

MIL-F-8961(ASG)

27 SEPTEMBER 1967

MILITARY SPECIFICATION

FASTENER, EXTERNALLY THREADED, 450° F AND 1,200° F, SELF-LOCKING ELEMENT FOR

This specification has been approved by the Department of the Air Force and by the Naval Air Systems Command.

1. SCOPE

1.1 Scope.- This specification covers the requirements for self-locking element for externally threaded fasteners to be used where temperatures will not exceed 450° F and 1,200° F.

1.2 Classification.- The self-locking element of the fastener shall be classified as follows:

<u>Class</u>	<u>Maximum temperature use</u>
I	450° F
II	1,200° F

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

SPECIFICATIONS

Federal

QQ-P-416	Plating, Cadmium (Electrodeposited)
TT-E-751	Ethyl Acetate, Technical, Organic Coatings Use
TT-I-735	Isopropyl Alcohol
TT-M-261	Methyl-Ethyl-Ketone (For Use in Organic Coatings)
TT-N-97	Naphtha, Aromatic

Military

MIL-H-3982	Hardware (Fasteners and Related Items) Packaging and Packing for Shipment and Storage of
MIL-S-8879	Screw Threads, Controlled Radius Root with Increased Minor Diameter, General Specification for
MIL-L-8937	Lubricant, Solid Film, Heat Cured

STANDARDS

Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MS15981	Fasteners, Externally Threaded, Self-Locking, Design and Usage, Limitations for
MS21250	Bolt, 12 Point, External Wrenching, 180,000 PSI

FSC 5306

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(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications.- The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply:

Society of Automotive Engineers (Aerospace Materials Specifications)

AMS2411 Silver Plating

(Copies of SAE publications may be obtained from the Society of Automotive Engineers, Inc., 485 Lexington Avenue, New York, New York 10017.)

National Aerospace Standards

NAS 1348 Fasteners-Recommended Tensile Stress Areas
for External Threaded Alloy Steel

(Copies of NAS publications may be obtained from the National Standards Association, Inc., 1321 Fourteenth Street, N. W., Washington, D. C. 20005.)

3. REQUIREMENTS

3.1 Qualification.- The self-locking fastener covered by this specification shall be a product which has been subjected to and which has passed the qualification tests specified herein, and which has been listed on or approved for listing on the applicable Qualified Products List.

3.2 Materials.-

3.2.1 Class I.- The 450° F fasteners shall be fabricated from alloy steel. The sulphur content or the phosphorous content of the noncorrosion-resistant steel shall not exceed 0.050 percent by weight.

3.2.2 Class II.- The 1,200° F fasteners shall be fabricated from corrosion- and heat-resistant steel.

3.3 Construction.- The self-locking element feature shall be a one-piece prevailing torque type, self-contained, all metal, and of the same material and heat treat as the fastener.

3.3.1 Lubrication.- The fastener shall be provided with an additional coating which will prevent nut-bolt seizure, if the fasteners submitted for qualification have such a coating applied thereto. Any dry film lubricant coating shall have been previously qualified to MIL-L-8937. The Qualified Products List will identify the lubricant used, which shall not be changed without requalification of the design.

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3.3.2 Dimensions.- Dimensions shall be as specified in the drawings, and are after plating but before lubrication. The fasteners must also meet the other requirements of the drawings and procurement specifications specified. The self-locking element shall be within the dimensional limitations of **MS15981**.

3.3.3 Threads.- Unless otherwise specified, thread dimensions shall be in accordance with MIL-S-8879. Threads used in the locking element may be displaced in any single rolling process which will provide self-locking fasteners conforming to this specification. Thread gaging shall be performed after plating in accordance with the applicable thread specification, except that the fastener with locking device incorporated, but without lubricant, shall enter the go gage member 1 to 1-1/2 turns before engagement of the locking element. When the lubricant prevents the use of standard gages, the free rotation (finger torque) of the nut shall produce bolt engagement of at least one turn.

3.3.4 Plating or surface treatment.- Fasteners fabricated from alloy steel shall be cadmium plated in accordance with type II, class 3 of QQ-P-416. For dry lubricated fasteners, the type and class are optional if the fasteners conform to the salt spray requirements for type II plating of QQ-P-416.

3.3.4.1 1,200° F corrosion-resistant steel.- The threads of fasteners fabricated for 1,200° F shall be silver plated in accordance with AMS2411 or provided with another approved coating or finish which will prevent bolt seizure.

3.4 Performance.-

3.4.1 Torque.- The fastener incorporating the self-locking element, when tested as specified in section 4, shall meet the torque requirements of table I.

