



FORGED FITTINGS

WELDING TYPE & THREADED TYPE

PRESSURE RATINGS

SIZE IDENTIFICATION

ELBOW (90°, 45°)

TEE

CROSS

COUPLING(FULL, HALF)

CAP

BOSS

UNION

REDUCER INSERT

PLUG

NIPPLE

OUTLET

SWAGED NIPPLE

PRESSURE RATINGS

The Fittings shall be designated as pressure classes 2000, 3000 and 6000 for threaded end fittings and class 3000, 6000 and 9000 for socket-weld end fittings

Table 1. Correlation of Fittings Class with Schedule Number or Wall Designation of Pipe for Calculation of Ratings.

| Pressure class Designation of fitting | Type of Fitting | Pipe Used for Rating Basic | |
|--|-----------------|----------------------------|------------------|
| | | Schedule No. | Wall Designation |
| 2000 lb | Threaded | 80 | X-S |
| 3000 lb | Threaded | 160 | - |
| 6000 lb | Threaded | - | XX-S |
| 3000 lb | Socket-Welding | 80 | X-S |
| 6000 lb | Socket-Welding | 160 | - |
| 9000 lb | Socket-Welding | - | XX-S |

- This table is not intended to restrict the use of pipe of thinner or thicker wall with fittings. Pipe actually used may be thinner or thicker in nominal wall than that shown in Table1. When thinner pipe is used its strength may govern the rating. When thicker pipe is used, the strength of the fitting governs the rating.

Table 2. Nominal Wall Thickness of Schedule 160 and Double Extra Strong Pipe

| NPS. | Schedule 160 | | XX-S | |
|------|--------------|------|-------|------|
| | inch | mm | inch | mm |
| 1/8 | 0.124 | 3.15 | 0.190 | 4.83 |
| 1/4 | 0.145 | 3.68 | 0.230 | 6.05 |
| 3/8 | 0.158 | 4.01 | 0.252 | 6.40 |

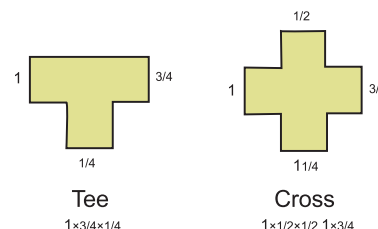
Table 3. Pressure / Temperature Ratings

Non-shock Working Pressure in Pounds per Square inch

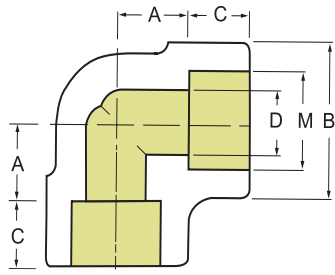
| Service Temperature Degree F | 2000lb Threaded Fitting | | | | | 3000lb Socket Welding and Threaded Fittings | | | | | 6000lb Socket Welding and Threaded Fittings | | | | |
|------------------------------|-------------------------|------|------|------|------|---|------|------|------|------|---|------|------|------|------|
| | Carbon Steel | F304 | F316 | F22 | F5 | Carbon Steel | F304 | F316 | F22 | F5 | Carbon Steel | F304 | F316 | F22 | F5 |
| 100 | 2000 | 1715 | 2000 | 2000 | 2000 | 3000 | 2570 | 3000 | 3000 | 3000 | 6000 | 5145 | 6000 | 6000 | 6000 |
| 150 | 1970 | 1615 | 1970 | 1970 | 1970 | 2950 | 2425 | 2950 | 2950 | 2950 | 5915 | 4855 | 5915 | 5915 | 5915 |
| 200 | 1940 | 1520 | 1940 | 1940 | 1940 | 2915 | 2280 | 2915 | 2915 | 2915 | 5830 | 4565 | 5830 | 5830 | 5830 |
| 250 | 1915 | 1445 | 1915 | 1915 | 1915 | 2875 | 2170 | 2975 | 2975 | 2975 | 5750 | 4340 | 5750 | 5750 | 5750 |
| 300 | 1975 | 1370 | 1896 | 1896 | 1895 | 2845 | 2055 | 2845 | 2845 | 2845 | 5690 | 4115 | 5690 | 5690 | 5690 |
| 350 | 1875 | 1310 | 1875 | 1875 | 1875 | 2810 | 1965 | 2810 | 2810 | 2810 | 5625 | 3930 | 5625 | 5625 | 5625 |
| 400 | 1850 | 1245 | 1850 | 1850 | 1850 | 2775 | 1870 | 2775 | 2775 | 2775 | 5550 | 3745 | 5550 | 5550 | 5550 |
| 450 | 1810 | 1195 | 1810 | 1710 | 1810 | 2715 | 1790 | 2715 | 2715 | 2715 | 5430 | 3585 | 5430 | 5430 | 5430 |
| 500 | 1735 | 1140 | 1735 | 1635 | 1735 | 2605 | 1715 | 2605 | 2605 | 2605 | 5210 | 3430 | 5210 | 5210 | 5210 |
| 550 | 1640 | 1100 | 1640 | 1540 | 1640 | 2460 | 1650 | 2460 | 2460 | 2460 | 4925 | 3305 | 4925 | 4925 | 4925 |
| 600 | 1540 | 1060 | 1540 | 1440 | 1540 | 2310 | 1590 | 2310 | 2310 | 2310 | 4620 | 3180 | 4620 | 4620 | 4620 |
| 650 | 1430 | 1020 | 1430 | 1330 | 1430 | 2150 | 1535 | 2150 | 2150 | 2150 | 4300 | 3070 | 4300 | 4300 | 4300 |
| 700 | 1305 | 985 | 1370 | 1240 | 1340 | 1960 | 1480 | 2055 | 2010 | 2010 | 3920 | 2960 | 4110 | 4025 | 4025 |
| 750 | 1180 | 950 | 1305 | 1145 | 1245 | 1775 | 1425 | 1960 | 1870 | 1870 | 3550 | 2580 | 3920 | 3745 | 3745 |
| 800 | 1015 | 915 | 1240 | 1055 | 1155 | 1525 | 1370 | 1865 | 1735 | 1735 | 3050 | 2745 | 3730 | 3470 | 3470 |
| 850 | 830 | 880 | 1180 | 1060 | 1060 | 1250 | 1330 | 1770 | 1595 | 1595 | 2500 | 2660 | 3540 | 3190 | 3190 |
| 900 | 615 | 860 | 1115 | 970 | 970 | 925 | 1290 | 1675 | 1455 | 1455 | 1885 | 2580 | 3350 | 2915 | 2915 |
| 950 | 425 | 845 | 1055 | 880 | 880 | 640 | 1270 | 1580 | 1320 | 1320 | 1295 | 2450 | 3165 | 2640 | 2640 |
| 1000 | 235 | 830 | 990 | 740 | 695 | 350 | 1250 | 1485 | 1115 | 1240 | 715 | 2500 | 2975 | 2230 | 2085 |

SIZE IDENTIFICATION

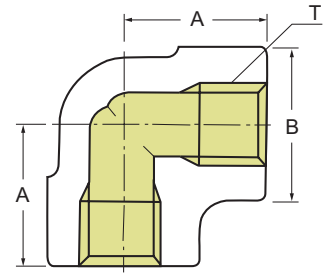
In the case of reducing tees and crosses, the size of the largest run opening shall be given first, followed by the size of the opening at the opposite end of the run. Where the fitting is a tee, the size of the branch is given last. Where the fitting is a cross, the largest side-outlet is the third dimension given, followed by the opening opposite.



90° ELBOW



3000lb, 6000lb, 9000lb



2000lb, 6000lb, 9000lb

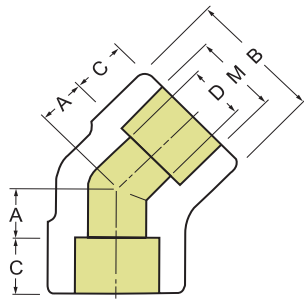
Socket Welding Type

| Size M | 3000lb | | | | 6000lb | | | | 9000lb | | | |
|-----------|--------|-------|------|------|--------|------|------|------|--------|------|------|------|
| | B | D | A | C | B | D | A | C | B | D | A | C |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1/4 | 26.5 | 9.4 | 11.1 | 10.0 | - | - | - | - | - | - | - | - |
| 3/8 | 26.5 | 12.7 | 13.4 | 10.0 | - | - | - | - | - | - | - | - |
| 1/2 | 34.0 | 16.1 | 16.0 | 13.0 | 38.5 | 12.0 | 20.0 | 16.0 | 46.5 | 6.4 | 23.0 | 16.0 |
| 3/4 | 38.5 | 21.2 | 20.0 | 14.0 | 46.5 | 15.8 | 23.0 | 16.0 | 56.5 | 11.0 | 28.0 | 16.0 |
| 1 | 46.5 | 27.0 | 23.0 | 15.0 | 56.5 | 21.0 | 28.0 | 18.0 | 63.5 | 15.2 | 33.0 | 18.0 |
| 1 1/4 | 56.5 | 35.4 | 28.0 | 17.0 | 63.5 | 29.7 | 33.0 | 20.0 | 76.0 | 22.7 | 40.0 | 20.0 |
| 1 1/2 | 63.5 | 41.2 | 33.0 | 18.0 | 76.0 | 34.2 | 40.0 | 22.0 | 84.0 | 27.9 | 42.0 | 22.0 |
| 2 | 76.0 | 52.7 | 39.0 | 22.0 | 84.0 | 43.1 | 42.0 | 24.0 | 110.0 | 38.1 | 54.0 | 24.0 |
| 2 1/2 | 92.0 | 62.7 | 42.0 | 24.0 | 110.0 | 54.0 | 57.1 | 24.0 | 121.0 | 45.0 | 66.0 | 24.0 |
| 3 | 110.0 | 78.0 | 57.1 | 31.5 | 121.0 | 67.7 | 66.0 | 31.5 | 146.0 | 58.5 | 70.0 | 31.5 |
| 4 | 146.0 | 102.0 | 68.0 | 45.0 | 152.0 | 87.0 | 70.0 | 45.0 | - | - | - | - |

