

FED. SUPPLY CLASS

5305

1. SCOPE

1.1 Scope. This specification covers hexagon socket-head shoulder screws and slotted-head shoulder screws.

2. APPLICABLE DOCUMENTS

2.1 Government documents

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

Federal

QQ-B-637 — Brass, Naval: Rod, Wire, Shapes, Forgings and Flat Products with Finished Edges (Bar, Flat, Wire, and Strip)
QQ-B-728 — Bronze-Manganese; Rod, Shapes, Forgings, and Flat Products (Flat Wire, Strip, Sheet, Bar, and Plate)
QQ-B-750 — Bronze, Phosphor; Bar, Plate, Rod, Sheet, Strip, Flat Wire and Structural and Special Shaped Sections
QQ-C-591 — Copper-Silicon, Copper-Zinc-Silicon, and Copper-Nickel-Silicon Alloys: Rod, Wire, Shapes, Forgings, and Flat Products (Flat Wire, Strip, Sheet, Bar, and Plate)
QQ-C-00465 — Copper-Aluminum Alloys (Aluminum Bronze) (Copper Alloy Numbers 606, 614, 630, and 642); Rod, Flat Products with Finished Edges (Flat Wire, Strip, and Bar), Shapes, and Forgings
QQ-N-281 — Nickel-Copper Alloy Bar, Rod, Plate, Sheet, Strip, Wire, Forgings, and Structural and Special Shaped Sections
QQ-N-286 — Nickel-Copper-Aluminum Alloy, Wrought

STANDARDS

Federal

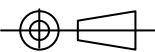
FED-STD-H28/2 — Screw-Thread Standards for Federal Services, Section 2, Unified Inch Screw threads-UN and UNR Thread Forms
FED-STD-H28/20 — Screw-Thread Standards for Federal Services, Section 20, Inspection Methods for Acceptability of UN, UNR, UNJ, M and MJ Screw-Threads
FED-STD-123 — Marking for Shipment (Civil Agencies)

Copies can be obtained from DLA Document Services, Bldg 4/D, 700 Robbins Ave, Philadelphia, PA 19111.
<http://quicksearch.dla.mil/>

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

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CUSTODIAN

NATIONAL AEROSPACE STANDARDS COMMITTEE

REVISION

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PROCUREMENT
SPECIFICATION

NONE

TITLE

**SCREW, SHOULDER, HEXAGON SOCKET-HEAD
AND SLOTTED-HEAD,
GENERAL SPECIFICATION FOR**

CLASSIFICATION
SPECIFICATION

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ASTM International

ASTM A370	Standard Test Methods and Definitions for Mechanical Testing of Steel Products
ASTM A493	Standard Specification for Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging
ASTM A574	Standard Specification for Alloy Steel Socket-Head Cap Screws
ASTM A582/A582M	Standard Specification for Free-Machining Stainless Steel Bars
ASTM B21/B21M	Standard Specification for Naval Brass Rod, Bar, and Shapes
ASTM B98/B98M	Standard Specification for Copper-Silicon Alloy Rod, Bar and Shapes
ASTM B99/B99M	Standard Specification for Copper-Silicon Alloy Wire for General Applications
ASTM B105	Standard Specification for Hard-Drawn Copper Alloy Wires for Electric Conductors
ASTM B124/B124M	Standard Specification for Copper and Copper Alloy Forging Rod, Bar, and Shapes
ASTM B138/B138M	Standard Specification for Manganese Bronze Rod, Bar, and Shapes
ASTM B139/B139M	Standard Specification for Phosphor Bronze Rod, Bar, and Shapes
ASTM B150/B150M	Standard Specification for Aluminum Bronze Rod, Bar, and Shapes
ASTM B283/B283M	Standard Specification for Copper and Copper-Alloy Die Forgings (Hot-Pressed)
ASTM B633	Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
ASTM D3951	Standard Practice for Commercial Packaging
ASTM E172	Standard Practice for Describing and Specifying the Excitation Source in Emission Spectrochemical Analysis
ASTM E1282	Standard Guide for Specifying the Chemical Compositions and Selecting Sampling Practices and Quantitative Analysis Methods for Metals, Ores, and Related Materials
ASTM E1417	Standard Practice for Liquid Penetrant Testing
ASTM E1444	Standard Practice for Magnetic Particle Testing
ASTM F606	Standard Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets
ASTM F788/F788M	Standard Specification for Surface Discontinuities of Bolts, Screws, and Studs, Inch and Metric Series

