Errata
to
ASME B18.8.1-1994

The Errata corrections listed below apply to ASME B18.8.1-1994, Clevis Pins and Cotter Pins (Inch Series). This Errata to the 1994 edition is being issued in the form of a replacement page. Corrections are incorporated directly into the effective page. Replace or insert the page listed. It is also advisable that this cover page be retained for reference. The page shows the corrections given below. The page not listed is the reverse side of the listed page and contains no changes.

Page	Location	Change
2	Table 1	(1) Vertical line below column headed M^4 removed and entries centered in column (2) General Note reference corrected to read ". . . on p. 1."

APRIL 1995

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
345 East 47th Street, New York, N.Y. 10017

L2494E

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale

CLEVIS PINS AND COTTER PINS (INCH SERIES)

1 INTRODUCTORY NOTES

1.1 Scope

1.1.1 This Standard covers the complete dimensional and general data for clevis pins and cotter (split) pins recognized as American National Standard.

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.

1.2 Dimensions

All dimensions in this Standard are given in inches, unless otherwise specified. Dimensions and tolerances are in accordance with ANSI Y14.5M.

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 ANSI/ASME B18.18.1M.

1.5 Terminology

For definitions of terms relating to pins or features thereof used in this Standard, refer to ANSI B18.12, Glossary of Terms for Mechanical Fasteners.

1.6 Reference Standards

Copies of referenced Standards may be obtained from:

ASTM
1916 Race Street
Philadelphia, PA 19103

SAE
Society of Automotive Engineers
400 Commonwealth Drive
Warrendale, PA 15096

ANSI
American National Standards Institute
11 West 42nd Street
New York, NY 10036

2 GENERAL DATA — CLEVIS PINS

2.1 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.

2.2 Head

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

2.2.2 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.

2.2.3 Head Periphery. The periphery of the head shall be within a circular runout equal to 12 percent of the maximum head diameter or 0.020 in., which-

