ASME B18.12-2020
(Revision of ASME B18.12-2012)

REAFFIRMED 2025

Glossary of Terms for Mechanical Fasteners

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

ASME B18.12-2020
(Revision of ASME B18.12-2012)

Glossary of Terms for Mechanical Fasteners

AN AMERICAN NATIONAL STANDARD

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

Date of Issuance: June 30, 2020

This Standard will be revised when the Society approves the issuance of a new edition.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Standard. Interpretations are published on the Committee web page and under http://go.asme.org/InterpsDatabase. Periodically certain actions of the ASME B18 Committee may be published as Cases. Cases are published on the ASME website under the B18 Committee Page at http://go.asme.org/B18committee as they are issued.

Errata to codes and standards may be posted on the ASME website under the Committee Pages to provide corrections to incorrectly published items, or to correct typographical or grammatical errors in codes and standards. Such errata shall be used on the date posted.

The B18 Committee Page can be found at http://go.asme.org/B18committee. There is an option available to automatically receive an e-mail notification when errata are posted to a particular code or standard. This option can be found on the appropriate Committee Page after selecting “Errata” in the “Publication Information” section.

ASME is the registered trademark of The American Society of Mechanical Engineers.

This code or standard was developed under procedures accredited as meeting the criteria for American National Standards. The Standards Committee that approved the code or standard was balanced to assure that individuals from competent and concerned interests have had an opportunity to participate. The proposed code or standard was made available for public review and comment that provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

ASME does not “approve,” “rate,” or “endorse” any item, construction, proprietary device, or activity.

ASME does not take any position with respect to the validity of any patent rights asserted in connection with any items mentioned in this document, and does not undertake to insure anyone utilizing a standard against liability for infringement of any applicable letters patent, nor assume any such liability. Users of a code or standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

Participation by federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of this code or standard.

ASME accepts responsibility for only those interpretations of this document issued in accordance with the established ASME procedures and policies, which precludes the issuance of interpretations by individuals.

No part of this document may be reproduced in any form,
in an electronic retrieval system or otherwise,
without the prior written permission of the publisher.

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

Copyright © 2020 by
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
All rights reserved
Printed in U.S.A.

CONTENTS

Foreword iv

Committee Roster v

Correspondence With the B18 Committee vi

1 Introduction 1

2 Terminology 1

3 Product Families 39

Tables

2.3.1-1 Common Applications of Threaded Fastener Head Styles 13

3.1.2.1-1 Type Designations for Tapping Screws and Metallic Drive Screws 56

3.1.5-1 Screw and Washer Assembly Combinations 68

Index 94

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 Engineering Standards Committee (AESC), with the Society of Automotive Engineers and The American Society of Mechanical Engineers (ASME) 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, Subcommittee 10 prepared and studied several drafts of the Glossary before agreeing on a suitable format and content.

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 AESC, which had changed its name to American Standards Association (ASA). It was designated 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 ASME B18.12-2001, which was approved by American National Standards Institute (ANSI), formerly known as ASA, on August 15, 2001 and revised in 2006.

For the 2012 edition, para. 3.1.3 was revised in its entirety, and para. 3.1.4 was added. It received ANSI approval on January 9, 2012.

In May 2019, Subcommittee 12 of the B18 Standards Committee reviewed the text of this Standard and made minor revisions and changes to bring the language and definitions of the Standard up to date. This edition of ASME B18.12 received ANSI approval on January 6, 2020.

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)

STANDARDS COMMITTEE OFFICERS

W. Guth, *Chair*
J. Medcalf, *Vice Chair*
A. L. Guzman Rodriguez, *Secretary*

STANDARDS COMMITTEE PERSONNEL

T. Anderson, Bay Bolt
L. Borowski, Greenslade & Co., Inc.
S. Brahimi, Industrial Fasteners Institute
B. Cao, Infasco
V. Cartina, Hi-Performance Fastening Systems
L. Claus, NNI Training and Consulting, Inc.
A. P. Cockman, Consultant
C. K. Cooney, The Yorkshire Group
D. S. George, Michigan Metal Coatings Co.
W. Guth, Electric Boat Corp.
A. L. Guzman Rodriguez, The American Society of Mechanical Engineers
J. Medcalf, Field Fastener
M. Q. Muhammad, Defense Logistics Agency Troop Support
J. P. Nash, Caterpillar Inc.
F. J. Perry, John Deere
C. B. Williamson, Fastenal Co.
M. Byrne, General Fasteners Co.
D. Clever, Consultant
J. F. McCarrick, *Alternate,* Defense Supply Center Philadelphia
R. W. Davidson, *Contributing Member*, Endries International, Inc.
J. J. Grey, *Contributing Member*, Fastener Consulting Services, Inc.
W. Guth, General Dynamics Electric Boat
J. C. Jennings, *Contributing Member*, Naval Surface Warfare Center, Philadelphia Division
M. Kaindl, *Contributing Member*, Aztech Locknut Co.
D. Korneffel, *Contributing Member,* CADENAS PARTsolutions
M. D. Prasad, *Contributing Member*, Global M&F Solutions, Inc.
J. J. Stoczanskyj, *Contributing Member*, Beacon Fasteners and Components, Inc.
R. D. Strong, *Contributing Member*, Lear Corp.
C. G. Vertullo, *Contributing Member*, Carver Engineering and Manufacturing, Inc.
C. J. Wilson, *Contributing Member*, Consultant

