ASME B18.12-2012
[Revision of ASME B18.12-2001 (R2006)]

Glossary of Terms for Mechanical Fasteners

AN AMERICAN NATIONAL STANDARD

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The American Society of Mechanical Engineers
Three Park Avenue • New York, NY • 10016 USA

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

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FOREWORD

Sectional Committee B18 on Dimensional Standardization of Bolts, Nuts, Rivets, Screws, and Similar Fasteners was organized in March 1922 under the procedure of the American Standards Association with the Society of Automotive Engineers and The American Society of Mechanical Engineers as joint sponsors.

Subcommittee 10 on the Glossary of Terms for Mechanical Fasteners was organized in February 1947. The purpose of the subcommittee was to promote and coordinate the standardization of fastener nomenclature for those products falling under the scope of the various other subcommittees of the B18 Sectional Committee, the definitions themselves being the responsibility of the cognizant subcommittee. It was later decided that terms not strictly in the above category but closely allied should be defined in the Glossary.

During the development period, several drafts of the Glossary were prepared and studied by Subcommittee 10 before a suitable format and content could be agreed upon.

To cover completely the field of mechanical fasteners, it has been necessary to include in this Standard illustrations of certain fastener features and types of fasteners that are of proprietary origin. Because it was impossible to include all variations of such proprietary designs, this Standard includes selected illustrations that exemplify the type of fastener or feature described. This selection was made on an impartial basis. The inclusion of any one proprietary design in this Standard does not constitute endorsement by the committee or the sponsors, nor is omission of certain styles to be construed as rejection of such styles by the committee and sponsors.

ASA B18.12 was approved by the B18 Sectional Committee, the sponsors, and the American Standards Association, and it was designated as an American Standard on June 22, 1962.

In May 1995, Subcommittee 12 of the B18 Standards Committee set forth the concept that a complete update and significant revision of the Glossary of Terms was necessary. The content was completely reorganized to reflect a logical approach to basic fastener characteristics and configurations. Many new sections and items, such as blind fasteners and retaining rings, were included. In total, 538 terms were included in the 2001 edition of the Standard. ASME B18.12-2001 was approved by the American National Standards Institute on August 15, 2001.

In this edition, para. 3.1.3 was revised in its entirety, and para. 3.1.4 was added.

Suggestions for improvement of this Standard will be welcomed. They should be sent to The American Society of Mechanical Engineers, Secretary, B18 Standards Committee, Three Park Avenue, New York, NY 10016-5990.

This revision was approved as an American National Standard on January 9, 2012.

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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SUBCOMMITTEE 12 — GLOSSARY OF TERMS

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W. K. Wilcox, Consultant
C. B. Williamson, Fastenal Co.

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 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 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.

GLOSSARY OF TERMS FOR MECHANICAL FASTENERS

1 INTRODUCTION

1.1 Scope

This Standard is a summary of nomenclature and terminology currently used to define and/or describe mechanical fasteners, related characteristics, and the manufacturing processes that produce these products. Utilization of these terms by manufacturers and consumers is intended to reduce or eliminate confusion and serve as a sound basis for communication.

(a) Primary Operations. Mechanical fasteners are produced by forming or screw machine operations. Forming is generally scrapless and, depending upon size, may produce fasteners at rates exceeding 500 pieces per minute. Screw machining, although more tightly toleranced, is significantly slower and generates scrap because it involves the removal of material.

(b) Secondary Operations. Fasteners generally undergo several secondary operations or processes, such as thread rolling, heat treating, or plating.

(c) Fastener. A fastener is a mechanical device designed specifically to hold, join, couple, assemble, or maintain equilibrium of single or multiple components. The resulting assembly may function dynamically or statically as a primary or secondary component of a mechanism or structure. Based on the intended application, a fastener is produced with varying degrees of built-in precision and engineering capability, ensuring adequate, sound service under planned, pre-established environmental conditions.

(d) Bolts, Studs, Screws, Nuts, Washers, Rivets, Pins, and Custom-Formed Parts. These items are the general product families in which mechanical fasteners are best classified. Within each product family are numerous types that may have a name conforming to the technical language of a national standard or alternately may have a name that has its origins in commercial or marketing nomenclature often taken from its intended application. Such names, for example, include the "stove bolt" and "carriage bolt." Because mechanical fasteners are used in just about every mechanical assembly, they necessarily have been designed to meet a broad range of applications from watch and computer assembly to the space shuttle design. The names given to fasteners appear to be as limitless as the designer's imagination. While many fasteners may look alike, they generally have defined engineered capabilities based upon their intended application.

1.2 Referenced Documents

In the development of this Standard, a number of terms were written based upon language found in more than 230 standards and other publications of the following organizations:

(a) American Society for Testing and Materials (ASTM International), 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959 (www.astm.org)

(b) 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)

(c) Industrial Fasteners Institute (IFI), 6363 Oak Tree Boulevard, Independence, OH 44131 (www.indfast.org)

(d) Society of Automotive Engineers (SAE International), 400 Commonwealth Drive, Warrendale, PA 15096 (www.sae.org)

2 TERMINOLOGY

2.1 Basic Fastener Terminology

2.1.1

commercial fastener: manufactured to published consensus standards and stocked by manufacturers or distributors.

2.1.2

compression fastener: a fastener whose primary function is to resist compressive forces.

2.1.3

endurance limit or endurance strength: the maximum alternating stress that a fastener can withstand for a specified number of stress cycles without failure.

2.1.4

headed fastener: a fastener having one end enlarged or formed.

2.1.5

headless fastener: a fastener, either threaded or unthreaded, that does not have either end enlarged.

2.1.6

high-strength fastener: a fastener having high tensile and shear strengths attained through combinations of materials, work-hardening, and heat treatment. These fasteners usually have a tensile strength in excess of 120,000 psi.