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

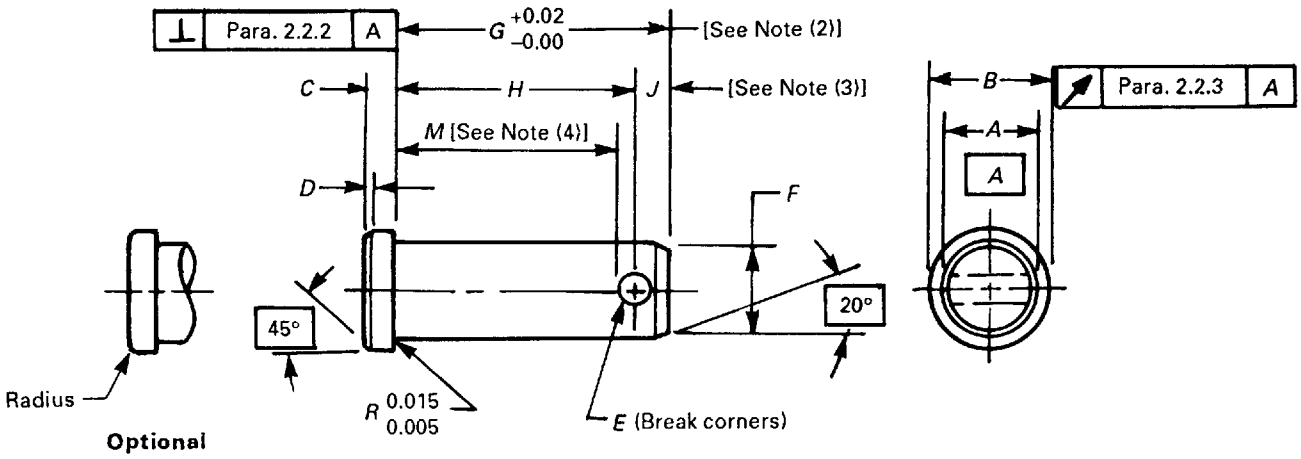


TABLE 1 DIMENSIONS OF CLEVIS PINS

Nominal Size[1] or Basic Pin Diameter		A Shank Diameter		B Head Diameter		C Head Height		D Head Chamfer	E Hole Diameter		F Point Diameter		G[2] Pin Length	H Head to Center of Hole		J[3] End to Center Ref	M[4] Head to Edge of Hole Ref	Recommended Cotter Pin Nominal Size	
		Max.	Min.	Max.	Min.	Max.	Min.	±0.01	Max.	Min.	Max.	Min.	Basic	Max.	Min.	Basic	Minimum		
3/16	0.188	0.186	0.181	0.32	0.30	0.07	0.05	0.02	0.088	0.073	0.15	0.14	0.58	0.504	0.484	0.09	0.440	1/16	0.062
1/4	0.250	0.248	0.243	0.38	0.36	0.10	0.08	0.03	0.088	0.073	0.21	0.20	0.77	0.692	0.672	0.09	0.628	1/16	0.062
5/16	0.312	0.311	0.306	0.44	0.42	0.10	0.08	0.03	0.119	0.104	0.26	0.25	0.94	0.832	0.812	0.12	0.752	3/32	0.093
3/8	0.375	0.373	0.368	0.51	0.49	0.13	0.11	0.03	0.119	0.104	0.33	0.32	1.06	0.958	0.938	0.12	0.878	3/32	0.093
7/16	0.438	0.436	0.431	0.57	0.55	0.16	0.14	0.04	0.119	0.104	0.39	0.38	1.19	1.082	1.062	0.12	1.002	3/32	0.093
1/2	0.500	0.496	0.491	0.63	0.61	0.16	0.14	0.04	0.151	0.136	0.44	0.43	1.36	1.223	1.203	0.15	1.127	1/8	0.125
5/8	0.625	0.621	0.616	0.82	0.80	0.21	0.19	0.06	0.151	0.136	0.56	0.55	1.61	1.473	1.453	0.15	1.377	1/8	0.125
3/4	0.750	0.746	0.741	0.94	0.92	0.26	0.24	0.07	0.182	0.167	0.68	0.67	1.91	1.739	1.719	0.18	1.628	5/32	0.156
7/8	0.875	0.871	0.866	1.04	1.02	0.32	0.30	0.09	0.182	0.167	0.80	0.79	2.16	1.989	1.969	0.18	1.878	5/32	0.156
1	1.000	0.996	0.991	1.19	1.17	0.35	0.33	0.10	0.182	0.167	0.93	0.92	2.41	2.239	2.219	0.18	2.128	5/32	0.156

GENERAL NOTE: For additional requirements, refer to General Data for Clevis Pins on p. 1.
NOTES:
(1) Where specifying nominal size in decimals, zeros preceding decimal shall be omitted.
(2) Lengths tabulated are intended for use with standard clevises, without spacers. When required, it is recommended that other pin lengths be limited wherever possible to nominal lengths in 0.06 in. increments.
(3) Basic *J* dimension (distance from centerline of hole to end of pin) is specified for calculating hole location from underside of head on pins of lengths not tabulated.
(4) Reference dimension provided for convenience in design layout and is not subject to inspection.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

ASME B18.8.1 94 ■ 0759670 0543415 T40 ■

ASME B18.8.1-1994

Clevis Pins and Cotter Pins (Inch Series)

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale

AN AMERICAN NATIONAL STANDARD

Clevis Pins and Cotter Pins (Inch Series)

ASME B18.8.1-1994

The American Society of Mechanical Engineers

345 East 47th Street, New York, N.Y. 10017

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale

Date of Issuance: October 14, 1994

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

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 Consensus 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 which 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 issued in accordance with governing ASME procedures and policies which preclude the issuance of interpretations by individual volunteers.

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.

Copyright © 1994 by
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
All Rights Reserved
Printed in U.S.A.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale

FOREWORD

(This Foreword is not part of ASME B18.8.1-1994.)

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 procedure of the American Standards Association (later the United States of America Standards Institute and as of October 6, 1969, the American National Standards Institute, Inc.), with the Society of Automotive Engineers and the American Society of Mechanical Engineers 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 is 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 santioned 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 clevis 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 Techinical 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 American Standards Association 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 American Standards Association on July 9, 1954 as ASA B5.20-1954.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

In 1956 and 1957, in response to requests from industry, extensive changes were incorporated into a proposed revision. These included revisions to chamfer values and tolerances on straight pins and unhardened ground dowel pins; revisons to under head to hole, pin end dimensions, and hole size tolerances on clevis pins; addition of chisel point to cotter pin end styles and the incorporaton of coverage on grooved pins. Following Sectional Committee and sponsor approvals, this revision was adopted by the American Standards Association on March 25, 1958, as ASA B5.20-1958.

Later in 1961, Sectional Committee B5 suggested that Sectional Committee B18 on the standardization of bolts, nuts, rivets, screws, and similar fasteners assume jurisdiction over standards for pins. Recognizing that the bulk of the products covered in the ASA B5.20 standards were fastener rather that machine oriented, this recommendation was supported by the B18 Committee and officially endorsed by the sponsor organizations. Consequently, at the September 14, 1962 meeting of this Committee it was decreed that Subcommittee 23[1] should be formed to undertake a review and updating of the pin standard.

At the initial meeting of Subcommittee 23 held on June 3, 1964, it was decided to add standards for spring pins (inch series) and to establish seven subgroups, each of which would have technical responsiblity for specific pin products, and to publish respective products under separate cover as projects were completed.

Over the ensuing four years, work by Subgroups 1 and 7 culminated in the development of a proposal for revision of the standards for clevis pins and cotter pins which was approved by letter ballot of Subcommittee 8 on June 19, 1969. Subsequent to acceptance by American National Standards Committee B18 and the sponsor organizations, this document was duly submitted to the American National Standards Institute for approval as an American National Standard. This was granted on May 10, 1972 and the standard was published under the designation ANSI B18.8.1, superseding in part the coverage provided in ASA B5.20-1958.