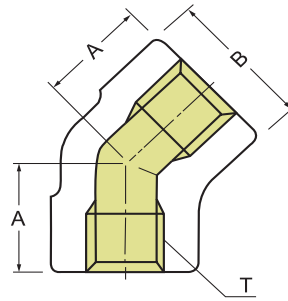
Threaded Type

| Size T | 2000lb | | 3000lb | | 6000lb | |
|-----------|--------|-------|--------|-------|--------|-------|
| | B | A | B | A | B | A |
| | mm | mm | mm | mm | mm | mm |
| 1/4 | 26.5 | 25.4 | 26.5 | 25.4 | - | - |
| 3/8 | 26.5 | 25.4 | 34.0 | 28.5 | 38.5 | 33.5 |
| 1/2 | 34.0 | 28.5 | 38.5 | 33.5 | 46.5 | 38.1 |
| 3/4 | 38.5 | 33.5 | 46.5 | 38.1 | 56.5 | 44.5 |
| 1 | 46.5 | 38.1 | 56.5 | 44.5 | 63.5 | 50.8 |
| 1 1/4 | 56.5 | 44.5 | 63.5 | 50.8 | 76.0 | 60.5 |
| 1 1/2 | 63.5 | 50.8 | 76.0 | 60.5 | 84.0 | 64.0 |
| 2 | 76.0 | 60.5 | 84.0 | 64.0 | 110.0 | 83.0 |
| 2 1/2 | 92.0 | 64.0 | 110.0 | 83.0 | 121.0 | 95.5 |
| 3 | 110.0 | 83.0 | 121.0 | 95.5 | 146.0 | 106.5 |
| 3 1/2 | 121.0 | 95.5 | 146.0 | 106.5 | 152.0 | 114.3 |
| 4 | 146.0 | 106.5 | 152.0 | 114.3 | 152.0 | 114.3 |

- Dimensions are in millimeters.
- Dimensional Tolerances See ASME B16.11 or JIS B2316
- Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.



3000lb, 6000lb, 9000lb



2000lb, 6000lb, 9000lb

45° ELBOW

Socket Welding Type

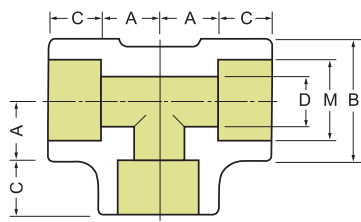
| Nominal Pipe Size | 3000lb | | | | 6000lb | | | | 9000lb | | | |
|-------------------|--------|-------|------|------|--------|------|------|------|--------|------|------|------|
| | B | D | A | C | B | D | A | C | B | D | A | C |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1/4 | 26.5 | 9.4 | 7.9 | 10.0 | - | - | - | - | - | - | - | - |
| 3/8 | 26.5 | 12.7 | 7.9 | 10.0 | - | - | - | - | - | - | - | - |
| 1/2 | 34.0 | 16.1 | 13.0 | 13.0 | 38.5 | 12.0 | 13.0 | 16.0 | 46.5 | 6.4 | 14.0 | 16.0 |
| 3/4 | 38.5 | 21.2 | 13.0 | 14.0 | 46.5 | 15.8 | 14.0 | 16.0 | 56.5 | 11.0 | 22.0 | 16.0 |
| 1 | 46.5 | 27.0 | 14.0 | 15.0 | 56.5 | 21.0 | 22.0 | 18.0 | 63.5 | 15.2 | 22.0 | 18.0 |
| 1 1/4 | 56.5 | 35.4 | 18.0 | 17.0 | 63.5 | 29.7 | 22.0 | 20.0 | 76.0 | 22.7 | 24.0 | 20.0 |
| 1 1/2 | 63.5 | 41.2 | 22.0 | 18.0 | 76.0 | 34.2 | 24.0 | 22.0 | 84.0 | 27.9 | 29.0 | 22.0 |
| 2 | 76.0 | 52.7 | 24.0 | 22.0 | 84.0 | 43.1 | 29.0 | 24.0 | 110.0 | 38.1 | 34.0 | 24.0 |
| 2 1/2 | 92.0 | 62.7 | 29.0 | 24.0 | 110.0 | 54.0 | 34.0 | 24.0 | 121.0 | 45.0 | 34.0 | 24.0 |
| 3 | 110.0 | 78.0 | 34.0 | 31.5 | 121.0 | 67.7 | 34.0 | 31.5 | 146.0 | 58.5 | 42.0 | 31.5 |
| 4 | 146.0 | 102.0 | 42.0 | 45.0 | 152.0 | 87.0 | 42.0 | 45.0 | - | - | - | - |

Threaded Type

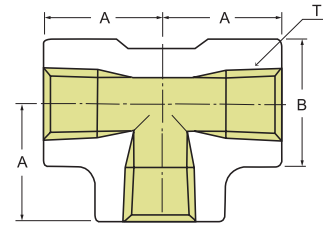
| Size T | 2000lb | | 3000lb | | 6000lb | |
|--------|--------|------|--------|------|--------|------|
| | B | A | B | A | B | A |
| | mm | mm | mm | mm | mm | mm |
| 1/4 | 26.5 | 19.1 | 26.5 | 19.1 | - | - |
| 3/8 | 26.5 | 19.1 | 34.0 | 26.0 | 38.5 | 28.6 |
| 1/2 | 34.0 | 26.0 | 38.5 | 28.6 | 46.5 | 30.0 |
| 3/4 | 38.5 | 28.6 | 46.5 | 30.0 | 56.5 | 33.3 |
| 1 | 46.5 | 30.0 | 56.5 | 33.3 | 63.5 | 42.0 |
| 1 1/4 | 56.5 | 33.3 | 63.5 | 42.0 | 76.0 | 46.0 |
| 1 1/2 | 63.5 | 42.0 | 76.0 | 46.0 | 84.0 | 53.0 |
| 2 | 76.0 | 46.0 | 84.0 | 53.0 | 110.0 | 64.0 |
| 2 1/2 | 92.0 | 53.0 | 110.0 | 64.0 | 121.0 | 64.0 |
| 3 | 110.0 | 64.0 | 121.0 | 64.0 | 146.0 | 80.0 |
| 3 1/2 | 121.0 | 64.0 | 146.0 | 80.0 | 152.0 | 80.0 |
| 4 | 146.0 | 80.0 | 152.0 | 80.0 | 152.0 | 80.0 |

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TEE



3000lb, 6000lb, 9000lb



2000lb, 6000lb, 9000lb

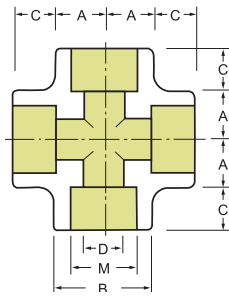
Socket Welding Type

| Size M | 3000lb | | | | 6000lb | | | | 9000lb | | | |
|-----------|--------|-------|------|------|--------|------|------|------|--------|------|------|------|
| | B | D | A | C | B | D | A | C | B | D | A | C |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1/4 | 26.5 | 9.4 | 11.1 | 10.0 | - | - | - | - | - | - | - | - |
| 3/8 | 26.5 | 12.7 | 13.4 | 10.0 | - | - | - | - | - | - | - | - |
| 1/2 | 34.0 | 16.1 | 16.0 | 13.0 | 38.5 | 12.0 | 20.0 | 16.0 | 46.5 | 6.4 | 23.0 | 16.0 |
| 3/4 | 38.5 | 21.2 | 20.0 | 14.0 | 46.5 | 15.8 | 23.0 | 16.0 | 56.5 | 11.0 | 28.0 | 16.0 |
| 1 | 46.5 | 27.0 | 23.0 | 15.0 | 56.5 | 21.0 | 28.0 | 18.0 | 63.5 | 15.2 | 33.0 | 18.0 |
| 1 1/4 | 56.5 | 35.4 | 28.0 | 17.0 | 63.5 | 29.7 | 33.0 | 20.0 | 76.0 | 22.7 | 40.0 | 20.0 |
| 1 1/2 | 63.5 | 41.2 | 33.0 | 18.0 | 76.0 | 34.2 | 40.0 | 22.0 | 84.0 | 27.9 | 42.0 | 22.0 |
| 2 | 76.0 | 52.7 | 39.0 | 22.0 | 84.0 | 43.1 | 42.0 | 24.0 | 110.0 | 38.1 | 54.0 | 24.0 |
| 2 1/2 | 92.0 | 62.7 | 42.0 | 24.0 | 110.0 | 54.0 | 57.1 | 24.0 | 121.0 | 45.0 | 66.0 | 24.0 |
| 3 | 110.0 | 78.0 | 57.1 | 31.5 | 121.0 | 67.7 | 66.0 | 31.5 | 146.0 | 58.4 | 70.0 | 31.5 |
| 4 | 146.0 | 102.0 | 68.0 | 45.0 | 152.0 | 87.0 | 70.0 | 45.0 | - | - | - | - |

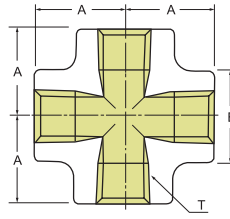
Threaded Type

| Size T | 2000lb | | 3000lb | | 6000lb | |
|-----------|--------|-------|--------|-------|--------|-------|
| | B | A | B | A | B | A |
| | mm | mm | mm | mm | mm | mm |
| 1/4 | 26.5 | 25.4 | 26.5 | 25.4 | - | - |
| 3/8 | 26.5 | 25.4 | 34.0 | 28.5 | 38.5 | 33.5 |
| 1/2 | 34.0 | 28.5 | 38.5 | 33.5 | 46.5 | 38.1 |
| 3/4 | 38.5 | 33.5 | 46.5 | 38.1 | 56.5 | 44.5 |
| 1 | 46.5 | 38.1 | 56.5 | 44.5 | 63.5 | 50.8 |
| 1 1/4 | 56.5 | 44.5 | 63.5 | 50.8 | 76.0 | 60.5 |
| 1 1/2 | 63.5 | 50.8 | 76.0 | 60.5 | 84.0 | 64.0 |
| 2 | 76.0 | 60.5 | 84.0 | 64.0 | 110.0 | 83.0 |
| 2 1/2 | 92.0 | 64.0 | 110.0 | 83.0 | 121.0 | 95.5 |
| 3 | 110.0 | 83.0 | 121.0 | 95.5 | 146.0 | 106.5 |
| 3 1/2 | 121.0 | 95.5 | 146.0 | 106.5 | 152.0 | 114.3 |
| 4 | 146.0 | 106.5 | 152.0 | 114.3 | 152.0 | 114.3 |

