

ASME/ANSI B1.8-1988

(REVISION OF ANSI B1.8-1977)

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STUB ACME SCREW THREADS

AN AMERICAN NATIONAL STANDARD



The American Society of
Mechanical Engineers

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The American Society of
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FOREWORD

(This Foreword is not part of ASME/ANSI B1.8-1988.)

The Standards Committee on the Standardization and Unification of Screw Threads, B1, was organized in June 1921 with the Society of Automotive Engineers and the American Society of Mechanical Engineers as joint sponsors under the procedures of the American Standards Association (ASA), now the American National Standards Institute (ANSI). This Committee was reorganized in May 1929, and its work was divided among five subcommittees as follows:

- No. 1 — Scope and Arrangement of American Standard
- No. 2 — Terminology and Form Threads, Except Gages
- No. 3 — Special Threads and Twelve Pitch Series, Except Gages
- No. 4 — Acme Threads, Except Gages
- No. 5 — Screw Thread Gages

National standardization of Acme screw threads in the United States began in 1932 when Subcommittee No. 4 on Acme Threads of Sectional Committee B1 held its first meeting in New York. A report was presented on the types of Acme threads and the range of sizes and pitches in use in this country. It was prepared by C. W. Bettcher with the assistance of F. L. Woodcock. This report developed into a draft standard. When it was finally approved as an American Standard with the designation ASA B1.3-1941, it contained a section of introductory notes and tables covering general purpose screws and general purpose nuts, basic dimensions of general purpose Acme threads with special and standard pitches, basic dimensions of 29 deg. stub threads, measurements over three wires for Acme threads, basic dimensions of 60 deg. stub threads, and basic proportions for modified square threads.

In December 1942, to meet the war emergency, the National Aircraft Standards Committee of the Aeronautical Chamber of Commerce requested the ASA to consider establishing an American war standard for special Acme screw threads for use in aircraft construction. Recognizing the vital importance of aircraft production to the war effort, the ASA at once initiated this project and organized a special committee to develop the standard. At the London Conference on the unification of screw threads held in the summer of 1944, it was proposed that a war standard on Stub Acme threads also be drawn up. Early in March 1945, therefore, the work on this proposed standard was begun and a draft prepared as a result of the discussion with the British and Canadian experts at the Ottawa Conference in October 1945. This draft was dated March 1946 and was submitted to the ASA War Committee on Acme Threads and the ASA War Committee on Screw Threads in April 1946 for approval by letter ballot. However, a Stub Acme war standard was never issued.

In April 1946, the Subcommittees of Standards Committee B1 were reorganized to include the responsibility of the ASA War Committee. Subcommittee No. 2 on Acme and Stub Acme Threads revised the March 1946 draft on Stub Acme screw threads and on March 31, 1948, distributed the January 1948 draft to industry for criticism and comment.

The final draft of the proposed standard on Stub Acme screw threads was completed in June 1951 and was submitted to Sectional Committee B1 for letter ballot on September 17, 1951; it was approved with minor amendments. Following approval by the sponsor

organizations, the proposed standard was submitted to the ASA for approval and designation as an American Standard. This was granted on May 7, 1952.

The next revisions were approved by ANSI as American National Standards on May 14, 1973, and May 11, 1977, respectively. Revisions were minor.

On September 2, 1981, the B1 Committee was reorganized as an ASME Standards Committee. The B1.8 Subcommittee developed this edition, which was subsequently approved by the ASME B1 Committee, submitted to ANSI, and adopted as an American National Standard on January 11, 1988.

