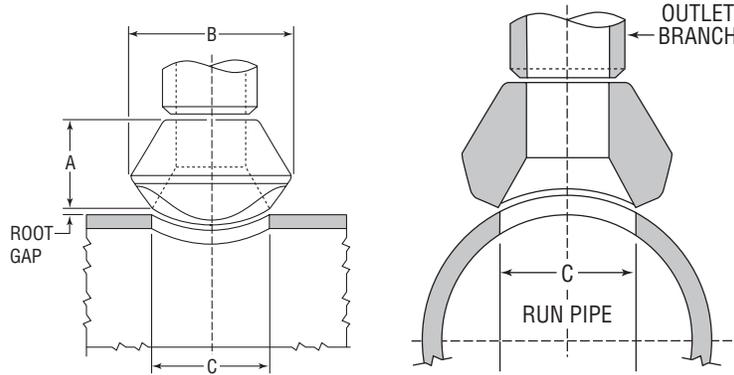


Standard Butt Weld Fig. BWAnvilet



Butt Weld Standard



| Outlet Size | | Dimensions | | | | | | Unit Weight | |
|-------------|----|------------|----|---------|-----|-------|----|-------------|------|
| | | A | | B | | C | | | |
| NPS | DN | in | mm | in | mm | in | mm | lbs | kg |
| 1/8 | 6 | 5/8 | 16 | 1 | 25 | 0.625 | 16 | 0.10 | 0.05 |
| 1/4 | 8 | 5/8 | 16 | 1 | 25 | 0.625 | 16 | 0.10 | 0.05 |
| 3/8 | 10 | 3/4 | 19 | 1 | 25 | 0.493 | 13 | 0.10 | 0.05 |
| 1/2 | 15 | 3/4 | 19 | 1 1/8 | 29 | 0.622 | 16 | 0.12 | 0.05 |
| 3/4 | 20 | 7/8 | 22 | 1 1/2 | 38 | 0.824 | 21 | 0.22 | 0.10 |
| 1 | 25 | 1 1/16 | 27 | 1 13/16 | 46 | 1.062 | 27 | 0.32 | 0.15 |
| 1 1/4 | 32 | 1 1/4 | 32 | 2 1/4 | 57 | 1.380 | 35 | 0.64 | 0.29 |
| 1 1/2 | 40 | 1 5/16 | 33 | 2 9/16 | 65 | 1.625 | 41 | 0.78 | 0.35 |
| 2 | 50 | 1 1/2 | 38 | 3 5/16 | 84 | 2.313 | 59 | 1.14 | 0.52 |
| 2 1/2 | 65 | 1 5/8 | 41 | 3 21/32 | 93 | 2.500 | 64 | 1.94 | 0.88 |
| 3 | 80 | 1 3/4 | 44 | 4 5/32 | 109 | 3.125 | 79 | 2.60 | 1.18 |

| Outlet Size | | Dimensions | | | | | | Unit Weight | |
|-------------|-----|------------|-----|---------|-----|--------|-----|-------------|--------|
| | | A | | B | | C | | | |
| NPS | DN | in | mm | in | mm | in | mm | lbs | kg |
| 4 | 100 | 2 | 51 | 5 3/8 | 137 | 4.145 | 105 | 4.12 | 1.87 |
| 6 | 150 | 2 3/8 | 60 | 7 23/32 | 194 | 6.112 | 155 | 11.00 | 4.99 |
| 8 | 200 | 2 3/4 | 70 | 10 3/8 | 264 | 8.688 | 221 | 28.00 | 12.70 |
| 10 | 250 | 3 1/16 | 78 | 12 9/16 | 319 | 10.813 | 275 | 39.00 | 17.69 |
| 12* | 300 | 3 3/8 | 86 | 14 7/8 | 378 | 12.813 | 325 | 65.00 | 29.48 |
| 14* | 350 | 3 1/2 | 89 | 16 1/8 | 410 | 14.063 | 357 | 70.00 | 31.75 |
| 16* | 400 | 3 11/16 | 94 | 18 3/4 | 464 | 16.063 | 408 | 92.00 | 41.73 |
| 18* | 450 | 4 1/16 | 103 | 20 3/4 | 527 | 18.625 | 473 | 125.00 | 56.70 |
| 20* | 500 | 4 5/8 | 117 | 23 1/16 | 586 | 20.063 | 510 | 175.00 | 79.38 |
| 24* | 600 | 5 3/8 | 137 | 27 7/8 | 708 | 25.125 | 638 | 280.00 | 127.01 |

Note: *Anvilet supplied in accordance with Full height specification of MSS SP-97. Reduced height Anvilets are available upon request, dimensions and prices on application.