Subcommittee 8 proposed revisions to the 1972 edition on July 23, 1988. After several Main Committee ballots and reviews, the final proposal was submitted to the Board on Standardization which approved the standard on November 19, 1993. The standard was later approved by ANSI on April 5, 1994.

---

[1]As of April 1, 1966 Subcommittee 23 was redesignated Subcommittee B.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

ASME STANDARDS COMMITTEE B18
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.)

OFFICERS

J. A. Trilling, *Chairman*
D. A. Clever, *Vice Chairman*
E. Schwartz, *Vice Chairman*
R. McGinnis, *Secretary*

COMMITTEE PERSONNEL

J. B. Belford, Lawson Products, Inc.
D. J. Broomfield, Illinois Tool Works, Inc.
R. M. Byrne, Trade Association Management, Inc.
D. A. Clever, Deere & Co.
H. W. Ellison, *Consultant*
F. Ferraro, General Electric Co.
R. A. Flor, Chrysler Corp.
R. E. Friesth, Don E. Williams Co.
D. A. Garrison, Russell Burdsall & Ward Corp.
G. A. Gobb, *Consultant*
R. J. Harrington, Spirol International Corp.
A. Herskovitz, U.S. Army
W. H. Kopke, ITW Shakeproof
J. B. Levy, *Consultant*
D. C. Littell, *Consultant*
A. R. Machell, Consultant
K. E. McCullough, SPS Technologies, Inc.
R. McGinnis, The American Society of Mechanical Engineers
J. C. McMurray, *Alternate,*Russell Burdsall & Ward Co.
D. B. Morrow, *Liaison Member,* Consultant
J. S. Orlando, Orlando Associates
J. S. Pastula, *Alternate,* U. S. Army
L. Pieninck, *Alternate,* Defense Industrial Supply Center
R. S. Piotrowski, Whitehall Engineering Services
G. A. Russ, Cummins Engine Co.
E. Schwartz, Defense Industrial Supply Center
R. D. Strong, General Motors Corp.
J. F. Sullivan, Accurate Fasteners
J. A. Trilling, Holo-Krome Co.
S. W. Vass, Lake Erie Screw Corp.
C. J. Wilson, Industrial Fasteners Institute
R. B. Wright, Wright Tool Co.
J. G. Zeratsky, National Rivet & Manufacturing Co.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

SUBCOMMITTEE 8 – MACHINE PINS

R. J. Harrington, *Chairman,* Spirol International Corp.
C. J. Wilson, *Secretary,* Industrial Fastener Institute
R. M. Byrne, Trade Association Management, Inc.
D. A. Clever, Deere & Co.
W. Duffey, Driv-Lok, Inc.
L. Hampel, Moline Corp.
A. Herskovitz, U.S. Army
H. Koehl, C.E.M. Co.
W. H. Kopke, ITW Shakeproof
K. E. McCullough, SPS Technologies, Inc.
J. Pagliuca, Groov-Pin Corp.
R. Pezick, Defense Industrial Supply Center
J. A. Trilling, Holo-Krome Co.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

CONTENTS

Foreword iii
Standards Committee Roster v

1 Introductory Notes 1
2 General Data – Clevis Pins 1
3 General Data – Cotter Pins 3

Figure
1 Cotter Pin Length Gage 4

Tables
1 Dimensions of Clevis Pins 2
2 Length Tolerance 4
3 Dimensions of Cotter Pins 5
4 Preferred Sizes and Lengths of Extended Prong Type Cotter Pins 6
5 Preferred Sizes and Lengths of Hammer Lock Type Cotter Pins 6

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

CLEVIS PINS AND COTTER PINS (INCH SERIES)

1 INTRODUCTORY NOTES

1.1 Scope

1.1.1 This Standard covers the complete dimensional and general data for clevis pins and cotter (split) pins recognized as American National Standard.

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.

1.2 Dimensions

All dimensions in this Standard are given in inches, unless otherwise specified. Dimensions and tolerances are in accordance with ANSI Y14.5M.

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 ANSI/ASME B18.18.1M.

1.5 Terminology

For definitions of terms relating to pins or features thereof used in this Standard, refer to ANSI B18.12, Glossary of Terms for Mechanical Fasteners.

1.6 Reference Standards

Copies of referenced Standards may be obtained from:

ASTM
1916 Race Street
Philadelphia, PA 19103

SAE
Society of Automotive Engineers
400 Commonwealth Drive
Warrendale, PA 15096

ANSI
American National Standards Institute
11 West 42nd Street
New York, NY 10036

2 GENERAL DATA — CLEVIS PINS

2.1 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.

2.2 Head

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

2.2.2 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.