Copies can be obtained from ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. www.astm.org

Aerospace Industries Association

NASM1312	Fasteners, Test Methods
NASM51575	Screw, Shoulder, Slotted-Head, CRES
NASM51576	Screw, Shoulder, Socket-Head, Hexagon, CRES
NASM51975	Screw, Shoulder-Socket-Head, Hexagon, Alloy Steel, Cadmium Plated, UNC-3A

Copies can be obtained from the Aerospace Industries Association, 1000 Wilson Blvd., Suite 1700, Arlington, VA 22209. www.aia-aerospace.org

SAE International

AS8879	Screw Threads, Standard, Optimum Selected Series, General Specification for
AMS2700	Cleaning Methods and Passivation Treatments for CRES
AMS2759	Heat Treatment of Steel, Process for
AMS-C-81562	Coatings, Cadmium, Tin-Cadmium and Zinc (Mechanically Deposited)
AMS-QQ-P-416	Plating, Cadmium (Electrodeposited)

Copies can be obtained from SAE International, 400 Commonwealth Dr., Warrendale, PA 15096-0001. www.sae.org

ASME

ASME B18.3	Socket Cap, Shoulder and Set Screws - Inch Series
ASME B18.6.3	Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series)
ASME B46.1	Surface Texture (Surface Roughness, Waviness, and Lay)

Copies can be obtained from ASME, Three Park Ave., New York, NY 10016-5990. www.asme.org

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American Society for Quality

ANSI/ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes

Copies can be obtained from the American Society for Quality, 600 North Plankinton Ave., Milwaukee, WI 53203.
www.asq.org

- 2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

- 3.1 NAS sheets. The individual item requirements shall be as specified herein and in accordance with the applicable NAS sheet. In the event of any conflict between requirements of this specification and the NAS sheet, the latter shall govern (see 6.2).

- 3.2 Material. The offeror/contractor is encouraged to use recovered materials in accordance with Public Law 94-580 to the maximum extent practicable. Screws shall be made of alloy steel in accordance with 3.2.1, CRES in accordance with 3.2.2 or 3.2.3, or non-ferrous material in accordance with 3.2.4, as specified (see 6.2 and 6.3). Mechanical properties shall be as specified in 3.3 and Tables I and II as applicable.

- 3.2.1 Alloy steel. Alloy steel screws shall be of a chemical composition which can be heat treated in accordance with AMS2759, to meet the mechanical properties specified in 3.3.1 and 3.3.1.1.

- 3.2.2 Free-machining CRES. Unless otherwise specified (see 6.2), screws shall be manufactured from free-machining CRES conforming to Type 303 (UNS S30300), Condition A, of ASTM A582/A582M.

- 3.2.3 Cold-finished CRES. When specified in the contract (see 6.2), screws shall be manufactured from Type 304 (UNS S30400) or Type 18-9LW (UNS S30430) in accordance with ASTM A493.

- 3.2.4 Non-ferrous material. Non-ferrous screws shall be manufactured from an alloy conforming to the mechanical properties specified in Table II.

3.3 Mechanical properties

- 3.3.1 Alloy steel. Alloy steel screws shall meet the mechanical property requirements specified in Table I.

TABLE I – MECHANICAL PROPERTIES OF ALLOY STEEL SHOULDER SCREWS

SIZE NOM	THREAD SIZE UNC-3A NOM	MINIMUM AREA IN ³		SHEAR STRENGTH LBF MIN		TENSILE STRENGTH LBF MIN /a/
		THREAD NECK	SHOULDER	SINGLE /b/	DOUBLE /c/	
.250	.1900-24	.0139	.0475	1,170	7,980	1,950
.3125	.2500-20	.0260	.0748	2,180	12,550	3,640
.375	.3125-18	.0441	.1081	3,700	18,150	6,170
.500	.3750-16	.0665	.1932	5,580	32,450	9,310
.625	.5000-13	.1238	.3029	10,400	50,900	17,300
.750	.6250-11	.1979	.4371	16,600	73,400	27,700
1.000	.7500-10	.2980	.7791	25,000	130,900	41,700
1.250	.8750-9	.4140	1.2194	34,800	204,850	58,000

/a/ Ultimate tensile strength is based on a stress of 140 KSI Min and the minimum thread neck area.

/b/ Single shear strength is based on a stress of 84 KSI Min and the minimum thread neck area.

/c/ Double shear strength is based on a stress of 84 KSI Min and twice the minimum shoulder area.

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