Each outlet size listed is available to fit any run curvature. BW Ends per ASME B16.9 and ASME B16.25. Design per MSS-SP-97.

RUN PIPE SIZES Outlet sizes 6" and less fit a number of run pipe sizes, and the fittings are marked accordingly. See page 5 for run pipe size combination table(s).

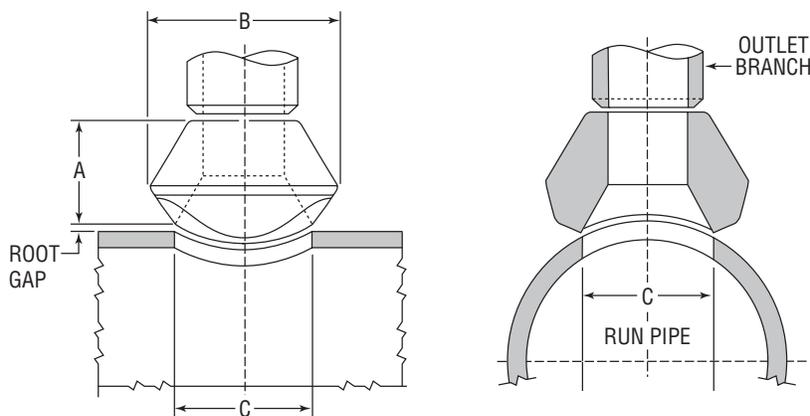
SCHEDULES Standard Butt Weld Anvilets are designed for use on Schedule 40 pipe in accordance with MSS SP-97. Extra Strong Butt Weld Anvilets are designed for use on Schedule 80 pipe in accordance with MSS SP-97. Pipe schedule numbers and weight designations are in accordance with ASME B36.10.

FLATS Flat butt-welded Universal Forged Steel Anvilet fittings for use on welding caps, elliptical heads and flat surfaces is available.

The A, B, and C dimensions given for the Branch Connections in the above Table are for reference only and to be used as a guideline. Dimensions B and C are subject to change depending upon the manufacturing process utilized. Although every attempt has been made to insure that the information contained in this table is correct, Anvil reserves the right to change the C dimension as deemed necessary.

| PROJECT INFORMATION | APPROVAL STAMP |
|---------------------|-------------------|
| Project: | Approved |
| Address: | Approved as noted |
| Contractor: | Not approved |
| Engineer: | Remarks: |
| Submittal Date: | |
| Notes 1: | |
| Notes 2: | |

Extra Strong Butt weld Fig. BWAnvilet



Butt weld Extra Strong



| Outlet Size | | Dimensions | | | | | | Unit Weight | |
|-------------|----|------------|----|---------|-----|-------|----|-------------|------|
| | | A | | B | | C | | | |
| NPS | DN | in | mm | in | mm | in | mm | lbs | kg |
| 1/8 | 6 | 5/8 | 16 | 1 | 25 | 0.625 | 16 | 0.10 | 0.05 |
| 1/4 | 8 | 5/8 | 16 | 1 | 25 | 0.625 | 16 | 0.10 | 0.05 |
| 3/8 | 10 | 3/4 | 19 | 1 | 25 | 0.423 | 11 | 0.10 | 0.05 |
| 1/2 | 15 | 3/4 | 19 | 1 1/8 | 29 | 0.742 | 14 | 0.12 | 0.05 |
| 3/4 | 20 | 7/8 | 22 | 1 1/2 | 38 | 0.742 | 19 | 0.18 | 0.08 |
| 1 | 25 | 1 1/16 | 27 | 2 13/16 | 71 | 1.062 | 27 | 0.36 | 0.16 |
| 1 1/4 | 32 | 1 1/4 | 32 | 2 1/4 | 57 | 1.278 | 32 | 0.55 | 0.25 |
| 1 1/2 | 40 | 1 5/16 | 33 | 2 9/16 | 65 | 1.625 | 41 | 0.68 | 0.31 |
| 2 | 50 | 1 1/2 | 38 | 3 5/16 | 84 | 2.313 | 59 | 1.24 | 0.56 |
| 2 1/2 | 65 | 1 5/8 | 41 | 3 21/32 | 93 | 2.500 | 64 | 2.26 | 1.02 |
| 3 | 80 | 1 3/4 | 44 | 4 3/32 | 109 | 3.125 | 79 | 2.84 | 1.29 |