2.2.3 Head Periphery. The periphery of the head shall be within a circular runout equal to 12 percent of the maximum head diameter or 0.020 in., which-

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

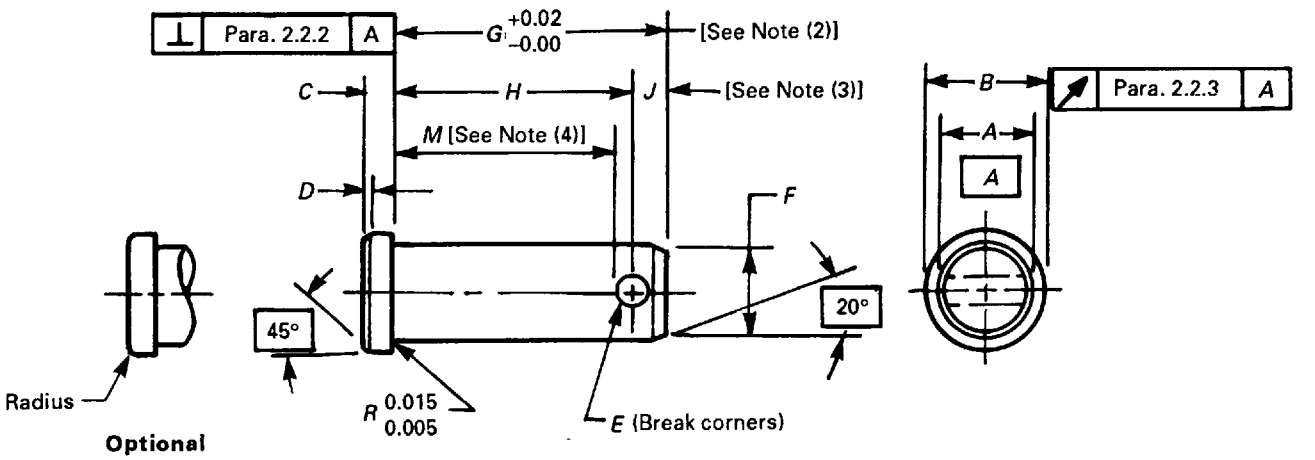


TABLE 1 DIMENSIONS OF CLEVIS PINS

Nominal Size[1] or Basic Pin Diameter		A Shank Diameter		B Head Diameter		C Head Height		D Head Chamfer	E Hole Diameter		F Point Diameter		G[2] Pin Length	H Head to Center of Hole		J[3] End to Center Ref	M[4] Head to Edge of Hole Ref		Recommended Cotter Pin Nominal Size	
		Max.	Min.	Max.	Min.	Max.	Min.	±0.01	Max.	Min.	Max.	Min.	Basic	Max.	Min.	Basic		Min.		
3/16	0.188	0.186	0.181	0.32	0.30	0.07	0.05	0.02	0.088	0.073	0.15	0.14	0.58	0.504	0.484	0.09		0.440	1/16	0.062
1/4	0.250	0.248	0.243	0.38	0.36	0.10	0.08	0.03	0.088	0.073	0.21	0.20	0.77	0.692	0.672	0.09		0.628	1/16	0.062
5/16	0.312	0.311	0.306	0.44	0.42	0.10	0.08	0.03	0.119	0.104	0.26	0.25	0.94	0.832	0.812	0.12		0.752	3/32	0.093
3/8	0.375	0.373	0.368	0.51	0.49	0.13	0.11	0.03	0.119	0.104	0.33	0.32	1.06	0.958	0.938	0.12		0.878	3/32	0.093
7/16	0.438	0.436	0.431	0.57	0.55	0.16	0.14	0.04	0.119	0.104	0.39	0.38	1.19	1.082	1.062	0.12		1.002	3/32	0.093
1/2	0.500	0.496	0.491	0.63	0.61	0.16	0.14	0.04	0.151	0.136	0.44	0.43	1.36	1.223	1.203	0.15		1.127	1/8	0.125
5/8	0.625	0.621	0.616	0.82	0.80	0.21	0.19	0.06	0.151	0.136	0.56	0.55	1.61	1.473	1.453	0.15		1.377	1/8	0.125
3/4	0.750	0.746	0.741	0.94	0.92	0.26	0.24	0.07	0.182	0.167	0.68	0.67	1.91	1.739	1.719	0.18		1.628	5/32	0.156
7/8	0.875	0.871	0.866	1.04	1.02	0.32	0.30	0.09	0.182	0.167	0.80	0.79	2.16	1.989	1.969	0.18		1.878	5/32	0.156
1	1.000	0.996	0.991	1.19	1.17	0.35	0.33	0.10	0.182	0.167	0.93	0.92	2.41	2.239	2.219	0.18		2.128	5/32	0.156

GENERAL NOTE: For additional requirements, refer to General Data for Clevis Pins on p. 2.

NOTES:

(1) Where specifying nominal size in decimals, zeros preceding decimal shall be omitted.

(2) Lengths tabulated are intended for use with standard clevises, without spacers. When required, it is recommended that other pin lengths be limited wherever possible to nominal lengths in 0.06 in. increments.

(3) Basic *J* dimension (distance from centerline of hole to end of pin) is specified for calculating hole location from underside of head on pins of lengths not tabulated.