B18 SUBCOMMITTEE 12 — GLOSSARY OF TERMS

J. J. Stoczanskyj, *Chair,* Beacon Fasteners and Components, Inc.
L. Borowski, Greenslade & Co., Inc.
S. Brahimi, Industrial Fasteners Institute
B. Cao, Infasco
D. S. George, Michigan Metal Coatings Co.
J. C. Jennings, Naval Surface Warfare Center, Philadelphia Division
R. A. Lund, Fastenal Co.
M. Q. Muhammad, Defense Logistics Agency Troop Support
J. P. Nash, Caterpillar Inc.
D. F. Sharp, TurnaSure LLC
G. M. Simpson, Semblex Corp.
Q. M. Smith III, Faurecia
C. J. Wilson, Consultant
J. F. McCarrick, *Alternate,* Defense Supply Center Philadelphia
D. Clever, *Contributing Member,* Consultant

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 or a case, and attending Committee meetings. Correspondence should be addressed to:

Secretary, B18 Standards Committee
The American Society of Mechanical Engineers
Two 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 to provide 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 and 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.

Requests for interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at http://go.asme.org/InterpretationRequest. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt.

If the Inquirer is unable to use the online form, he/she may mail the request to the Secretary of the B18 Standards Committee at the above address. 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 in one or two words.
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. Please provide a condensed and precise question, composed in such a way that a “yes” or “no” reply is acceptable.
Proposed Reply(ies):	Provide a proposed reply(ies) in the form of “Yes” or “No,” with explanation as needed. If entering replies to more than one question, please number the questions and replies.
Background Information:	Provide the Committee with any background information that will assist the Committee in understanding the inquiry. 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 the format described above may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

Moreover, ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Standard requirements. If, based on the inquiry information submitted, it is the opinion of the Committee that the Inquirer should seek assistance, the inquiry will be returned with the recommendation that such assistance be obtained.

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 and/or telephone conferences that are open to the public. Persons wishing to attend any meeting and/or telephone conference should contact the Secretary of the B18 Standards Committee. Future Committee meeting dates and locations can be found on the Committee Page at http://go.asme.org/B18committee.

INTENTIONALLY LEFT BLANK

GLOSSARY OF TERMS FOR MECHANICAL FASTENERS

1 INTRODUCTION

1.1 Scope

This Standard is a summary of mechanical fastener terminology, related characteristics, and manufacture.

(a) 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. Fasteners are used in just about every mechanical assembly, and they have been designed to meet the needs of products ranging from wristwatches to the space shuttle. Each fastener is produced with the degree of built-in precision and engineering capability needed to ensure adequate, sound service under preestablished environmental conditions.

(b) Bolts, Studs, Screws, Nuts, Washers, Rivets, Pins, and Custom-Formed Parts. These are the general product families used to classify mechanical fasteners. Within each product family are numerous fasteners whose names either conform to the technical language of a national standard or relate to their original applications, e.g., "stove bolt" or "carriage bolt." The names given to fasteners appear to be as limitless as the imaginations of their designers. While many fasteners may look alike, each has defined engineered capabilities based upon its intended application.

(c) Primary Operations. Mechanical fasteners are produced by forming or screw machine operations.

(1) Forming may produce thousands of fasteners per minute with looser tolerance (depending on the size and configuration of the fastener) and typically creates minimal scrap.

(2) Screw machining is significantly slower and typically produces tighter tolerance but has a higher risk of creating scrap.

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

1.2 Referenced Documents

The developers of this Standard wrote a number of terms based on the language found in more than 230 standards and other publications of the following organizations:

(a) The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)

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

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

(d) Research Council on Structural Connections (RCSC), c/o AISC, One East Wacker Drive, Suite 700, Chicago, IL 60601 (www.boltcouncil.org)

(e) 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

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

2.1.2 Compression Fastener

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