



Designation: F3148 – 17a

Standard Specification for High Strength Structural Bolt Assemblies, Steel and Alloy Steel, Heat Treated, 144ksi Minimum Tensile Strength, Inch Dimensions¹

This standard is issued under the fixed designation F3148; 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 chemical, dimensional, physical and mechanical requirements for quenched and tempered bolts manufactured from steel and alloy steel, in inch dimensions. The bolts are available as structural bolting assemblies which include a fixed spline bolt, a suitable nut and at least one washer covered by reference herein.

1.2 Intended Use:

1.2.1 Bolts manufactured under this specification, and structural bolting assemblies supplied under this specification, are intended for use in structural connections covered in the Specification for Structural Joints Using High-Strength Bolts and installed using the torque-and-angle or part turn/combined installation method.

1.2.2 Structural bolting assemblies in this specification are furnished in nominal diameters from 1/2 to 1-1/4 in. inclusive.

1.3 Classification:

1.3.1 Structural bolting assemblies are designated as Grade 144.

1.3.2 Bolts are designated by type denoting raw material chemical composition.

Type 1 - 144ksi - carbon steel, carbon boron steel, alloy steel or alloy steel with boron addition
Type 3 - 144ksi - weathering steel

1.4 Terms used in the specification are defined in Terminology **F1789**.

1.4.1 *Torque-and-Angle Fixed-Spline Structural Bolt*—bolt that includes an integral fixed-spline end which extends beyond the threaded portion of the bolt and is used as a component of a torque-and-angle fixed-spline structural bolting assembly.

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 May 15, 2017. Published June 2017. Originally approved in 2015. Last previous edition approved in 2017 as F3148-17. DOI: 10.1520/F3148-17A

1.4.2 *Torque-and-Angle Fixed-Spline Structural Bolting Assembly*²—a fastener assembly comprised of a torque-and-angle fixed-spline bolt with a suitable nut and at least one washer, installed and tightened using a special electric wrench and socket system which has an inner socket that engages the fixed-spline end of the bolt and with an outer socket that engages and turns the nut, in two separate and distinct operations, the first is a controlled torque application and the second is a specified angle.

1.4.3 *Combined Method*—A tightening method comprised of two steps, the first tightening step using a torque regulating tool and the second tightening step in which a specified turn is applied to the turned part of the assembly. Also known as the ‘part turn method’.

1.5 *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.*

1.6 ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

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 The torque-and-angle fixed-spline structural bolting system has a patent application pending. Interested parties are invited to submit information regarding the identification of an alternative(s) to this patent-pending item to the ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend.