



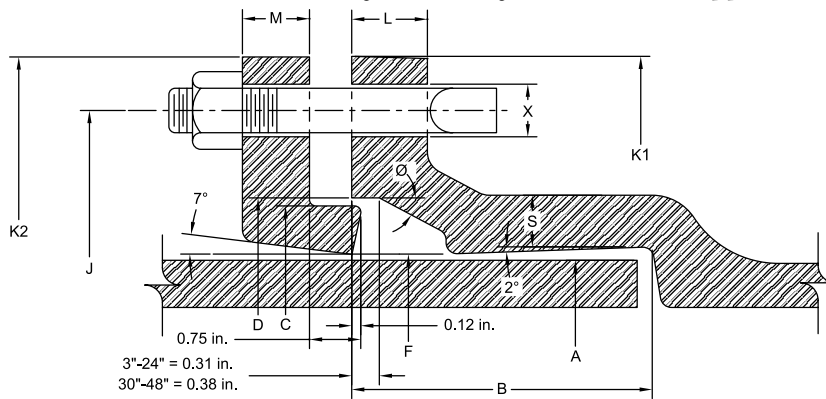
# Full Body MJ Fittings

ANSI/AWWA C110/A21.10

## 2" - 64" DUCTILE IRON MECHANICAL JOINT FULL BODY FITTINGS

### GENERAL SPECIFICATIONS

- MATERIAL:** Ductile iron per ASTM A536
- PRESSURE:** 350 PSI rating for 2" - 24" sizes, 250 PSI rating for 30" - 48" and 150 PSI for 54"-64" or as noted
- TESTING:** In accordance with ANSI/AWWA C110/A21.10
- LAYING LENGTH:** In accordance with ANSI/AWWA C110/A21.10 (fittings not listed in ANSI/AWWA have dimensions per Star design as noted in the catalog)
- WEIGHTS:** Are in pounds, unless noted otherwise and do not include accessories, cement lining and coating
- FLANGES:** Flanged ends on fittings match ANSI/AWW C110/A21.10 and ANSI B16.1 class 125 flanges.
- CEMENT LINING:** In accordance with ANSI/AWWA C104/A21.4 -- size 2" - 3" single thickness and sizes 4" - 64" double thickness. [Click here for a pressure jetting discussion](#) or visit [http://www.starpipeproducts.com/pressure\\_cleaning\\_guidelines.asp](http://www.starpipeproducts.com/pressure_cleaning_guidelines.asp).
- COATING:** Asphaltic seal coat inside and out in accordance with ANSI/AWWA C104/A21.4 and referenced in ANSI/AWWA C110/A21.10
- GASKETS:** SBR in accordance with ANSI/AWWA C111/A21.11 (see pg. 20)
- T-BOLTS/NUTS:** Low alloy steel in accordance with ANSI/AWWA C11/A21.11 (see pg. 22)
- APPROVALS:** Sizes 2" and greater are UL/ANSI/NSF Standards 61 and 372
- DIMENSIONS:** All dimensions are in inches unless noted otherwise. ([Click here for a short commentary on non-pressure sewer applications](#) or visit [http://www.starpipeproducts.com/non-pressure\\_sewer\\_applications.asp](http://www.starpipeproducts.com/non-pressure_sewer_applications.asp). Review commentary before ordering or installing fittings for this application.)
- INSTALLATION:** Per ANSI/AWWA C600 and C111 using DIP conforming to C150/C151 and PVC pipe conforming to C900/C905



| MECHANICAL JOINT DIMENSIONS |  |      |        |        |        |        |         |         |      |      |      |     |        |               |     |
|-----------------------------|--|------|--------|--------|--------|--------|---------|---------|------|------|------|-----|--------|---------------|-----|
| NOM. SIZE                   | A DIA.   | B    | C DIA. | D DIA. | F DIA. | J DIA. | K1 DIA. | K2 DIA. | L    | M    | S    | Ø   | X DIA. | BOLTS         |     |
|                             |  |      |        |        |        |        |         |         |      |      |      |     |        | SIZE          | NO. |
| 2                           | 2.50   | 2.50 | 3.39   | 3.50   | 2.61   | 4.75   | 6.25    | 6.25    | 0.75 | 0.62 | 0.44 | 28° | 3/4    | 5/8 x 3       | 2   |
| 3                           | 3.96   | 2.50 | 4.84   | 4.94   | 4.06   | 6.19   | 7.69    | 7.69    | 0.94 | 0.62 | 0.52 | 28° | 3/4    | 5/8 x 3       | 4   |
| 4                           | 4.80   | 2.50 | 5.92   | 6.02   | 4.90   | 7.50   | 9.12    | 9.12    | 1.00 | 0.75 | 0.65 | 28° | 7/8    | 3/4 x 3 1/2   | 4   |
| 6                           | 6.90   | 2.50 | 8.02   | 8.12   | 7.00   | 9.50   | 11.12   | 11.12   | 1.06 | 0.88 | 0.70 | 28° | 7/8    | 3/4 x 3 1/2   | 6   |
| 8                           | 9.05   | 2.50 | 10.17  | 10.27  | 9.15   | 11.75  | 13.37   | 13.37   | 1.12 | 1.00 | 0.75 | 28° | 7/8    | 3/4 x 4       | 6   |
| 10                          | 11.10  | 2.50 | 12.22  | 12.34  | 11.20  | 14.00  | 15.69   | 15.62   | 1.19 | 1.00 | 0.80 | 28° | 7/8    | 3/4 x 4       | 8   |
| 12                          | 13.20  | 2.50 | 14.32  | 14.44  | 13.30  | 16.25  | 17.94   | 17.88   | 1.25 | 1.00 | 0.85 | 28° | 7/8    | 3/4 x 4       | 8   |
| 14                          | 15.30  | 3.50 | 16.40  | 16.54  | 15.44  | 18.75  | 20.31   | 20.25   | 1.31 | 1.25 | 0.89 | 28° | 7/8    | 3/4 x 4 1/2   | 10  |
| 16                          | 17.40  | 3.50 | 18.50  | 18.64  | 17.54  | 21.00  | 22.56   | 22.50   | 1.38 | 1.31 | 0.97 | 28° | 7/8    | 3/4 x 4 1/2   | 12  |
| 18                          | 19.50  | 3.50 | 20.60  | 20.74  | 19.64  | 23.25  | 24.83   | 24.75   | 1.44 | 1.38 | 1.05 | 28° | 7/8    | 3/4 x 4 1/2   | 12  |
| 20                          | 21.60  | 3.50 | 22.70  | 22.84  | 21.74  | 25.50  | 27.08   | 27.00   | 1.50 | 1.44 | 1.12 | 28° | 7/8    | 3/4 x 4 1/2   | 14  |
| 24                          | 25.80  | 3.50 | 26.90  | 27.04  | 25.94  | 30.00  | 31.58   | 31.50   | 1.62 | 1.56 | 1.22 | 28° | 7/8    | 3/4 x 5       | 16  |
| 30                          | 32.00  | 4.00 | 33.29  | 33.46  | 32.17  | 36.88  | 39.12   | 39.12   | 1.81 | 2.00 | 1.50 | 20° | 1 1/8  | 1 x 6         | 20  |
| 36                          | 38.30  | 4.00 | 39.59  | 39.76  | 38.47  | 43.75  | 46.00   | 46.00   | 2.00 | 2.00 | 1.80 | 20° | 1 1/8  | 1 x 6         | 24  |
| 42                          | 44.50  | 4.00 | 45.79  | 45.96  | 44.67  | 50.62  | 53.12   | 53.12   | 2.00 | 2.00 | 1.95 | 20° | 1 3/8  | 1 1/4 x 6 1/2 | 28  |
| 48                          | 50.80  | 4.00 | 52.09  | 52.26  | 50.97  | 57.50  | 60.00   | 60.00   | 2.00 | 2.00 | 2.20 | 20° | 1 3/8  | 1 1/4 x 6 1/2 | 32  |
| 54                          | { Fittings & Dimensions Available On Request } |      |        |        |        |        |         |         |      |      |      |     |        |               |     |
| 60                          |  |      |        |        |        |        |         |         |      |      |      |     |        |               |     |
| 64                          |  |      |        |        |        |        |         |         |      |      |      |     |        |               |     |

