



Standard Specification for “Twist Off” Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 150 ksi Minimum Tensile Strength¹

This standard is issued under the fixed designation F2280; 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 two types of heat treated, steel, tension control bolt-nut-washer assemblies, also referred to as “sets,” having a tensile strength of 150 to 173 ksi. These assemblies are capable of developing a minimum predetermined tension when installed by applying torque to the nut, while at the same time applying a counter torque to separate the spline end from the body of the bolt using an appropriate spline drive installation tool.

1.2 An assembly consists of a tension control bolt with spline end (covered by this specification) and a suitable nut and washer covered by reference to applicable ASTM specifications.

1.3 The fastener assemblies are intended for use in structural connections. These connections, installation procedures, and the use of alternate design structural bolts are covered under the requirements of the “Specification for Structural Joints Using ASTM or A490 Bolts”, approved by the Research Council on Structural Connections.

1.4 The assemblies are available with either round (button or dome) heads, heavy hex structural heads, or alternate design heads described in Section 11, in sizes ½ to 1 ⅛ in. inclusive, in two types specified in Section 4.

1.5 Tension control bolts manufactured and marked in accordance with the requirements of Specification A490, and conforming to the dimensional and other requirements of this specification, will be considered an acceptable alternate under this specification for two years following initial publication.

1.6 *The following precautionary statement pertains only to the test method portions, Sections 15 and 16, 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.

2. Referenced Documents

2.1 ASTM Standards:²

A490 Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength

A563 Specification for Carbon and Alloy Steel Nuts

A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products

E709 Guide for Magnetic Particle Testing

E1444 Practice for Magnetic Particle Testing

F436 Specification for Hardened Steel Washers

F606 Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets

F788/F788M Specification for Surface Discontinuities of Bolts, Screws, and Studs, Inch and Metric Series

F1470 Practice for Fastener Sampling for Specified Mechanical Properties and Performance Inspection

F1789 Terminology for F16 Mechanical Fasteners

F2328 Test Method for Determining Decarburization and Carburization in Hardened and Tempered Threaded Steel Bolts, Screws, Studs, and Nuts

G101 Guide for Estimating the Atmospheric Corrosion Resistance of Low-Alloy Steels

2.2 ASME Standards:³

B1.1 Unified Inch Screw Threads

B1.3M Screw Threads Gaging Systems for Dimensional Acceptability—Inch and Metric Screw Threads

¹ This specification is under the jurisdiction of ASTM Committee F16 on Fasteners and is the direct responsibility of Subcommittee F16.02 on Steel Bolts, Nuts, Rivets and Washers.

Current edition approved Sept. 1, 2014. Published September 2014. Originally approved in 2006. Last previous edition approved in 2012 as F2280–12. DOI: 10.1520/F2280-14.

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 Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, <http://www.asme.org>.