FED-STD-H28/12A
20 September 1989
SUPERSEDING
FED-STD-H28/12
31 August 1978
(See Note)

FEDERAL STANDARD

SCREW-THREAD STANDARDS FOR FEDERAL SERVICES

SECTION 12

ACME THREADS

This standard was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

AMSC N/A

AREA THDS

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FOREWORD

This section was developed to provide Acme Threads for the Federal Services. The present issue is a complete revision of FED-STD-H28/12 dated 31 August 1978.

FED-STD-H28/12A was prepared by the Defense Industrial Supply Center (DLA-IS) and incorporates the American National Standard for Acme Screw Threads, ASME/ANSI B1.5-1988. Significant changes from the previous issue include the following:

(1) Inactivated Classes 5G, 5C and 6C for new design.

(2) Changed diameter designations from fractions to decimals.

(3) Added indicating type gages as an option.

(4) Changed tolerances on GO and NOT GO plain gages for external general purpose Acme Threads.

SECTION 12 - ACME THREADS

1. Scope. This section provides the standards for Acme screw threads.

2. Referenced documents.

2.1 Government publications. The issue of the following document in effect on the date of invitation for bids or request for proposal forms a part of this standard to the extent specified herein.

Federal standard.

FED-STD-H28/1 Nomenclature, Definitions and Letter Symbols for Screw Threads

(Activities outside the Federal Government may obtain copies of Federal specifications, standards and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions. The Index, which includes cumulative bi-monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this standard and other Federal specifications, standards and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available from the General Services Administration Specification Section, Room 6654, 7th and D Streets, S.W., Washington, DC 20407; telephone (202) 472-2205.

(Federal Government activities may obtain copies of Federal standardization documents, and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

2.2 Other publications. The following document forms a part of this standard to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

American National Standard.

ASME/ANSI B1.5-1988 - Acme Screw Threads

(Application for copies should be addressed to the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, NY 10017 or the American National Standards Institute, 1430 Broadway, New York, NY 10018.)

3. Definitions. The terms applicable to this standard are defined in FED-STD-H28/1.

4. General requirements. Acme screw threads and thread gages shall be in accordance with ASME/ANSI B1.5-1988. The following corrections apply to ASME/ANSI B1.5-1988:

a. Pg. 12, Table 6: For 1 1/2 diameter & 6 threads/in., change 0.0195 to 0.0196.

b. Pg. 13, Table 6: For 4 diameter & 1 1/2 threads/in., change 0.0335 to 0.0365.

c. Pg. 17, Table 8: For 5 diameter & 2 threads/in., change 0.0015 to 0.0115.

d. Pg. 19, Table 9: For 1 diameter, change max. major diameter from 0.0400 to 1.0400.

e. Pg. 30, Table 13: For 1 3/4 size, change col. 7 from 0.0016 to 0.0046.

f. Pg. 40, Table 18: For 1/2 diameter, change Class 4C pitch diameter tolerance from 0.0016 to 0.0046.

g. Pg. 40, Table 18: For 7/8 diameter, change Class 2C min. pitch diameter from 0.7063 to 0.7663.

h. Pg. 40, Table 18: For 1 diameter, change Class 3C min. pitch diameter from 0.8840 to 0.8849.

i. Pg. 40, Table 18: For 1 1/8 diameter, change Class 2C pitch diameter tolerance from 0.0193 to 0.0198.

j. Pg. 40, Table 18: For 1 3/8 diameter, change Class 3C max. pitch diameter from 1.2480 to 1.2430.

5. Detailed requirements.

5.1 Thread form. Standard Acme screw threads are symmetrical in form with included angles of 29°. Basic height is equal to 0.5 pitch.

5.2 Thread types. Two types of threads are provided. These are identified by application as:

General purpose Acme Threads (G)
Centralizing Acme Threads (C)

General purpose threads are cleared at the major and minor diameters such that thread fit is controlled on the flanks. These threads are specified in section 1 of ASME/ANSI B1.5-1988. Control on standard centralizing threads is at the major diameter. Centralizing threads are specified in section 2 of ASME/ANSI B1.5-1988. Alternate centralizing threads are controlled at the minor diameter and are described in Appendix A of ASME/ANSI B1.5-1988. The alternate configuration is non-preferred.

5.3 Thread series. ASME/ANSI B1.5-1988 tables 3 and 12, provide a series of standard diameters and their corresponding numbers of threads per inch. If this series cannot be used, preference should be given to the use of a standard number of threads per inch as tabulated in tables 2 and 11 of that document.

5.4 Standard thread fits.

5.4.1 General purpose Acme thread classes. Thread Class 2G is preferred for general use. Classes 3G and 4G are used where less backlash or end play is required.

5.4.2 Centralizing Acme thread classes. Thread Classes 2C, 3C and 4C are standard. Class 2C provides the most backlash or end play and Class 4C the least.

5.5 Obsolete thread fits.

5.5.1 General purpose Class 5G. The Class 5G fit threads are inactive for new design. Thread data appears in Appendix D of ASME/ANSI B1.5-1988.

5.5.2 Centralizing Classes 5C and 6C. Classes 5C and 6C were standardized in 1945 to accommodate the needs of the aerospace industry. They are no longer recommended for new design. Consideration should be given to using Classes 3C and 4C, respectively, in place of Classes 5C and 6C.

CAUTION: A Class 3C internal thread cannot be used with a mating Class 4C external thread when a centralizing fit is required.

Thread data for Classes 5C and 6C appears in Appendix E of ASME/ANSI B1.5-1988.

5.6 Thread designations. Designations for general purpose Acme threads shall be in accordance with paragraph 1.15 of ASME/ANSI B1.5-1988. Centralizing Acme threads shall be designated in accordance with paragraph 2.15 of ASME/ANSI B1.5-1988.

5.7 Thread gages. Gages for general purpose Acme threads are specified in section 3 and centralizing Acme thread gages are specified in section 4 of ASME/ANSI B1.5-1988. Pitch diameter measurements using wires are delineated in Appendix C of that standard.

6. Notes.

6.1 Supersession note. In addition to superseding FED-STD-H28/12 dated 31 August 1978, this document also supersedes Appendix A13 of FED-STD-H28 dated 31 March 1978 where it applies to Acme threads.

MILITARY INTERESTS:

Custodians:

Army - AR
Navy - AS
Air Force - 99

Review Activities:

Navy - EC
Air Force - 82

User Activity:

Air Force - 15

CIVIL AGENCY COORDINATING ACTIVITIES:

DOT - FAA
GSA - 7FXE, FCET
NASA - JFK

PREPARING ACTIVITY:

DLA - IS

(DoD Project THDS-0077)