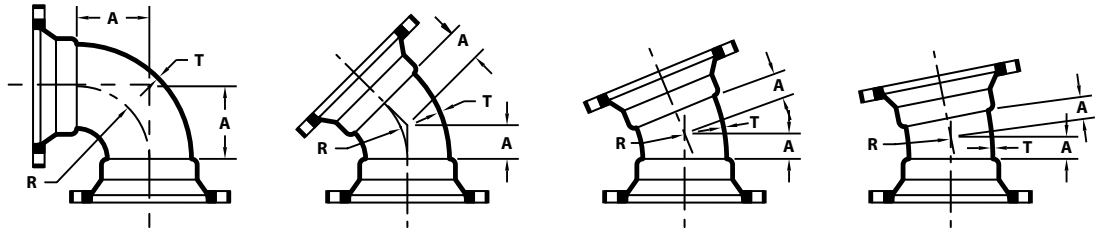
STAR<sup>®</sup> PIPE PRODUCTS



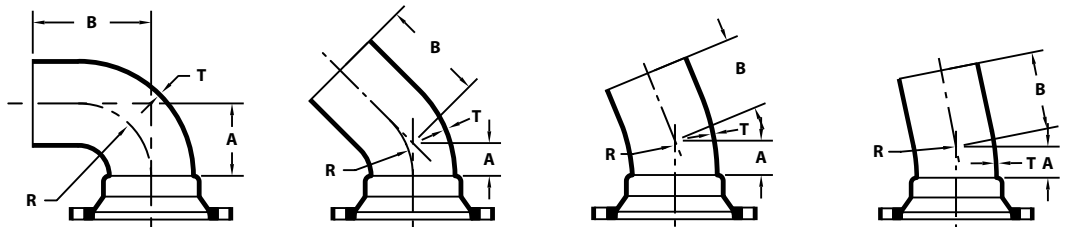


# Full Body MJ Fittings

ANSI/AWWA C110/A21.10



| MJ x MJ BENDS |      | 90° MJ x MJ BENDS (1/4) |       |           | 45° MJ x MJ BENDS (1/8) |       |           | 22 1/2° MJ x MJ BENDS (1/16) |        |           | 11 1/4° MJ x MJ BENDS (1/32) |        |           |
|---------------|------|-------------------------|-------|-----------|-------------------------|-------|-----------|------------------------------|--------|-----------|------------------------------|--------|-----------|
| NOM. SIZE     | T    | A                       | R     | WT (LBS.) | A                       | R     | WT (LBS.) | A                            | R      | WT (LBS.) | A                            | R      | WT (LBS.) |
| 2             | 0.39 | 3.25                    | 2.25  | 14        | 1.80                    | 1.96  | 13        | 1.80                         | 4.02   | 13        | 1.80                         | 8.12   | 13        |
| 3             | 0.48 | 5.50                    | 4.00  | 35        | 3.00                    | 3.62  | 30        | 3.00                         | 7.56   | 30        | 3.00                         | 15.25  | 30        |
| 4             | 0.52 | 6.50                    | 4.50  | 55        | 4.00                    | 4.81  | 50        | 4.00                         | 10.06  | 50        | 4.00                         | 20.31  | 50        |
| 6             | 0.55 | 8.00                    | 6.00  | 85        | 5.00                    | 7.25  | 75        | 5.00                         | 15.06  | 75        | 5.00                         | 30.50  | 75        |
| 8             | 0.60 | 9.00                    | 7.00  | 125       | 5.50                    | 8.44  | 110       | 5.50                         | 17.62  | 110       | 5.50                         | 35.50  | 110       |
| 10            | 0.68 | 11.00                   | 9.00  | 190       | 6.50                    | 10.88 | 155       | 6.50                         | 22.62  | 160       | 6.50                         | 45.69  | 160       |
| 12            | 0.75 | 12.00                   | 10.00 | 255       | 7.50                    | 13.25 | 215       | 7.50                         | 27.62  | 220       | 7.50                         | 55.81  | 220       |
| 14            | 0.66 | 14.00                   | 11.50 | 340       | 7.50                    | 12.06 | 270       | 7.50                         | 25.12  | 275       | 7.50                         | 50.75  | 275       |
| 16            | 0.70 | 15.00                   | 12.50 | 430       | 8.00                    | 13.25 | 340       | 8.00                         | 27.62  | 345       | 8.00                         | 55.81  | 345       |
| 18            | 0.75 | 16.50                   | 14.00 | 545       | 8.50                    | 14.50 | 420       | 8.50                         | 30.19  | 430       | 8.50                         | 60.94  | 430       |
| 20            | 0.80 | 18.00                   | 15.50 | 680       | 9.50                    | 16.88 | 530       | 9.50                         | 35.19  | 535       | 9.50                         | 71.06  | 540       |
| 24            | 0.89 | 22.00                   | 18.50 | 1025      | 11.00                   | 18.12 | 755       | 11.00                        | 37.69  | 765       | 11.00                        | 76.12  | 770       |
| 30            | 1.03 | 25.00                   | 21.50 | 1690      | 15.00                   | 27.75 | 1380      | 15.00                        | 57.81  | 1400      | 15.00                        | 116.75 | 1410      |
| 36            | 1.15 | 28.00                   | 24.50 | 2475      | 18.00                   | 35.00 | 2095      | 18.00                        | 72.88  | 2135      | 18.00                        | 147.25 | 2145      |
| 42            | 1.28 | 31.00                   | 27.50 | 3410      | 21.00                   | 42.25 | 2955      | 21.00                        | 88.00  | 3020      | 21.00                        | 177.69 | 3035      |
| 48            | 1.42 | 34.00                   | 30.50 | 4595      | 24.00                   | 49.50 | 4080      | 24.00                        | 103.06 | 4170      | 24.00                        | 208.12 | 4190      |



| MJ x PE BENDS |      | 90° MJ x PE BENDS (1/4) |       |       |           | 45° MJ x PE BENDS (1/8) |       |       |           | 22 1/2° MJ x PE BENDS (1/16) |       |       |           | 11 1/4° MJ x PE BENDS (1/32) |       |        |           |
|---------------|------|-------------------------|-------|-------|-----------|-------------------------|-------|-------|-----------|------------------------------|-------|-------|-----------|------------------------------|-------|--------|-----------|
| NOM. SIZE     | T    | A                       | B     | R     | WT (LBS.) | A                       | B     | R     | WT (LBS.) | A                            | B     | R     | WT (LBS.) | A                            | B     | R      | WT (LBS.) |
| 3             | 0.48 | 5.50                    | 13.50 | 4.00  | 35        | 3.00                    | 11.00 | 3.62  | 30        | 3.00                         | 11.00 | 7.56  | 30        | 3.00                         | 11.00 | 15.25  | 30        |
| 4             | 0.52 | 6.50                    | 14.50 | 4.50  | 50        | 4.00                    | 12.00 | 4.81  | 45        | 4.00                         | 12.00 | 10.06 | 45        | 4.00                         | 12.00 | 20.31  | 45        |
| 6             | 0.55 | 8.00                    | 16.00 | 6.00  | 80        | 5.00                    | 13.00 | 7.25  | 70        | 5.00                         | 13.00 | 15.06 | 70        | 5.00                         | 13.00 | 30.50  | 70        |
| 8             | 0.60 | 9.00                    | 17.00 | 7.00  | 120       | 5.50                    | 13.50 | 8.44  | 105       | 5.50                         | 13.50 | 17.62 | 105       | 5.50                         | 13.50 | 35.50  | 105       |
| 10            | 0.68 | 11.00                   | 19.00 | 9.00  | 190       | 6.50                    | 14.50 | 10.88 | 155       | 6.50                         | 14.50 | 22.62 | 160       | 6.50                         | 14.50 | 45.69  | 160       |
| 12            | 0.75 | 12.00                   | 20.00 | 10.00 | 255       | 7.50                    | 15.50 | 13.25 | 215       | 7.50                         | 15.50 | 27.62 | 220       | 7.50                         | 15.50 | 55.81  | 220       |
| 14            | 0.66 | 14.00                   | 22.00 | 11.50 | 325       | 7.50                    | 15.50 | 12.06 | 255       | 7.50                         | 15.50 | 25.12 | 260       | 7.50                         | 15.50 | 50.75  | 260       |
| 16            | 0.70 | 15.00                   | 23.00 | 12.50 | 410       | 8.00                    | 16.00 | 13.25 | 320       | 8.00                         | 16.00 | 27.62 | 325       | 8.00                         | 16.00 | 55.81  | 325       |
| 18            | 0.75 | 16.50                   | 24.50 | 14.00 | 517       | 8.50                    | 16.50 | 14.50 | 395       | 8.50                         | 16.50 | 30.19 | 401       | 8.50                         | 16.50 | 60.94  | 402       |
| 20            | 0.80 | 18.00                   | 26.00 | 15.50 | 644       | 9.50                    | 17.50 | 16.88 | 493       | 9.50                         | 17.50 | 35.19 | 501       | 9.50                         | 17.50 | 71.06  | 502       |
| 24            | 0.89 | 22.00                   | 30.00 | 18.50 | 985       | 11.00                   | 19.00 | 18.12 | 715       | 11.00                        | 19.00 | 37.69 | 725       | 11.00                        | 19.00 | 76.12  | 730       |
| 30            | 1.03 | 25.00                   | 33.00 | 21.50 | 1585      | 15.00                   | 23.00 | 27.75 | 1275      | 15.00                        | 23.00 | 57.81 | 1295      | 15.00                        | 23.00 | 116.75 | 1305      |
| 36            | 1.15 | 28.00                   | 36.00 | 24.50 | 2310      | 18.00                   | 26.00 | 35.00 | 1930      | 18.00                        | 26.00 | 72.88 | 1970      | 18.00                        | 26.00 | 147.25 | 1980      |
| 42            | 1.28 | 31.00                   | 39.00 | 27.50 | 3200      | 21.00                   | 29.00 | 42.25 | 2745      | 21.00                        | 29.00 | 88.00 | 2810      | 21.00                        | 29.00 | 177.69 | 2825      |

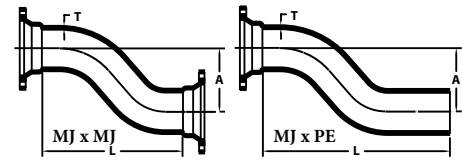
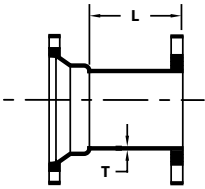
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STAR<sup>®</sup> PIPE PRODUCTS



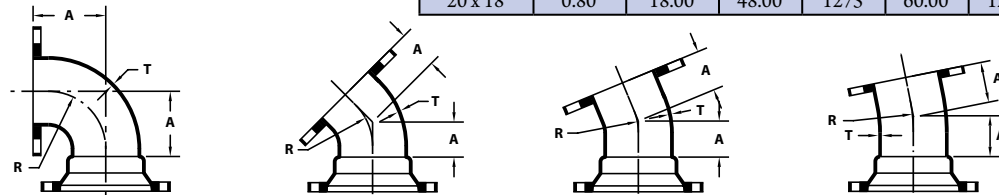
# Full Body MJ Fittings

ANSI/AWWA C110/A21.10



| MJ x FLANGE ADAPTER |      |       |           |
|---------------------|------|-------|-----------|
| NOM. SIZE           | T    | L     | WT (LBS.) |
| 3                   | 0.48 | 8.00  | 30        |
| 4                   | 0.52 | 8.00  | 40        |
| 6                   | 0.55 | 8.00  | 60        |
| 8                   | 0.60 | 8.00  | 85        |
| 10                  | 0.68 | 8.00  | 115       |
| 12                  | 0.75 | 8.00  | 155       |
| 14                  | 0.66 | 8.00  | 195       |
| 16                  | 0.70 | 8.00  | 240       |
| 18                  | 0.75 | 8.00  | 280       |
| 20                  | 0.80 | 8.00  | 340       |
| 24                  | 0.89 | 8.00  | 455       |
| 30                  | 1.03 | 10.00 | 760       |
| 36                  | 1.15 | 10.00 | 1070      |

