

MSS SP-97-2012

**Integrally Reinforced Forged
Branch Outlet Fittings –
Socket Welding, Threaded,
and Buttwelding Ends**

Standard Practice
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**INTEGRALLY REINFORCED FORGED BRANCH OUTLET FITTINGS –
SOCKET WELDING, THREADED, AND BUTTWELDING ENDS**

1. SCOPE

1.1 This Standard Practice covers essential dimensions, finish, tolerances, testing, marking, material, and minimum strength requirements for 90 and 45 degree integrally reinforced forged branch outlet fittings of butt welding, socket welding, and threaded types.

1.2 Fittings manufactured to this Standard Practice are designed to make a fully reinforced branch connection in accordance with applicable piping code requirements, when attached, at an opening in a run pipe by means of a full penetration weld.

1.3 Fittings may be made to special dimensions, size, shape, tolerances, or of other wrought material by agreement between the manufacturer and the purchaser.

1.4 *Standard Units* Tables 2 through 7 show the fitting’s dimensional requirements in customary units or inches (decimal). Tables A2 through A7 show the fitting’s dimensional requirements in SI (metric) units (e.g., millimeters). The values stated in either customary or SI (metric) units are to be regarded separately as the Standard. Within the body text, the SI (metric) units are shown in parenthesis. Combining values from the two systems may result in non-conformance with the Standard Practice. The values stated in each option are not exact equivalents; therefore, each measurement system must be used independently of the other.

2. SERVICE DESIGNATION

2.1 These fittings are designated by their size, type, and class, as shown in Table 1.

2.2 Design temperature and other service conditions shall be limited as provided by the applicable piping code or regulation for the material of construction of the fitting. Within these limits, the maximum allowable pressure of a fitting shall be that computed for straight seamless run pipe of equivalent material (as shown by comparison of composition and mechanical properties in the respective material specifications). The wall thickness used in such computation shall be that tabulated in ASME B36.10M for the size and applicable schedule of pipe reduced by applicable manufacturing tolerances and other allowances (e.g., threaded allowances).

2.3 Any corrosion allowance and any variation in allowable stress due to temperature or other design factors shall be applied to the pipe and fitting alike. The pipe wall thickness corresponding to each Class of fitting, for rating purposes only, is shown in Table 1.

**TABLE 1
Correlation of Fittings Class with Schedule Number or
Wall Designation of Run Pipe for Calculation of Ratings**

| Class of Fitting | Type | Branch Size | Pipe Wall for Rating Basis ^(a) |
|------------------|---------------------------|--------------|---|
| Standard | Buttwelding | NPS 1/8 – 24 | Standard |
| Extra Strong | Buttwelding | NPS 1/8 – 24 | Extra Strong |
| Schedule 160 | Buttwelding | NPS 1/2 – 6 | Schedule 160 |
| 3000 | Threaded & Socket Welding | NPS 1/8 – 4 | Extra Strong |
| 6000 | Threaded & Socket Welding | NPS 1/2 – 2 | Schedule 160 |

Note: (a) The use of run or branch pipe wall thickness either thinner or thicker than shown in Table 1 constitutes a deviation from this Standard Practice and is provided for in Section 1.3.