ASME STANDARDS COMMITTEE B1 Standardization and Unification of Screw Threads

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

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CONTENTS

Foreword	iii
Standards Committee Roster	v
General and Historical	1
1 Specifications for Stub Acme Threads	1
2 Gages for Stub Acme Screw Threads	5
Figures	
1 Stub Acme Form of Thread	2
2 Disposition of Allowances, Tolerances, and Crest Clearances for Stub Acme Threads	3
Tables	
1 Tolerances on Major and Minor Diameters of External and Internal Threads	4
2 Stub Acme Screw Thread Form, Design Dimensions	8
3 Stub Acme Screw Threads, Standard Series, Basic Dimensions	9
4 Tolerances and Allowances for Major and Minor Diameters, Stub Acme Screw Threads, Standard Series	10
5 Pitch Diameter Allowances for Stub Acme Screw Threads	11
6 Pitch Diameter Tolerances for Stub Acme Screw Threads	12
7 Limiting Dimensions and Tolerances, Stub Acme Screw Threads, Standard Series	13
8 Plain Gage Tolerances	15
9 Tolerances for GO and NOT GO Thread Working and Setting Gages, Stub Acme Screw Threads	15
10 Pitch Diameter Compensation for Adjusted Lengths of GO Ring Gages	16
Appendices	
A Alternative Stub Acme Threads, Modified Form 1 and Modified Form 2	17
B Three-Wire Method of Measurement of Pitch Diameter of 29 deg. Stub Acme Threads	21
Figures	
A1 Modified Stub Acme Thread With Basic Height of $0.375p$ (Form 1)	18
A2 Modified Stub Acme Thread With Basic Height of $0.250p$ (Form 2)	18
B1 Basis of Lead Angle Correction for External Thread	28

Tables

A1	Modified Stub Acme Thread Form, Design Dimensions (Form 1)	19
A2	Modified Stub Acme Thread Form, Design Dimensions (Form 2)	20
B1	Wire Sizes and Constants, Single-Start Stub Acme Threads (29 deg.)	22
B2	Values for Wire Measurements of Single-Start Standard Stub Acme Threads (29 deg.)	23
B3	Values of $(1 + \operatorname{cosec} \alpha')$ for $\alpha = 14 \text{ deg. } 30 \text{ min}$ and Lead Angles From 0 deg. to 5 deg.	24
B4	Best-Wire Diameters and Constants for Large Lead Angles, 1 in. Axial Pitch Stub Acme Threads (29 deg.)	26

STUB ACME SCREW THREADS

GENERAL AND HISTORICAL

When formulated prior to 1895, regular Acme screw threads were intended to replace square threads and a variety of threads of other forms used chiefly for the purpose of producing traversing motions on machines, tools, etc. For current information on Acme threads, see the latest edition of ASME/ANSI B1.5.

The Stub Acme thread came into being early in the 1900s. Its use has been generally confined to those unusual applications where a coarse-pitch thread of shallow depth is required due to mechanical or metallurgical considerations.

Federal Government Use. When this Standard is approved by the Department of Defense and Federal Agencies and is incorporated into FED-STD H28/13, Screw Thread Standards for Federal Services, Section 13, the use of this Standard by the Federal Government is subject to all the requirements and limitations of FED-STD H28/13.

1 SPECIFICATIONS FOR STUB ACME THREADS

1.1 Angle of Thread

The included angle between the flanks of the thread measured in an axial plane shall be 29 deg. The line bisecting this 29 deg. angle shall be perpendicular to the axis of the screw thread.

1.2 Pitch of Thread

The pitch of a thread is the distance, measured parallel to its axis, between corresponding points on adjacent thread forms.

1.3 Height of Thread

The basic height of the standard Stub Acme thread shall be equal to 0.3 pitch. When design requirements necessitate use of a lesser or greater thread height, the data should be obtained from Appendix A.

1.4 Thickness of Thread

The basic thickness of the thread at a diameter smaller than the basic major diameter (i.e., the basic pitch diameter) by 0.3 pitch shall be equal to one-half the pitch.

1.5 Allowance (Minimum Clearance) at Major and Minor Diameters

A minimum diametral clearance is provided at the minor diameter of all Stub Acme thread assemblies by establishing the maximum minor diameter of external threads 0.020 in. below the basic minor diameter on threads 10 pitch and coarser, and 0.010 in. below the basic minor diameter for finer pitches.

A minimum diametral clearance at the major diameter is obtained by establishing the minimum major diameter of the internal thread 0.020 in. above the basic major diameter for threads 10 pitch and coarser, and 0.010 in. above the basic major diameter for finer pitches.

1.6 Basic Thread Form Dimensions

The basic dimensions of the Stub Acme thread form for the most generally used pitches are given in Table 2. The basic thread form is symmetrical and is illustrated in Fig. 1.

1.7 Stub Acme Screw Thread Series

The series of diameters and associated pitches of Stub Acme threads listed in Table 3 are recommended as preferred. These diameters and pitches have been carefully selected to meet the present needs with the fewest number of items in order to reduce to a minimum the inventory of both tools and gages. If other combinations of diameter and pitch are required, calculate thread dimensions in accordance with the formulas in Fig. 2.