

FED. SUPPLY CLASS

5305

1. SCOPE

1.1 Scope. This specification covers aircraft structural screws.

1.2 Classification. Screws shall be of the types and sizes designated by the part numbers on the NASM standard as specified (see 6.2).

2. APPLICABLE DOCUMENTS

2.1 Government documents

2.1.1 Specifications and standards. Unless otherwise specified (see 6.2), the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal

QQ-A-225/6 Aluminum Alloy Bar, Rod, And Wire; Rolled, Drawn, or Cold Finished, 2024
QQ-A-430 Aluminum Alloy Rod And Wire; For Rivets And Cold Heading
QQ-B-728 Bronze Manganese; Rod, Shapes, Forgings, And Flat Products (Flat Wire, Strip, Sheet, Bar, And Plate)
QQ-S-763 Steel Bars, Wire, Shapes, And Forgings, Corrosion-Resisting

Military

MIL-S-6049 Steel, Chrome Nickel Molybdenum (8740) Bars And Reforging Stock (Aircraft Quality)
MIL-S-6050 Steel, Chrome-Nickel-Molybdenum (8630) Bars And Reforging Stock (Aircraft Quality)
MIL-S-6098 Steel, Chrome Nickel Molybdenum (8735) Bars And Reforging Stock (Aircraft Quality)
MIL-S-6758 Steel, Chrome Molybdenum (4130) Bars And Reforging Stock (Aircraft Quality)
MIL-S-7742 Screw Threads, Standard, Optimum Selected Series: General Specification For
MIL-A-8625 Anodic Coatings, For Aluminum And Aluminum Alloys
MIL-S-18732 Steel Bars, Billets, Forgings, Tubing (431), Special Quality
MIL-STD-2073/1 Standard Practice for Military Packaging

STANDARDS

Military

MS24694 Screw, Machine, Flat Countersunk Head, 1000, Structural, Cross Recessed, UNC 3A And UNF 3A
MS27039 Screw, Machine Pan Head, Structural, Cross Recessed

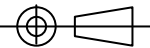
Air Force – Navy Aeronautical

AN502 Screw, Machine, Drilled Fillister Head, Fine Thread
AN503 Screw, Machine, Drilled Fillister Head, Coarse Thread
AN525 Screw, Washer Head

(Copies of specifications and standards required by manufacturers in connection with specific acquisition functions shall be obtained from the contracting activity or as directed by the contracting officer.)

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THE INITIAL RELEASE OF THIS DOCUMENT SUPERSEDES MIL-S-7839, REVISION B, AMENDMENT 3.

THIRD ANGLE PROJECTION 	CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE	REVISION 1
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FORM 09-01

REVISION DATE: AUGUST 26, 2011

ISSUE DATE: DECEMBER 1998

- 2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

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)

ASTM International

ASTM B138/B138M Manganese Bronze Rod, Bar, and Shapes
ASTM D3951 Standard Practice for Commercial Packaging
ASTM E1417 Inspection, Penetrant Method Of
ASTM E1444 Inspection Process, Magnetic Particle

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

Aerospace Industries Association (AIA)

NAS410 Non-Destructive Testing Personnel Qualification and Certification (Eddy Current, Liquid Penetrant, Magnetic Particle, Radiographic and Ultrasonic)
NASM525 Screw, Washer Head
NASM1312 Fasteners, Test Methods
NASM9006 Recesses-Cross, Low Torque Drive, Dimensions And Gage Dimensions For
NASM14191 Recess, Ribbed Torque-Set, Dimensions of Recess, Gage and Driver For
NASM24694 Screw, Machine, Flat Countersunk Head, 100°, Structural, Cross Recessed, UNC-3A And UNF-3A
NASM27039 Screw, Machine - Pan Head, Structural, Cross Recessed
NASM33750 Recess-Dovetail Slot, Dimensions of Recess, Gage, and Driver For
NASM33781 Recess, Offset Cruciform, Dimensions of Recess, Gage and Driver For