| Outlet Size | | Dimensions | | | | | | Unit Weight | |
|-------------|-----|------------|-----|----------|-----|--------|-----|-------------|--------|
| | | A | | B | | C | | | |
| NPS | DN | in | mm | in | mm | in | mm | lbs | kg |
| 4 | 100 | 2 | 51 | 5 3/8 | 137 | 4.145 | 105 | 4.56 | 2.07 |
| 6 | 150 | 3 1/16 | 78 | 7 23/32 | 196 | 5.800 | 147 | 15.00 | 6.80 |
| 8 | 200 | 3 7/8 | 98 | 10 5/8 | 270 | 8.688 | 221 | 32.00 | 14.51 |
| 10* | 250 | 3 1/2 | 89 | 12 7/8 | 327 | 10.738 | 273 | 46.00 | 20.87 |
| 12* | 300 | 3 5/16 | 100 | 15 3/16 | 386 | 13.000 | 330 | 61.00 | 27.67 |
| 14* | 350 | 4 1/8 | 105 | 16 11/16 | 424 | 14.313 | 364 | 75.00 | 34.02 |
| 16* | 400 | 4 7/16 | 113 | 18 7/8 | 479 | 16.500 | 419 | 115.00 | 52.16 |
| 18* | 450 | 4 11/16 | 119 | 21 1/8 | 537 | 18.625 | 473 | 130.00 | 58.97 |
| 20* | 500 | 5 | 127 | 23 3/8 | 594 | 20.813 | 529 | 187.00 | 84.82 |
| 24* | 600 | 5 1/2 | 140 | 27 7/8 | 708 | 25.125 | 638 | 316.00 | 143.34 |

Note: *Anvilet supplied in accordance with Full height specification of MSS SP-97. Reduced height Anvilets are available upon request, dimensions and prices on application.

Each outlet size listed is available to fit any run curvature. BW Ends per ASME B16.9 and ASME B16.25. Design per MSS-SP-97.

RUN PIPE SIZES Outlet sizes 6" and less fit a number of run pipe sizes, and the fittings are marked accordingly. See page 5 for run pipe size combination table(s).

SCHEDULES Standard Butt weld Anvilets are designed for use on Schedule 40 pipe in accordance with MSS SP-97. Extra Strong Butt weld Anvilets are designed for use on Schedule 80 pipe in accordance with MSS SP-97. Pipe schedule numbers and weight designations are in accordance with ASME B36.10.

FLATS Flat butt-welded Universal Forged Steel Anvilet fittings for use on welding caps, elliptical heads and flat surfaces is available.

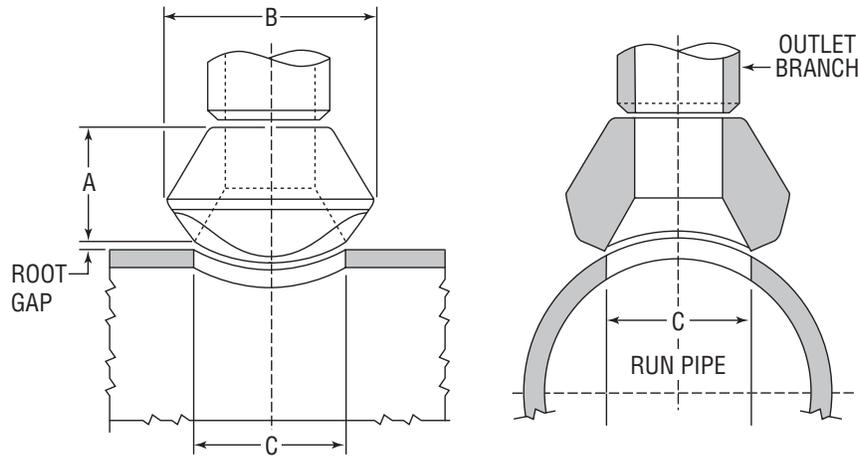
The A, B, and C dimensions given for the Branch Connections in the above Table are for reference only and to be used as a guideline. Dimensions B and C are subject to change depending upon the manufacturing process utilized. Although every attempt has been made to insure that the information contained in this table is correct, Anvil reserves the right to change the C dimension as deemed necessary.



