

FED-STD-H28/23
20 January 1989
SUPERSEDING
FED-STD-H28 APPENDIX A11
31 March 1978

FEDERAL STANDARD
SCREW-THREAD STANDARDS FOR FEDERAL SERVICES
SECTION 23
CLASS 5 INTERFERENCE-FIT SCREW THREADS

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

AMSC N/A

THDS

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

INFORMATION SHEET ON FEDERAL STANDARDS

This Federal Standard is issued in loose leaf form to permit the insertion or removal of new or revised pages and sections.

All users of Federal Standards should keep them up to date by inserting revised or new pages as issued and removing superseded and cancelled pages.

New and revised pages will be issued under Change Notices which will be numbered consecutively and will bear the date of issuance. Change Notices should be retained and filed in front of the Standard until such time as they are superseded by a reissue of the entire Standard.

FOREWORD

This section was developed to provide Class 5 Interference-Fit Screw Threads for the Federal Services. It is a replacement for FED-STD-H28 Appendix 11 of 31 March 1978.

FED-STD-H28/23 was prepared by the Defense Industrial Supply Center (DLA-IS) and incorporates the American National Standard ASME/ANSI B1.12-1987. Significant changes from the superseded FED-STD-H28 Appendix 11 include the following:

- (1) Acceptability in accordance with FED-STD-H28/20.
- (2) More definitive information on Class 5 threads and their design.
- (3) Dimensional data for working and setting thread gages.
- (4) Recommendations on thread lead, flank angle and runout control.
- (5) Removal of design guidance on fine threads. Interference-fit fine threads are not recommended.
- (6) Addition of specifications for elastic interference-fit threads and specially modified plastic flow interference-fit threads used with nickel-copper-aluminum externally threaded parts for use in Navy ships.
- (7) Tables of the obsolete tentative and alternate Class 5 thread standards for identification of threads used on old drawings.

SECTION 23 - CLASS 5 INTERFERENCE-FIT SCREW THREADS

1. Scope. This section provides the standards for general purpose Class 5 interference-fit screw threads of modified National thread form in the Coarse Series (NC) for sizes 0.250 through 1.500 inches. Also provided are Navy ship specifications for special application interference-fit threads.

1.1 Application. Interference-fit threads are intended to develop sufficient breakloose torques to prevent loosening of externally threaded parts in service where other, less costly methods are not deemed satisfactory.

1.2 Classification. The following classes of screw threads included in this section are listed below.

1.2.1 General purpose thread classes.

- NC-5 HF Ferrous material external threads for driving in hard ferrous material with hardness greater than 160HB
- NC-5 CSF Ferrous material external threads for driving in copper alloy and soft ferrous material with hardness 160HB or less
- NC-5 ONF Ferrous material external threads for driving in non-ferrous materials other than copper alloys
- NC-5 IF All ferrous material internal threads
- NC-5 INF All non-ferrous material internal threads

1.2.2 Elastic interference-fit thread classes for Naval ship use.

- NC-5 HFM Nickel-copper (Monel), nickel-copper-aluminum (K-Monel) and hard ferrous material external threads
- NC-5 IFM Nickel-copper (Monel), nickel-copper-aluminum (K-Monel) and all ferrous material internal threads

1.2.3 Plastic flow interference-fit thread classes for Naval ship use.

- NC-5 HFK Nickel-copper-aluminum (K-Monel) external threads for driving in hard ferrous material with hardness greater than 160HB
- NC-5 CSFK Nickel-copper-aluminum (K-Monel) external threads for driving in copper alloy and soft ferrous material with hardness 160HB or less
- NC-5 ONFK Nickel-copper-aluminum (K-Monel) external threads for driving in non-ferrous material other than copper alloys
- NC-5 HFS Application similar to NC-5 HF
- NC-5 CSFS Application similar to NC-5 CSF
- NC-5 ONFS Application similar to NC-5 ONF
- NC-5 IFS Application similar to NC-5 IF
- NC-5 INFS Application similar to NC-5 INF

1.2.4 Obsolete interference-fit thread classes (inactive for new design).

- NC-5 TENTATIVE Hard steel external threads for driving in hard materials such as cast iron, steel and bronze
- NC-5 ALTERNATE Hard steel external threads for driving in hard materials such as cast iron, steel and bronze

2. Referenced documents.

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

Federal standards.

- FED-STD-H28/1 Nomenclature, Definitions and Letter Symbols for Screw Threads
- FED-STD-H28/6 Gages and Gaging for Unified Screw Threads-UN and UNR Thread Forms
- FED-STD-H28/20 Inspection Methods for Acceptability of UN, UNR, UNJ, M and MJ 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 6662, 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 Standards.

ASME/ANSI B1.12-1987 - Class 5 Interference-Fit Thread

(Application for copies should be addressed to the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, NY 10017-2330 or the American National Standards Institute, 1430 Broadway, New York, NY 10018-3308.)

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

4. General requirements.

4.1 Screw threads.

Note: Internal threads designated NC-5 IF, NC-5 INF, NC-5 IFS and NC-5 INFS have size limits identical to the obsolete National form NC-3 threads except for minor diameter. Therefore, taps suitable for NC-3 threads may be used for these classes.

4.1.1 General purpose interference-fit threads. Classes of threads designated in 1.2.1 shall be accordance with ASME/ANSI B1.12-1987.

4.1.2 Special purpose interference-fit threads for Naval ship use. Classes of threads designated in 1.2.2 and 1.2.3 shall be in accordance with, respectively, Appendices B and C of ASME/ANSI B1.12-1987.

4.1.3 Obsolete Tentative and Alternate interference fit threads. These classes of threads designated in 1.2.4 shall be accordance with Appendix A of ASME/ANSI B1.12-1987. They shall not be used for new design.

4.2 Acceptability. Screw thread inspection methods for acceptability shall be in accordance with FED-STD-H28/20. The required gaging system shall be specified in accordance with that standard. See Section 11 of ASME/ANSI B1.12-1987 for additional information and requirements.

4.3 Gages and gaging. Gages and gaging shall be in accordance with FED-STD-H28/6 except that gage dimensions shall be as specified in ASME/ANSI B1.12-1987

5. Detailed requirements.

5.1 Standard thread sizes. The following sizes from the coarse thread series are standard for Class 5 interference-fit screw threads:

0.2500-20	0.8750-9
0.3125-18	1.0000-8
0.3750-16	1.1250-7
0.4375-14	1.2500-7
0.5000-13	1.3750-6
0.5625-12	1.5000-6
0.6250-11	1.7500-5 (Only for HFM and IFM)
0.7500-10	2.0000-4.5 (Only for HFM and IFM)

5.2 Non-standard thread sizes. For thread sizes not listed in 5.1 above, limiting dimensions for all characteristics which must be controlled shall be specified. Non-standard threads shall be identified as NS-5; only standard threads are designated NC-5.

Note: Non-standard size threads should be tested prior to approval to assure satisfactory performance.

5.3 Mating part materials. Material combinations not listed in section 1.2 are non-standard. Limiting dimensions for all characteristics which must be controlled shall be specified. Non-standard threads shall be identified as NS-5.

Note: Non-standard threads should be tested prior to approval to assure satisfactory performance. If testing demonstrates that standard threads may be applied to non-standard material combinations, the applicable standard thread designation is used.

MILITARY INTERESTS:

Custodians:

Army - AR
Navy - AS
Air Force - 99

Review Activities:

Army - AT, AV, ME, MI
Navy - EC
Air Force - 15

User Activities:

Army - CR, ER

CIVIL AGENCY COORDINATING ACTIVITIES:

DOT - ACO
GSA - 7FXE
NASA - JFK

PREPARING ACTIVITY:

DLA - IS

(DoD Project THDS-0070)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER

FED-STD-H28/23

2. DOCUMENT TITLE

Class 5 Interference-Fit Screw Threads

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

☐ VENDOR

☐ USER

☐ MANUFACTURER

☐ OTHER (Specify): _____

b. ADDRESS (Street, City, State, ZIP Code)

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) - Optional

b. WORK TELEPHONE NUMBER (Include Area Code) - Optional

c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional

8. DATE OF SUBMISSION (YYMMDD)

(TO DETACH THIS FORM, CUT ALONG THIS LINE.)