12         |
| 12                                 | 13.20            | 19.00       | 17.00         | 1.25               | 2.62            | 2.00             | 1.00               | 7/8 x 4       | 12         |
| 14                                 | 15.30            | 21.00       | 18.75         | 1.38               | 2.70            | 2.01             | 1.125              | 1 x 4-1/2     | 12         |
| 16                                 | 17.40            | 23.50       | 21.25         | 1.44               | 2.70            | 2.25             | 1.125              | 1 x 4-1/2     | 16         |
| 18                                 | 19.50            | 25.00       | 22.75         | 1.56               | 2.82            | 2.45             | 1.25               | 1-1/8 x 5     | 16         |
| 20                                 | 21.60            | 27.50       | 25.00         | 1.69               | 2.93            | 2.62             | 1.25               | 1-1/8 x 5     | 20         |
| 24                                 | 25.80            | 32.00       | 29.50         | 1.88               | 3.17            | 2.96             | 1.375              | 1-1/4 x 5-1/2 | 20         |
| 30                                 | 32.00            | 38.75       | 36.00         | 2.12               | 4.00            | 3.37             | 1.375              | 1-1/4 x 5-1/2 | 28         |
| 36                                 | 38.30            | 46.00       | 42.75         | 2.38               | 5.00            | 4.00             | 1.625              | 1-1/2 x 7     | 32         |
| 42                                 | 44.50            | 53.00       | 49.50         | 2.62               | 5.12            | 4.50             | 1.625              | 1-1/2 x 7-1/2 | 36         |
| 48                                 | 50.80            | 59.50       | 56.00         | 2.75               | 5.50            | 5.12             | 1.625              | 1-1/2 x 8     | 44         |
| 54                                 | 57.56            | 66.25       | 62.75         | 3.00               | 7.16            | 6.18             | 2.00               | 1-3/4 x 8-1/2 | 44         |
| 60                                 | 61.61            | 73.00       | 69.25         | 3.12               | 7.16            | 6.18             | 2.00               | 1-3/4 x 9     | 52         |
| 64                                 | 65.67            | 80.00       | 76.00         | 3.38               | 7.16            | 6.18             | 2.00               | 1-3/4 x 9     | 52         |

# 27U – AWWA C111/A21.11 DUCTILE IRON ADAPTER FLANGE

Revised 12/2018 (Current revisions for the noted Standards apply)

|                             |   |
|-----------------------------|---|
| <b>SIZES:</b>               | 3"–12" – Recommended for use with Class 53 — Class 56 ductile iron pipe.  |
| <b>STANDARDS:</b>           | ANSI/AWWA C110/A21.10, ANSI/AWWA C111/A21.11, UL listed and FM approved.  |
| <b>MATERIAL:</b>            | Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.   |
| <b>PRESSURE RATING:</b>     | Flanged fittings 3"–10" rated at 250 psi and 12" rated at 150psi.   |
| <b>DEFLECTION:</b>          | Max joint deflection 2°, reduces by 50% at nominal pipe and fitting diameters.  |
| <b>NSF-61 &amp; NSF372:</b> | Meets all requirements, including Annex G, Tyler Union’s Underwriters Laboratory listing MH16439.   |
| <b>COATING:</b>             | Tnemec Pota Pox N140-1211.  |
| <b>BOLTS:</b>               | 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 hardness and shipped assembled in the adapter. Torque head will break off at 80–90 ft-lb. |
| <b>INSTALLATION:</b>        | Install per Tyler Union instructions below.   |



ADAPTER FLANGE DIMENSIONS IN INCHES

| Size | Rated Working Pressure | No. of Set Screws | Bolt Circle | D.I.        | Pipe O.D. | D<br>+.06 –.04 | F<br>+.07–.03 | C    | Weight |
|------|------------------------|-------------------|-------------|-------------|-----------|----------------|---------------|------|--------|
|      |                        |                   |             | +.06 / -.06 |           |                |               |      |        |
| 3    | 3                      | 4                 | 6.00        | 3.96        |           | 4.64           | 4.06          | 0.94 | 7      |
| 4    | 4                      | 4                 | 7.50        | 4.80        |           | 6.02           | 4.90          | 1.00 | 10     |
| 6    | 6                      | 8                 | 9.50        | 6.90        |           | 8.12           | 7.00          | 1.06 | 14     |
| 8    | 8                      | 8                 | 11.75       | 9.05        |           | 10.27          | 9.15          | 1.12 | 22     |
| 10   | 10                     | 12                | 14.25       | 11.10       |           | 12.34          | 11.20         | 1.19 | 30     |
| 12   | 12                     | 12                | 17.00       | 13.20       |           | 14.44          | 13.30         | 1.25 | 40     |