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3000lb, 6000lb, 9000lb



2000lb, 6000lb, 9000lb

CROSS

Socket Welding Type

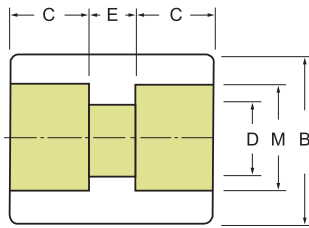
| Size M | 3000lb | | | | 6000lb | | | | 9000lb | | | |
|-----------|--------|-------|------|------|--------|------|------|------|--------|------|------|------|
| | B | D | A | C | B | D | A | C | B | D | A | C |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1/4 | 26.5 | 9.4 | 11.1 | 10.0 | - | - | - | - | - | - | - | - |
| 3/8 | 26.5 | 12.7 | 13.4 | 10.0 | - | - | - | - | - | - | - | - |
| 1/2 | 34.0 | 16.1 | 16 | 13.0 | 38.5 | 12.0 | 20.0 | 16.0 | 46.5 | 6.4 | 23.0 | 16.0 |
| 3/4 | 38.5 | 21.2 | 20 | 14.0 | 46.5 | 15.8 | 23.0 | 16.0 | 56.5 | 11.0 | 28.0 | 16.0 |
| 1 | 46.5 | 27.0 | 23 | 15.0 | 56.5 | 21.0 | 28.0 | 18.0 | 63.5 | 15.2 | 33.0 | 18.0 |
| 1 1/4 | 56.5 | 35.4 | 28 | 17.0 | 63.5 | 29.7 | 33.0 | 20.0 | 76.0 | 22.7 | 40.0 | 20.0 |
| 1 1/2 | 63.5 | 41.2 | 33 | 18.0 | 76.0 | 34.2 | 39.0 | 22.0 | 84.0 | 27.9 | 42.0 | 22.0 |
| 2 | 76.0 | 52.7 | 39 | 22.0 | 84.0 | 43.1 | 42.0 | 24.0 | 110.0 | 38.1 | 54.0 | 24.0 |
| 2 1/2 | 92.0 | 62.7 | 42 | 24.0 | 110.0 | 54.0 | 57.1 | 24.0 | 121.0 | 45.0 | 66.0 | 24.0 |
| 3 | 110.0 | 78.0 | 57.1 | 31.5 | 121.0 | 67.7 | 66.0 | 31.5 | 146.0 | 58.4 | 70.0 | 31.5 |
| 4 | 146.0 | 102.0 | 68 | 45.0 | 152.0 | 87.0 | 70.0 | 45.0 | - | - | - | - |

Threaded Type

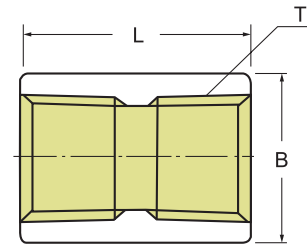
| Size T | 2000lb | | 3000lb | | 6000lb | |
|-----------|--------|-------|--------|-------|--------|-------|
| | B | A | B | A | B | A |
| | mm | mm | mm | mm | mm | mm |
| 1/4 | 26.5 | 25.4 | 26.5 | 25.4 | - | - |
| 3/8 | 26.5 | 25.4 | 34.0 | 28.5 | 38.5 | 33.5 |
| 1/2 | 34.0 | 28.5 | 38.5 | 33.5 | 46.5 | 38.1 |
| 3/4 | 38.5 | 33.5 | 46.5 | 38.1 | 56.5 | 44.5 |
| 1 | 46.5 | 38.1 | 56.5 | 44.5 | 63.5 | 50.8 |
| 1 1/4 | 56.5 | 44.5 | 63.5 | 50.8 | 76.0 | 60.5 |
| 1 1/2 | 63.5 | 50.8 | 76.0 | 60.5 | 84.0 | 64.0 |
| 2 | 76.0 | 60.5 | 84.0 | 64.0 | 110.0 | 83.0 |
| 2 1/2 | 92.0 | 64.0 | 110.0 | 83.0 | 121.0 | 95.5 |
| 3 | 110.0 | 83.0 | 121.0 | 95.5 | 146.0 | 106.5 |
| 3 1/2 | 121.0 | 95.5 | 146.0 | 106.5 | 152.0 | 114.3 |
| 4 | 146.0 | 106.5 | 152.0 | 114.3 | 152.0 | 114.3 |

- Dimensions are in millimeters.
- Dimensional Tolerances See ASME B16.11 or JIS B2316
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FULL COUPLING



3000lb, 6000lb, 9000lb



2000lb, 6000lb, 9000lb

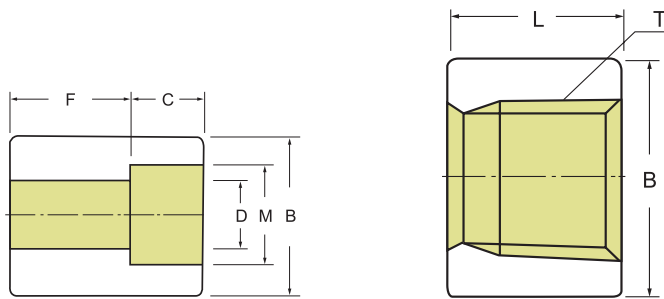
Socket Welding Type

| Size M | 3000lb | | | | 6000lb | | | | 9000lb | | | |
|-----------|--------|-------|------|------|--------|------|------|------|--------|------|------|------|
| | B | D | A | C | B | D | A | C | B | D | A | C |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1/4 | 21.0 | 9.4 | 10.0 | 6.4 | - | - | - | - | - | - | - | - |
| 3/8 | 25.0 | 12.7 | 10.0 | 6.4 | - | - | - | - | - | - | - | - |
| 1/2 | 31.0 | 16.1 | 10.0 | 9.6 | 32.6 | 12.0 | 10.0 | 9.6 | 40.4 | 6.4 | 10.0 | 9.6 |
| 3/4 | 36.3 | 21.2 | 13.0 | 9.6 | 40.0 | 15.8 | 13.0 | 9.6 | 45.5 | 11.0 | 13.0 | 9.6 |
| 1 | 44.5 | 27.0 | 13.0 | 12.7 | 48.5 | 21.0 | 13.0 | 12.7 | 55.0 | 15.2 | 13.0 | 12.7 |
| 1 1/4 | 54.0 | 35.4 | 13.0 | 12.7 | 57.2 | 29.7 | 13.0 | 12.7 | 66.5 | 22.7 | 13.0 | 12.7 |
| 1 1/2 | 60.3 | 41.2 | 13.0 | 12.7 | 64.7 | 34.2 | 13.0 | 12.7 | 73.0 | 27.9 | 13.0 | 12.7 |
| 2 | 73.5 | 52.7 | 16.0 | 19.1 | 80.3 | 43.1 | 16.0 | 19.1 | 88.0 | 38.1 | 16.0 | 19.1 |
| 2 1/2 | 92.5 | 62.7 | 16.0 | 19.1 | 98.0 | 54.0 | 16.0 | 19.1 | 108.0 | 45.0 | 16.0 | 19.1 |
| 3 | 106.8 | 78.0 | 16.0 | 19.1 | 114.3 | 67.7 | 16.0 | 19.1 | 127.0 | 58.5 | 16.0 | 19.1 |
| 4 | 140.0 | 102.0 | 19.0 | 19.1 | 160.0 | 87.0 | 19.0 | 19.1 | 160.0 | 80.3 | 19.0 | 19.1 |

Threaded Type

| Size T | 2000lb | | 3000lb | | 6000lb | |
|-----------|--------|-------|--------|-------|--------|-------|
| | B | L | B | L | B | L |
| | mm | mm | mm | mm | mm | mm |
| 1/4 | 19.0 | 35.0 | 19.0 | 35.1 | 25.4 | 35.0 |
| 3/8 | 22.0 | 38.0 | 22.0 | 38.1 | 31.8 | 38.0 |
| 1/2 | 28.5 | 48.0 | 28.5 | 48.0 | 38.1 | 48.0 |
| 3/4 | 35.0 | 51.0 | 35.0 | 51.0 | 44.5 | 51.0 |
| 1 | 44.5 | 61.0 | 44.5 | 61.0 | 57.0 | 61.0 |
| 1 1/4 | 57.0 | 67.0 | 57.0 | 67.0 | 63.5 | 67.0 |
| 1 1/2 | 63.5 | 80.0 | 63.5 | 80.0 | 76.0 | 80.0 |
| 2 | 76.0 | 86.0 | 76.0 | 86.0 | 92.0 | 86.0 |
| 2 1/2 | 92.0 | 92.0 | 92.0 | 92.0 | 108.0 | 92.0 |
| 3 | 108.0 | 108.0 | 108.0 | 108.0 | 127.0 | 108.0 |
| 3 1/2 | 127.0 | 114.3 | 127.0 | 114.3 | 140.0 | 114.3 |
| 4 | 140.0 | 121.0 | 140.0 | 121.0 | 160.0 | 121.0 |

- Dimensions are in millimeters.
- Dimensional Tolerances See ASME B16.11 or JIS B2316
- Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.