| NOM. SIZE | MJ OFFSETS |       | MJ x MJ |           | MJ x PE |           |
|-----------|------------|-------|---------|-----------|---------|-----------|
|           | T          | A     | L       | WT (LBS.) | L       | WT (LBS.) |
| 4 x 6     | 0.52       | 6.00  | 19.00   | 75        | 27.00   | 70        |
| 4 x 12    | 0.52       | 12.00 | 22.00   | 85        | 30.00   | 80        |
| 4 x 18    | 0.52       | 18.00 | 30.00   | 105       | 38.00   | 100       |
| 4 x 24    | 0.52       | 24.00 | 30.00   | 125       | 38.00   | 115       |
| 6 x 6     | 0.55       | 6.00  | 20.00   | 110       | 28.00   | 105       |
| 6 x 12    | 0.55       | 12.00 | 26.00   | 135       | 34.00   | 130       |
| 6 x 18    | 0.55       | 18.00 | 33.00   | 165       | 41.00   | 160       |
| 6 x 24    | 0.55       | 24.00 | 33.00   | 195       | 41.00   | 195       |
| 8 x 6     | 0.60       | 6.00  | 21.00   | 160       | 29.00   | 155       |
| 8 x 12    | 0.60       | 12.00 | 28.00   | 200       | 36.00   | 195       |
| 8 x 18    | 0.60       | 18.00 | 35.00   | 245       | 43.00   | 240       |
| 8 x 24    | 0.60       | 24.00 | 36.00   | 280       | 44.00   | 275       |
| 10 x 12   | 0.68       | 12.00 | 30.00   | 250       | 38.00   | 280       |
| 10 x 18   | 0.68       | 18.00 | 38.00   | 340       | 46.00   | 340       |
| 10 x 24   | 0.68       | 24.00 | 38.00   | 420       | 46.00   | 420       |
| 12 x 12   | 0.75       | 12.00 | 37.00   | 420       | 45.00   | 420       |
| 12 x 18   | 0.75       | 18.00 | 48.00   | 520       | 56.00   | 520       |
| 12 x 24   | 0.75       | 24.00 | 48.00   | 640       | 56.00   | 630       |
| 16 x 12   | 0.70       | 12.00 | 40.00   | 600       | 48.00   | 580       |
| 16 x 18   | 0.70       | 18.00 | 50.00   | 710       | 58.00   | 690       |
| 20 x 12   | 0.80       | 12.00 | 40.00   | 1025      | 48.00   | 1015      |
| 20 x 18   | 0.80       | 18.00 | 48.00   | 1275      | 60.00   | 1265      |



| MJ x FE BENDS |      | 90° MJ x FE BENDS (1/4) |       |           | 45° MJ x FE BENDS (1/8) |       |           | 22 1/2° MJ x FE BENDS (1/16) |       |           | 11 1/4° MJ x FE BENDS (1/32) |       |           |
|---------------|------|-------------------------|-------|-----------|-------------------------|-------|-----------|------------------------------|-------|-----------|------------------------------|-------|-----------|
| NOM. SIZE     | T    | A                       | R     | WT (LBS.) | A                       | R     | WT (LBS.) | A                            | R     | WT (LBS.) | A                            | R     | WT (LBS.) |
| 4             | 0.52 | 6.50                    | 4.50  | 38        | 4.00                    | 4.81  | 45        | 4.00                         | 10.06 | 45        | 4.00                         | 20.31 | 45        |
| 6             | 0.55 | 8.00                    | 6.00  | 75        | 5.00                    | 7.25  | 69        | 5.00                         | 15.06 | 69        | 5.00                         | 30.50 | 69        |
| 8             | 0.60 | 9.00                    | 7.00  | 115       | 5.50                    | 8.44  | 105       | 5.50                         | 17.62 | 105       | 5.50                         | 35.50 | 105       |
| 10            | 0.68 | 11.00                   | 9.00  | 177       | 6.50                    | 10.88 | 155       | 6.50                         | 22.62 | 155       | 6.50                         | 45.69 | 155       |
| 12            | 0.75 | 12.00                   | 10.00 | 246       | 7.50                    | 13.25 | 215       | 7.50                         | 27.62 | 215       | 7.50                         | 55.81 | 215       |
| 14            | 0.66 | -                       | -     | -         | 7.50                    | 12.06 | 245       | -                            | -     | -         | -                            | -     | -         |
| 16            | 0.70 | 15.00                   | 12.50 | 465       | 8.00                    | 13.25 | 360       | 8.00                         | 27.62 | 360       | 8.00                         | 55.81 | 360       |
| 18            | 0.75 | 16.50                   | 14.00 | 577       | 8.50                    | 14.50 | 422       | 8.50                         | 30.19 | 422       | 8.50                         | 60.94 | 422       |
| 20            | 0.80 | 18.00                   | 15.50 | 745       | 9.50                    | 16.88 | 543       | 9.50                         | 35.19 | 575       | 9.50                         | 71.06 | 575       |
| 24            | 0.89 | 22.00                   | 18.50 | 1150      | 11.00                   | 18.12 | 800       | 11.00                        | 37.69 | 800       | 11.00                        | 76.12 | 800       |
| 30            | 1.03 | 25.00                   | 21.50 | 1559      | -                       | -     | -         | 15.00                        | 57.81 | 1270      | -                            | -     | -         |
| 36            | 1.15 | 28.00                   | 24.50 | 2318      | -                       | -     | -         | -                            | -     | -         | -                            | -     | -         |
| 48            | 1.42 | 34.00                   | 30.50 | 4378      | -                       | -     | -         | -                            | -     | -         | -                            | -     | -         |

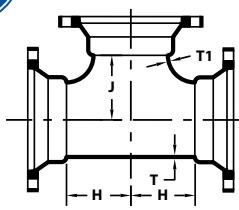
STAR<sup>®</sup> PIPE PRODUCTS





# Full Body MJ Fittings

ANSI/AWWA C110/A21.10



| MJ x MJ TEES |      |      |       |       |           |
|--------------|------|------|-------|-------|-----------|
| NOM. SIZE    | T    | T1   | H     | J     | WT (LBS.) |
| 2 x 2        | 0.39 | 0.39 | 3.25  | 3.25  | 20        |
| 3 x 2        | 0.48 | 0.39 | 3.50  | 3.50  | 43        |
| 3 x 3        | 0.48 | 0.48 | 5.50  | 5.50  | 55        |
| 4 x 2        | 0.52 | 0.39 | 4.00  | 4.00  | 57        |
| 4 x 3        | 0.52 | 0.48 | 6.50  | 6.50  | 75        |
| 4 x 4        | 0.52 | 0.52 | 6.50  | 6.50  | 80        |
| 4 x 4 x 6    | 0.52 | 0.55 | 8.00  | 8.00  | 115       |
| 6 x 2        | 0.55 | 0.39 | 8.00  | 8.00  | 78        |
| 6 x 3        | 0.55 | 0.48 | 8.00  | 8.00  | 110       |
| 6 x 4        | 0.55 | 0.52 | 8.00  | 8.00  | 115       |
| 6 x 6        | 0.55 | 0.55 | 8.00  | 8.00  | 125       |
| 6 x 6 x 8    | 0.55 | 0.60 | 9.00  | 9.00  | 185       |
| 8 x 2        | 0.60 | 0.39 | 9.00  | 9.00  | 125       |
| 8 x 3        | 0.60 | 0.48 | 9.00  | 9.00  | 155       |
| 8 x 4        | 0.60 | 0.52 | 9.00  | 9.00  | 165       |
| 8 x 6        | 0.60 | 0.55 | 9.00  | 9.00  | 175       |
| 8 x 8        | 0.60 | 0.60 | 9.00  | 9.00  | 185       |
| 8 x 8 x 12   | 0.60 | 0.75 | 12.00 | 12.00 | 280       |
| 10 x 4       | 0.68 | 0.52 | 11.00 | 11.00 | 235       |
| 10 x 6       | 0.68 | 0.55 | 11.00 | 11.00 | 250       |
| 10 x 8       | 0.68 | 0.60 | 11.00 | 11.00 | 260       |
| 10 x 10      | 0.80 | 0.80 | 11.00 | 11.00 | 310       |
| 12 x 4       | 0.75 | 0.52 | 12.00 | 12.00 | 315       |
| 12 x 6       | 0.75 | 0.55 | 12.00 | 12.00 | 325       |
| 12 x 8       | 0.75 | 0.60 | 12.00 | 12.00 | 340       |
| 12 x 10      | 0.87 | 0.80 | 12.00 | 12.00 | 390       |
| 12 x 12      | 0.87 | 0.87 | 12.00 | 12.00 | 410       |
| 14 x 6       | 0.66 | 0.55 | 14.00 | 14.00 | 435       |
| 16 x 4       | 0.70 | 0.52 | 15.00 | 15.00 | 525       |
| 16 x 6       | 0.70 | 0.55 | 15.00 | 15.00 | 540       |
| 16 x 8       | 0.70 | 0.60 | 15.00 | 15.00 | 550       |
| 16 x 10      | 0.70 | 0.68 | 15.00 | 15.00 | 570       |
| 16 x 12      | 0.70 | 0.75 | 15.00 | 15.00 | 590       |
| 16 x 16      | 0.70 | 0.70 | 15.00 | 15.00 | 650       |
| 18 x 6       | 0.75 | 0.55 | 13.00 | 15.50 | 590       |
| 18 x 8       | 0.75 | 0.60 | 13.00 | 15.50 | 605       |
| 18 x 12      | 0.75 | 0.75 | 13.00 | 15.50 | 640       |
| 18 x 18      | 0.75 | 0.75 | 16.50 | 16.50 | 820       |
| 20 x 6       | 0.80 | 0.55 | 14.00 | 17.00 | 725       |
| 20 x 8       | 0.80 | 0.60 | 14.00 | 17.00 | 735       |
| 20 X 10      | 0.80 | 0.68 | 14.00 | 17.00 | 755       |
| 20 x 12      | 0.80 | 0.75 | 14.00 | 17.00 | 775       |
| 20 x 16      | 0.80 | 0.70 | 18.00 | 18.00 | 945       |
| 20 x 20      | 0.80 | 0.80 | 18.00 | 18.00 | 1020      |
| 24 x 6       | 0.89 | 0.55 | 15.00 | 19.00 | 985       |
| 24 x 8       | 0.89 | 0.60 | 15.00 | 19.00 | 1000      |
| 24 x 10      | 0.89 | 0.68 | 15.00 | 19.00 | 958       |