(4) Reference dimension provided for convenience in design layout and is not subject to inspection.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale

ever is greater, with respect to the axis of the shank, as determined over a length under the head equal to the nominal pin diameter.

2.3 Length

2.3.1 Measurement. The length of the clevis pin shall be measured, parallel to the axis of pin, from the bearing surface of the head to the extreme end of the pin.

2.3.2 Length Increments. The tabulated lengths apply to pins intended for use with standard clevises, without spacers. When required, it is recommended that other pin lengths be limited, wherever possible, to nominal lengths in 0.06 in. increments.

2.4 Hole

2.4.1 Location. The hole location on all clevis pins shall be specified as the distance, measured parallel to the axis of the pin, from the bearing surface of the head to the center line of the hole. For pins having lengths other than those tabulated, the limits for H, shall be determined by subtracting referenced dimension, J, from the maximum and minimum pin length G.

2.4.2 Alignment and Angularity. The axis of hole through shank shall not be offset from the axis of pin by more than 0.010 in. for the 3/16 and 1/4 in. nominal pin size and 0.020 in. for all larger pin sizes, and shall be square with the axis of pin within 2 deg.

2.4.3 Chamfer. The hole shall be chamfered or edges otherwise relieved at both ends to remove all burrs and sharp edges.

2.5 Material and Heat Treatment

Clevis pins shall be made from low carbon steel unless otherwise specified. Case hardened pins shall have a case depth of 0.010 to 0.016 in. and shall be resistant to a No.58 file in accordance with SAE J864. Case hardened pins shall be marked with a capital "H" located in the center of the top of the head and the manufacturer's mark must also be on the head for identification purposes.

2.6 Finish

Clevis pins shall normally be furnished with a plain (as processed) finish, not plated or coated. Other finishes,where required, shall be subject to agreement between the manufacturer and the purchaser. However, plated or coated case hardened pins which are subject to hydrogen embrittlement shall be baked for a suitable time at a temperature that will obviate such embrittlement. Baking shall be accomplished within one hour following application of plating or coating inasmuch as delay is detrimental to achievement of desired results.

2.7 Workmanship

Clevis pins shall be free from burrs, loose scale, sharp edges, and all other defects affecting their serviceability.

2.8 Designation

Clevis pins shall be designated by the following data, in the sequence shown:

(a) product name (noun first);
(b) nominal size (fraction or decimal equivalent);
(c) length (decimal);
(d) material (case hardened, if required);
(e) protective finish, if required.

Examples:
Pin, Clevis, 1/4 × 0.77, Steel, Zinc Plated

Pin, Clevis, 0.375 × 1.06, Steel, Case Hardened

3 GENERAL DATA — COTTER PINS

3.1 Application

The cotter pins specified are intended for use with clevis pins contained herein and in pinned bolt and nut assemblies or other type of free fitting pinned assemblies in general applications.

3.2 Head Design

A degree of leeway shall be permissible in the design of the head provided; however, the specified minimum outside diameter is maintained as specified in Table 3.

3.3 Length

3.3.1 Measurement. The length of pin, L, shall be measured, parallel to the axis of the pin, from the plane of contact of a gage (see Fig. 1) with the head of the pin to the end of the prong or pin as depicted in the illustrations for the respective points types. The

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale

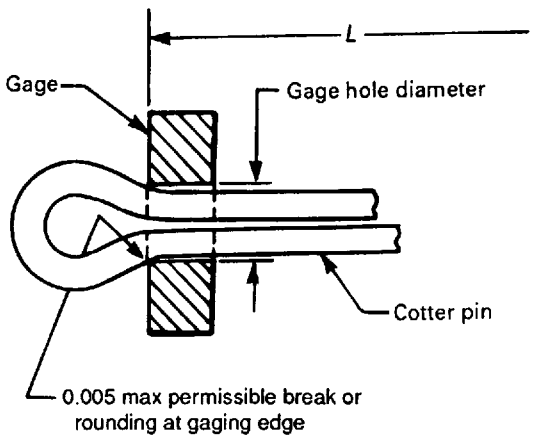


FIG. 1 COTTER PIN LENGTH GAGE

TABLE 2 LENGTH TOLERANCE

Nominal Pin Length	Tolerance on Length
Up to 1 in.	+/− 0.03
1 in. and longer	+/− 0.06

gage shall have a hole equal to the specified gage hole diameter (see Table 3) within a tolerance of ±0.001 in. The permissible break or rounding at the gauging edges of gauging holes shall not exceed 0.005 in. Pin shall be inserted into the gage with finger pressure (force not to exceed 8 oz.).

Where pins having point types other than those illustrated herein are gauged, the length, L, shall be measured from the plane of contact of the gage with the end of the shortest prong.

3.3.2 Tolerance on Length. The tolerance on length of cotter pins shall be as specified in Table 2.

3.3.3 Preferred Lengths. Tables 4 and 5 depict the preferred sizes and lengths of pins that are normally available. Other sizes and lengths are produced, as required by the purchaser.