3000lb, 6000lb, 9000lb

2000lb, 3000lb, 6000lb

HALF COUPLING

Socket Welding Type

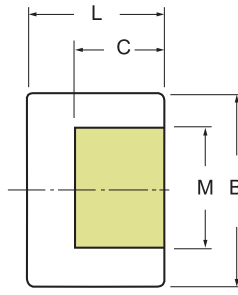
| Size M | 3000lb | | | | 6000lb | | | | 9000lb | | | |
|-----------|--------|-------|------|------|--------|------|------|------|--------|------|------|------|
| | B | D | A | C | B | D | A | C | B | D | A | C |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1/4 | 21.0 | 9.4 | 10.0 | 15.7 | - | - | - | - | - | - | - | - |
| 3/8 | 25.0 | 12.7 | 10.0 | 17.5 | - | - | - | - | - | - | - | - |
| 1/2 | 31.0 | 16.1 | 10.0 | 22.4 | 32.6 | 12.0 | 10.0 | 22.4 | 40.4 | 6.4 | 10.0 | 22.4 |
| 3/4 | 36.3 | 21.2 | 13.0 | 23.9 | 40.0 | 15.8 | 13.0 | 23.9 | 45.5 | 11.0 | 13.0 | 23.9 |
| 1 | 44.5 | 27.0 | 13.0 | 28.4 | 48.5 | 21.0 | 13.0 | 28.4 | 55.0 | 15.2 | 13.0 | 28.4 |
| 1 1/4 | 54.0 | 35.4 | 13.0 | 30.2 | 57.2 | 29.7 | 13.0 | 30.2 | 66.5 | 22.7 | 13.0 | 30.2 |
| 1 1/2 | 60.3 | 41.2 | 13.0 | 31.8 | 64.7 | 34.2 | 13.0 | 31.8 | 73.0 | 27.9 | 13.0 | 31.8 |
| 2 | 73.5 | 52.7 | 16.0 | 41.1 | 80.3 | 43.1 | 16.0 | 41.1 | 88.0 | 38.1 | 16.0 | 41.1 |
| 2 1/2 | 92.5 | 62.7 | 16.0 | 42.9 | 98.0 | 54.0 | 16.0 | 42.9 | 108.0 | 45.0 | 16.0 | 42.9 |
| 3 | 106.8 | 78.0 | 16.0 | 44.5 | 114.3 | 67.7 | 16.0 | 44.5 | 127.0 | 58.4 | 16.0 | 44.5 |
| 4 | 140.0 | 102.0 | 19.0 | 47.7 | 160.0 | 87.0 | 19.0 | 47.7 | 160.0 | 80.3 | 19.0 | 47.7 |

Threaded Type

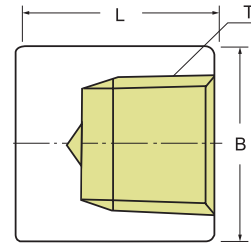
| Size T | 2000lb | | 3000lb | | 6000lb | |
|-----------|--------|------|--------|------|--------|------|
| | B | L | B | L | B | L |
| | mm | mm | mm | mm | mm | mm |
| 1/4 | 19.0 | 17.5 | 19.0 | 17.5 | 25.4 | 17.5 |
| 3/8 | 22.0 | 19.0 | 22.0 | 19.0 | 31.8 | 19.0 |
| 1/2 | 28.5 | 24.0 | 28.5 | 24.0 | 38.1 | 24.0 |
| 3/4 | 35.0 | 25.5 | 35.0 | 25.5 | 44.5 | 25.5 |
| 1 | 44.5 | 30.5 | 44.5 | 30.5 | 57.0 | 30.5 |
| 1 1/4 | 57.0 | 33.5 | 57.0 | 33.5 | 63.5 | 33.5 |
| 1 1/2 | 63.5 | 40.0 | 63.5 | 40.0 | 76.0 | 40.0 |
| 2 | 76.0 | 43.0 | 76.0 | 43.0 | 92.0 | 43.0 |
| 2 1/2 | 92.0 | 46.0 | 92.0 | 46.0 | 108.0 | 46.0 |
| 3 | 108.0 | 54.0 | 108.0 | 54.0 | 127.0 | 54.0 |
| 3 1/2 | 127.0 | 57.0 | 127.0 | 57.0 | 140.0 | 57.0 |
| 4 | 140.0 | 60.5 | 140.0 | 60.5 | 160.0 | 60.5 |

- Dimensions are in millimeters.
- Dimensional Tolerances See ASME B16.11 or JIS B2316
- Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.

CAP



3000lb, 6000lb, 9000lb



2000lb, 3000lb, 6000lb

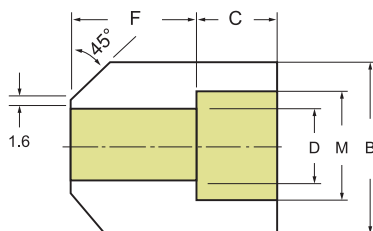
Socket Welding Type

| Size M | 3000lb | | | 6000lb | | | 9000lb | | |
|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | B mm | C mm | L mm | D mm | C mm | L mm | D mm | C mm | L mm |
| 1/4 | 21.0 | 10.0 | 20.0 | - | - | - | - | - | - |
| 3/8 | 25.0 | 10.0 | 20.0 | - | - | - | - | - | - |
| 1/2 | 31.0 | 10.0 | 20.0 | 32.6 | 10.0 | 26.0 | 40.4 | 10.0 | 30.0 |
| 3/4 | 36.3 | 13.0 | 25.0 | 40.0 | 13.0 | 27.0 | 45.5 | 13.0 | 30.0 |
| 1 | 44.5 | 13.0 | 27.0 | 48.5 | 13.0 | 30.0 | 55.0 | 13.0 | 33.0 |
| 1 1/4 | 54.0 | 13.0 | 30.0 | 57.2 | 13.0 | 35.0 | 66.5 | 13.0 | 40.0 |
| 1 1/2 | 60.3 | 13.0 | 30.0 | 64.7 | 13.0 | 36.0 | 73.0 | 13.0 | 40.0 |
| 2 | 73.5 | 16.0 | 36.0 | 80.3 | 16.0 | 39.0 | 88.0 | 16.0 | 43.0 |
| 2 1/2 | 92.5 | 16.0 | 42.0 | 98.0 | 16.0 | 45.0 | 108.0 | 16.0 | 50.0 |
| 3 | 106.8 | 16.0 | 46.0 | 114.3 | 16.0 | 52.0 | 127.0 | 16.0 | 58.0 |
| 4 | 140.0 | 19.0 | 55.0 | - | - | - | - | - | - |

Threaded Type

| Size T | 2000lb | | 3000lb | | 6000lb | |
|-----------|---------|---------|---------|---------|---------|---------|
| | B mm | L mm | B mm | L mm | B mm | L mm |
| 1/4 | 19.0 | 25.0 | 19.0 | 25.0 | 25.4 | 27.0 |
| 3/8 | 22.0 | 25.0 | 22.0 | 25.0 | 31.8 | 27.0 |
| 1/2 | 28.5 | 32.0 | 28.5 | 32.0 | 38.1 | 33.0 |
| 3/4 | 35.0 | 37.0 | 35.0 | 37.0 | 44.5 | 38.0 |
| 1 | 44.5 | 41.0 | 44.5 | 41.0 | 57.0 | 43.0 |
| 1 1/4 | 57.0 | 44.0 | 57.0 | 44.0 | 63.5 | 46.0 |
| 1 1/2 | 63.5 | 44.0 | 63.5 | 44.0 | 76.0 | 48.0 |
| 2 | 76.0 | 48.0 | 76.0 | 48.0 | 92.0 | 51.0 |
| 2 1/2 | 92.0 | 60.0 | 92.0 | 60.0 | 108.0 | 64.0 |
| 3 | 108.0 | 65.0 | 108.0 | 65.0 | 127.0 | 68.0 |
| 3 1/2 | 127.0 | 68.0 | 127.0 | 68.0 | 140.0 | 70.0 |
| 4 | 140.0 | 68.0 | 140.0 | 68.0 | 160.0 | 75.0 |

- Dimensions are in millimeters.
- Dimensional Tolerances See ASME B16.11 or JIS B2316
- Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.



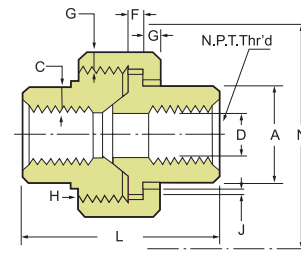
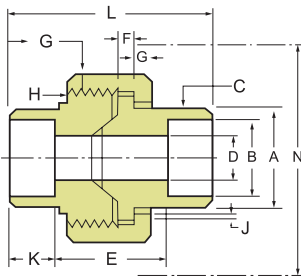
BOSS

Socket Welding Type

| Size M | 3000lb | | | | 6000lb | | | |
|-----------|--------|-------|------|------|--------|------|------|------|
| | B | D | C | F | B | D | C | F |
| | mm | mm | mm | mm | mm | mm | mm | mm |
| 1/4 | 21.0 | 9.4 | 10.0 | 15.7 | - | - | - | - |
| 3/8 | 25.0 | 12.7 | 10.0 | 17.5 | - | - | - | - |
| 1/2 | 31.0 | 16.1 | 10.0 | 22.4 | 32.6 | 12.0 | 10.0 | 22.4 |
| 3/4 | 36.3 | 21.2 | 13.0 | 23.9 | 40.0 | 15.8 | 13.0 | 23.9 |
| 1 | 44.5 | 27.0 | 13.0 | 28.4 | 48.5 | 21.0 | 13.0 | 28.4 |
| 1 1/4 | 54.0 | 35.4 | 13.0 | 30.2 | 57.2 | 29.7 | 13.0 | 30.2 |
| 1 1/2 | 60.3 | 41.2 | 13.0 | 31.8 | 64.7 | 34.2 | 13.0 | 31.8 |
| 2 | 73.5 | 52.7 | 16.0 | 41.1 | 80.3 | 43.1 | 16.0 | 41.1 |
| 2 1/2 | 92.5 | 62.7 | 16.0 | 42.9 | 98.0 | 54.0 | 16.0 | 42.9 |
| 3 | 106.8 | 78.0 | 16.0 | 44.5 | 114.3 | 67.7 | 16.0 | 44.5 |
| 4 | 140.0 | 102.0 | 19.0 | 47.7 | 160.0 | 87.0 | 19.0 | 47.7 |

UNION

MSS SP-83 (#3000)