| MJ x MJ TEES (Con't) |      |      |       |       |           |
|----------------------|------|------|-------|-------|-----------|
| NOM. SIZE            | T    | T1   | H     | J     | WT (LBS.) |
| 24 x 12              | 0.89 | 0.75 | 15.00 | 19.00 | 1030      |
| 24 x 14              | 0.89 | 0.66 | 15.00 | 19.00 | 1055      |
| 24 x 16              | 0.89 | 0.70 | 15.00 | 19.00 | 1075      |
| 24 x 18              | 0.89 | 0.75 | 22.00 | 22.00 | 1400      |
| 24 x 20              | 0.89 | 0.80 | 22.00 | 22.00 | 1450      |
| 24 x 24              | 0.89 | 0.89 | 22.00 | 22.00 | 1535      |
| 30 x 6               | 1.03 | 0.55 | 18.00 | 23.00 | 1730      |
| 30 x 8               | 1.03 | 0.60 | 18.00 | 23.00 | 1745      |
| 30 x 10              | 1.03 | 0.68 | 18.00 | 23.00 | 1760      |
| 30 x 12              | 1.03 | 0.75 | 18.00 | 23.00 | 1780      |
| 30 x 14              | 1.03 | 0.66 | 18.00 | 23.00 | 1648      |
| 30 x 16              | 1.03 | 0.70 | 18.00 | 23.00 | 1820      |
| 30 x 18              | 1.03 | 0.75 | 18.00 | 23.00 | 1845      |
| 30 x 20              | 1.03 | 0.80 | 18.00 | 23.00 | 1875      |
| 30 x 24              | 1.03 | 0.89 | 25.00 | 25.00 | 2400      |
| 30 x 30              | 1.03 | 1.03 | 25.00 | 25.00 | 2595      |
| 36 x 6               | 1.15 | 0.55 | 20.00 | 26.00 | 2500      |
| 36 x 8               | 1.15 | 0.60 | 20.00 | 26.00 | 2520      |
| 36 x 10              | 1.15 | 0.68 | 20.00 | 26.00 | 2535      |
| 36 x 12              | 1.15 | 0.75 | 20.00 | 26.00 | 2550      |
| 36 x 14              | 1.15 | 0.66 | 20.00 | 26.00 | 2570      |
| 36 x 16              | 1.15 | 0.70 | 20.00 | 26.00 | 2585      |
| 36 x 18              | 1.15 | 0.75 | 20.00 | 26.00 | 2610      |
| 36 x 20              | 1.15 | 0.80 | 20.00 | 26.00 | 2635      |
| 36 x 24              | 1.15 | 0.89 | 20.00 | 26.00 | 2690      |
| 36 x 30              | 1.15 | 1.03 | 28.00 | 28.00 | 3545      |
| 36 x 36              | 1.15 | 1.15 | 28.00 | 28.00 | 3745      |
| 42 x 12              | 1.28 | 0.75 | 23.00 | 30.00 | 3555      |
| 42 x 14              | 1.28 | 0.66 | 23.00 | 30.00 | 3575      |
| 42 x 16              | 1.28 | 0.70 | 23.00 | 30.00 | 3595      |
| 42 x 18              | 1.28 | 0.75 | 23.00 | 30.00 | 3615      |
| 42 x 20              | 1.28 | 0.80 | 23.00 | 30.00 | 3640      |
| 42 x 24              | 1.28 | 0.89 | 23.00 | 30.00 | 3690      |
| 42 x 30              | 1.28 | 1.03 | 31.00 | 31.00 | 4650      |
| 42 x 36              | 1.78 | 1.58 | 31.00 | 31.00 | 6075      |
| 42 x 42              | 1.78 | 1.78 | 31.00 | 31.00 | 6320      |
| 48 x 12              | 1.42 | 0.75 | 26.00 | 34.00 | 4870      |
| 48 x 14              | 1.42 | 0.66 | 26.00 | 34.00 | 4885      |
| 48 x 16              | 1.42 | 0.70 | 26.00 | 34.00 | 4905      |
| 48 x 18              | 1.42 | 0.75 | 26.00 | 34.00 | 4925      |
| 48 x 20              | 1.42 | 0.80 | 26.00 | 34.00 | 4950      |
| 48 x 24              | 1.42 | 0.89 | 26.00 | 34.00 | 4995      |
| 48 x 30              | 1.42 | 1.03 | 26.00 | 34.00 | 5140      |
| 48 x 36              | 1.42 | 1.15 | 34.00 | 34.00 | 6280      |
| 48 x 42              | 1.96 | 1.78 | 34.00 | 34.00 | 8130      |
| 48 x 48              | 1.96 | 1.96 | 34.00 | 34.00 | 8420      |
| 48 x 36 x 48         | 1.42 | 1.15 | 34.00 | 34.00 | 6275      |

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(Con't)

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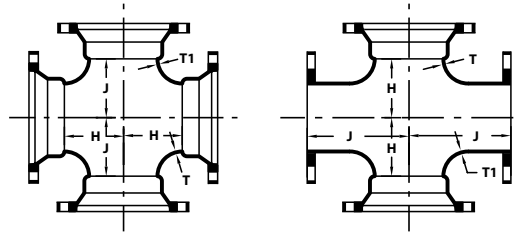
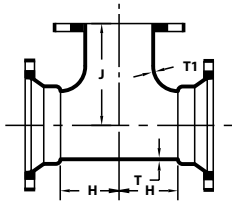


Certified to ISO 9001:2015



# Full Body MJ Fittings

ANSI/AWWA C110/A21.10



| MJ x FE TEES |      |      |       |       |           |
|--------------|------|------|-------|-------|-----------|
| NOM. SIZE    | T    | T1   | H     | J     | WT (LBS.) |
|              |      |      |       |       |           |
| 4 x 4        | 0.52 | 0.52 | 6.50  | 6.50  | 74        |
| 4 x 4 x 6    | 0.52 | 0.55 | 8.00  | 8.00  | 103       |
| 6 x 4        | 0.55 | 0.52 | 8.00  | 8.00  | 109       |
| 6 x 6        | 0.55 | 0.55 | 8.00  | 8.00  | 115       |
| 8 x 4        | 0.60 | 0.52 | 9.00  | 9.00  | 159       |
| 8 x 6        | 0.60 | 0.55 | 9.00  | 9.00  | 165       |
| 8 x 8        | 0.60 | 0.60 | 9.00  | 9.00  | 175       |
| 10 x 4       | 0.68 | 0.52 | 11.00 | 11.00 | 231       |
| 10 x 6       | 0.68 | 0.55 | 11.00 | 11.00 | 237       |
| 10 x 8       | 0.68 | 0.60 | 11.00 | 11.00 | 249       |
| 12 x 4       | 0.75 | 0.52 | 12.00 | 12.00 | 309       |
| 12 x 6       | 0.75 | 0.55 | 12.00 | 12.00 | 315       |
| 12 x 8       | 0.75 | 0.60 | 12.00 | 12.00 | 330       |
| 12 x 10      | 0.87 | 0.68 | 12.00 | 12.00 | 360       |
| 12 x 12      | 0.87 | 0.87 | 12.00 | 12.00 | 401       |
| 14 x 6       | 0.66 | 0.55 | 14.00 | 14.00 | 485       |
| 14 x 14      | 0.66 | 0.66 | 14.00 | 14.00 | 465       |
| 16 x 4       | 0.70 | 0.52 | 15.00 | 15.00 | 575       |
| 16 x 6       | 0.70 | 0.55 | 15.00 | 15.00 | 605       |
| 16 x 8       | 0.70 | 0.60 | 15.00 | 15.00 | 615       |
| 16 x 12      | 0.70 | 0.75 | 15.00 | 15.00 | 651       |
| 16 x 16      | 0.70 | 0.70 | 15.00 | 15.00 | 596       |
| 18 x 6       | 0.75 | 0.55 | 13.00 | 15.50 | 665       |
| 18 x 8       | 0.75 | 0.60 | 13.00 | 15.50 | 675       |
| 18 x 12      | 0.75 | 0.75 | 13.00 | 15.50 | 705       |
| 18 x 18      | 0.75 | 0.75 | 16.50 | 16.50 | 915       |
| 20 x 6       | 0.80 | 0.55 | 14.00 | 17.00 | 677       |
| 20 x 8       | 0.80 | 0.60 | 14.00 | 17.00 | 688       |
| 20 x 12      | 0.80 | 0.75 | 14.00 | 17.00 | 722       |
| 20 x 20      | 0.80 | 0.80 | 18.00 | 18.00 | 1165      |
| 24 x 6       | 0.89 | 0.55 | 15.00 | 19.00 | 1125      |
| 24 x 8       | 0.89 | 0.60 | 15.00 | 19.00 | 1140      |
| 24 x 12      | 0.89 | 0.75 | 15.00 | 19.00 | 1165      |
| 24 x 16      | 0.89 | 0.70 | 15.00 | 19.00 | 988       |
| 24 x 24      | 0.89 | 0.89 | 22.00 | 22.00 | 1795      |
| 30 x 10      | 1.03 | 0.68 | 18.00 | 23.00 | 1606      |
| 30 x 12      | 1.03 | 0.75 | 18.00 | 23.00 | 1626      |
| 30 x 30      | 1.03 | 1.03 | 25.00 | 25.00 | 3080      |
| 36 x 6       | 1.15 | 0.55 | 20.00 | 26.00 | 2325      |
| 36 x 10      | 1.15 | 0.68 | 20.00 | 26.00 | 2345      |
| 36 x 12      | 1.15 | 0.75 | 20.00 | 26.00 | 2361      |
| 36 x 16      | 1.15 | 0.70 | 20.00 | 26.00 | 2373      |
| 36 x 24      | 1.15 | 0.89 | 20.00 | 26.00 | 2432      |
| 36 x 30      | 1.15 | 1.03 | 28.00 | 28.00 | 3133      |
| 48 x 24      | 1.42 | 0.89 | 26.00 | 34.00 | 4965      |

