



Designation: A 694/A 694M – 03

# Standard Specification for Carbon and Alloy Steel Forgings for Pipe Flanges, Fittings, Valves, and Parts for High-Pressure Transmission Service<sup>1</sup>

This standard is issued under the fixed designation A 694/A 694M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

## 1. Scope\*

1.1 This specification covers forged or rolled steel pipe flanges, forged fittings, valves, and parts suitable for use with high-strength transmission-service pipe. Included are flanges, fittings, and similar parts ordered either to dimensions specified by the purchaser or to ASME or MSS dimensional standards referenced in Section 2.

1.2 Several grades of material, based on minimum yield strength requirements, are covered, as indicated in Table 1.

1.3 Supplementary Requirements are provided. Supplementary Requirement S 1 is provided for use when purchaser approval is required for repair welding.

1.4 This specification is expressed in both inch-pound units and in SI units. However, unless the order specifies the applicable “M” specification designation (SI units), the material shall be furnished to inch-pound units.

1.5 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

## 2. Referenced Documents

2.1 In addition to those reference documents listed in Specification A 961, the following list of standards apply to this specification:

### 2.2 ASTM Standards:<sup>2</sup>

A 53/A 53M Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

A 106 Specification for Seamless Carbon Steel Pipe for High-Temperature Service

A 381 Specification for Metal-Arc-Welded Steel Pipe for

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys, and is the direct responsibility of Subcommittee A01.22 on Valves and Fittings.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.

TABLE 1 Tensile Requirements

Grade	Yield Strength (0.2 % Offset), min, ksi [MPa]	Tensile Strength, min, ksi [MPa]	Elongation in 2 in. or 50 mm, min %
F42	42 [290]	60 [415]	20
F46	46 [315]	60 [415]	20
F48	48 [330]	62 [425]	20
F50	50 [345]	64 [440]	20
F52	52 [360]	66 [455]	20
F56	56 [385]	68 [470]	20
F60	60 [415]	75 [515]	20
F65	65 [450]	77 [530]	20
F70	70 [485]	82 [565]	18

### Use with High-Pressure Transmission Systems

A 707/A 707M Specification for Forged Carbon and Alloy Steel Flanges for Low-Temperature Service

A 788 Specification for Steel Forgings, General Requirements

A 961 Specification for Common Requirements for Steel Flanges, Forged Fittings, Valves, and Parts for Piping Applications

### 2.3 ASME Standards:

ASME B 16.5 Steel Pipe Flanges and Flanged Fittings<sup>3</sup>

ASME B 16.9 Steel Butt-Welding Fittings<sup>3</sup>

ASME B 16.10 Face-to-Face and End-to-End Dimensions of Ferrous Valves<sup>3</sup>

ASME B 16.11 Forged Steel Fittings, Socket Welding and Threaded<sup>3</sup>

ASME B 16.28 Wrought Steel Butt-Welding Short Radius Elbows<sup>3</sup>

ASME B 16.47 Large Diameter Steel Flanges<sup>3</sup>

### 2.4 MSS Standards:<sup>4</sup>

MSS SP-44 Standard for Steel Pipe Line Flanges

MSS SP-75 Specification for High-Test Welding Fittings

MSS SP-95 Swage (d) Nipples and Bull Plugs

MSS SP-97 Integrally Reinforced Forged Branch Outlet Fittings

### 2.5 API Standard:

<sup>3</sup> Available from American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990.

<sup>4</sup> Available from the Manufacturers’ Standardization Society of the Valve and Fittings Industry, 127 Park St., Northeast, Vienna, VA 22180.

\*A Summary of Changes section appears at the end of this standard.