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Building connections that last™

XXS, Sch. 160 Butt weld Fig. BWAnvilet



Buttweld XXS, Sch. 160



| Outlet Size | | Dimensions | | | | C | | Unit Weight | |
|-------------|-----|------------|----|--------|-----|-------|----|-------------|------|
| NPS | DN | A | B | C | | | | | |
| | | in | mm | in | mm | in | mm | lbs | kg |
| 1/2 | 15 | 1/8 | 29 | 1 3/8 | 35 | 0.563 | 14 | 0.25 | 0.11 |
| 3/4 | 20 | 1/4 | 32 | 1 3/4 | 44 | 0.750 | 19 | 0.70 | 0.32 |
| 1 | 25 | 1/2 | 38 | 2 | 51 | 1.000 | 25 | 0.85 | 0.39 |
| 1 1/4 | 32 | 3/4 | 44 | 2 7/16 | 62 | 1.313 | 33 | 1.25 | 0.57 |
| 1 1/2 | 40 | 2 | 51 | 2 3/4 | 70 | 1.500 | 38 | 1.75 | 0.79 |
| 2 | 50 | 2 3/16 | 56 | 3 3/16 | 81 | 1.688 | 43 | 2.15 | 0.98 |
| 2 1/2 | 65 | 2 7/16 | 62 | 3 8/16 | 97 | 2.125 | 54 | 3.40 | 1.54 |
| 3 | 80 | 2 7/8 | 73 | 4 3/4 | 121 | 2.875 | 73 | 6.30 | 2.86 |
| 4 | 100 | 3 5/16 | 84 | 6 | 152 | 3.875 | 98 | 4.56 | 4.76 |

Each outlet size listed is available to fit any run curvature. BW Ends per ASME B16.9 and ASME B16.25. Design per MSS-SP-97.

RUN PIPE SIZES Outlet sizes 6" and less fit a number of run pipe sizes, and the fittings are marked accordingly. See page 5 for run pipe size combination table(s).

SCHEDULES Standard Buttweld Anvilets are designed for use on Schedule 40 pipe in accordance with MSS SP-97. Extra Strong Buttweld Anvilets are designed for use on Schedule 80 pipe in accordance with MSS SP-97. Pipe schedule numbers and weight designations are in accordance with ASME B36.10.

FLATS Flat butt-welded Universal Forged Steel Anvilet fittings for use on welding caps, elliptical heads and flat surfaces is available.

The A, B, and C dimensions given for the Branch Connections in the above Table are for reference only and to be used as a guideline. Dimensions B and C are subject to change depending upon the manufacturing process utilized. Although every attempt has been made to insure that the information contained in this table is correct, Anvil reserves the right to change the C dimension as deemed necessary.



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Building connections that last™

Buttweld Anvilets Fig. BWAnvilet

Anvil Anvilets provide a strong branch pipe connection, considerably stronger than a welded pipe-to-pipe connection. Consequently, with good welding procedures, Anvil Anvilets offer greater resistance to distortion and bursting.

Anvil Anvilets readily and economically permit the adding of branch connectors to existing piping installations, eliminating the relatively higher cost of cutting or disassembly and re-assembly required for the installation of tees.

Anvil Anvilets of the same outlet size as a header or run pipe size (i.e. "Full Size" Anvilets) are so proportioned that the (elliptically shaped) hole in the header pipe has the minimum weakening or distortion effect, and yet provides good fluid flow characteristics.

Specifications

Chemical and physical properties are rigidly controlled to ensure consistently high quality. Physical and chemical test reports are available on request. Traceability of individual Anvilets can be established through the heat code of each fitting.

Anvil Anvilets meet the requirements of MSS standard SP-97. They are forged from steel which complies with ASTM A105.

Threaded Anvilets – conform with ASME B1.20.1.

Socket-Weld Anvilets – dimensions conform with ASME B16.11.

Buttweld Anvilets – ends conform with ASME B16.25.

