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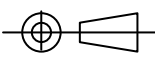
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THE INITIAL RELEASE OF THIS DOCUMENT SUPERSEDES MIL-B-85730, AMENDMENT 1.

THIRD ANGLE PROJECTION		CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE	REVISION 1
PROCUREMENT SPECIFICATION NONE	TITLE NUT, SELF-LOCKING, SPLINE DRIVE, ASSEMBLED WASHER, NICKEL ALLOY 718, 220 KSI Ftu, 900 °F	①	CLASSIFICATION SPECIFICATION NASM85730 SHEET 1 OF 18



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1. SCOPE

This specification covers self-locking Nickel Alloy 718 corrosion resistant nuts for use in temperatures up to and including 900 °F, in conjunction with expandable shank bolts conforming to MIL-B-85667.

2. APPLICABLE DOCUMENTS

2.1 Government documents

2.1.1 Specification 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.

Military

MIL-STD-2073/1	Standard Practice for Military Packaging
MIL-W-8982	Wrenches, Splined, High Strength, Thin Wall, General Specification for
MIL-PRF-46010	Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting
MIL-B-85667	Bolt, Straight Shank, Expandable Sleeve, Protruding and Flush Head, General Specification for
MIL-STD-129	Marking for Shipment and Storage
MS33787	Wrenching Element, External Spline, Dimensions For

Copies can be obtained from the Department of Defense Single Stock Point (DODSSP). <http://dodssp.daps.dla.mil>

2.2 Other publications

The following document(s) forms 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.

ASTM International

ASTM D3951	Standard Practice for Commercial Packaging
ASTM E1417/E1417M	Inspection, Liquid Penetrant

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

NAS410	NAS Certification & Qualification of Nondestructive Test Personnel
NASM1312	Fastener Test Methods
NASM33588	Nut, Self-Locking, Aircraft, Design and Usage Requirements For

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

ASME

ASME B46.1	Surface Texture (Surface Roughness, Waviness and Lay)
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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

SAE International

AS272 Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting, Procurement Specification
AS8879 Screw Threads, Controlled Radius Root with Increased Minor Diameter, General Specification for
AMS2700 Passivation of CRES
AMS2759 Heat Treatment of Steel (Aircraft Practice), Process for
AMS5525 Steel, Sheet, Strip & Plate, Corrosion & Heat Resistant
AMS5662 Bar, Forging, Rings, Nickel Base, 19CR, 19FE, 3.1MO, 5.1 (Cb+Ta) .9T1, .5AL consumable electrode or Vacuum Induction melted, solution heat treated

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

2.2.1

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 or part 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

Part Standards

The individual item requirements shall be as specified herein and in accordance with the applicable part standard. In the event of any conflict between the requirements of this specification and the part standard, the latter shall govern. If a specific requirement specified herein is not required for an item, it shall be so indicated on the part standard.

3.2

Qualification

The nut manufacturer shall be responsible for conducting qualification tests and furnishing part drawings, certified qualification test reports (if required by the purchaser) and test samples. The nuts furnished under this specification shall be produced using the same manufacturing methods as those used to produce nuts that have passed qualification tests. The purchaser may apply any or all tests specified herein to any product represented as meeting this specification, at any time, to verify conformance.

3.3

Retention of Qualification

Requalification will be required in the event any change is made in the product design, construction, materials, method of manufacture, heat treatment, finish, lubricant, or manufacturer's part number or designation.

3.4

Definitions

For definitions of terms used in this specification, see 6.4.

3.5

Materials

3.5.1

Nut

The nut shall be fabricated from nickel alloy 718 as specified in the applicable part standard.

3.5.2

Washer

The washer shall be fabricated from CRES (A286) as specified in the applicable part standard.

3.6

Design

Nut design shall conform to the applicable part standard.

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3.7 Construction

Nuts shall be of the prevailing torque-type. The locking device shall not operate by means of separate movement as a result of installation and shall not depend upon pressure on the bearing surface for locking action.