3.4 Prongs

3.4.1 Preferred Points. The preferred point type shall be the extended prong — square cut or hammer lock designs illustrated, as specified by purchaser. Variations of the extended prong design and other types of points are also available, subject to mutual agreement between the purchaser and manufacturer.

3.4.2 Prong Alignment. The ends of the pins shall not be open and any gaps occurring between the prongs along the shank portion of pins beyond the end shall not exceed 0.015 in. for pins under 3/8 in. in diameter and 0.025 in. for pins 3/8 in. and over. The misalignment of prongs over entire length of shank shall not stop pin from being inserted into the gauging hole.

3.5 Material and Test

3.5.1 Material. Low carbon steel. When so specified by purchaser, pins may also be made from ASTM A493, Types 302 (UNS S30200) and 304 (UNS S30400), corrosion resistant steel; ASTM B134, Alloy 260 (UNS C26000), cartridge brass; Monel Alloy (UNS N04400) or other material as agreed upon between manufacturer and purchaser.

3.5.2 Analysis. Chemical composition determinations shall be made in accordance with methods given in ASTM Standard E30 when composition verification is specified.

3.5.3 Ductility. Each prong of the cotter pin shall be capable of withstanding being bent back upon itself once with no visible indication of fracture occurring at the point of bend.

3.5.4 Wire Section. Cotter pins are manufactured from approximately half-round wire and it is desirable that the flat side of the wire have a small degree of rounding at the edges rather than sharp corners.

3.6 Finish

Unless otherwise specified by the purchaser, cotter pins shall be supplied with a plain (as processed) finish, not plated or coated. Other finishes, where required, shall be subject to agreement between the manufacturer and purchaser.

3.7 Workmanship

Cotter pins shall be free from excessive burrs, cracks, loose scale, sharp edges, and all other defects affecting their serviceability.

3.8 Designation

Cotter pins shall be designated by the following data, in sequence shown:

(a) product name (noun first);
(b) nominal size (fraction or decimal equivalent);
(c) pin length;
(d) point type;
(e) material and protective finish, if required.

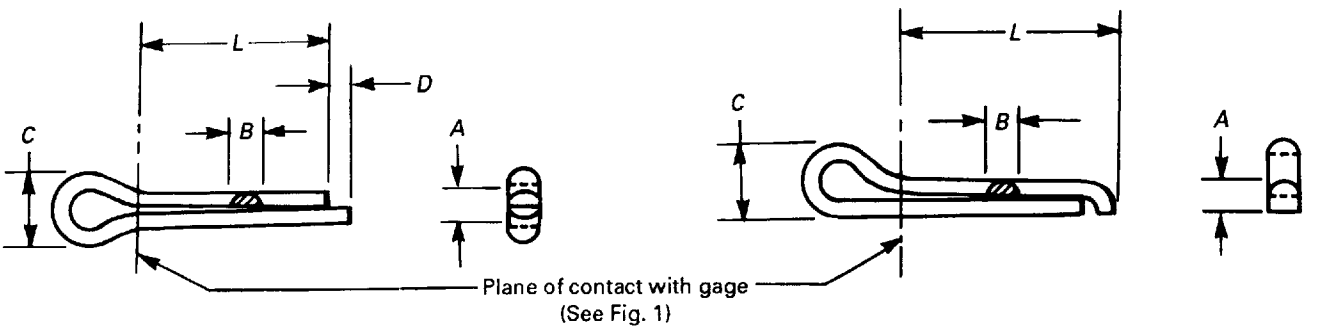
Examples:

Pin, Cotter, 1/8 × 1 1/4, Extended Prong Type, Steel, Zinc Plated

Pin, Cotter, 0.250 × 1.50, Hammer Lock Type, Corrosion Resistant Steel

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale



Extended Prong Square Cut Type

Hammer Lock Type

TABLE 3 DIMENSIONS OF COTTER PINS

Nominal Size[1,2] or Basic Pin Dia.	Total Shank Diameter *A*[3]		Wire Width *B*		Head Diameter *C*	Extended Prong Length *D*	Gage Hole Diameter ±0.001
	Max.	Min.	Max.	Min.	Min.	Min.	
1/32 0.031	0.032	0.028	0.032	0.022	0.06	0.01	0.047
3/64 0.047	0.048	0.044	0.048	0.035	0.09	0.02	0.062
1/16 0.062	0.060	0.056	0.060	0.044	0.12	0.03	0.078
5/64 0.078	0.076	0.072	0.076	0.057	0.16	0.04	0.094
3/32 0.094	0.090	0.086	0.090	0.069	0.19	0.04	0.109
7/64 0.109	0.104	0.100	0.104	0.080	0.22	0.05	0.125
1/8 0.125	0.120	0.116	0.120	0.093	0.25	0.06	0.141
9/64 0.141	0.134	0.130	0.134	0.104	0.28	0.06	0.156
5/32 0.156	0.150	0.146	0.150	0.116	0.31	0.07	0.172
3/16 0.188	0.176	0.172	0.176	0.137	0.38	0.09	0.203
7/32 0.219	0.207	0.202	0.207	0.161	0.44	0.10	0.234
1/4 0.250	0.225	0.220	0.225	0.176	0.50	0.11	0.266
5/16 0.312	0.280	0.275	0.280	0.220	0.62	0.14	0.312
3/8 0.375	0.335	0.329	0.335	0.263	0.75	0.16	0.375
7/16 0.438	0.406	0.400	0.406	0.320	0.88	0.20	0.438
1/2 0.500	0.473	0.467	0.473	0.373	1.00	0.23	0.500
5/8 0.625	0.598	0.590	0.598	0.472	1.25	0.30	0.625
3/4 0.750	0.723	0.715	0.723	0.572	1.50	0.36	0.750

