



Designation: A769/A769M – 17

Standard Specification for Carbon and High-Strength Electric Resistance Forge- Welded Steel Structural Shapes¹

This standard is issued under the fixed designation A769/A769M; 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 reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification covers carbon and high-strength steel shapes of structural quality manufactured by the electric-resistance forge-welding process from coils.

1.2 The size range covered is described in nominal dimensions for columns, beams, and tees.

	Size Range, in. (mm)
Web thickness	0.060 to 0.500 [1.5 to 12.7]
Flange thickness	0.060 to 0.500 [1.5 to 12.7]
Overall depth	2.00 to 24.00 [50 to 600]
Flange width	0.50 to 12.00 [12.7 to 300]

1.3 These shapes are intended for two classes of application:

1.3.1 *Class 1*—General structural use where static loading predominates.

1.3.2 *Class 2*—Structural use where fatigue loading occurs and is a principal design consideration.

NOTE 1—**Caution**—Because of the absence of smooth, integral, large radius fillets at the junctions of the webs and the flanges (see Fig. 1), fatigue limits of resistance forge-welded shapes in torsion, lateral loading, and flexure are usually lower than those for hot-rolled shapes of similar size and material. Users should consult shape manufacturers for recommended values of fatigue limits for each specific use, material, and size in cases where dynamic loading is a principal design consideration.

1.4 When the steel is to be welded, it is presupposed that a welding procedure suitable for the grade of steel and intended use or service will be utilized. See Appendix X3 of Specification A6/A6M for information on weldability.

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

1.6 The following safety hazards caveat pertains only to the test methods portion, Section 10, of this specification: *This*

standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

A6/A6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
A370 Test Methods and Definitions for Mechanical Testing of Steel Products

A568/A568M Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for

A635/A635M Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Alloy, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, General Requirements for

A700 Guide for Packaging, Marking, and Loading Methods for Steel Products for Shipment

2.2 American Welding Society Standard:

AWS Specification D 1.1 Structural Welding Code³

3. Ordering Information

3.1 Orders for material under this specification should include the following, as required, to describe the desired material adequately:

3.1.1 Quantity (total number of feet (metres) or lengths),

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.02 on Structural Steel for Bridges, Buildings, Rolling Stock and Ships.

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² 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.

³ Available from American Welding Society (AWS), 8669 NW 36 St., #130, Miami, FL 33166-6672, <http://www.aws.org>.

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