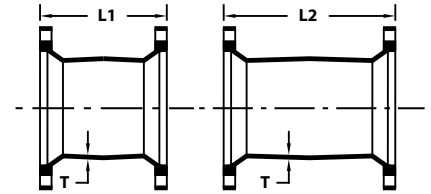
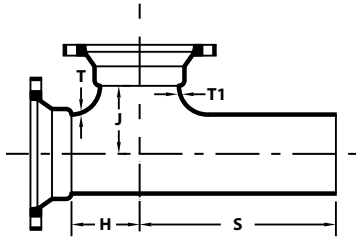
| MJ x MJ / MJ x FE CROSSES |      |      |       |       |           |         |  |
|---------------------------|------|------|-------|-------|-----------|---------|--|
| NOM. SIZE                 | T    | T1   | H     | J     | WT (LBS.) |         |  |
|                           |      |      |       |       | MJ X MJ   | MJ X FE |  |
| 6 x 4                     | 0.55 | 0.52 | 8.00  | 8.00  | 140       | ---     |  |
| 6 x 6                     | 0.55 | 0.55 | 8.00  | 8.00  | 160       | 140     |  |
| 8 x 4                     | 0.60 | 0.52 | 9.00  | 9.00  | 185       | 176     |  |
| 8 x 6                     | 0.60 | 0.55 | 9.00  | 9.00  | 205       | 185     |  |
| 8 x 8                     | 0.60 | 0.60 | 9.00  | 9.00  | 235       | 215     |  |
| 10 x 6                    | 0.68 | 0.55 | 11.00 | 11.00 | 285       | ---     |  |
| 10 x 8                    | 0.68 | 0.60 | 11.00 | 11.00 | 310       | ---     |  |
| 10 x 10                   | 0.80 | 0.80 | 11.00 | 11.00 | 380       | 354     |  |
| 12 x 4                    | 0.75 | 0.52 | 12.00 | 12.00 | 340       | ---     |  |
| 12 x 6                    | 0.75 | 0.55 | 12.00 | 12.00 | 360       | 340     |  |
| 12 x 8                    | 0.75 | 0.60 | 12.00 | 12.00 | 385       | 365     |  |
| 12 x 12                   | 0.87 | 0.87 | 12.00 | 12.00 | 495       | 487     |  |
| 14 x 8                    | 0.66 | 0.60 | 14.00 | 14.00 | 500       | ---     |  |
| 14 x 14                   | 0.66 | 0.66 | 14.00 | 14.00 | 635       | ---     |  |
| 16 x 6                    | 0.70 | 0.55 | 15.00 | 15.00 | 575       | ---     |  |
| 16 x 8                    | 0.70 | 0.60 | 15.00 | 15.00 | 605       | 585     |  |
| 16 x 16                   | 0.70 | 0.70 | 15.00 | 15.00 | 790       | 770     |  |
| 18 x 8                    | 0.75 | 0.60 | 13.00 | 15.50 | 655       | ---     |  |
| 18 x 10                   | 0.75 | 0.68 | 13.00 | 15.50 | 685       | ---     |  |
| 18 x 12                   | 0.75 | 0.75 | 13.00 | 15.50 | 725       | ---     |  |
| 18 x 18                   | 0.75 | 0.75 | 16.50 | 16.50 | 995       | ---     |  |
| 20 x 8                    | 0.80 | 0.60 | 14.00 | 17.00 | 790       | ---     |  |
| 20 x 12                   | 0.80 | 0.75 | 14.00 | 17.00 | 860       | ---     |  |
| 20 x 16                   | 0.80 | 0.70 | 18.00 | 18.00 | 1085      | ---     |  |
| 20 x 20                   | 0.80 | 0.80 | 18.00 | 18.00 | 1230      | ---     |  |
| 24 x 6                    | 0.89 | 0.55 | 15.00 | 19.00 | 1025      | ---     |  |
| 24 x 8                    | 0.89 | 0.60 | 15.00 | 19.00 | 1045      | ---     |  |
| 24 x 12                   | 0.89 | 0.75 | 15.00 | 19.00 | 1110      | ---     |  |
| 24 x 16                   | 0.89 | 0.70 | 15.00 | 19.00 | 1200      | 988     |  |
| 24 x 20                   | 0.89 | 0.80 | 22.00 | 22.00 | 1675      | ---     |  |
| 24 x 24                   | 0.89 | 0.89 | 22.00 | 22.00 | 1835      | ---     |  |
| 30 x 6                    | 1.03 | 0.55 | 18.00 | 23.00 | 1770      | ---     |  |
| 30 x 10                   | 1.03 | 0.68 | 18.00 | 23.00 | ---       | 1606    |  |
| 30 x 12                   | 1.03 | 0.75 | 18.00 | 23.00 | 1865      | ---     |  |
| 30 x 24                   | 1.03 | 0.89 | 25.00 | 25.00 | 2675      | ---     |  |
| 30 x 30                   | 1.03 | 1.03 | 25.00 | 25.00 | 3075      | ---     |  |
| 36 x 24                   | 1.15 | 0.89 | 20.00 | 26.00 | 2910      | ---     |  |
| 36 x 30                   | 1.15 | 1.03 | 28.00 | 28.00 | ---       | 3133    |  |
| 36 x 36                   | 1.15 | 1.15 | 28.00 | 28.00 | 4370      | ---     |  |
| 42 x 24                   | 1.28 | 0.89 | 23.00 | 30.00 | 3439      | ---     |  |
| 42 x 42                   | 1.78 | 1.78 | 31.00 | 31.00 | 7145      | ---     |  |

STAR<sup>®</sup> PIPE PRODUCTS



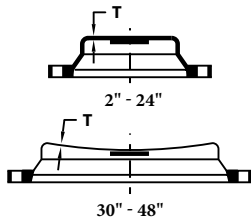
# Full Body MJ Fittings

ANSI/AWWA C110/A21.10

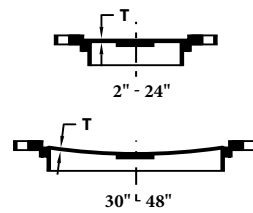


| MJ x PE x MJ TEES |      |      |       |       |       |           |
|-------------------|------|------|-------|-------|-------|-----------|
| NOM. SIZE         | T    | T1   | H     | J     | S     | WT (LBS.) |
| 4 x 4             | 0.52 | 0.52 | 6.50  | 6.50  | 14.50 | 75        |
| 6 x 4             | 0.55 | 0.52 | 8.00  | 8.00  | 16.00 | 112       |
| 6 x 6             | 0.55 | 0.55 | 8.00  | 8.00  | 16.00 | 120       |
| 8 x 6             | 0.60 | 0.55 | 9.00  | 9.00  | 17.00 | 170       |
| 8 x 8             | 0.60 | 0.60 | 9.00  | 9.00  | 17.00 | 180       |
| 10 x 10           | 0.80 | 0.80 | 11.00 | 11.00 | 19.00 | 303       |
| 12 x 4            | 0.75 | 0.52 | 12.00 | 12.00 | 20.00 | 315       |
| 12 x 6            | 0.75 | 0.55 | 12.00 | 12.00 | 20.00 | 325       |
| 12 x 8            | 0.75 | 0.60 | 12.00 | 12.00 | 20.00 | 340       |
| 12 x 10           | 0.87 | 0.80 | 12.00 | 12.00 | 20.00 | 390       |
| 12 x 12           | 0.87 | 0.87 | 12.00 | 12.00 | 20.00 | 407       |

| MJ SOLID SLEEVES |      |               |           |              |           |
|------------------|------|---------------|-----------|--------------|-----------|
| NOM. SIZE        | T    | SHORT SLEEVES |           | LONG SLEEVES |           |
|                  |      | L1            | WT (LBS.) | L2           | WT (LBS.) |
| 2                | 0.39 | 7.50          | 12        | 12.00        | 18        |
| 3                | 0.48 | 7.50          | 25        | 12.00        | 30        |
| 4                | 0.52 | 7.50          | 35        | 12.00        | 45        |
| 6                | 0.55 | 7.50          | 45        | 12.00        | 65        |
| 8                | 0.60 | 7.50          | 65        | 12.00        | 85        |
| 10               | 0.68 | 7.50          | 85        | 12.00        | 115       |
| 12               | 0.75 | 7.50          | 110       | 12.00        | 145       |
| 14               | 0.66 | 9.50          | 150       | 15.00        | 195       |
| 16               | 0.70 | 9.50          | 180       | 15.00        | 235       |
| 18               | 0.75 | 9.50          | 215       | 15.00        | 285       |
| 20               | 0.80 | 9.50          | 240       | 15.00        | 325       |
| 24               | 0.89 | 9.50          | 320       | 15.00        | 425       |
| 30               | 1.03 | 15.00         | 635       | 24.00        | 885       |
| 36               | 1.15 | 15.00         | 855       | 24.00        | 1190      |
| 42               | 1.28 | 15.00         | 1115      | 24.00        | 1550      |
| 48               | 1.42 | 15.00         | 1385      | 24.00        | 1940      |



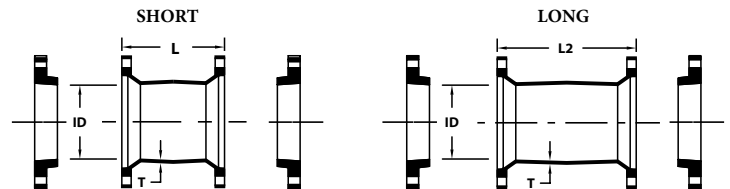
CAPS



PLUGS

| MJ CAPS & PLUGS (SOLID OR TAPPED) |      |          |           |       |
|-----------------------------------|------|----------|-----------|-------|
| NOM. SIZE                         | T    | MAX. TAP | WT (LBS.) |       |
|                                   |      |          | CAPS      | PLUGS |
| 2                                 | 0.39 | 1 1/2    | 5         | 5     |
| 3                                 | 0.50 | 2        | 12        | 10    |
| 4                                 | 0.60 | 3        | 15        | 15    |
| 6                                 | 0.65 | 4        | 25        | 25    |
| 8                                 | 0.70 | 4        | 45        | 45    |
| 10                                | 0.75 | 4        | 60        | 65    |
| 12                                | 0.75 | 4        | 80        | 85    |
| 14                                | 0.82 | 5        | 120       | 115   |
| 16                                | 0.89 | 6        | 155       | 145   |
| 18                                | 0.96 | 6        | 195       | 185   |
| 20                                | 1.03 | 6        | 240       | 225   |
| 24                                | 1.16 | 6        | 345       | 335   |
| 30                                | 1.03 | 6        | 590       | 573   |
| 36                                | 1.15 | 6        | 850       | 815   |
| 42                                | 1.28 | 6        | 1180      | 1110  |
| 48                                | 1.42 | 6        | 1595      | 1455  |