GENERAL NOTE: For additional requirements, refer to General Data for Cotter Pins in Sections 1 and 3.
NOTES:
(1) Where specifying nominal size in decimals, zero preceding decimal shall be omitted.
(2) 5/64, 7/32, 7/16 and 3/4 not preferred for new design.
(3) Total shank diameter, *A* dimension, is two times wire thickness. *A* is measured at end of pin where no gap is permitted.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale

TABLE 4 PREFERRED SIZES AND LENGTHS OF EXTENDED PRONG TYPE COTTER PINS

Nominal Pin Length	Nominal Pin Size											
	1/32	3/64	1/16	3/32	1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8
1/2	XX	XX	XX	XX	XX							
3/4	XX	XX	XX	XX	XX	XX	XX					
1	XX	XX	XX	XX	XX	XX	XX	XX	XX			
1 1/2			XX	XX	XX	XX	XX	XX	XX	XX		
2			XX	XX	XX	XX	XX	XX	XX	XX		
2 1/2				XX	XX	XX	XX	XX	XX	XX	XX	
3					XX	XX	XX	XX	XX	XX	XX	XX
3 1/2							XX	XX	XX	XX	XX	XX
4							XX	XX	XX	XX	XX	XX
5									XX	XX	XX	XX
6										XX	XX	XX

TABLE 5 PREFERRED SIZES AND LENGTHS OF HAMMER LOCK TYPE COTTER PINS

Nominal Pin Length	Nominal Pin Size									
	3/64	1/16	3/32	7/64	1/8	5/32	3/16	1/4	5/16	3/8
1/2	XX	XX	XX	XX	XX					
3/4	XX	XX	XX	XX	XX	XX	XX			
1		XX	XX	XX	XX	XX	XX	XX	XX	
1 1/2		XX	XX	XX	XX	XX	XX	XX	XX	XX
2		XX	XX	XX	XX	XX	XX	XX	XX	XX
2 1/2						XX	XX	XX	XX	XX
3						XX	XX	XX	XX	XX
3 1/2							XX	XX	XX	XX
4							XX	XX	XX	XX