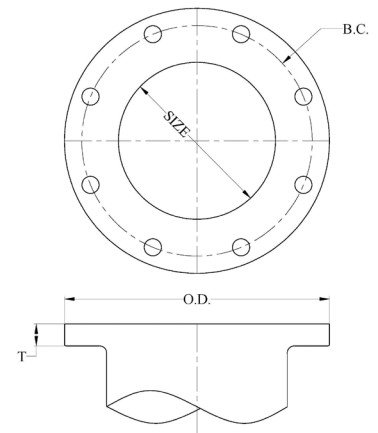
## INSTALLATION

- 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.
- 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.
- 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.
- 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".
- Snug set screws evenly, alternating 180°, tighten set screws to 80–90 ft-lb.

# 28U – ANSI/AWWA C110/A21.10 C110 FLANGE JOINT CLASS 125 PRODUCT

Revised 3/2017 (Current revisions for the noted Standards apply)

|                             |  |
|-----------------------------|--|
| <b>SIZES:</b>               | 2"–64"   |
| <b>STANDARDS:</b>           | ANSI/AWWA C110/A21.10, NFPA 13/24, ASME B16.1, 3"–12" UL listed and FM approved.   |
| <b>MATERIAL:</b>            | Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.  |
| <b>PRESSURE RATING:</b>     | *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.   |
| <b>DEFLECTION:</b>          | Deflection is "not" recommended for flange joint due to the rigidity of the joint.   |
| <b>NSF-61 &amp; NSF372:</b> | Meets all requirements, including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.  |
| <b>COATING:</b>             | Asphaltic or Primer per ANSI/AWWA C104/A21.4, Standard primer is Tnemec Pota Pox N140-1211. Contact Tyler Union for additional coating options.  |
| <b>CEMENT LINING:</b>       | Per ANSI/AWWA C104/A21.4, with double cement lining available upon request.  |
| <b>EPOXY COATING:</b>       | Fusion-bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.   |
| <b>BARE FITTINGS:</b>       | Available upon request.  |
| <b>FLANGES:</b>             | ANSI Class 125 per ASME B16.1 and ANSI/AWWA C111/A21.11.<br>Bolt holes shall straddle the center line.<br><b>NOTE:</b> Class 125 ASME B16.1 are not compatible with Class 250 Flanges.<br><b>NOTE:</b> Class 250 ASME B16.1 fittings are available upon request. |
| <b>FASTENERS:</b>           | High-strength low-alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242.  |
| <b>INSTALLATION:</b>        | Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51.   |

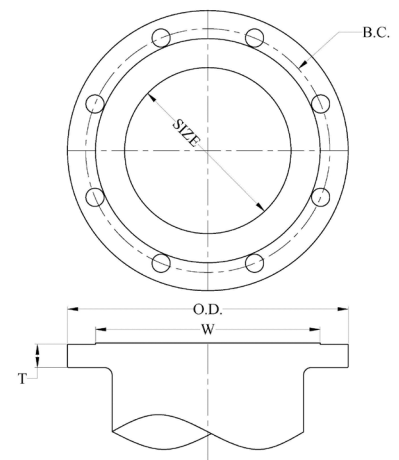


| FLANGE DETAILS IN INCHES |                  |             |               |                    |                    |               |            |
|--------------------------|------------------|-------------|---------------|--------------------|--------------------|---------------|------------|
| Size (In.)               | Diameter DI Pipe | Flange O.D. | B.C. Diameter | Flange Thickness T | Bolt Hole Diameter | Bolt Size     | Qty. Bolts |
| 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 6-1/2 | 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                       | 57.56            | 66.25       | 62.75         | 3.00               | 2.000              | 1-3/4 x 8-1/2 | 44         |
| 60                       | 61.61            | 73.00       | 69.25         | 3.12               | 2.000              | 1-3/4 x 9     | 52         |
| 64                       | 65.67            | 80.00       | 76.00         | 3.38               | 2.000              | 1-3/4 x 9     | 52         |

# 28U-B – ANSI/AWWA C110/A21.10 C110 FLANGE JOINT CLASS 250 PRODUCT

Revised 2/2017 (Current revisions for the noted Standards apply)

|                             |   |
|-----------------------------|---|
| <b>SIZES:</b>               | 2"–48"  |
| <b>STANDARDS:</b>           | ANSI/AWWA C110/A21.10, NFPA 13/24, ASME B16.1.  |
| <b>MATERIAL:</b>            | Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.   |
| <b>PRESSURE RATING:</b>     | *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.   |
| <b>DEFLECTION:</b>          | Deflection is not recommended for flange joint due to the rigidity of the joint.  |
| <b>NSF-61 &amp; NSF372:</b> | Meets all requirements, including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.   |
| <b>COATING:</b>             | Asphaltic or Primer per ANSI/AWWA C104/A21.4, Standard primer is Tnemec Pota Pox N140-1211. Contact Tyler Union for additional coating options.   |
| <b>CEMENT LINING:</b>       | Per ANSI/AWWA C104/A21.4, with double cement lining available upon request.   |
| <b>EPOXY COATING:</b>       | Fusion-bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.  |
| <b>BARE FITTINGS:</b>       | Available upon request.   |
| <b>FLANGES:</b>             | ANSI Class 250 per ASME B16.1 and ANSI/AWWA C111/A21.11. Bolt holes shall straddle the center line.<br><b>NOTE:</b> Class 250 ASME B16.1 are not compatible with Class 125 Flanges.<br><b>NOTE:</b> Class 250 ASME B16.1 fittings are available upon request. |
| <b>FASTENERS:</b>           | High-strength low-alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242.   |
| <b>INSTALLATION:</b>        | Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51.  |

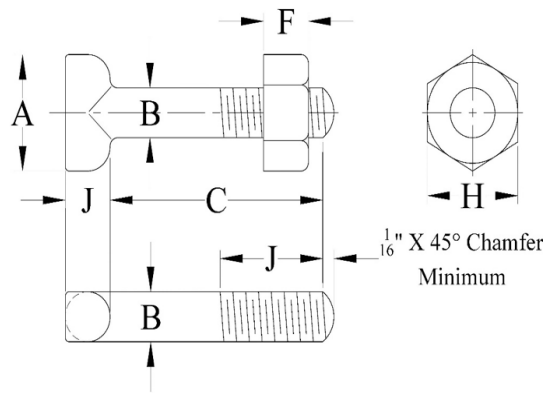


| CLASS 250 FLANGE DETAILS IN INCHES |                  |             |                   |               |                    |                    |               |            |
|------------------------------------|------------------|-------------|-------------------|---------------|--------------------|--------------------|---------------|------------|
| Size (In.)                         | Diameter DI Pipe | Flange O.D. | "W (Raised Face)" | B.C. Diameter | Flange Thickness T | Bolt Hole Diameter | Bolt Size     | Qty. Bolts |
| 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         |

# 29U – BOLTS AND NUTS FOR MECHANICAL JOINTS

Revised 2/2017 (Current revisions for the noted Standards apply)

|                   |  |
|-------------------|--|
| <b>SIZES:</b>     | 5/8 x 3 through 1-1/4 x 8-1/2.   |
| <b>STANDARDS:</b> | ANSI/AWWA C111/A21.11.   |
| <b>MATERIAL:</b>  | ASTM A242 high-strength low-alloy steel. Also available in ANSI 304 or ANSI 316 AISI Stainless Steel.  |
| <b>COATING:</b>   | Standard nuts and bolts are not coated.<br>Flouropolymer coating is available upon request. Flouropolymer is Fluorokote #1 (blue for low alloy steel). |
| <b>FASTENERS:</b> | High-strength low-alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242.  |



NOMINAL JOINT DIMENSIONS IN INCHES

| Size (In.)    | 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).

(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.

# 30U – STANDARD MECHANICAL & PUSH-ON JOINT GASKETS

**(SBR, NBR, EPDM, NEOPRENE, FKM)**

**Revised 2/2017** (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   | D1149-86          | No cracking      |
| Ozone 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.

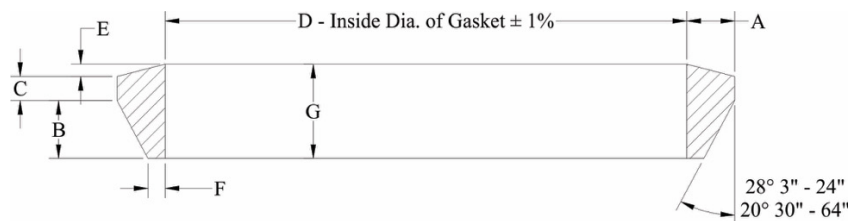
Tyler Union provides that our Mechanical and Push-On joint gaskets for potable or wastewater projects will perform as designed when selected per the chart provided and installed per AWWA C600-10.



