ASME B18.8.1-2014
[Revision of ASME B18.8.1-1994 (R2010)]

# Clevis Pins and Cotter Pins (Inch Series)

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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# Clevis Pins and Cotter Pins (Inch Series)



AN AMERICAN NATIONAL STANDARD

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

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The American Society of Mechanical Engineers
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# FOREWORD

The need for a Standard covering machine pins was recognized by industry as far back as March 1926, when the Sectional Committee on the Standardization of Machine Pins was organized under the auspices of the American Standards Association (ASA) (later the United States of America Standards Institute, and as of October 6, 1969, the American National Standards Institute, Inc. [ANSI]), with the Society of Automotive Engineers (SAE International) and the American Society of Mechanical Engineers (ASME) as joint sponsors.

For the next year or two, an effort was made via correspondence to develop a basis on which a standard for straight, taper, split, and dowel pins might be established. This correspondence developed a distinct difference of opinion on the part of the manufacturers and users of taper machine pins, which fact seemed to discourage the members of the committee from attempting standardization on any of the types of pins within its scope. The sponsor organizations made frequent efforts to revive this project through letters and the distribution of technical literature on this general subject, without avail. In December 1941, in its periodic review of standards projects for which the Society was sponsor, the ASME Standardization Committee decided that there was little hope for reviving this project and voted, subject to acceptance by the sponsors, to suggest to the ASA the transfer of this project to Sectional Committee B5 on the Standardization of Small Tools and Machine Tool Elements. The sponsors agreed and on July 7, 1942, the ASA sanctioned this action and Sectional Committee B43 was discharged and the project was officially transferred to Section Committee B5.

At its meeting in December 1942, Sectional Committee B5 voted to enlarge its scope to include machine pins. Technical Committee No. 23 was subsequently established and charged with the responsibility for technical content of standards covering machine pins. This group held its first meeting on November 30, 1943, at which time a Subgroup on Correlation and Recommendations was appointed and it was voted to include dowel pins in addition to the other pin types already under consideration. Several drafts were prepared by the subgroup, distributed for critical comment to users, manufacturers, and general interests, and revised and resubmitted for comments. This action finally resulted in acceptance by Technical Committee 23 of a draft dated November 1945, which was duplicated in printer's proof form, under a date of October 1946, and distributed to the members of Sectional Committee B5 for letter ballot approval. Subsequent to the approval of the Sectional Committee, the proposal was next approved by the sponsor bodies, and presented to the ASA for approval as an American Standard. This designation was granted on July 7, 1947.

Following the issuance of the Standard, it became apparent that the table on cotter pins needed revision. Accordingly, in 1953, a proposed revision was submitted to the Sectional Committee. After attaining Sectional Committee and sponsor approval, this revision was approved by the ASA on July 2, 1954.

In 2013, a major U.S. manufacturer of cotter pins brought to the attention of the B18.8 Subcommittee that there were several issues in this Standard for cotter pins that needed modification. None of the modifications change the pin's function or quality.

The first change is to open the tolerance on the total shank diameter, *A*, in Table 1 to make cotter pins easier to produce and to bring this tolerance in line with the other feature tolerances. The second modification is to increase the tolerance on gage hole diameter in Table 3 for holes of $\frac{3}{16}$-in. nominal diameter and up to be more consistent with the ratio of gage hole to nominal diameter of the nominal hole sizes below $\frac{3}{16}$ in. The third change is to modify the gap wording in para. 3.4.2 to include 3 ranges and increase the gap on $\frac{3}{8}$-in. and larger nominal diameters. Finally, in para. 3.5.3, the ductility wording "... being bent back upon itself once with no..." has no indication of a bent radius. A bent radius in relation to the pin nominal size has been added and expressed as a given diameter of pin to wrap the legs around 180 deg (i.e., $\frac{1}{8}$-in. nominal to be bent back 180 deg around a 118-in. diameter gage pin).

Several changes were also made to clevis pins. The following clevis pin sizes were added: 9/16, 1 1/8, 1 1/4, 1 3/8, 1 1/2, 1 5/8, 1 3/4, 1 7/8, and 2 in. Table 2 was added to describe how to derive the effective length, *G*, based on the various shank lengths, *M*.

This revision was approved as an American National Standard on November 5, 2014.

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

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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.

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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 at go.asme.org/Inquiry.

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.

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# CLEVIS PINS AND COTTER PINS (INCH SERIES)

## 1 INTRODUCTION

### 1.1 Scope

**1.1.1** This Standard covers the complete dimensional and general data for clevis pins sizes $^{3}/_{16}$ in. through 2 in. and cotter (split) pins sizes $^{1}/_{32}$ in. through $^{3}/_{4}$ in. of various materials.

**1.1.2** The inclusion of dimensional data in this Standard is not intended to imply that all products described are stock production items. Consumers should consult with suppliers concerning the availability of products.

**1.1.3** There is no ISO standard comparable to this Standard.

### 1.2 Dimensions

All dimensions in this Standard are given in inches and apply before plating or coating. Tolerancing is in accordance with ASME Y14.5.

### 1.3 Responsibility

The responsible party for the performance of the products within the scope of this Standard is the organization that supplies the components to the purchaser and certifies or represents that the component was manufactured, tested, and inspected in accordance with this specification and meets all of its requirements.

### 1.4 Inspection and Quality Assurance

Unless otherwise specified by the purchaser, acceptability shall be based on conformance with the requirements specified in ASME B18.18.

### 1.5 Terminology

For definitions of terms relating to pins or features thereof used in this Standard, refer to ASME B18.12.

### 1.6 Reference Standards

ASME B18.12, Glossary of Terms for Mechanical Fasteners

ASME B18.18, Quality Assurance for Fasteners

ASME Y14.5, Dimensioning and Tolerancing

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

ASTM A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM A380, Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems

ASTM A493, Standard Specification for Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging

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

ASTM B134/B134M, Standard Specification for Brass Wire

ASTM E384, Standard Test Method for Knoop and Vickers Hardness of Materials

ASTM F1941, Standard Specification for Electrodeposited Coatings on Threaded Fasteners (Unified Inch Screw Threads (UN/UNR))

ASTM F2329, Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners

Publisher: ASTM International, 100 Barr Harbor Drive, P. O. Box C700, West Conshohocken, PA 19428-2959 (www.astm.org)

SAE J864, Surface Hardness Testing With Files

Publisher: SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001 (www.sae.org)

## 2 GENERAL DATA — CLEVIS PINS

### 2.1 Clevis Pin Application

The clevis pins covered herein are intended for general applications. The clevis pins specified are intended for use in conjunction with clevises and rod end eyes, and the cotter pins contained herein. Tables 1 and 2 contain dimensional data relative to clevis pin dimensions.

### 2.2 Clevis Pin Head

**2.2.1 Clevis Pin Top of Head.** The top of the head shall be flat and either chamfered or rounded at outer periphery.

**2.2.2 Clevis Pin Bearing Surface.** The bearing surface of the head shall be flat and square with the axis of pin (determined over a distance from under the head equivalent to 1.5 times the basic pin diameter) within 2 deg.