3.7.1 Wrenching element

Wrenching element shall be in accordance with MS33787.

3.7.2 Bearing surface

After removal of the washer from the nut, the bearing surface shall be normal to the axis of the pitch diameter of the threads within the values specified on the applicable standard or drawing.

3.7.3 Threads

Unless otherwise specified, thread dimensions shall be in accordance with AS8879. Threads used on the locking device may be displaced in any manner which will provide self-locking nuts conforming to this specification. Thread gaging shall be performed after plating in accordance with the applicable thread specification (except that the nut with locking device incorporated but without lubricant shall allow the go plug gage members to enter a minimum of three-fourths turn before engagement of the locking device.) When lubricant prevents use of standard gages, the nut shall permit free rotational (finger torqued) bolt engagement of at least three-fourths turn.

3.8 Surface treatment

The nut shall be passivated in accordance with AMS2700, Method 1, Class 4.

3.9 Dry film lubricant

The nut shall be lubricated with dry film lubricant conforming to ~~MIL-PRF-46010~~ AS5272.

3.10 Axial strength

The nuts shall have a minimum axial strength of not less than the values specified in Table I, see 4.5.2.

3.11 Torque

3.11.1 Wrench torque

The nuts shall withstand the wrench torque values specified in Table I, when tested as specified in 4.5.3.1. Upon completion of the test, the nut shall show no indications of permanent deformation which may prevent its proper application and removal with a socket-type wrench conforming to MIL-W-8982. The nuts shall show no evidence of cracking, see 4.5.7.

3.11.2 Torque effectivity, room temperature

The nuts shall not exceed the room temperature maximum locking torque nor produce less than the minimum breakaway torque specified in Table III, see 4.5.3.2.

3.11.2.1 Torque effectivity, 900 °F

The nuts shall not exceed the room temperature after bake maximum locking torque nor produce less than the minimum breakaway torque specified in Table III, see 4.5.3.2.1.

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3.11.2.2 Locking torque

The nuts shall not exceed the room temperature maximum locking torque nor produce less than the 1st cycle minimum breakaway torque specified in Table III, see 4.5.3.3.

3.11.2.3 Permanent set

The nuts shall not exceed the maximum locking torque nor be less than the minimum breakaway torque specified in Table III, see 4.5.3.4.

3.12 Accelerated vibration

The nuts shall withstand the vibration test specified in 4.5.4.

3.13 Stress durability

The nuts shall show no evidence of cracking, see 4.5.5.

3.14 Stress corrosion

The nuts shall show no evidence of cracking when tested as specified in 4.5.6.

3.15 Discontinuities

Discontinuities in the nuts shall not exceed the depth limitations shown in Table IV when examined as specified in 4.5.7. Care shall be exercised not to confuse cracks with discontinuities, see 6.4.3. Cracks are not permitted in any location.

3.16 Heat treatment

The nuts and washers shall be heat treated in accordance with AMS2759 to develop the mechanical properties as specified herein.

3.17 Workmanship

Workmanship shall be consistent with the type or product, finish, and the class of thread fit specified. Sharp edges shall be broken; hanging burrs and slivers shall be removed.

TABLE I – AXIAL STRENGTH AND WRENCH TORQUE

Nominal Size	Cross Sectional Area (sq-in)	Axial Strength Minimum (lbf)	Wrench Torque Minimum (in-lbf)
.1900-32	.0226	4,970	80
.2500-28	.0404	8,890	210
.3125-24	.0640	14,100	450
.3750-24	.0951	20,900	730
.4375-20	.1288	28,300	1,100
.5000-20	.1717	37,800	1,500
.5625-18	.2176	47,900	2,100
.6250-18	.2724	59,900	2,700
.7500-16	.3952	86,900	4,600
.8750-14	.5392	119,000	7,600
1.0000-12	.7027	155,000	10,400
1.1250-12	.9007	198,000	13,500
1.2500-12	1.1232	247,000	16,500
1.3750-12	1.3703	301,000	18,300
1.5000-12	1.6420	361,000	22,000

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