|  |                |  |
|--|----------------|--|
| <b>SBR (STYRENE BUTADIENE RUBBER) (BUNA-S)</b><br>Not recommended for hydrocarbon service.   | 20°F to 180°F  | Suitable for water, wastewater, most moderate chemicals, wet or dry organic acids, alcohols, ketones and aldehydes.  |
| <b>EPDM (ETHYLENE PROPYLENE)</b><br>Not recommended for hydrocarbon service.   | -10°F to 250°F | Ideal for water, wastewater, ozone and strong oxidizing chemicals. May be used on steam and air within its temperature range.  |
| <b>CR (NEOPRENE)</b>   | -10°F to 200°F | Recommended for moderate chemicals and acids, oil fats, greases, many solvents and air with hydrocarbons. Will not support combustion.   |
| <b>NBR (NITRILE)(BUNA-N)(HYCAR)</b>  | -40°F to 250°F | Ideally suited for gasoline, petroleum products, hydrocarbons, water, mineral and vegetable oils.  |
| <b>*FKM (FLUOROELASTOMER)</b><br>*Check with customer service for availability.  | 10°F to 425°F  | Ideally suited for hydrocarbons, acids, vegetable oils and petroleum.  |
| <b>GASKET TYPES OFFERED:</b>   |                | (1) Mechanical Joint std. (2) Push-On Joint std. (3) Mechanical Joint DUO (4) Mechanical and Push-on Joint Transition (5) Push-on Restraining (6) Mechanical Joint Armor Tip Conductivity (7) Compact tapping Sleeve |
| <b>NOTE:</b> Unless other wise requested by the purchaser upon order placement, all gaskets provided will be of our standard SBR material. |                |  |

| MECHANICAL JOINT GASKETS/ANSI/AWWA C111/A21.11-12/*MJ TRU-LOCK GASKETS 30"-48" INCH |           |             |            |           |       |      |           |             |
|---|-----------|-------------|------------|-----------|-------|------|-----------|-------------|
| Pipe Size (In.)   | Pipe O.D. | A<br>+0.01" | B          | C         | D     | E    | F         | G           |
| **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. Manufacturer's Standard does not meet AWWA C111.



| ** MECHANICAL JOINT TRANSITION GASKET DIMENSIONS IN INCHES |              |      |      |           |      |              |              |
|--|--------------|------|------|-----------|------|--------------|--------------|
| Pipe Size (In.)  | A<br>± 0.01" | B    | C    | D<br>± 1% | E    | F<br>± 0.01" | G<br>± 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. Manufacturer's Standard does not meet AWWA C111.

# 31U – IMPORT STANDARD DUTY VALVE AND SERVICE BOXES AND COMPONENTS

Revised 3/2017 (Current revisions for the noted Standards apply)

|                      |  |
|----------------------|--|
| <b>SIZES:</b>        | 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.   |
| <b>STANDARDS:</b>    | 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. |
| <b>INSTALLATION:</b> | Per AWWA M44, Manual of Water Supply Practices.  |
| <b>COATING:</b>      | 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 PC.**

| 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 PC.**

| 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 PC.**

| 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            |

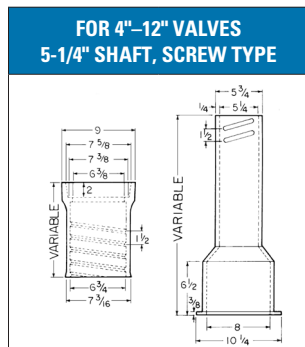
**NOTE:** Base required, order separately.

|         |            |                 |
|---------|------------|-----------------|
| T = TOP | B = BOTTOM | EXT = EXTENSION |
|---------|------------|-----------------|

# 32U – HEAVY DUTY VALVE AND SERVICE BOXES AND COMPONENTS

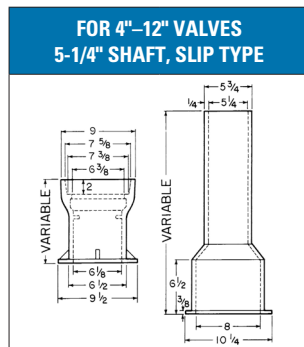
Revised 3/2017 (Current revisions for the noted Standards apply)

|                      |  |
|----------------------|--|
| <b>SIZES:</b>        | 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.   |
| <b>STANDARDS:</b>    | 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. |
| <b>INSTALLATION:</b> | Per AWWA M44, Manual of Water Supply Practices.  |
| <b>COATING:</b>      | 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.  |