\*Threads in Accordance with ANSI/ASME B1.20.1



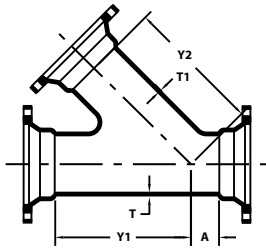
| MJ DUAL PURPOSE SLEEVES W/ OVERSIZE GLANDS |               |        |      |       |           |       |           |
|--|---------------|--------|------|-------|-----------|-------|-----------|
| NOM. SIZE                                  | PIPE SIZE     | (I.D.) | T    | SHORT |           | LONG  |           |
|  |               |        |      | L1    | WT (LBS.) | L2    | WT (LBS.) |
| 4  | 4.80 - 5.00   | 5.10   | 0.52 | 7.50  | 35        | 12.00 | 35        |
| 6  | 6.90 - 7.10   | 7.20   | 0.55 | 7.50  | 45        | 12.00 | 65        |
| 8  | 9.05 - 9.30   | 9.40   | 0.60 | 7.50  | 65        | 12.00 | 86        |
| 10   | 11.10 - 11.40 | 11.50  | 0.68 | 7.50  | 85        | 12.00 | 115       |
| 12   | 13.20 - 13.50 | 13.60  | 0.75 | 7.50  | 110       | 12.00 | 145       |
| 16   | 17.40 - 17.80 | 17.94  | 0.70 | ---   | ---       | 15.00 | 236       |

STAR<sup>®</sup> PIPE PRODUCTS



# Full Body MJ Fittings

ANSI/AWWA C110/A21.10



| 45° MJ LATERALS |      |      |      |       |       |           |
|-----------------|------|------|------|-------|-------|-----------|
| NOM. SIZE       | T    | T1   | A    | Y1    | Y2    | WT (LBS.) |
| 3 x 3           | 0.48 | 0.48 | 3.00 | 10.00 | 10.00 | 60        |
| 4 x 3           | 0.52 | 0.48 | 3.00 | 12.00 | 12.00 | 85        |
| 4 x 4           | 0.52 | 0.52 | 3.00 | 12.00 | 12.00 | 90        |
| 6 x 3           | 0.55 | 0.48 | 3.50 | 14.50 | 14.50 | 125       |
| 6 x 4           | 0.55 | 0.52 | 3.50 | 14.50 | 14.50 | 130       |
| 6 x 6           | 0.55 | 0.55 | 3.50 | 14.50 | 14.50 | 145       |
| 8 x 3           | 0.60 | 0.48 | 4.50 | 17.50 | 17.50 | 185       |
| 8 x 4           | 0.60 | 0.52 | 4.50 | 17.50 | 17.50 | 190       |
| 8 x 6           | 0.60 | 0.55 | 4.50 | 17.50 | 17.50 | 205       |
| 8 x 8           | 0.60 | 0.60 | 4.50 | 17.50 | 17.50 | 230       |
| 10 x 6          | 0.68 | 0.55 | 5.00 | 20.50 | 20.50 | 285       |
| 10 x 8          | 0.68 | 0.60 | 5.00 | 20.50 | 20.50 | 310       |
| 10 x 10         | 0.68 | 0.68 | 5.00 | 20.50 | 20.50 | 340       |
| 12 x 8          | 0.75 | 0.60 | 5.50 | 24.50 | 24.50 | 425       |
| 12 x 12         | 0.75 | 0.75 | 5.50 | 24.50 | 24.50 | 490       |
| 14 x 6          | 0.66 | 0.55 | 6.00 | 27.00 | 27.00 | 570       |
| 14 x 14         | 0.66 | 0.66 | 6.00 | 27.00 | 27.00 | 645       |
| 16 x 4          | 0.70 | 0.52 | 6.50 | 30.00 | 30.00 | 585       |
| 16 x 10         | 0.70 | 0.68 | 6.50 | 30.00 | 30.00 | 665       |
| 16 x 12         | 0.70 | 0.75 | 6.50 | 30.00 | 30.00 | 700       |
| 16 x 14         | 0.70 | 0.66 | 6.50 | 30.00 | 30.00 | 750       |
| 16 x 16         | 0.70 | 0.70 | 6.50 | 30.00 | 30.00 | 770       |
| 18 x 4          | 0.75 | 0.52 | 7.00 | 32.00 | 32.00 | 560       |
| 18 x 8          | 0.75 | 0.60 | 7.00 | 32.00 | 32.00 | 766       |
| 18 x 10         | 0.75 | 0.68 | 7.00 | 32.00 | 32.00 | 801       |
| 18 x 12         | 0.75 | 0.75 | 7.00 | 32.00 | 32.00 | 840       |
| 18 x 16         | 0.75 | 0.70 | 7.00 | 32.00 | 32.00 | 905       |
| 18 x 18         | 0.75 | 0.75 | 7.00 | 32.00 | 32.00 | 953       |
| 20 x 4          | 0.80 | 0.52 | 0    | 27.00 | 29.50 | 673       |
| 20 x 6          | 0.80 | 0.55 | 0    | 27.00 | 29.50 | 691       |
| 20 x 8          | 0.80 | 0.60 | 0    | 27.00 | 29.50 | 710       |
| 20 x 10         | 0.80 | 0.68 | 8.00 | 35.00 | 35.00 | 985       |
| 20 x 12         | 0.80 | 0.75 | 8.00 | 35.00 | 35.00 | 1025      |
| 20 x 14         | 0.80 | 0.66 | 8.00 | 35.00 | 35.00 | 1047      |
| 20 x 16         | 0.80 | 0.70 | 8.00 | 35.00 | 35.00 | 1089      |
| 20 x 20         | 0.80 | 0.80 | 8.00 | 35.00 | 35.00 | 1203      |
| 24 x 4          | 0.89 | 0.52 | 0.50 | 31.50 | 31.50 | 980       |
| 24 x 6          | 0.89 | 0.55 | 0.50 | 31.50 | 31.50 | 994       |
| 24 x 8          | 0.89 | 0.60 | 0    | 31.50 | 34.50 | 1007      |
| 24 x 10         | 0.89 | 0.68 | 9.00 | 40.50 | 40.50 | 1399      |
| 24 x 12         | 0.89 | 0.75 | 9.00 | 40.50 | 40.50 | 1442      |
| 24 x 14         | 0.89 | 0.66 | 9.00 | 40.50 | 40.50 | 1458      |
| 24 x 16         | 0.89 | 0.70 | 9.00 | 40.50 | 40.50 | 1503      |
| 24 x 18         | 0.89 | 0.75 | 9.00 | 40.50 | 40.50 | 1556      |
| 24 x 20         | 0.89 | 0.80 | 9.00 | 40.50 | 40.50 | 1615      |
| 24 x 24         | 0.89 | 0.89 | 9.00 | 40.50 | 40.50 | 1755      |

(Con't)▶

| 45° MJ LATERALS (Con't) |      |      |       |       |       |           |
|-------------------------|------|------|-------|-------|-------|-----------|
| NOM. SIZE               | T    | T1   | A     | Y1    | Y2    | WT (LBS.) |
| 30 x 12                 | 1.37 | 0.75 | 10.00 | 49.00 | 49.00 | 2836      |
| 30 x 16                 | 1.37 | 0.89 | 10.00 | 49.00 | 49.00 | 2959      |
| 30 x 20                 | 1.37 | 1.03 | 10.00 | 49.00 | 49.00 | 3089      |
| 30 x 24                 | 1.37 | 1.16 | 10.00 | 49.00 | 49.00 | 3260      |
| 30 x 30                 | 1.37 | 1.37 | 10.00 | 49.00 | 49.00 | 3710      |
| 36 x 6                  | 1.58 | 0.55 | 1.00  | 40.00 | 40.00 | 2868      |
| 36 x 8                  | 1.58 | 0.60 | 15.25 | 54.00 | 54.00 | 4301      |
| 36 x 12                 | 1.58 | 0.75 | 15.25 | 54.00 | 54.00 | 4376      |
| 36 x 14                 | 1.58 | 0.82 | 15.25 | 54.00 | 54.00 | 4434      |
| 36 x 16                 | 1.58 | 0.89 | 15.25 | 54.00 | 54.00 | 4488      |
| 36 x 18                 | 1.58 | 0.96 | 15.25 | 54.00 | 54.00 | 4549      |
| 36 x 20                 | 1.58 | 1.03 | 15.25 | 54.00 | 54.00 | 4615      |
| 36 x 24                 | 1.58 | 1.16 | 15.25 | 54.00 | 54.00 | 4761      |
| 36 x 30                 | 1.58 | 1.37 | 15.25 | 56.00 | 56.00 | 5266      |
| 36 x 36                 | 1.58 | 1.58 | 19.50 | 60.00 | 60.00 | 6306      |
| 42 x 12                 | 1.78 | 0.75 | 0     | 52.00 | 52.00 | 4495      |
| 42 x 20                 | 1.78 | 1.03 | 12.00 | 60.00 | 60.00 | 6064      |
| 42 x 24                 | 1.78 | 1.16 | 12.00 | 60.00 | 60.00 | 6203      |
| 42 x 30                 | 1.78 | 1.37 | 12.00 | 63.00 | 63.00 | 6820      |
| ★ 42 x 36               | 1.78 | 1.58 | 12.00 | 66.00 | 66.00 | 7604      |
| ★ 42 x 42               | 1.78 | 1.78 | 15.00 | 71.00 | 71.00 | 9018      |
| 48 x 14                 | 1.96 | 0.82 | 0     | 52.00 | 62.00 | 5723      |
| 48 x 18                 | 1.96 | 0.96 | ---   | 52.00 | 62.00 | 5810      |
| 48 x 20                 | 1.96 | 1.03 | ---   | 52.00 | 62.00 | 5861      |
| 48 x 24                 | 1.96 | 1.16 | 5.00  | 58.00 | 64.00 | 6897      |
| 48 x 30                 | 1.96 | 1.37 | 4.00  | 59.00 | 64.00 | 7183      |
| 48 x 36                 | 1.96 | 1.58 | 6.00  | 64.00 | 68.00 | 8294      |
| ★ 48 x 42               | 1.96 | 1.78 | 12.00 | 77.00 | 77.00 | 10862     |
| ★ 48 x 48               | 1.96 | 1.96 | 16.00 | 77.00 | 77.00 | 11940     |

