

Class 3000 and 6000 Pipe Unions,
Socket Welding and Threaded
(Carbon Steel, Alloy Steel, Stainless Steels,
and Nickel Alloys)

Standard Practice
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The U.S. customary units in this Standard Practice are regarded as the standard. Combining or converting values between systems may result in non-conformance with this Standard Practice.

Substantive changes in this 2018 edition are “flagged” by parallel bars as shown on the margins of this paragraph. The specific detail of the change may be determined by comparing the material flagged with that in the previous edition.

Non-toleranced dimensions in this Standard Practice are nominal unless otherwise specified.

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FOREWORD

This Standard Practice was originally approved in 1976; providing a clear industry standard for Class 3000 Carbon Steel Unions that were primarily for use in high-pressure industrial, oil-field, and petrochemical industries. Metric units were included and derived utilizing standard conversion factors and rounded to appropriate accuracy.

In 1987, austenitic stainless-steel Grades 304/304L and 316/316L were added for use in process chemical, pharmaceutical, power generation, and other industries where corrosion resistance was a major concern.

In 1995, socket-welding union dimensions for socket diameters, socket wall thicknesses, and union “water-way” bores were aligned to correspond with dimensions of the ASME B16.11, for Class 3000 fittings. Metric equivalencies were removed as reference units.

In the 2001 edition, the waterways of threaded unions were adapted to allow the use of the larger diameter drills used for National Pipe Thread (NPT) type threading, which was in line with practices for threaded fitting use within the same piping systems.

In 2006, the Standard Practice was essentially reaffirmed with minor editorial changes.

The 2014 revision represented a substantive revision for SP-83. The committee reviewed and confirmed the basis for the original pressure-temperature ratings contained in the Standard Practice and pressure-temperature tables were updated as a result. Based on formula, test, and field experience, coverage for numerous alloy steel, stainless steel and nickel alloy grades were added to the Standard Practice. In addition, on the same basis, dimensions, materials, and pressure-temperature ratings were added for the new inclusion of Class 6000 socket-welding and threaded unions. The revisions contained in the 2014 edition provided for a more robust and comprehensive standard for pipe unions, intended for commercial and industrial applications of a wide variety.

This 2018 revision updated (1) the materials in Tables 4 and 5 to include A350 LF2, A420-WPL6, and B462-N08020, (2) the size and service designation/pressure marking requirements on union nuts, and (3) the references in Annex A, among other editorial and formatting adjustments. Note the re-inclusion of SI (metric) units, as an independent but equal standard to the existing U.S. customary units, is envisioned for the next edition.

GENERAL CAUTIONARY NOTE:

Union parts from different manufacturers are not functionally interchangeable and combining parts from different manufacturers is not recommended.

CAUTIONARY NOTES REGARDING INSTALLATION OF PIPE UNIONS:

- a) Leakage from a union can result when joining pipe ends which are poorly aligned.
- b) Care should be taken to avoid placing unions in lines subject to live loads and bending loads, which may cause leakage.
- c) Care should be taken to prevent damage to the seating surfaces.
- d) Due consideration should be given to the possibility of shock pressure in the system.
- e) Installation techniques or instructions are outside the scope of this Standard Practice.