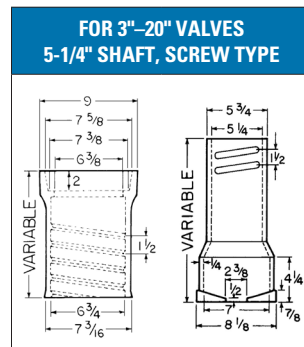
**6850 SCREW TYPE VALVE BOX  
CAST IRON – 2 PC.**

| 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            |



**6855 SLIP TYPE VALVE BOX  
CAST IRON – 2 PC.**

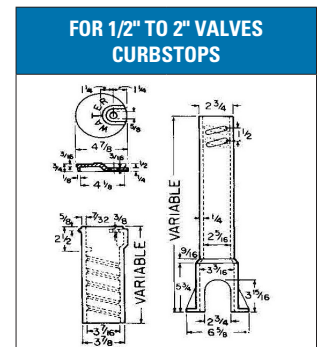
| Components          | Extension Height |
|---------------------|------------------|
| 10T + 15B           | 19–22            |
| 10T + 24B           | 27–32            |
| 16T + 24B           | 27–37            |
| 16T + 30B           | 33–43            |
| 16T + 36B           | 39–50            |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



**6860 SCREW TYPE VALVE BOX  
CAST IRON – 3 PC.**

| 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            |

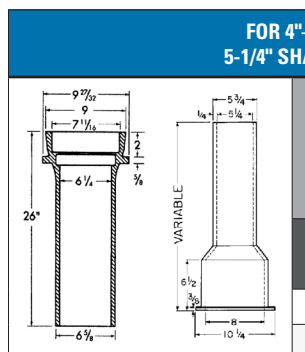
**NOTE:** Base required, order separately



**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 + 33B  | 41–64            |

**NOTE:** Enlarged base available



**7126 SLIP TYPE VALVE BOX  
CAST IRON – 2 PC.**

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

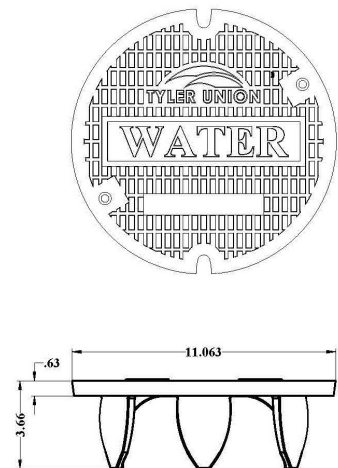
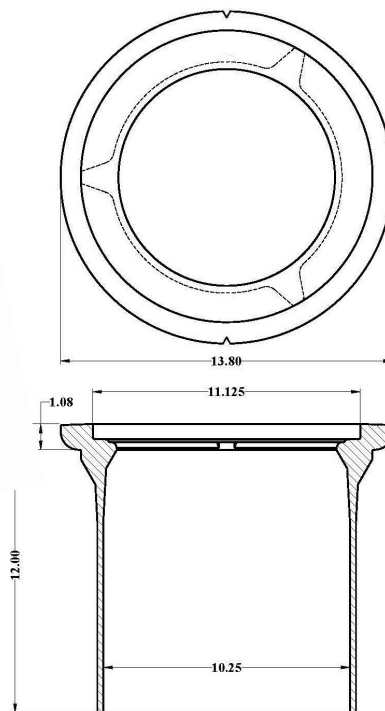
T = TOP                      B = BOTTOM                      EXT = EXTENSION



# 37U – TU G05 SERIES VALVE BOX & LID

Revised 2/2018 (Current revisions for the noted Standards apply)

|                      |  |
|----------------------|--|
| <b>STANDARDS:</b>    | 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.   |
| <b>INSTALLATION:</b> | Per AWWA M44, Manual of Water Supply Practices.  |
| <b>COATING:</b>      | 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.   |
| <b>FEATURES:</b>     | <ul style="list-style-type: none"> <li>Lid provided with longer tyne to prevent movement.</li> <li>Lids are available with "WATER", "SEWER" or blank marking.</li> <li>Specialty marking available in domestic only; contact Tyler Union for more details. Available in an assembly, or pieces sold individually.</li> <li>Straight body allows for easy assembly on AWWA C900 PVC Pipe.</li> <li>Valve Box ribs provided to prevent movement.</li> <li>No pre-cast required.</li> </ul> |
| <b>COATING:</b>      | Asphaltic or Primer per ANSI/AWWA C104/A21.4. Standard primer is Tnemec Pota Pox N140-1211. Contact Tyler Union for additional coating options.  |
| <b>WEIGHTS:</b>      | <ul style="list-style-type: none"> <li>Body: 42lbs.</li> <li>Lid: 16lbs.</li> </ul>  |





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