Reinforcement Requirements

ASME B31.1 Power Piping Code

ASME B31.3 Refinery Code

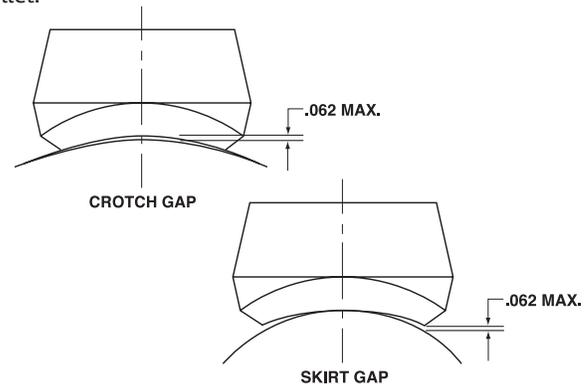
Forging Markings

Anvil Anvilets are clearly marked with the following:

- Outlet size
- Range of run pipe sizes that the Anvilet will fit
- The weight, schedule number, or pressure class
- The material specification
- Steel heat code identification

Installation Note

Anvil Anvilets are designed to have no more than a $\frac{1}{16}$ " gap (1.6mm) between the base or skirt of the Anvilet when it is seated directly upon the appropriate run pipe. However, it is recommended that the skirt of Anvilets be held slightly above the run pipe and tack welded to provide a small continuous root gap between the skirt and run pipe before completing the all-around welding beads or fillet.



Specials

Your local Anvil Branch will be more than happy to assist you with specially machined outlets and those made of alloy material.

Pressure Temperature Ratings

MSS standard Practice SP-97 gives the following correlation between fitting pressure class and pipe schedule number/wall thickness designation for calculation of pressure-temperature ratings:

| Branch Connection Type | Pressure Class of Fitting | Branch Connection Size | | Pipe Wall for Rating Basis |
|------------------------|---------------------------|------------------------|----------|----------------------------|
| | | NPS | DN | |
| Buttweld | STD | $\frac{1}{8}$ - 24 | 6 - 600 | STD |
| | XS/XH | $\frac{1}{8}$ - 24 | 6 - 600 | XS/XH |
| | SCH 160 | $\frac{1}{2}$ - 6 | 15 - 150 | SCH 160 |
| Threaded | 3,000 | $\frac{1}{4}$ - 4 | 8 - 100 | XS/XH |
| | 6,000 | $\frac{1}{2}$ - 2 | 15 - 50 | SCH 160 |
| Socket-Welding | 3,000 | $\frac{1}{2}$ - 2 | 15 - 50 | XS/XH |
| | 6,000 | $\frac{1}{2}$ - 2 | 15 - 50 | SCH 160 |

The maximum allowable pressure of a fitting is computed in accordance with the applicable piping code or regulation for straight seamless header (run) pipe or for material of equivalent composition and mechanical properties to the fitting. Any corrosion or mechanical allowances and any reduction in allowable stress due to temperature or other service conditions, must be applied to the pipe and fitting alike.

Buttweld Anvilets Fig. BWAnvilet

Engineering Specifications

Universal Forged Steel Anvilets Run Size Combinations

| | | Outlet Size (in) | | | | | | | | | | | |
|---------------------------|-----|------------------|------------|------------|-------------|---------------|---------------|-----------|---------------|-----------|-----------|---------|---------|
| | | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 6 |
| Buttweld Standard | 1/4 | 1/4 | 1/2 - 3/8 | 1 - 1/2 | 2 - 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 6 |
| | 3/8 | 36 - 3/8 | 36 - 3/4 | 36 - 1 1/4 | 36 - 2 1/2 | 1 1/2 - 1 1/4 | 2 - 1 1/2 | 3 1/2 - 2 | 3 - 2 1/2 | 4 - 3 | 4 - 3 1/2 | 6 - 5 | 8 |
| | | | | | | 36 - 2 | 6 - 2 1/2 | 36 - 4 | 6 - 3 1/2 | 10 - 5 | 6 - 5 | 10 - 8 | 10 |
| | | | | | | | | 36 - 8 | 36 - 8 | 36 - 12 | 14 - 8 | 20 - 12 | 14 - 12 |
| | | | | | | | | | | | 36 - 16 | 36 - 22 | 18 - 16 |
| | | | | | | | | | | | | | 24 - 20 |
| | | | | | | | | | | | | | 34 - 26 |
| | | | | | | | | | | | | | 42 - 36 |
| Buttweld Extra Strong | 1/4 | 36 - 1/4 | 3/8 | 3/4 - 1/2 | 1 1/2 - 3/4 | 1 | 2 - 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 6 |
| | 3/8 | | 36 - 1/2 | 36 - 1 | 36 - 2 | 1 1/2 - 1 1/4 | 5 - 2 1/2 | 3 1/2 - 2 | 3 - 2 1/2 | 4 - 3 | 4 - 3 1/2 | 6 - 5 | 8 |
| | | | | | | 36 - 2 | 36 - 6 | 36 - 4 | 6 - 3 1/2 | 10 - 5 | 6 - 5 | 10 - 8 | 10 |
| | | | | | | | | | 36 - 8 | 36 - 12 | 14 - 8 | 20 - 12 | 14 - 12 |
| | | | | | | | | | | | 36 - 1 | 36 - 22 | 18 - 16 |
| | | | | | | | | | | | | | 24 - 20 |
| | | | | | | | | | | | | | 34 - 26 |
| | | | | | | | | | | | | | 42 - 36 |
| Threaded Class 3000 | 1/4 | 3/8 - 1/4 | 1 - 3/8 | 1/2 | 1 1/4 - 3/4 | 1 | 1 1/2 - 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | |
| | 3/8 | 36 - 1/2 | 36 - 1 1/4 | 36 - 3/4 | 36 - 1 1/2 | 2 1/2 - 1 1/4 | 3 1/2 - 2 | 2 1/2 - 2 | 3 1/2 - 2 1/2 | 3 1/2 - 3 | 5 - 3 1/2 | 6 - 5 | |
| | | | | | | 36 - 3 | 36 - 4 | 5 - 3 | 6 - 4 | 6 - 4 | 14 - 6 | 10 - 8 | |
| | | | | | | | | 36 - 6 | 36 - 8 | 36 - 8 | 36 - 16 | 20 - 12 | |
| | | | | | | | | | | | | | 36 - 22 |
| | | | | | | | | | | | | | |
| Threaded Class 6000 | 1/4 | 3/8 - 1/4 | 1 - 3/8 | 1/2 | 3/4 | 1 | 1 1/2 - 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | |
| | 3/8 | 36 - 1/2 | 36 - 1 1/4 | 36 - 3/4 | 1 1/4 - 1 | 2 1/2 - 1 1/4 | 3 1/2 - 2 | 2 1/2 - 2 | 3 1/2 - 2 1/2 | 3 1/2 - 3 | 3 1/2 | 5 | |
| | | | | | 36 - 1 1/2 | 36 - 3 | 8 - 4 | 5 - 3 | 6 - 4 | 5 - 4 | 4 | 6 | |
| | | | | | | | 36 - 10 | 36 - 6 | 36 - 8 | 10 - 6 | 6 - 5 | 10 - 8 | |
| | | | | | | | | | | 26 - 12 | 12 - 8 | 18 - 12 | |
| | | | | | | | | | | 36 - 28 | 36 - 14 | 36 - 20 | |
| Socket-Weld Class 3000 | 1/4 | 1/4 | 1/2 - 3/8 | 1/2 | 1 1/4 - 3/4 | 1 | 1 1/2 - 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | |
| | 3/8 | 36 - 3/8 | 36 - 3/4 | 36 - 3/4 | 36 - 1 1/2 | 2 1/2 - 1 1/4 | 3 1/2 - 2 | 2 1/2 - 2 | 3 1/2 - 2 1/2 | 3 1/2 - 3 | 5 - 3 1/2 | 6 - 5 | |
| | | | | | | 36 - 3 | 36 - 4 | 5 - 3 | 6 - 4 | 6 - 4 | 14 - 6 | 10 - 8 | |
| | | | | | | | | 36 - 6 | 36 - 8 | 36 - 8 | 36 - 16 | 20 - 12 | |
| | | | | | | | | | | | | | 36 - 22 |
| | | | | | | | | | | | | | |
| Socket-Weld Class 6000 | 1/4 | 36 - 1/4 | 36 - 3/8 | 1/2 | 1 - 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 3 - 2 1/2 | 3 1/2 - 3 | 4 | |
| | 3/8 | | | 36 - 3/4 | 36 - 1 1/4 | 2 1/2 - 1 1/4 | 4 - 1 1/2 | 2 1/2 - 2 | 3 1/2 - 2 1/2 | 5 - 3 1/2 | 5 - 4 | 5 | |
| | | | | | | 36 - 3 | 36 - 5 | 5 - 3 | 6 - 4 | 18 - 6 | 10 - 6 | 8 - 6 | |
| | | | | | | | | 36 - 6 | 36 - 8 | 36 - 20 | 26 - 12 | 14 - 10 | |
| | | | | | | | | | | | 36 - 28 | 36 - 16 | |
| | | | | | | | | | | | | | |