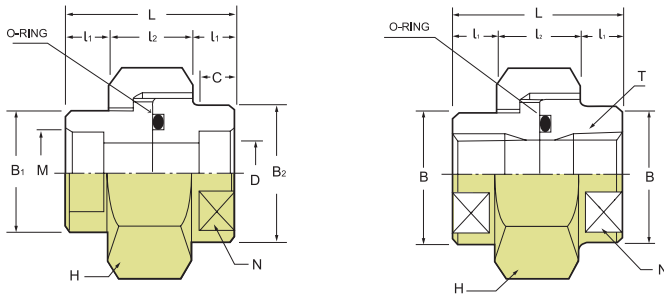
Socket Welding Type

| Nominal Pipe Size | Pipe End Min. A | Socket Bore Dia. B | Socket Wall Min. C | Water Way Bore D | Laying Length E | Male Flange Min. F | Nut Min. G | Treads Per 25.4 Max. H | Bearing Min. J | Depth of Socket Min. K | Length Assem. Nominal L | Clear Assem. Nut N |
|-------------------|-----------------|--------------------|--------------------|------------------|-----------------|--------------------|------------|------------------------|----------------|------------------------|-------------------------|--------------------|
| 1/8 | 21.8 | 10.92 10.67 | 3.17 | 6.83 6.43 | 22.4 19.0 | 3.17 | 3.17 | 16.0 | 1.24 | 9.6 | 41.4 | 49.0 |
| 1/4 | 21.8 | 14.22 13.97 | 3.30 | 9.85 9.45 | 22.4 19.0 | 3.17 | 3.17 | 16.0 | 1.24 | 9.6 | 41.4 | 49.0 |
| 3/8 | 25.9 | 17.78 17.53 | 3.48 | 13.92 13.51 | 26.9 20.6 | 3.43 | 3.43 | 14.0 | 1.37 | 9.6 | 46.0 | 55.0 |
| 1/2 | 31.2 | 21.84 21.59 | 4.06 | 17.47 17.07 | 26.9 20.6 | 3.68 | 3.68 | 14.0 | 1.50 | 9.6 | 49.0 | 57.0 |
| 3/4 | 37.1 | 27.18 26.92 | 4.27 | 21.79 21.37 | 31.8 25.4 | 4.06 | 4.06 | 11.0 | 1.68 | 12.7 | 56.9 | 67.0 |
| 1 | 45.5 | 34.04 33.78 | 4.95 | 28.14 27.74 | 34.3 26.2 | 4.57 | 4.44 | 11.0 | 1.85 | 12.7 | 62.0 | 79.0 |
| 1 1/4 | 54.9 | 42.67 42.42 | 5.28 | 35.76 35.36 | 40.6 32.5 | 5.33 | 5.21 | 11.0 | 2.13 | 12.7 | 71.1 | 94.0 |
| 1 1/2 | 61.5 | 48.77 48.51 | 5.54 | 41.61 41.20 | 42.2 34.0 | 5.84 | 5.59 | 10.0 | 2.31 | 12.7 | 76.5 | 111.0 |
| 2 | 75.2 | 61.47 61.21 | 6.05 | 52.53 52.12 | 45.5 37.3 | 6.60 | 6.35 | 10.0 | 2.69 | 15.8 | 86.1 | 132.0 |
| 2 1/2 | 91.7 | 74.17 73.66 | 7.65 | 64.72 64.31 | 61.7 52.1 | 7.49 | 7.11 | 8.0 | 3.07 | 15.8 | 102.4 | 148.0 |
| 3 | 109.2 | 90.17 89.66 | 8.31 | 77.67 77.27 | 63.8 53.6 | 8.25 | 8.00 | 8.0 | 3.53 | 15.8 | 109.0 | 175.0 |

Threaded Type

| Nominal Pipe Size | Pipe End Min. A | Socket Bore Dia. B | Socket Wall Min. C | Water Way Bore D | Laying Length E | Male Flange Min. F | Nut Min. G | Treads Per 25.4 Max. H | Bearing Min. J | Depth of Socket Min. K | Length Assem. Nominal L | Clear Assem. Nut N |
|-------------------|-----------------|--------------------|--------------------|------------------|-----------------|--------------------|------------|------------------------|----------------|------------------------|-------------------------|--------------------|
| 1/8 | 14.7 | - | 2.41 | 6.83 6.43 | - | 3.17 | 3.2 | 16.0 | 1.24 | - | 41.4 | 49.0 |
| 1/4 | 19.0 | - | 3.02 | 9.85 9.45 | - | 3.17 | 3.2 | 16.0 | 1.24 | - | 41.4 | 49.0 |
| 3/8 | 22.9 | - | 3.20 | 13.92 13.51 | - | 3.43 | 3.4 | 14.0 | 1.37 | - | 46.0 | 55.0 |
| 1/2 | 27.7 | - | 3.73 | 17.47 17.07 | - | 3.68 | 3.7 | 14.0 | 1.50 | - | 49.0 | 57.0 |
| 3/4 | 33.5 | - | 3.91 | 21.79 21.39 | - | 4.06 | 4.1 | 11.0 | 1.68 | - | 56.9 | 67.0 |
| 1 | 41.4 | - | 4.55 | 28.14 27.74 | - | 4.57 | 4.4 | 11.0 | 1.85 | - | 62.0 | 79.0 |
| 1 1/4 | 50.5 | - | 4.85 | 35.76 35.36 | - | 5.33 | 5.2 | 11.0 | 2.13 | - | 71.1 | 94.0 |
| 1 1/2 | 57.2 | - | 5.08 | 41.61 41.20 | - | 5.84 | 5.6 | 10.0 | 2.31 | - | 76.4 | 111.0 |
| 2 | 70.1 | - | 5.54 | 52.53 52.12 | - | 6.60 | 6.4 | 10.0 | 2.69 | - | 86.1 | 132.0 |
| 2 1/2 | 85.3 | - | 7.01 | 64.72 64.31 | - | 7.49 | 7.1 | 8.0 | 3.07 | - | 102.4 | 148.0 |
| 3 | 102.4 | - | 7.62 | 77.67 77.27 | - | 8.25 | 8.0 | 8.0 | 3.53 | - | 109.0 | 175.0 |

- Dimensions are in millimeters.
- Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.



UNION

PFC Standards (#3000, #6000)

Socket Welding Type

| Size M | B ₁ | B ₂ | D | C | l ₁ | l ₂ | L | N | H | O-Ring |
|-----------|----------------|----------------|------|------|----------------|----------------|------|------|--------|--------|
| 1/4 | 22.0 | 24.0 | 10.0 | 10.0 | 10.0 | 18.0 | 38.0 | 21.0 | 35 HEX | P18 |
| 3/8 | 27.0 | 30.0 | 12.0 | 10.0 | 10.0 | 18.0 | 38.0 | 26.0 | 41 HEX | P20 |
| 1/2 | 32.0 | 35.0 | 16.0 | 10.0 | 12.0 | 20.0 | 44.0 | 32.0 | 46 HEX | G25 |
| 3/4 | 38.0 | 42.0 | 20.0 | 13.0 | 12.0 | 26.0 | 50.0 | 38.0 | 54 HEX | G30 |
| 1 | 47.0 | 52.0 | 25.0 | 13.0 | 15.0 | 26.0 | 56.0 | 46.0 | 66 HEX | G35 |
| 1 1/4 | 56.0 | 60.0 | 32.0 | 13.0 | 15.0 | 30.0 | 60.0 | 54.0 | 77 HEX | G45 |
| 1 1/2 | 63.0 | 68.0 | 38.0 | 13.0 | 18.0 | 36.0 | 72.0 | 63.0 | 80 HEX | G50 |
| 2 | 76.0 | 85.0 | 48.0 | 17.0 | 18.0 | 36.0 | 72.0 | 77.0 | 95 HEX | G65 |

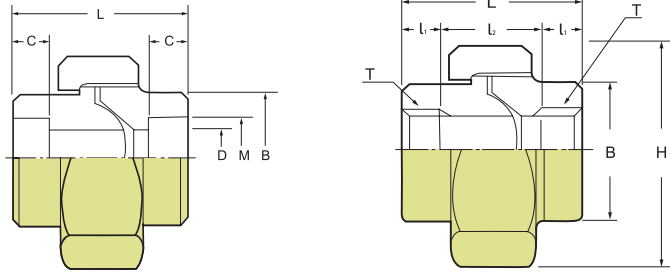
Socket Welding Type

| Size M | B ₁ | B ₂ | D | C | l ₁ | l ₂ | L | N | H | O-Ring |
|-----------|----------------|----------------|---|---|----------------|----------------|------|------|--------|--------|
| 1/4 | 22.0 | - | - | - | 10.0 | 18.0 | 38.0 | 21.0 | 35 HEX | P18 |
| 3/8 | 27.0 | - | - | - | 10.0 | 18.0 | 38.0 | 26.0 | 41 HEX | P20 |
| 1/2 | 32.0 | - | - | - | 12.0 | 20.0 | 44.0 | 32.0 | 46 HEX | G25 |
| 3/4 | 38.0 | - | - | - | 12.0 | 26.0 | 50.0 | 38.0 | 54 HEX | G30 |
| 1 | 47.0 | - | - | - | 15.0 | 26.0 | 56.0 | 46.0 | 66 HEX | G35 |
| 1 1/4 | 56.0 | - | - | - | 15.0 | 30.0 | 60.0 | 54.0 | 77 HEX | G45 |
| 1 1/2 | 63.0 | - | - | - | 18.0 | 36.0 | 72.0 | 63.0 | 80 HEX | G50 |
| 2 | 76.0 | - | - | - | 18.0 | 36.0 | 72.0 | 77.0 | 95 HEX | G65 |

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UNION

PFC Standards (#3000, #6000)