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale

AMERICAN NATIONAL STANDARDS FOR BOLTS, NUTS, RIVETS, SCREWS, WASHERS, AND SIMILAR FASTENERS

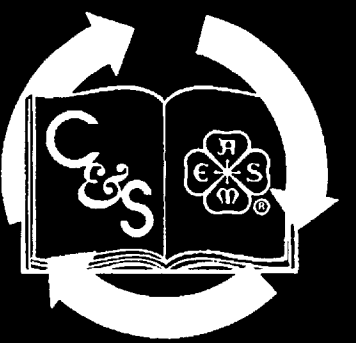
Small Solid Rivets ..... B18.1.1-1972(R1989)
Large Rivets ..... B18.1.2-1972(R1989)
Metric Small Solid Rivets ..... B18.1.3M-1983(R1989)
Square and Hex Bolts and Screws – Inch Series ..... B18.2.1-1981(R1992)
Square and Hex Nuts (Inch Series) ..... B18.2.2-1987(R1993)
Metric Hex Cap Screws ..... B18.2.3.1M-1979(R1989)
Metric Formed Hex Screws ..... B18.2.3.2M-1979(R1989)
Metric Heavy Hex Screws ..... B18.2.3.3M-1979(R1989)
Metric Hex Flange Screws B18.2.3.4M-1984
Metric Hex Bolts ..... B18.2.3.5M-1979(R1989)
Metric Heavy Hex Bolts ..... B18.2.3.6M-1979(R1989)
Metric Heavy Hex Structural Bolts ..... B18.2.3.7M-1979(R1989)
Metric Hex Lag Screws ..... B18.2.3.8M-1981(R1991)
Metric Heavy Hex Flange Screws B18.2.3.9M-1984
Metric Hex Nuts, Style 1 ..... B18.2.4.1M-1979(R1989)
Metric Hex Nuts, Style 2 ..... B18.2.4.2M-1979(R1989)
Metric Slotted Hex Nuts ..... B18.2.4.3M-1979(R1989)
Metric Hex Flange Nuts B18.2.4.4M-1982
Metric Hex Jam Nuts ..... B18.2.4.5M-1979(R1990)
Metric Heavy Hex Nuts ..... B18.2.4.6M-1979(R1990)
Socket Cap, Shoulder and Set Screws – Inch Series B18.3-1986
Socket Head Cap Screws (Metric Series) ..... B18.3.1M-1986(R1993)
Metric Series Hexagon Keys and Bits ..... B18.3.2M-1979(R1990)
Hexagon Socket Head Shoulder Screws (Metric Series) ..... B18.3.3M-1986(R1993)
Hexagon Socket Button Head Cap Screws (Metric Series) ..... B18.3.4M-1986(R1993)
Hexagon Socket Flat Countersunk Head Cap Screws (Metric Series) ..... B18.3.5M-1986(R1993)
Metric Series Socket Set Screws ..... B18.3.6M-1986(R1993)
Round Head Bolts (Inch Series) B18.5-1990
Metric Round Head Short Square Neck Bolts B18.5.2.1M-1981
Metric Round Head Square Neck Bolts B18.5.2.2M-1982
Round Head Square Neck Bolts With Large Head (Metric Series) B18.5.2.3M-1990
Wood Screws (Inch Series) ..... B18.6.1-1981(R1991)
Slotted Head Cap Screws, Square Head Set Screws, and Slotted Headless Set Screws ..... B18.6.2-1972(R1993)
Machine Screws and Machine Screw Nuts ..... B18.6.3-1972(R1983)
Thread Forming and Thread Cutting Tapping Screws and
Metallic Drive Screws (Inch Series) ..... B18.6.4-1981(R1991)
Metric Thread Forming and Thread Cutting Tapping Screws ..... B18.6.5M-1986(R1993)
Metric Machine Screws ..... B18.6.7M-1985(R1993)
General Purpose Semi-Tubular Rivets, Full Tubular Rivets, Split Rivets and Rivet Caps ..... B18.7-1972(R1992)
Metric General Purpose Semi-Tubular Rivets ..... B18.7.1M-1984(R1992)
Clevis Pins and Cotter Pins (Inch Series) B18.8.1-1994
Taper Pins, Dowel Pins, Straight Pins, Grooved Pins, and Spring Pins (Inch Series) B18.8.2-1994
Spring Pins – Coiled Type (Metric Series) B18.8.3M-1990
Spring Pins – Slotted (Metric Series) B18.8.4M-1994
Machine Dowel Pins – Hardened Ground (Metric Series) 18.8.5M-1994
Cotter Pins (Metric Series) B18.8.6M-1994
Headless Clevis Pins (Metric Series) B18.8.7M-1994
Headed Clevis Pins (Metric Series) B18.8.8M-1994
Plow Bolts ..... B18.9-1958(R1989)
Track Bolts and Nuts ..... B18.10-1982(R1992)
Miniature Screws ..... B18.11-1961(R1992)
Glossary of Terms for Mechanical Fasteners ..... B18.12-1962(R1991)
Screw and Washer Assemblies – Sems (Inch Series) ..... B18.13-1987(R1993)
Screw and Washer Assemblies – Sems (Metric Series) B18.13.1M-1991
Forged Eyebolts B18.15-1985

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

Mechanical and Performance Requirements for Prevailing-Torque Type
Steel Metric Hex Nuts and Hex Flange Nuts ..... B18.16.1M-1979(R1986)
Torque-Tension Test Requirements for Prevailing-Torque Type
Steel Metric Hex Nuts and Hex Flange Nuts ..... B18.16.2M-1979(R1986)
Dimensional Requirements for Prevailing-Torque Type Steel
Metric Hex Nuts and Hex Flange Nuts ..... B18.16.3M-1982(R1993)
Wing Nuts, Thumb Screws, and Wing Screws ..... B18.17-1968(R1983)
Inspection and Quality Assurance for General Purpose Fasteners ..... B18.18.1M-1987(R1993)
Inspection and Quality Assurance for High-Volume Machine Assembly Fasteners ..... B18.18.2M-1987(R1993)
Inspection and Quality Assurance for Special Purpose Fasteners ..... B18.18.3M-1987(R1993)
Inspection and Quality Assurance for Fasteners for Highly Specialized
Engineered Applications ..... B18.18.4M-1987(R1993)
Lock Washers (Inch Series) B18.21.1-1990
Lock Washers (Metric Series) B18.21.2M-1990
Metric Plain Washers ..... B18.22M-1981(R1990)
Plain Washers ..... B18.22.1-1965(R1990)
Helical Coil Screw Thread Inserts (Inch Series) B18.29.1-1993

The ASME Publications Catalog shows a complete list of all the Standards published by the Society. For a complimentary catalog, or the latest information about our publications, call 1-800-THE-ASME (1-800-843-2763).

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale



This document is printed
on 50% recycled paper.

ISBN #0-7918-2267-2

L02494

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale