

INCH-POUND

FED-STD-H28B  
24 April 2019  
SUPERSEDING  
FED-STD-H28A  
28 DEC 1994

## FEDERAL STANDARD

### SCREW-THREAD STANDARDS FOR FEDERAL SERVICES

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

Comments, suggestions, or questions on this document should be addressed to Defense Supply Center Philadelphia (DSCP), ATTN: DSCP-NASA, 700 Robbins Avenue, Philadelphia, PA 19111-5096 or e-mail to [dscpg&ispeccomments@dla.mil](mailto:dscpg&ispeccomments@dla.mil) . Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil/>.

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## FED-STD-H28B

### 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All users of Federal Standards should keep them up to date by inserting revised or new pages as issued and removing superseded and cancelled pages.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 Change Notices should be retained and filed in front of the Standard until such time as they are superseded by a reissue of the entire Standard.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 Standard was developed to provide dimensional data requirements for screw threads including, as necessary, those relating to gages and gaging systems as well as other information associated with the purchase/use of interchangeable threaded parts by Federal Government agencies. So far as practicable, these data are intended to conform to generally accepted commercial practice, although certain special requirements of the Federal Services may necessitate the inclusion of some which are not generally applicable outside the Federal Government. References are cited throughout the text to standards approved by the American National Standards Institute (ANSI) and to such other published standards as are in agreement with Federal Services' requirements.

FED-STD-H28, together with its detailed standard sections FED-STD-H28/1, FED-STD-H28/2, etc., superseded Handbook H28 Parts I, II and 111.

FED-STD-H28B was prepared by the Defense Industrial Supply Center (DLA-IS) and is an update of FED-STD-H28A dated 31 March 1978 and modified by Change Notices 1, 2 and 3.

## FED-STD-H28B

1. Scope. This standard includes the basic screw thread dimensional and acceptability requirements for common screw thread forms and applications. Design and use information are also provided when necessary. Specific requirements for particular screw threads, gages, etc., are covered by detailed standard sections.

2. Applicable 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-H28/2 - Unified Inch Screw Threads -UN and UNR Thread Forms

FED-STD-H28/3 - CANCELED AND SUPERSEDED by FED-STD-H28/2

FED-STD-H28/4 - Controlled Radius Root Screw Threads, UNJ Symbol

FED-STD-H28/5 - Unified Miniature Screw Threads

FED-STD-H28/6 - Gages and Gaging for Unified Screw Threads -UN and UNR Thread Forms

FED-STD-H28/7 - Pipe Threads, General Purpose

FED-STD-H28/8 - Dryseal Pipe Threads

FED-STD-H28/9 - Gas Cylinder Valve Outlet and Inlet Threads

FED-STD-H28/10 - American National Hose Coupling and Fire-Hose Coupling Threads

FED-STD-H28/11 - Hose Connections for Welding and Cutting Equipment

FED-STD-H28/12 - Acme Threads

FED-STD-H28/13 - Stub Acme Threads

FED-STD-H28/14 - Buttress Screw Threads - 7°/45° Flank Angles

FED-STD-H28/15 - Rolled Threads for Screw-Shells for Electric Lampholders and Lamp Bases

## FED-STD-H28B

FED-STD-H28/16 - Microscope Objective and Nosepiece Threads, 0.8000- 36AM0

FED-STD-H28/17- Surveying Instrument Mounting Threads

FED-STD-H28/18- Photographic Equipment Threads

FED-STD-H28/19 - Miscellaneous Threads

FED-STD-H28/20 - Inspection Methods for Acceptability of UN, UNR UNJ, M and MJ  
Screw Threads

FED-STD-H28/21 - Metric Screw-Threads

FED-STD-H28/22 - Gages and Gaging for Metric Screw Threads - M and MJ Thread  
Forms

FED-STD-H28/23 - Class 5 Interference-Fit Screw Threads

## MILITARY STANDARDS

MIL-S-8879 - Screw Threads, Controlled Radius Root With Increased Minor Diameter,  
General Specification for

## MILITARY HANDBOOKS

MIL-HDBK-60 - Threaded Fasteners - Tightening to Proper Tension

(Copies of these documents are available online at <https://quicksearch.dla.mil/> or from the  
Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA  
19111-5094.)

2.2 Other publications. The following documents form a part of this standard to the extent  
specified herein. Unless otherwise specified, the issues of the documents which are DoD-  
Adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise  
specified, the issues of documents not listed in the DoDISS are the issues of the documents cited  
in the solicitation.

### American Society of Mechanical Engineers (ASME):

ASME B1.1- Unified Inch Screw Threads (UN and UNR Thread Form)

ASME B1.2- Gages and Gaging for Unified Inch Screw Threads

ASME B1.3M - Screw Thread Gaging Systems for Dimensional Acceptability – Inch and  
Metric Screw Threads (UN, UNR, UNJ, M, and MJ)

FED-STD-H28B

ASME B1.5- Acme Screw Threads

ASME B1.7M - Nomenclature, Definitions, and Letter Symbols for Screw Threads

ASME B1.8- Stub Acme Screw Threads

ASME B1.9- Buttress Inch Screw Threads

ASME B1.10- Unified Miniature Screw Threads

ASME B1. 11- Microscope Objective Thread

ASME B1.12- Class 5 Interference-Fit Thread

ASME B1.13M - Metric Screw Threads - M Profile

ASME B1.16M - Gages and Gaging for Metric M Screw Threads

ASME B1.20.1 - Pipe Threads, General Purpose (Inch)

ASME B1.20.3- Dryseal Pipe Threads (Inch)

ASME B1.20.5 - Gaging for Dryseal Pipe Threads (Inch)

ASME B1.20.7- Hose Coupling Screw Threads (Inch)

ASME B1.21M - Metric Screw Threads - MJ Profile

ASME B1.22M - Gages and Gaging for MJ Series Metric Screw Threads

ASME B18.2.1- Square and Hex Bolts and Screws, Inch Series

ASME B18.2.2 - Square and Hex Nuts (Inch Series)

ASME B18.6.2- Slotted Head Cap Screws, Square Head Set Screws, and Slotted  
Headless Set Screws

ASME B18.6.3- Machine Screws and Machine Screw Nuts

(Copies of this document are available from [www.asme.org](http://www.asme.org) or the American Society of Mechanical Engineers International, Three Park Avenue, M/S 10E New York, NY 10016-5990.)

American National Standards Institute (ANSI) Publications

FED-STD-H28B

ANSI C81.61- Electrical Lamp Bases

ANSI C8 1.62- Lampholders for Electric Lamps

ANSI C8 1.63- Gauges for Electric Lamp Bases and Lampholders

ANSI PH3.101- Photography (Cameras) - Tripod Connections for American Cameras  
(1/4-Inch-20 Thread)

ANSI PH3.103- Photography (Cameras) - Lens Barrel Attachment Threads for Lens  
Accessories

ANSI PH3.107- Photography (Cameras) - Shutter Cable Release and Socket –  
Dimensions

Compressed Gas Association (CGA)

ANSI/CSA/CGA V-1- Compressed Gas Cylinder Valve Outlet and Inlet Connections

CGA E-1 - Standard Connections for Regulator Outlets, Torches and Fitted Hose for  
Welding and Cutting Equipment

(Copies of this document are available from [www.cganet.com](http://www.cganet.com) or the Compressed Gas  
Association, 14501 George Carter Way, Suite 103, Chantilly, VA 20151.)

National Fire Protection Association (NFPA)

NFPA 1963- Screw Threads and Gaskets for Fire Hose Connections

(Copies of this document are available from [www.nfpa.org](http://www.nfpa.org) or the National Fire  
Protection Association, 1 Batterymarch Park, Quincy, Massachusetts, 02169-7471.)

Society of Automotive Engineers (SAE)

SAE-AS8879 - Screw Threads - UNJ Profile, Inch Controlled Radius Root with Increased  
Minor Diameter

(Copies of these documents are available from [www.sae.org](http://www.sae.org) or the American Society of  
Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

Society of Motion Picture and Television Engineers (SMPTE)

ANSI/SMPTE 76 - Motion-Picture Cameras -16- and 8-mm Threaded Lens Mounts

## FED-STD-H28B

(Copies of this document are available from [www.smppte.org](http://www.smppte.org) or the Society of Motion Picture and Television Engineers, White Plains Plaza, 445 Hamilton Ave, Suite 601, White Plains, NY 10601 -1827.)

3. Definitions. The terms applicable to FED-STD-H28 are in accordance with FED-STD-H28/1 and the other individual FED-STD-H28 standard sections listed in 2.1.

4. General requirements. The applicable FED-STD-H28 section standards shall be selected from the listing in 2.1.

5. Detailed requirements. Not applicable

6. Notes .

6.1 Related industrial standards. The following is a listing of industry standards related to, but not necessarily identical to, the subjects covered in the section standards of FED-STD-H28. Industry standards incorporated, by reference, in the section standards, are indicated by an asterisk (\*).

FED-STD-H28/1 - ANSI/ASME B1.7M\*

FED-STD-H28/2 - ASME B1.1\*

FED-STD-H28/4 - ASME B1.15

FED-STD-H28/5 – ANSI/ASME B1.10

FED-STD-H28/6 - ANSI/ASME B1.2\*

FED-STD-H.28/7 - ANSI/ASME B1.20.1\*

FED-STD-H28/8 - ANSI B1.20.3\* and ASME B1.20.5\*

FED-STD-H28/9 - ANSI/CSA/CGA V-1\*

FED-STD-H28/10- ASME B 1.20.7\* and NFPA 1963\*

FED-STD-H28/11- CGA E- 1

FED-STD-H28/12- ASME/ANSI B1.5 \*

FED-STD-H28/13 - ASME/ANSI B1.8\*

FED-STD-H28/14 - ANSI B1.9\*

## FED-STD-H28B

FED-STD-H28/15 - ANSI C81.61\*, C81.62\*, C81.63\*

FED-STD-H28/16 - ANSI B1.11

FED-STD-H28/17-

FED-STD-H28/18 - ANSI PH3. 101\*, 102\*, 103\*, 107\* and ANSI/SMPTE 76\*

FED-STD-H28/19 –

FED-STD-H28/20 - ASME B1.3M\*

FED-STD-H28/21 - ANSI/ASM13B1. 13M\* and ANSI B1.21M\*

FED-STD-H28/22 - ANSI/AS1.13B1.16M\*, B1.22M\*

FED-STD-H28/23 - ASME/ANSI B1.12\*

6.2 Appendices. The following is a list of appendices which had been part of FED- STD-H28 or the cancelled Handbook H28. Their disposition and action date are indicated.

A1 - American National Form of Thread Series for Bolts, Machine Screws, Nuts, Tapped Holes and General Applications (Superseded 20 August 1991 by FED-STD-H28/2).

A2 - American National Screw Threads of Special Diameters, Pitches, and Lengths of Engagement (Deleted by the 1969 Issue of Handbook H28)

A3 - Recommended Hole Size Limits Before Threading and Tap Drill Sizes (Superseded 20 April 1984 by FED-STD-H28/2))

A4 - Methods of Wire Measurements of Pitch Diameter of 60° Threads (Superseded 5 March 1985 by FED-STD-H28/6, /7, and /8)

A5 - Design of Special Threads (Superseded 20 April 1984 by FED-STD-H28/2)

A6 - References (Deleted by the 1969 issue of Handbook H28)

A7 - Supplementary Pipe Thread Information (Superseded 25 October 1984 by FED-STD-H28/7 and /8)

A8 - Geometry of Taper Screw Threads (Deleted by this Issue of FED-STD-H28))

A9 - Extent of Usage of the American National Fire-Hose Coupling Threads on Couplings and Nipples Used With 2 1/2 Inch Nominal Size Fire Hose (Cancelled 21 June 1993 by FED-STD-H28/10)



FED-STD-H28B

A10 - Wrench Openings (Superseded 20 January 1989- see ANSI B18.2. 1, ASME/ANSI B18.2.2, ANSI B18.6.3, and ANSI B18.6.4)

A11- Class 5 Interference-Fit Threads (Superseded 20 January 1989 by FED-STD-H28/23)

A12 - The Tightening of Threaded Fasteners to Proper Tension (Superseded 12 March 1990 by MJLHDBK-60)

A13- Three-Wire Method of Measurement of Pitch Diameter of 29° Acme, 29° Stub Acme and Buttress Threads (Superseded 20 September 1989 by FED-STD-H28/12, /13 and /14)

A14 - Metric Screw Thread Standards (Superseded 31 May 1977 by FED-STD-H28/21)

Custodian:

Army - AR

Navy - AS

Air Force - 99

Preparing activity

DLA-IS

Project No. THDS-2019-003

NOTE: The activities listed above were interested in this document as of the date of this Document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at

<https://assist.dla.mil/>