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

SAE International

AMS2759 Heat Treatment of Steel Parts
AMS2770 Heat Treatment of Wrought Aluminum Alloy Parts
AMS6322 Steel Bars, Forgings, and Rings
AMS6325 Steel Bars, Forgings, and Rings, Heat Treated, 105 KSI Ft_u
AMS6327 Steel Bars, Forgings, and Rings, Heat Treated, 125 KSI Ft_u
AMS6300 Steel, .25 Mo (.35-.40C)
AMS-H-6875 Heat Treatment Of Steels (Aircraft Practice) Process For
AMS-QQ-P-416 Plating, Cadmium (Electrodeposited)
AMS-QQ-S-763 Steel Bars, Wire, Shapes, And Forgings, Corrosion-Resisting
AMS6320 Steel, Chrome Nickel-Molybdenum (8735) Bars And Reforging Stock (Aircraft Quality)
AMS-QQ-A-225/6 Aluminum Alloy Bar, Rod, And Wire; Rolled, Drawn, or Cold Finished, 2024
AMS2700 Passivation Treatments For CRES
AS8879 Screw Threads, Controlled Radius Root With Increased Minor Diameter; General Specification For

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

- 2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

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Documents

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3. REQUIREMENTS

3.1 Data. Unless otherwise specified in the contract or order, no data are required by this specification or any of the documents referenced in Section 2 (see 6.2).

3.2 Material

3.2.1 Low-alloy steel. Low-alloy steel screws having Ø.4375 inch body and less shall be manufactured from steel conforming to AMS6300 or MIL-S-6050. Low-alloy steel screws having a body diameter greater than Ø.4375 inches shall be manufactured from steel conforming to ~~MIL-S-6049~~, ~~MIL-S-6098~~, ~~MIL-S-6758~~, AMS6322, AMS6325, AMS6327, MIL-S-6050, AMS6320, AMS-S-6758, or AMS6300.

3.2.2 CRES steel. CRES screws shall be manufactured from material conforming to ~~QQ-S-763~~ AMS-QQ-S-763, Class 302, Condition B; ~~QQ-S-763~~ AMS-QQ-S-763, Class 430, Condition A; or MIL-S-18732, or equal, or interchangeable with 16-18 chrome-nickel alloy steels.

3.2.3 Aluminum alloy. Aluminum-alloy screws shall be manufactured from material conforming to QQ-A-430, alloy 2024, or AMS-QQ-A-225/6 in the solution heat-treated T4 temper.

3.2.4 Manganese bronze. Manganese bronze screws shall be manufactured from material conforming to ~~QQ-B-728~~ ASTM B138/B138M.

3.3 Design and construction

3.3.1 Threads. Threads of all screws shall conform to MIL-S-7742 or AS8879, as specified, and shall be of the sizes specified on the applicable NASM standard. Unless otherwise specified, threads shall be right hand.

3.3.1.1 Grip. The grip length shall be measured from the largest diameter of the bearing surface of the head, parallel with the screw axis, to the end of the unthreaded shank.

3.3.2 Head eccentricity. Machine screw heads shall not be eccentric with the screw bodies by more than 3 percent of the maximum head diameter. Eccentricity is defined as one-half of the full indicator movement (FIM).

3.3.2.1 Bearing surface. The bearing surface of protruding screw heads shall be at right angles to the body within 2 degrees.

3.3.2.2 Slot drive. When a screw with a slot drive is required, the dimensions of the slot shall be as shown on the applicable screw standard.

3.3.2.3 Recess drive. Recess dimensions shall conform to NASM9006, NASM14191, NASM33750 or NASM33781 as specified on applicable standard or drawing.

3.3.3 Straightness of shank. The straightness of the shank shall be within the values specified in Table I when the screw is rolled on a surface plate and the point of greatest deviation is measured with a feeler gage of .250 inch width. The straightness of shank requirements shall apply to size .1900 and larger screws, and screws smaller than size .1900 that have a length greater than six times their diameter. For screws under size .1900, the straightness of shank from Table I for size .1900 shall be used.

TABLE I – STRAIGHTNESS OF SHANK

Screw Size	Deviation of screw shank from plate, maximum (inch per inch of screw length)
.1900	.0040
.2500, .3125	.0030
.3750, .4375	.0025
.5000 and larger	.0020

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