★ 150 PSI pressure rating

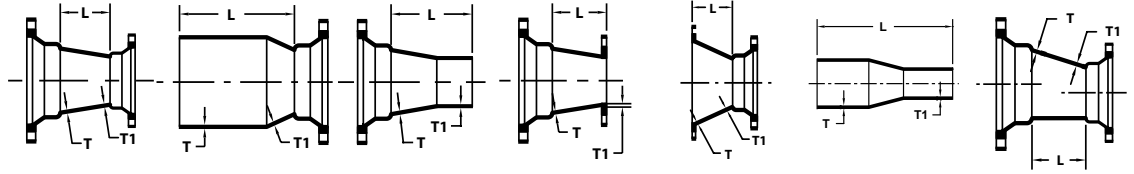
STAR<sup>®</sup> PIPE PRODUCTS





# Full Body MJ Fittings

ANSI/AWWA C110/A21.10



| REDUCERS  |      |      | MJ x MJ |           | SEB   |           | LEB   |           | MJ x FE |           | FE x MJ |           | PE x PE |           | ECCENTRIC |           |
|-----------|------|------|---------|-----------|-------|-----------|-------|-----------|---------|-----------|---------|-----------|---------|-----------|-----------|-----------|
| NOM. SIZE | T    | T1   | L       | WT (LBS.) | L     | WT (LBS.) | L     | WT (LBS.) | L       | WT (LBS.) | L       | WT (LBS.) | L       | WT (LBS.) | L         | WT (LBS.) |
| 3 x 2     | 0.48 | 0.39 | 6.00    | 25        | 14.00 | 14        | 14.00 | 20        | 6.00    | 20        | ---     | ---       | ---     | ---       | ---       | ---       |
| 4 x 2     | 0.52 | 0.39 | 7.00    | 30        | 15.00 | 18        | 15.00 | 30        | 7.00    | 25        | ---     | ---       | ---     | ---       | ---       | ---       |
| 4 x 3     | 0.52 | 0.48 | 7.00    | 40        | 15.00 | 35        | 15.00 | 40        | 7.00    | 35        | 7.00    | 34        | ---     | ---       | ---       | ---       |
| 6 x 2     | 0.55 | 0.39 | 9.00    | 45        | 17.00 | 45        | 17.00 | 45        | 9.00    | 40        | ---     | ---       | ---     | ---       | ---       | ---       |
| 6 x 3     | 0.55 | 0.48 | 9.00    | 55        | 17.00 | 50        | 17.00 | 55        | 9.00    | 49        | ---     | ---       | ---     | ---       | ---       | ---       |
| 6 x 4     | 0.55 | 0.52 | 9.00    | 60        | 17.00 | 60        | 17.00 | 60        | 9.00    | 53        | 9.00    | 60        | ---     | ---       | 9.00      | 65        |
| 8 x 3     | 0.60 | 0.48 | 11.00   | 75        | 19.00 | 70        | 19.00 | 70        | 11.00   | 65        | ---     | ---       | ---     | ---       | ---       | ---       |
| 8 x 4     | 0.60 | 0.52 | 11.00   | 80        | 19.00 | 80        | 19.00 | 80        | 11.00   | 75        | 11.00   | 80        | ---     | ---       | ---       | ---       |
| 8 x 6     | 0.60 | 0.55 | 11.00   | 95        | 19.00 | 90        | 19.00 | 90        | 11.00   | 80        | 11.00   | 89        | 27.00   | 85        | 11.00     | 100       |
| 10 x 4    | 0.68 | 0.52 | 12.00   | 105       | 20.00 | 100       | 20.00 | 100       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 10 x 6    | 0.68 | 0.55 | 12.00   | 115       | 20.00 | 115       | 20.00 | 115       | 12.00   | 105       | 12.00   | 114       | ---     | ---       | ---       | ---       |
| 10 x 8    | 0.68 | 0.60 | 12.00   | 135       | 20.00 | 130       | 20.00 | 130       | 12.00   | 130       | 12.00   | 130       | ---     | ---       | 12.00     | 140       |
| 12 x 4    | 0.75 | 0.52 | 14.00   | 135       | 22.00 | 130       | 22.00 | 130       | 14.00   | 125       | ---     | ---       | ---     | ---       | ---       | ---       |
| 12 x 6    | 0.75 | 0.55 | 14.00   | 150       | 22.00 | 150       | 22.00 | 145       | 14.00   | 145       | 14.00   | 151       | ---     | ---       | ---       | ---       |
| 12 x 8    | 0.75 | 0.60 | 14.00   | 165       | 22.00 | 165       | 22.00 | 165       | 14.00   | 175       | 14.00   | 183       | 30.00   | 165       | ---       | ---       |
| 12 x 10   | 0.75 | 0.68 | 14.00   | 190       | 22.00 | 190       | 22.00 | 185       | 14.00   | 185       | 14.00   | 190       | ---     | ---       | 14.00     | 195       |
| 14 x 6    | 0.66 | 0.55 | 16.00   | 190       | 24.00 | 175       | 24.00 | 185       | 16.00   | 195       | ---     | ---       | 32.00   | 170       | ---       | ---       |
| 14 x 8    | 0.66 | 0.60 | 16.00   | 210       | 24.00 | 190       | 24.00 | 205       | 16.00   | 215       | ---     | ---       | ---     | ---       | ---       | ---       |
| 14 x 10   | 0.66 | 0.68 | 16.00   | 230       | ---   | ---       | ---   | ---       | 16.00   | 216       | ---     | ---       | ---     | ---       | ---       | ---       |
| 14 x 12   | 0.66 | 0.75 | 16.00   | 255       | 24.00 | 240       | 24.00 | 255       | 16.00   | 246       | ---     | ---       | ---     | ---       | ---       | ---       |
| 16 x 6    | 0.70 | 0.55 | 18.00   | 230       | 26.00 | 210       | 26.00 | 230       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 16 x 8    | 0.70 | 0.60 | 18.00   | 250       | 26.00 | 230       | 26.00 | 250       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 16 x 10   | 0.70 | 0.68 | 18.00   | 280       | 26.00 | 255       | 26.00 | 275       | ---     | ---       | ---     | ---       | ---     | ---       | 18.00     | 275       |
| 16 x 12   | 0.70 | 0.75 | 18.00   | 305       | 26.00 | 285       | 26.00 | 305       | 18.00   | 325       | 18.00   | 305       | ---     | ---       | 18.00     | 302       |
| 16 x 14   | 0.70 | 0.66 | 18.00   | 335       | 26.00 | 310       | 26.00 | 315       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 18 x 8    | 0.75 | 0.60 | 19.00   | 295       | 27.00 | 270       | 27.00 | 295       | 19.00   | 300       | ---     | ---       | ---     | ---       | ---       | ---       |
| 18 x 10   | 0.75 | 0.68 | 19.00   | 325       | 27.00 | 300       | 27.00 | 320       | 19.00   | 340       | ---     | ---       | ---     | ---       | ---       | ---       |
| 18 x 12   | 0.75 | 0.75 | 19.00   | 350       | 27.00 | 325       | 27.00 | 350       | 19.00   | 360       | ---     | ---       | ---     | ---       | ---       | ---       |
| 18 x 14   | 0.75 | 0.66 | 19.00   | 380       | 27.00 | 355       | 27.00 | 365       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 18 x 16   | 0.75 | 0.70 | 19.00   | 415       | 27.00 | 390       | 27.00 | 395       | 19.00   | 405       | ---     | ---       | ---     | ---       | ---       | ---       |
| 20 x 8    | 0.80 | 0.60 | 20.00   | 345       | 28.00 | 345       | ---   | ---       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 20 x 10   | 0.80 | 0.68 | 20.00   | 375       | 28.00 | 345       | 28.00 | 375       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 20 x 12   | 0.80 | 0.75 | 20.00   | 405       | 28.00 | 375       | 28.00 | 405       | ---     | ---       | ---     | ---       | ---     | ---       | 20.00     | 404       |
| 20 x 14   | 0.80 | 0.66 | 20.00   | 430       | ---   | ---       | ---   | ---       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 20 x 16   | 0.80 | 0.70 | 20.00   | 470       | 28.00 | 435       | 28.00 | 445       | 20.00   | 510       | ---     | ---       | ---     | ---       | ---       | ---       |
| 20 x 18   | 0.80 | 0.75 | 20.00   | 510       | 28.00 | 475       | 28.00 | 485       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 24 x 8    | 0.89 | 0.60 | 24.00   | 482       | ---   | ---       | ---   | ---       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 24 x 12   | 0.89 | 0.75 | 24.00   | 550       | 32.00 | 510       | 32.00 | 550       | 24.00   | 535       | ---     | ---       | ---     | ---       | ---       | ---       |
| 24 x 14   | 0.89 | 0.66 | 24.00   | ---       | ---   | ---       | ---   | ---       | 24.00   | 543       | ---     | ---       | ---     | ---       | ---       | ---       |
| 24 x 16   | 0.89 | 0.70 | 24.00   | 615       | 32.00 | 575       | 32.00 | 595       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 24 x 18   | 0.89 | 0.75 | 24.00   | 660       | 32.00 | 620       | 32.00 | 635       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 24 x 20   | 0.89 | 0.80 | 24.00   | 705       | 32.00 | 665       | 32.00 | 675       | 24.00   | 648       | ---     | ---       | ---     | ---       | 24.00     | 710       |
| 30 x 12   | 1.03 | 0.75 | 30.00   | 920       | ---   | ---       | ---   | ---       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 30 x 16   | 1.03 | 0.70 | 30.00   | 945       | 38.00 | 830       | ---   | ---       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 30 x 18   | 1.03 | 0.75 | 30.00   | 990       | 38.00 | 885       | 38.00 | 965       | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 30 x 20   | 1.03 | 0.80 | 30.00   | 1050      | 38.00 | 945       | 38.00 | 1020      | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 30 x 24   | 1.03 | 0.89 | 30.00   | 1165      | 38.00 | 1060      | 38.00 | 1125      | ---     | ---       | ---     | ---       | ---     | ---       | 30.00     | 1170      |
| 36 x 20   | 1.15 | 0.80 | 36.00   | 1450      | 44.00 | 1285      | 44.00 | 1420      | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 36 x 24   | 1.15 | 0.89 | 36.00   | 1580      | 44.00 | 1410      | 44.00 | 1535      | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |

(Con't) ▶

UCAT:19.01  
 \* REGISTERED TRADEMARK OF STAR PIPE PRODUCTS



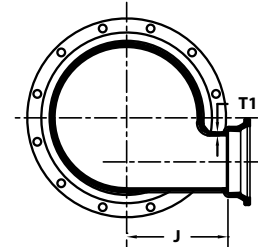
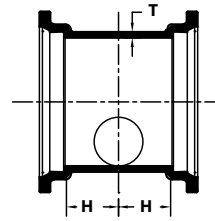
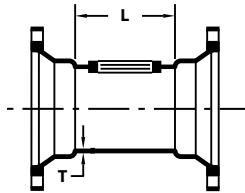




# Full Body MJ Fittings

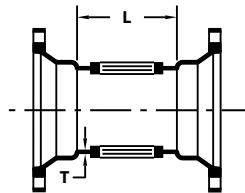
ANSI/AWWA C110/A21.10

| REDUCERS (con't) |      |      | MJ x MJ |           | SEB   |           | LEB   |           | MJ x FE |           | FE x MJ |           | PE x PE |           | ECCENTRIC |           |
|------------------|------|------|---------|-----------|-------|-----------|-------|-----------|---------|-----------|---------|-----------|---------|-----------|-----------|-----------|
| NOM. SIZE        | T    | T1   | L       | WT (LBS.) | L     | WT (LBS.) | L     | WT (LBS.) | L       | WT (LBS.) | L       | WT (LBS.) | L       | WT (LBS.) | L         | WT (LBS.) |
| 36 x 30          | 1.15 | 1.03 | 36.00   | 1855      | 44.00 | 1690      | 44.00 | 1750      | ---     | ---       | ---     | ---       | ---     | ---       | 36.00     | 1865      |
| 42 x 24          | 1.28 | 0.89 | 42.00   | 2060      | 50.00 | 1855      | 50.00 | 2020      | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 42 x 30          | 1.28 | 1.03 | 42.00   | 2370      | 50.00 | 2165      | 50.00 | 2265      | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 48 x 30          | 1.42 | 1.03 | 48.00   | 3005      | 56.00 | 2740      | 56.00 | 2900      | ---     | ---       | ---     | ---       | ---     | ---       | ---       | ---       |
| 48 x 36          | 1.42 | 1.15 | 48.00   | 3370      | 56.00 | 3100      | 56.00 | 3205      | ---     | ---       | ---     | ---       | ---     | ---       | 48.00     | 3439      |
| 48 x 42          | 1.42 | 1.28 | ---     | ---       | ---   | ---       | ---   | ---       | ---     | ---       | ---     | ---       | ---     | ---       | 48.00     | 3815      |

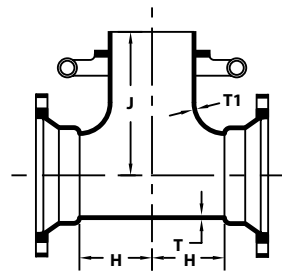


| MJ TAPPED TEE |      |      |         |           |
|---------------|------|------|---------|-----------|
| NOM. SIZE     | T    | L    | MAX TAP | WT (LBS.) |
| 4 x 4         | 0.52 | 8.00 | 3       | 45        |
| 6 x 6         | 0.55 | 8.00 | 3       | 70        |
| 8 x 8         | 0.60 | 8.00 | 3       | 95        |
| 10 x 10       | 0.68 | 8.00 | 3       | 127       |
| 12 x 12       | 0.75 | 8.00 | 3       | 165       |
| 16 x 16       | 0.70 | 8.00 | 3       | 267       |
| 20 x 20       | 0.80 | 8.00 | 3       | 381       |
| 24 x 24       | 0.89 | 9.00 | 3       | 516       |

Threads in Accordance with ANSI/ASME B1.20.1



| TANGENTIAL TEE |      |      |       |       |           |
|----------------|------|------|-------|-------|-----------|
| NOM. SIZE      | T    | T1   | H     | J     | WT (LBS.) |
| 20 x 4         | 0.80 | 0.52 | 14.00 | 17.00 | 820       |
| 20 x 8         | 0.80 | 0.60 | 14.00 | 17.00 | 846       |
| 24 x 4         | 0.89 | 0.52 | 15.00 | 19.00 | 1120      |
| 24 x 8         | 0.89 | 0.60 | 15.00 | 19.00 | 1148      |



| MJ TAPPED CROSS |      |      |         |           |
|-----------------|------|------|---------|-----------|
| NOM. SIZE       | T    | L    | MAX TAP | WT (LBS.) |
| 4 x 4           | 0.52 | 8.00 | 3       | 45        |
| 6 x 6           | 0.55 | 8.00 | 3       | 70        |
| 8 x 8           | 0.60 | 8.00 | 3       | 95        |
| 10 x 10         | 0.68 | 8.00 | 3       | 130       |
| 12 x 12         | 0.75 | 8.00 | 3       | 165       |
| 16 x 16         | 0.70 | 8.00 | 3       | 267       |
| 20 x 20         | 0.80 | 8.00 | 3       | 381       |
| 24 x 24         | 0.89 | 9.00 | 3       | 516       |

Threads in Accordance with ANSI/ASME B1.20.1

| MJ x SWIVEL HYDRANT TEES W/ SWIVEL GLAND |      |      |       |       |           |
|--|------|------|-------|-------|-----------|
| NOM. SIZE                                | T    | T1   | H     | J     | WT (LBS.) |
| 6 x 6                                    | 0.55 | 0.55 | 8.00  | 10.50 | 150       |
| 8 x 6                                    | 0.60 | 0.55 | 9.00  | 11.50 | 200       |
| 8 x 8                                    | 0.60 | 0.60 | 9.00  | 11.50 | 210       |
| 10 x 6                                   | 0.68 | 0.55 | 11.00 | 13.50 | 239       |
| 12 x 6                                   | 0.75 | 0.55 | 12.00 | 14.50 | 341       |
| 16 x 6                                   | 0.70 | 0.55 | 15.00 | 17.50 | 619       |
| 16 x 8                                   | 0.70 | 0.60 | 15.00 | 17.50 | 649       |
| 20 x 6                                   | 0.80 | 0.55 | 14.00 | 19.50 | 829       |
| 30 x 6                                   | 1.03 | 0.55 | 18.00 | 24.50 | 2070      |



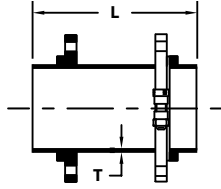
STAR<sup>®</sup> PIPE PRODUCTS



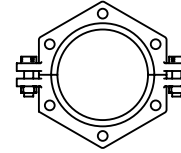
# Full Body MJ Fittings

ANSI/AWWA C110/A21.10

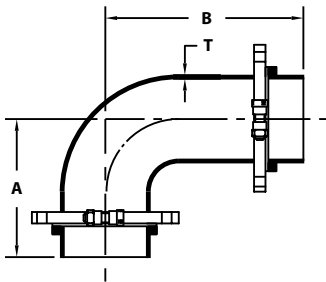
STAR® PIPE PRODUCTS



| SWIVEL x SOLID HYDRANT ADAPTER |      |       |           |
|--------------------------------|------|-------|-----------|
| NOM. SIZE                      | T    | L     | WT (LBS.) |
| 4 x 13                         | 0.52 | 13.00 | 28        |
| 6 x 13                         | 0.55 | 13.00 | 54        |
| 6 x 18                         | 0.55 | 18.00 | 68        |
| 6 x 24                         | 0.55 | 24.00 | 81        |
| 6 x 36                         | 0.55 | 36.00 | 110       |
| 6 x 48                         | 0.55 | 48.00 | 139       |
| 8 x 13                         | 0.60 | 13.00 | 68        |
| 8 x 18                         | 0.60 | 18.00 | 88        |
| 8 x 24                         | 0.60 | 24.00 | 112       |
| 8 x 48                         | 0.60 | 48.00 | 208       |
| 12 x 13                        | 0.75 | 13.00 | 123       |



| SWIVEL GLANDS |           |                   |
|---------------|-----------|-------------------|
| NOM. SIZE     | WT (LBS.) | T-HEAD BOLTS      |
| 4             | 8         | (2) 3/4" x 3 1/2" |
| 6             | 11        | (2) 3/4" x 3 1/2" |
| 8             | 13        | (2) 3/4" x 3 1/2" |
| 12            | 25        | (2) 3/4" x 4"     |



| SWIVEL x SWIVEL HYDRANT ELL W/ 2 SWIVEL GLANDS |      |       |       |           |
|--|------|-------|-------|-----------|
| NOM. SIZE                                      | T    | A     | B     | WT (LBS.) |
| 6  | 0.55 | 10.50 | 15.50 | 100       |
| 8  | 0.60 | 11.50 | 16.50 | 140       |

UCAT19.01  
\* REGISTERED TRADEMARK OF STAR PIPE PRODUCTS