ASME B18.18-2011

(Revision and Consolidation of ASME B18.18.1, B18.18.2, B18.18.3M, B18.18.4M, B18.18.5M, B18.18.6M, and B18.18.7M)

Quality Assurance for Fasteners

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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Three Park Avenue • New York, NY • 10016 USA

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This Standard will be revised when the Society approves the issuance of a new edition. There will be no addenda or written interpretations of the requirements of this Standard issued to this edition.

Periodically certain actions of the ASME B18 Committee may be published as Cases. Cases are published on the ASME Web site under the Committee Pages at http://cstools.asme.org as they are issued.

The American Society of Mechanical Engineers
Three Park Avenue, New York, NY 10016-5990

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FOREWORD

This Standard is intended to be used as part of a contractual agreement between sellers and buyers of fasteners. It provides minimum criteria for four categories of metric and inch fasteners of any material type. It is to be used in concert with the specifications that apply to a given part. This Standard is intended to be a part within a larger quality assurance structure that addresses highly specific elements of quality planning, material control, human resources, gaging and testing, procedures, blueprint and standards control, and ongoing improvements that are necessary to permit the effective realization of the fastener itself. Such structures shall ideally be internationally recognized, but can be buyer specific.

This Standard also provides minimum criteria for manufacturing inspection and final inspection and allows for the necessary measure of flexibility and ingenuity of manufacturing approaches that suppliers may use as they comply with the standards requirements and end objectives. It provides reference material to enable buyers and sellers to make modifications to their plans should they find that necessary in meeting the requirements of this Standard and those of their buyers.

In the implementation of this Standard, buyers must become cognizant of the source of supply manufacturing quality plan and use a means of their own to ensure that it is effective and that it is conscientiously and continuously being developed and improved. Nonconformity prevention and continuous improvement must be an ongoing cultural element that is applied by all members of the supply chain.

Historically, the fastener industry has been served by the standards ASME B18.18.1, B18.18.2, B18.18.3M, B18.18.4M, B18.18.5M, B18.18.6M, and B18.18.7M. These very standards have been replaced by this document but may still be referenced throughout the industry. The B18 Standards Committee and related Subcommittees are committed to replacing references to the aforementioned documents with a reference to this document.

This Standard was approved by the American National Standards Institute on March 5, 2011.

ASME B18 COMMITTEE
Standardization of Bolts, Nuts, Rivets, Screws, Washers, and Similar Fasteners

(The following is the roster of the Committee at the time of approval of this Standard.)

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CORRESPONDENCE WITH THE B18 COMMITTEE

General. ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by requesting interpretations, proposing revisions, and attending Committee meetings. Correspondence should be addressed to:

Secretary, B18 Standards Committee
The American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990
http://go.asme.org/Inquiry

Proposing Revisions. Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued for the purpose of providing alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee Web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the standard, the paragraph, figure or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the standard to which the proposed Case applies.

Interpretations. Upon request, the B18 Standards Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the B18 Standards Committee.

The request for an interpretation should be clear and unambiguous. It is further recommended that the inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry.
Edition:	Cite the applicable edition of the Standard for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in this format may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Attending Committee Meetings. The B18 Standards Committee regularly holds meetings that are open to the public. Persons wishing to attend any meeting should contact the Secretary of the B18 Standards Committee.

QUALITY ASSURANCE FOR FASTENERS

1 GENERAL INFORMATION

1.1 Scope

This quality focused Standard establishes in-process and final inspection requirements for fastener products as well as a receiving inspection plan for fastener purchasers. This Standard identifies four categories, recognizing that fastener users have widely varying requirements. The four categories covered are as follows:

(a) Category 1 — A receiving inspection plan for purchasers

(b) Categories 2 and 3 — Utilizes documented and verifiable in-process controls structured at the producer's discretion

(c) Category 4 — Includes all of the requirements of Category 2 plus 100% inspection for a specific feature or features

In the preparation of this Standard, it was recognized that its function must enable it to be a part of the various regimens in use today that attain certain quality levels of products. This Standard was written to encompass frameworks that enable the users of this Standard to pinpoint which category they wish to use in meeting their own objectives.

1.2 References

The following is a list of publications referenced in this Standard. Unless otherwise specified, the latest edition shall apply.

ASME B1.3M, Screw Thread Gaging Systems for Dimensional Acceptability — Inch Metric Screw Threads (UN, UNR, UNJ, M, and MJ)

ASME B18.6.3, Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series)

ASME B18.12, Glossary of Terms for Mechanical Fasteners

Publisher: The American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016-5990; Order Department: 22 Law Drive, P.O. Box 2900, Fairfield, NJ 07007-2900 (www.asme.org)

ASTM F 1470, Standard Practice for Fastener Sampling for Specified Mechanical Properties and Performance Inspection

ASTM F 1941, Standard Specification for Electrodeposited Coatings on Threaded Fasteners [Unified Inch Screw Threads (UN/UNR)]

Publisher: American Society for Testing and Materials (ASTM International), 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 (www.astm.org)

ISO 9001, Quality management systems — Requirements

ISO/IEC 17011, Conformity assessment — General requirements for accreditation bodies accrediting conformity assessment bodies

ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories

ISO/TS 16949, Quality management systems — Particular requirements for the application of ISO 9001:2000 for automotive production and relevant service part organizations

Publisher: International Organization for Standardization (ISO) Central Secretariat, 1 ch. de la Voie-Creuse, Case postale 56, CH-1211 Geneva 20, Switzerland (www.iso.org)

1.3 Measuring and Testing Equipment

All inspection and testing equipment that is used for the acceptance of Category 2, 3, and 4 fasteners shall be calibrated by a laboratory that has been accredited to ISO/IEC 17025 by an accreditation body that operates in accordance with ISO/IEC 17011. Calibration shall be traceable to the National Institute of Standards and Technology (NIST) Standard or an equivalent national or international standard.

1.4 Terminology

For definitions of terminology not specifically defined in this Standard, refer to ASME B18.12.

1.4.1 Lot. A lot is a quantity of product of one part number made from a single heat of raw material by the same production process and subsequently submitted for final inspection at one time. In the case of fastener assemblies, such as screw and washer assemblies, the manufacturer shall maintain lot traceability for all components.

1.5 Designation of Final Inspection Category

Procurement documents should indicate which category (2, 3, or 4) of final inspection is required. Examples of designation are provided under the appropriate inspection category sections of this document.

2 BASIC PLAN REQUIREMENTS

2.1 Understanding the Basic Requirements

The following information applies to all fasteners produced to any applicable category contained within this document.