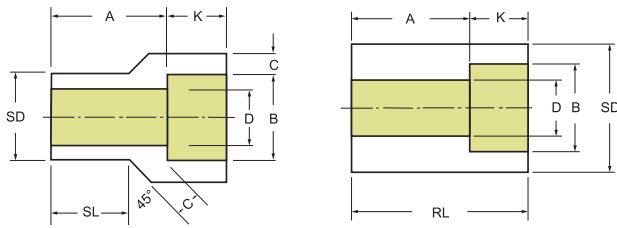
Socket Welding Type

| Nominal Pipe Size | B | | L | | C | | D | | H | |
|-------------------|-------|-------|-------|-------|------|------|------|------|---------|---------|
| | 3000 | 6000 | 3000 | 6000 | 3000 | 6000 | 3000 | 6000 | 3000 | 6000 |
| 1/4 | 21.0 | - | 41.0 | - | 10.0 | - | 9.4 | - | 35 HEX | - |
| 3/8 | 25.0 | - | 46.0 | - | 10.0 | - | 12.7 | - | 40 HEX | - |
| 1/2 | 32.0 | 40.0 | 51.0 | 57.0 | 10.0 | 13.0 | 16.1 | 12.0 | 46 HEX | 56 HEX |
| 3/4 | 40.0 | 44.5 | 57.0 | 64.0 | 13.0 | 13.0 | 21.2 | 15.8 | 58 HEX | 65 HEX |
| 1 | 48.0 | 51.0 | 64.0 | 72.0 | 13.0 | 13.0 | 27.0 | 21.0 | 65 HEX | 74 HEX |
| 1 1/4 | 55.0 | 57.2 | 72.0 | 78.0 | 13.0 | 16.0 | 35.4 | 29.7 | 76 OTC | 83 OTC |
| 1 1/2 | 63.5 | 71.5 | 78.0 | 88.0 | 13.0 | 16.0 | 41.2 | 34.2 | 83 OTC | 103 OTC |
| 2 | 76.0 | 90.0 | 88.0 | 110.0 | 16.0 | 16.0 | 52.7 | 43.1 | 103 OTC | 124 OTC |
| 2 1/2 | 95.0 | 105.0 | 110.0 | 120.0 | 18.0 | 18.0 | 62.7 | 54.0 | 124 OTC | 150 OTC |
| 3 | 116.0 | 125.0 | 120.0 | 140.0 | 22.5 | 22.0 | 78.0 | 67.7 | 142 OTC | 176 OTC |

Socket Welding Type

| Nominal Pipe Size | B | | L | | C | | D | | H | |
|-------------------|-------|-------|------|------|------|------|-------|-------|---------|---------|
| | 3000 | 6000 | 3000 | 6000 | 3000 | 6000 | 3000 | 6000 | 3000 | 6000 |
| 1/4 | 21.0 | 25.4 | 11.5 | 13.5 | 18.0 | 19.0 | 41.0 | 46.0 | 35 HEX | 40 HEX |
| 3/8 | 25.0 | 32.0 | 14.0 | 15.0 | 18.0 | 21.0 | 46.0 | 51.0 | 40 HEX | 46 HEX |
| 1/2 | 32.0 | 40.0 | 15.0 | 17.0 | 21.0 | 23.0 | 51.0 | 57.0 | 46 HEX | 56 HEX |
| 3/4 | 40.0 | 44.5 | 17.0 | 19.5 | 23.0 | 25.0 | 57.0 | 64.0 | 58 HEX | 65 HEX |
| 1 | 48.0 | 51.0 | 19.5 | 22.5 | 25.0 | 27.0 | 64.0 | 72.0 | 65 HEX | 74 HEX |
| 1 1/4 | 55.0 | 57.2 | 22.5 | 24.0 | 27.0 | 30.0 | 72.0 | 78.0 | 76 OTC | 83 OTC |
| 1 1/2 | 63.5 | 71.5 | 24.0 | 26.0 | 30.0 | 36.0 | 78.0 | 88.0 | 83 OTC | 103 OTC |
| 2 | 76.0 | 90.0 | 26.0 | 34.0 | 36.0 | 42.0 | 88.0 | 110.0 | 103 OTC | 124 OTC |
| 2 1/2 | 95.0 | 105.0 | 34.0 | 37.5 | 42.0 | 45.0 | 110.0 | 120.0 | 124 OTC | 150 OTC |
| 3 | 116.0 | 125.0 | 37.0 | 45.0 | 45.0 | 50.0 | 120.0 | 140.0 | 142 OTC | 180 OTC |

- Dimensions are in millimeters.
- Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.



REDUCER INSERT

Sch5s, Sch10s, Sch20s

ASME B16.9

| Nominal Pipe Size | Type (2) | | Socket | | Shank Dia. SD | Laying Length A | | Bore D | | Wall Min. C | | Length Min. | | | |
|-------------------|----------|----|--------|-------------|---------------|-----------------|------|--------|------|-------------|-------|-------------|----|----------|----|
| | 3M | 6M | Dia.B | Depth Min.K | | 3M | 6M | 3M | 6M | 3M | 6M | SL | | RL (min) | |
| | | | | | | | | | | | | 3M | c | 3M | 3M |
| 3/8 x 1/4 | 1 | 1 | 14.22 | 10.0 | 17.15 | 19.0 | 21.0 | 9.0 | 6.5 | 3.78 | 4.60 | 14 | 16 | - | - |
| 1/2 x 3/8 | 1 | 1 | 17.65 | 10.0 | 21.34 | 21.0 | 23.0 | 12.5 | 9.0 | 4.01 | 5.03 | 16 | 16 | - | - |
| 1/2 x 1/4 | 2 | 1 | 14.22 | 10.0 | 21.34 | 21.0 | 21.0 | 9.0 | 6.0 | 3.78 | 4.60 | 16 | 16 | - | - |
| 3/4 x 1/2 | 1 | 1 | 21.84 | 10.0 | 26.67 | 22.0 | 25.0 | 16.0 | 11.5 | 4.67 | 5.97 | 17 | 19 | - | - |
| 3/4 x 3/8 | 2 | 1 | 17.65 | 10.0 | 26.67 | 16.0 | 22.0 | 12.5 | 9.0 | 4.01 | 5.03 | - | 19 | 21 | - |
| 3/4 x 1/4 | 2 | 2 | 14.22 | 10.0 | 26.67 | 18.0 | 22.0 | 9.0 | 6.5 | 3.78 | 4.60 | - | - | 21 | 32 |
| 1 x 3/4 | 1 | 1 | 27.18 | 13.0 | 33.40 | 24.0 | 28.0 | 21.0 | 15.5 | 4.90 | 6.96 | 19 | 21 | - | - |
| 1 x 1/2 | 2 | 1 | 21.84 | 10.0 | 33.40 | 16.0 | 28.0 | 16.0 | 11.5 | 4.67 | 5.97 | - | 21 | 28 | - |
| 1 x 3/8 | 2 | 2 | 17.65 | 10.0 | 33.40 | 18.0 | 22.0 | 12.5 | 9.0 | 4.01 | 5.03 | - | - | 28 | 33 |
| 1 x 1/4 | 2 | 2 | 14.22 | 10.0 | 33.40 | 19.0 | 24.0 | 9.0 | 6.0 | 3.78 | 4.60 | - | - | 28 | 33 |
| 1 1/4 x 1 | 1 | 1 | 33.91 | 13.0 | 42.16 | 25.0 | 30.0 | 26.5 | 20.5 | 5.69 | 7.92 | 21 | 22 | - | - |
| 1 1/4 x 3/4 | 2 | 2 | 27.18 | 13.0 | 42.16 | 18.0 | 21.0 | 21.0 | 15.5 | 4.90 | 6.96 | - | - | 32 | 35 |
| 1 1/4 x 1/2 | 2 | 2 | 21.84 | 10.0 | 42.16 | 19.0 | 22.0 | 16.0 | 11.5 | 4.67 | 5.97 | - | - | 32 | 35 |
| 1 1/4 x 3/8 | 2 | 2 | 17.65 | 10.0 | 42.16 | 21.0 | 24.0 | 12.5 | 9.0 | 4.01 | 5.03 | - | - | 32 | 35 |
| 1 1/4 x 1/4 | 2 | 2 | 14.22 | 10.0 | 42.16 | 22.0 | 25.0 | 9.0 | 6.0 | 3.78 | 4.60 | - | - | 32 | 35 |
| 1 1/2 x 1 1/4 | 1 | 1 | 42.67 | 13.0 | 48.26 | 28.0 | 35.0 | 35.0 | 29.5 | 6.07 | 7.92 | 22 | 25 | - | - |
| 1 1/2 x 1 | 2 | 1 | 33.91 | 13.0 | 48.26 | 18.0 | 29.0 | 26.5 | 20.5 | 5.69 | 7.92 | - | 25 | 33 | - |
| 1 1/2 x 3/4 | 2 | 2 | 27.18 | 13.0 | 48.26 | 19.0 | 25.0 | 21.0 | 15.5 | 4.90 | 6.96 | - | - | 33 | 40 |
| 1 1/2 x 1/2 | 2 | 2 | 21.84 | 10.0 | 48.26 | 21.0 | 27.0 | 16.0 | 11.5 | 4.67 | 5.97 | - | - | 33 | 40 |
| 1 1/2 x 3/8 | 2 | 2 | 17.65 | 10.0 | 48.26 | 22.0 | 28.0 | 12.5 | 9.0 | 4.01 | 5.03 | - | - | 33 | 40 |
| 2 x 1 1/2 | 1 | 1 | 48.77 | 13.0 | 60.32 | 32.0 | 47.0 | 41.0 | 34.0 | 6.35 | 8.90 | 25 | 40 | - | - |
| 1 x 4 | 2 | 2 | 42.67 | 13.0 | 60.32 | 21.0 | 24.0 | 35.0 | 29.5 | 6.07 | 7.92 | - | - | 38 | 41 |
| 2 x 1 | 2 | 2 | 33.91 | 13.0 | 60.32 | 22.0 | 25.0 | 26.5 | 21.0 | 5.69 | 7.92 | - | - | 38 | 41 |
| 2 x 3/4 | 2 | 2 | 27.18 | 13.0 | 60.32 | 24.0 | 27.0 | 21.0 | 15.5 | 4.90 | 6.96 | - | - | 38 | 41 |
| 2 x 1/2 | 2 | 2 | 21.84 | 10.0 | 60.32 | 25.0 | 28.0 | 16.0 | 11.5 | 4.67 | 5.97 | - | - | 38 | 41 |
| 2 1/2 x 2 | 1 | 1 | 61.24 | 16.0 | 73.02 | 46.0 | 43.0 | 52.5 | 43.0 | 6.93 | 10.92 | 38 | 32 | - | - |
| 2 1/2 x 1 1/2 | 2 | - | 48.77 | 13.0 | 73.02 | 35.0 | - | 41.0 | - | 6.35 | - | - | - | 54 | - |
| 2 1/2 x 1 1/4 | 2 | - | 42.67 | 13.0 | 73.02 | 37.0 | - | 35.0 | - | 6.07 | - | - | - | 54 | - |
| 2 1/2 x 1 | 2 | - | 33.91 | 13.0 | 73.02 | 38.0 | - | 26.5 | - | 5.69 | - | - | - | 54 | - |
| 2 1/2 x 3/4 | 2 | - | 27.18 | 13.0 | 73.02 | 40.0 | - | 21.0 | - | 4.90 | - | - | - | 54 | - |
| 3 x 2 1/2 | 1 | - | 74.01 | 16.0 | 88.90 | 38.0 | - | 62.5 | - | 8.76 | - | 32 | - | - | - |
| 3 x 2 | 2 | - | 61.24 | 16.0 | 88.90 | 25.0 | - | 52.5 | - | 6.93 | - | - | - | 48 | - |
| 3 x 1 1/2 | 2 | - | 48.77 | 13.0 | 88.90 | 29.0 | - | 41.0 | - | 6.35 | - | - | - | 48 | - |
| 3 x 1 1/4 | 2 | - | 42.67 | 13.0 | 88.90 | 30.0 | - | 35.0 | - | 6.07 | - | - | - | 48 | - |
| 3 x 1 | 2 | - | 33.91 | 13.0 | 88.90 | 32.0 | - | 26.5 | - | 5.69 | - | - | - | 48 | - |
| 4 x 3 | 2 | - | 89.99 | 16.0 | 114.30 | 33.0 | - | 78.0 | - | 9.50 | - | - | - | 60 | - |
| 4 x 2 1/2 | 2 | - | 74.01 | 16.0 | 114.30 | 38.0 | - | 62.5 | - | 8.76 | - | - | - | 60 | - |
| 4 x 2 | 2 | - | 61.24 | 16.0 | 114.30 | 38.0 | - | 52.5 | - | 6.93 | - | - | - | 60 | - |
| 4 x 1 1/2 | 2 | - | 48.77 | 13.0 | 114.30 | 42.0 | - | 41.0 | - | 6.35 | - | - | - | 60 | - |
| 4 x 1 1/4 | 2 | - | 42.67 | 13.0 | 114.30 | 43.0 | - | 35.0 | - | 6.07 | - | - | - | 60 | - |

• Dimensional Tolerances MSS SP-79

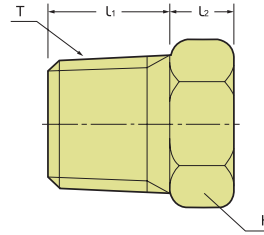
(1) At the option of the manufacturer Type 2 Reducers may be furnished in Type 1 configuration.

(2) 3M and 6M symbols denote 3000 and 6000 classes.

• Dimensions are in millimeters.

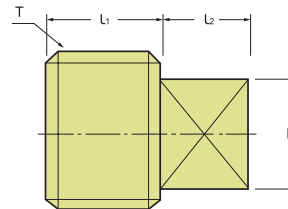
• Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.

HEX.HEAD PLUG



| Size T | 3000lb | | |
|-----------|----------------|----------------|-------|
| | l ₁ | l ₂ | H |
| | mm | mm | mm |
| 1/8 | 11.0 | 6.3 | 11.0 |
| 1/4 | 13.0 | 6.3 | 16.0 |
| 3/8 | 14.0 | 8.0 | 18.0 |
| 1/2 | 18.0 | 8.0 | 22.0 |
| 3/4 | 19.0 | 10.0 | 27.0 |
| 1 | 21.0 | 10.0 | 35.0 |
| 1 1/4 | 22.0 | 14.0 | 44.0 |
| 1 1/2 | 24.0 | 16.0 | 51.0 |
| 2 | 25.0 | 18.0 | 63.5 |
| 2 1/2 | 32.0 | 19.0 | 76.5 |
| 3 | 40.0 | 21.0 | 99.0 |
| 3 1/2 | 41.0 | 22.0 | 103.0 |
| 4 | 42.0 | 32.0 | 117.0 |

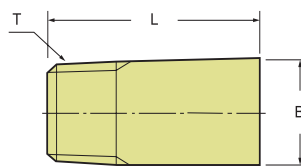
SQ.HEAD PLUG



| Size T | 3000lb | | |
|-----------|----------------|----------------|------|
| | l ₁ | l ₂ | H |
| | mm | mm | mm |
| 1/8 | 9.9 | 6.6 | 7.0 |
| 1/4 | 13.0 | 6.6 | 9.5 |
| 3/8 | 13.0 | 7.9 | 11.0 |
| 1/2 | 15.0 | 9.9 | 14.5 |
| 3/4 | 16.0 | 11.0 | 16.0 |
| 1 | 20.1 | 13.0 | 21.0 |
| 1 1/4 | 21.1 | 15.0 | 24.0 |
| 1 1/2 | 21.1 | 16.0 | 28.5 |
| 2 | 23.1 | 18.0 | 33.5 |
| 2 1/2 | 27.0 | 20.0 | 38.1 |
| 3 | 29.0 | 21.0 | 42.9 |
| 3 1/2 | 30.0 | 22.2 | 47.6 |
| 4 | 32.0 | 25.0 | 63.5 |

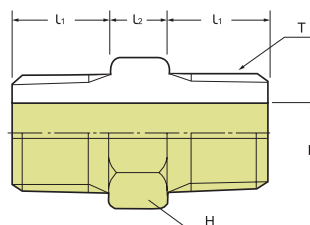
- Dimensions are in millimeters.
- Dimensional Tolerances See ASME B16.11 or JIS B2316
- Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.

ROUND HEAD PLUG



| Size T | 3000lb | |
|-----------|--------|------|
| | B | L |
| | mm | mm |
| 1/8 | 10.3 | 35.0 |
| 1/4 | 13.5 | 41.3 |
| 3/8 | 17.5 | 41.3 |
| 1/2 | 21.4 | 44.5 |
| 3/4 | 27.0 | 44.5 |
| 1 | 33.4 | 50.8 |
| 1 1/4 | 42.9 | 50.8 |
| 1 1/2 | 48.4 | 50.8 |
| 2 | 60.3 | 63.5 |
| 2 1/2 | 73.0 | 70.0 |
| 3 | 88.9 | 70.0 |
| 3 1/2 | 101.6 | 76.2 |
| 4 | 114.3 | 76.2 |

HEX.NIPPLE

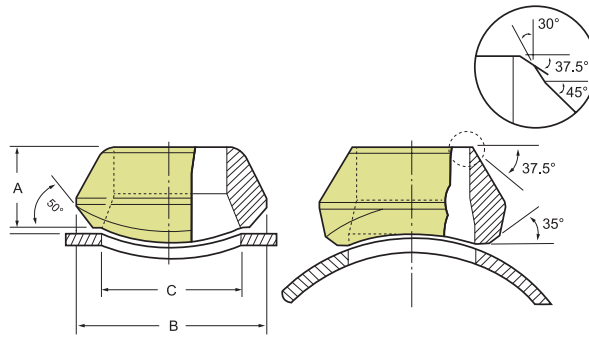


| Size T | 3000lb | | | |
|-----------|--------|-------|----------------|----------------|
| | D | H | l ₁ | l ₂ |
| | mm | mm | mm | mm |
| 1/8 | 5.5 | 12.0 | 10.0 | 6.0 |
| 1/4 | 7.0 | 17.0 | 14.0 | 8.0 |
| 3/8 | 9.0 | 19.0 | 14.0 | 8.0 |
| 1/2 | 12.0 | 24.0 | 19.0 | 9.0 |
| 3/4 | 15.0 | 30.0 | 19.0 | 10.0 |
| 1 | 20.0 | 36.0 | 24.0 | 11.0 |
| 1 1/4 | 28.0 | 46.0 | 24.0 | 12.0 |
| 1 1/2 | 32.0 | 50.0 | 25.0 | 14.0 |
| 2 | 40.0 | 65.0 | 26.0 | 16.0 |
| 2 1/2 | 60.0 | 80.0 | 38.0 | 18.0 |
| 3 | 74.0 | 95.0 | 40.0 | 20.0 |
| 4 | 97.0 | 116.0 | 50.0 | 25.0 |

- Dimensions are in millimeters.
- Dimensional Tolerances See ASME B16.11 or JIS B2316
- Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.

WELDOLET

STD(Sch40), X-S(Sch80), Sch160, XX-S



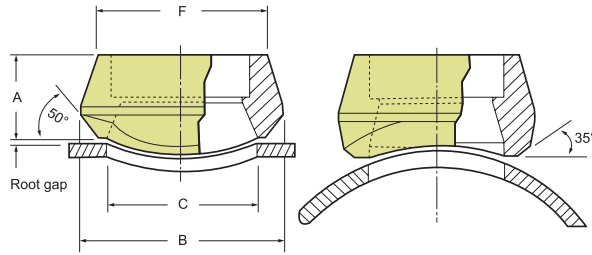
STD, X-S

| Outlet Size | A | | B | | C | | APP' Weight | |
|-------------|-------|-------|-------|-------|-------|-------|-------------|--------|
| | STD | X-S | STD | X-S | STD | X-S | STD | X-S |
| | mm | mm | mm | mm | mm | mm | kg | kg |
| 1/2 | 19.1 | 19.1 | 34.9 | 34.9 | 23.8 | 23.8 | 0.08 | 0.09 |
| 3/4 | 22.2 | 22.2 | 44.5 | 44.5 | 30.2 | 30.2 | 0.11 | 0.14 |
| 1 | 27.0 | 27.0 | 54.0 | 54.0 | 36.5 | 36.5 | 0.23 | 0.21 |
| 1 1/4 | 31.8 | 31.8 | 65.1 | 65.1 | 44.5 | 44.5 | 0.36 | 0.41 |
| 1 1/2 | 33.3 | 33.3 | 73.0 | 73.0 | 50.8 | 50.8 | 0.45 | 0.50 |
| 2 | 38.1 | 38.1 | 88.9 | 88.9 | 65.1 | 65.1 | 0.80 | 0.80 |
| 2 1/2 | 41.3 | 41.3 | 103.2 | 103.2 | 76.2 | 76.2 | 1.14 | 1.20 |
| 3 | 44.5 | 44.5 | 122.2 | 122.2 | 93.7 | 93.7 | 1.82 | 1.90 |
| 4 | 50.8 | 50.8 | 152.4 | 152.4 | 120.7 | 120.7 | 2.86 | 2.90 |
| 5 | 57.2 | 57.2 | 179.4 | 179.4 | 141.3 | 141.3 | 4.66 | 4.70 |
| 6 | 60.3 | 77.8 | 215.9 | 225.4 | 169.9 | 169.9 | 6.45 | 10.50 |
| 8 | 69.9 | 98.5 | 263.5 | 292.1 | 220.7 | 220.7 | 10.68 | 16.80 |
| 10 | 77.8 | 93.7 | 322.3 | 323.9 | 274.7 | 265.1 | 17.73 | 20.90 |
| 12 | 85.7 | 103.2 | 377.8 | 397.4 | 325.4 | 317.5 | 26.82 | 27.70 |
| 14 | 88.9 | 100.0 | 409.6 | 431.8 | 357.2 | 350.8 | 30.00 | 31.80 |
| 16 | 93.7 | 106.4 | 463.6 | 466.7 | 408.0 | 403.2 | 34.10 | 46.40 |
| 18 | 96.8 | 111.1 | 520.7 | 523.9 | 458.8 | 455.6 | 44.10 | 59.10 |
| 20 | 101.6 | 119.1 | 571.5 | 582.6 | 508.0 | 509.6 | 53.60 | 71.80 |
| 24 | 115.9 | 139.7 | 689.0 | 708.0 | 614.4 | 638.2 | 100.00 | 131.80 |

Sch160, XX-S

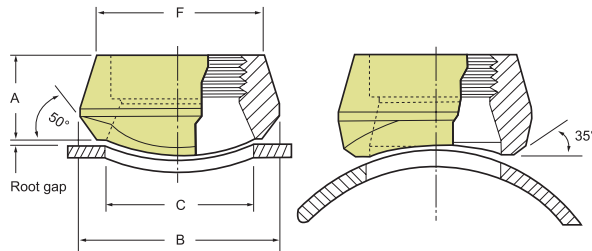
| Outlet Size | A | | B | | C | | APP' Weight | |
|-------------|-------|-------|-------|-------|-------|-------|-------------|-------|
| | STD | X-S | STD | X-S | STD | X-S | STD | X-S |
| | mm | mm | mm | mm | mm | mm | kg | kg |
| 1/2 | 28.6 | 28.6 | 34.9 | 34.9 | 14.3 | 14.3 | 0.11 | - |
| 3/4 | 31.8 | 31.8 | 44.5 | 44.5 | 19.1 | 19.1 | 0.32 | - |
| 1 | 38.1 | 38.1 | 50.8 | 50.8 | 25.4 | 25.4 | 0.38 | 0.38 |
| 1 1/4 | 44.5 | 44.5 | 61.9 | 61.9 | 33.3 | 33.3 | 0.57 | 0.57 |
| 1 1/2 | 50.8 | 50.8 | 69.9 | 69.9 | 38.1 | 38.1 | 0.80 | 0.80 |
| 2 | 55.6 | 55.6 | 81.0 | 81.0 | 42.9 | 42.9 | 1.00 | 1.00 |
| 2 1/2 | 61.9 | 61.9 | 96.8 | 96.8 | 54.0 | 54.0 | 1.54 | 1.54 |
| 3 | 73.0 | 73.0 | 120.7 | 120.7 | 73.0 | 73.0 | 2.90 | 2.90 |
| 4 | 84.1 | 84.1 | 152.4 | 152.4 | 98.4 | 98.4 | 4.80 | 4.80 |
| 5 | 93.7 | 93.7 | 187.3 | 187.3 | 122.2 | 122.2 | 6.50 | 6.50 |
| 6 | 104.8 | 104.8 | 220.7 | 220.7 | 146.1 | 146.1 | 12.70 | 12.70 |
| 8 | 111.1 | 111.1 | 284.2 | 284.2 | 173.0 | 173.0 | 20.50 | 20.50 |
| 10 | 125.4 | 125.4 | 312.7 | 312.7 | 215.9 | 215.9 | 38.60 | 38.60 |

- Dimensions are in millimeters.
- Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.



SOCKOLET

| Outlet Size | A | | B | | C | | F | | APP' Weight | |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|-------|
| | 3000# | 6000# | 3000# | 6000# | 3000# | 6000# | C | 6000# | 6000# | 6000# |
| | mm | mm | mm | mm | mm | mm | mm | mm | kg | kg |
| 1/2 | 25.4 | 31.8 | 34.9 | 44.5 | 23.8 | 19.1 | 31.8 | 39.7 | 0.14 | 0.23 |
| 3/4 | 27.0 | 36.5 | 44.5 | 50.8 | 30.2 | 25.4 | 36.5 | 45.2 | 0.15 | 0.36 |
| 1 | 33.3 | 39.7 | 54.0 | 61.9 | 36.5 | 33.3 | 46.0 | 57.2 | 0.27 | 0.59 |
| 1 1/4 | 33.3 | 41.3 | 65.1 | 69.9 | 44.5 | 38.1 | 55.6 | 65.1 | 0.39 | 0.73 |
| 1 1/2 | 34.9 | 42.9 | 73.0 | 82.6 | 50.8 | 49.2 | 61.9 | 76.2 | 0.47 | 0.91 |
| 2 | 38.1 | 58.7 | 88.9 | 103.2 | 65.1 | 58.7 | 74.6 | 92.1 | 0.73 | 2.33 |
| 2 1/2 | 46.0 | - | 103.2 | - | 76.2 | - | 87.3 | - | 1.25 | - |
| 3 | 50.8 | - | 122.2 | - | 93.7 | - | 104.8 | - | 1.73 | - |
| 4 | 57.2 | - | 152.4 | - | 120.7 | - | 130.2 | - | 3.30 | - |

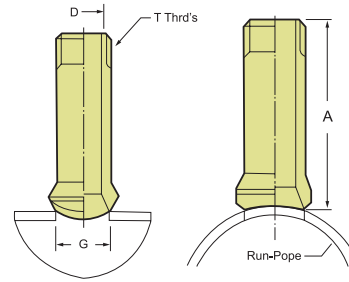


THREADDOLET

| Outlet Size | A | | B | | C | | F | | APP' Weight | |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|-------|
| | 3000# | 6000# | 3000# | 6000# | 3000# | 6000# | C | 6000# | 6000# | 6000# |
| | mm | mm | mm | mm | mm | mm | mm | mm | kg | kg |
| 1/2 | 25.4 | 31.8 | 34.9 | 44.5 | 23.8 | 19.1 | 31.8 | 39.7 | 0.11 | 0.20 |
| 3/4 | 27.0 | 36.5 | 44.5 | 50.8 | 30.2 | 25.4 | 36.5 | 46.6 | 0.16 | 0.34 |
| 1 | 33.3 | 39.7 | 54.0 | 61.9 | 36.5 | 33.3 | 46.0 | 57.2 | 0.28 | 0.56 |
| 1 1/4 | 33.3 | 41.3 | 65.1 | 69.9 | 44.5 | 38.1 | 55.6 | 65.1 | 0.41 | 0.71 |
| 1 1/2 | 34.9 | 42.9 | 73.0 | 82.6 | 50.8 | 49.2 | 61.9 | 76.2 | 0.45 | 0.89 |
| 2 | 38.1 | 52.4 | 88.9 | 103.2 | 65.1 | 69.9 | 74.6 | 92.1 | 0.80 | 2.31 |
| 2 1/2 | 46.0 | - | 103.2 | - | 76.2 | - | 87.3 | - | 1.36 | - |
| 3 | 50.8 | - | 122.2 | - | 93.7 | - | 104.8 | - | 1.98 | - |
| 4 | 57.2 | - | 152.4 | - | 120.7 | - | 130.2 | - | 3.23 | - |

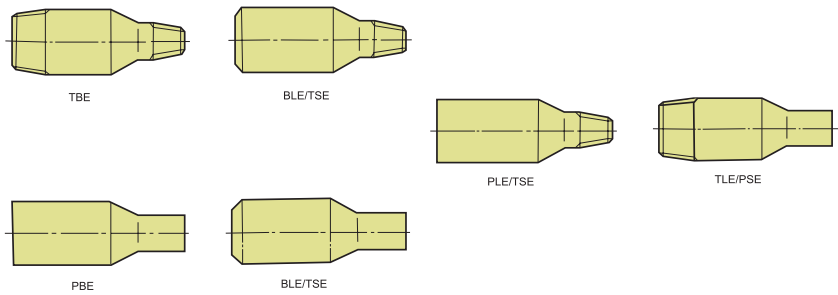
- Dimensions are in millimeters.
- Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.

NIPPOLET



| Run Pipe Size | Outlet Size | A | G | D | E |
|---------------|-------------|--------|--------|--------|--------|
| | 3000lb | 3000lb | 3000lb | 3000lb | 3000lb |
| | mm | mm | mm | mm | mm |
| 36-3/4 | 1/2 | 88.9 | 23.9 | 14.0 | 21.3 |
| 36-1 | 3/4 | 88.9 | 30.2 | 18.8 | 26.7 |
| 36-1 1/4 | 1 | 88.9 | 36.6 | 24.4 | 33.3 |
| 36-1 1/2 | 1 1/4 | 88.9 | 44.5 | 32.5 | 42.2 |
| 36-2 | 1 1/2 | 88.9 | 50.8 | 38.1 | 48.3 |
| 36-2 1/2 | 2 | 88.9 | 65.0 | 49.3 | 60.5 |

SWAGED NIPPLE



| Large end Size | Small end Size | Length |
|----------------|----------------|-----------|
| | MSS SP-95 | MSS SP-95 |
| | mm | mm |
| 1/2 | 3/8~1/8 | 70 |
| 3/4 | 1/2~1/8 | 76 |
| 1 | 3/4~1/8 | 89 |
| 1 1/4 | 1~1/8 | 102 |
| 1 1/2 | 1 1/4~1/8 | 114 |
| 2 | 1 1/2~1/8 | 165 |
| 2 1/2 | 2~1/8 | 178 |
| 3 | 2 1/2~1/8 | 203 |
| 3 1/2 | 3~1/8 | 203 |
| 4 | 3 1/2~1/4 | 229 |
| 5 | 4~1/4 | 279 |
| 6 | 5~1/2 | 305 |
| 8 | 6~1 | 330 |
| 10 | 8~2 | 381 |
| 12 | 10~2 | 406 |

• Fittings of special dimensions, sizes, shapes, and tolerances may be made by agreement between the manufacturer and the purchaser.