3.4.2 Vibration.- The self-locking fasteners shall withstand the applicable vibration requirements specified in 4.5.7.

3.5 Workmanship.- Workmanship shall be consistent with the type of product and class of thread fit.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.- Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 General.- The quality assurance provisions of this specification and the applicable fastener specification shall apply.

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TABLE I. Torque (at room temperature in inch-pounds)

Bolt or screw size	Maximum torque (installation or removal)	Minimum breakaway torque	Tensile preload (lbs) (fourth, ninth and fourteenth installation cycles)	
			Class I	Class II
.2500-28-UNJF-3B	60	7.0	4,400	2,300
.3125-24-UNJF-3B	120	13.0	7,000	3,650
.3750-24-UNJF-3B	160	19.0	10,800	5,650
.4375-20-UNJF-3B	200	28.0	14,600	7,660
.5000-20-UNJF-3B	300	36.0	19,500	10,200
.5625-18-UNJF-3B	400	48.0	24,800	12,950
.6250-18-UNJF-3B	600	64.0	31,000	16,200
.7500-16-UNJF-3B	800	100.0	45,000	23,500
.8750-14-UNJF-3B	1,200	140.0	61,000	32,000
1.0000-12-UNJF-3B	1,600	184.0	80,000	41,800
1.1250-12-UNJF-3B	1,800	234.0	102,000	53,600
1.2500-12-UNJF-3B	2,000	286.0	128,000	66,800

4.2 Classification of inspection.- The examination and tests shall be classified as follows:

- (a) Qualification inspection (4.3)
- (b) Quality conformance inspection (4.4)

4.3 Qualification inspection.-

4.3.1 Sampling instructions.- The qualification test samples shall consist of 70 fasteners and 70 nuts for each diameter upon which qualification is desired. These fasteners shall incorporate the self-locking design and conform to the configuration listed in table II, but shall be of the material as specified in 3.2.1 and 3.2.2, and the nuts shall conform to table III. Samples shall be identified as required and forwarded to the activity designated in the letter of authorization from the activity responsible for qualification (see 6.4).

4.3.2 Qualification testing.- Qualification testing by the Government shall be limited to the fasteners listed in table II, modified to include a self-locking design feature. The qualification tests will be authorized only upon presentation of certified test reports to the activity responsible for qualification indicating that the fasteners of the diameters to be tested have met or will meet the requirements of this specification. These test reports shall include the actual results of all tests specified by this specification. When these test reports are submitted, a

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drawing shall be submitted which shows the location, size, material, method of attachment, and protrusion of the self-locking design, if applicable, for each diameter upon which qualification is desired. A manufacturer's designation shall be submitted for the locking design feature to be used in each diameter of the fastener.

TABLE II. Configuration of fasteners required for qualification tests

Part No.	Length Dash No.
MS21250-04	.022
MS21250-05	.022
MS21250-06	.022
MS21250-07	.022
MS21250-08	.022
MS21250-09	.022
MS21250-10	.022
MS21250-12	.022
MS21250-14	.022
MS21250-16	.022
MS21250-18	.022
MS21250-20	.022

4.3.3 Tests.-- The qualification tests of the fasteners, with the self-locking design feature incorporated therein, shall consist of the tests specified in table IV.

4.4 Quality conformance inspection.-- The fastener manufacturer shall be responsible for accomplishing the quality conformance inspection specified herein and in the applicable fastener specification. The Government may accept certification of tests required under the applicable fastener specifications when the basic fastener is manufactured at a separate facility.

4.4.1 Sampling.-- The sample shall be selected at random from each lot as specified below.

4.4.1.1 Lot.-- A lot shall consist of finished fasteners, with self-locking design incorporated, which are of the same diameter and length, fabricated by the same process, heat treated in the same manner, and produced as one continuous run or order, or part thereof.

4.4.1.2 Random sample.-- A random sample is a specific number of items so selected that each item of the lot from which the sample is drawn has the same chance of being the first item in the sample. After the first item in the sample is drawn, each of the remaining items has the same chance of being the second item in the sample, and so on.

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TABLE III. Dimensions of nuts used for qualification tests (inches)

Thread size	Maximum across flats	Nut thickness <u>+0.010</u>	90 degree C-sink <u>+0.010</u> dia.
.2500-28-UNJF-3B	0.437	0.281	0.281
.3125-24-UNJF-3B	.500	.328	.344
.3750-24-UNJF-3B	.562	.328	.406
.4375-20-UNJF-3B	.688	.375	.468
.5000-20-UNJF-3B	.750	.375	.531
.5625-18-UNJF-3B	.875	.422	.593
.6250-18-UNJF-3B	.937	.468	.656
.7500-16-UNJF-3B	1.062	.625	.781
.8750-14-UNJF-3B	1.250	.656	.906
1.0000-12-UNJF-3B	1.437	.750	1.031
1.1250-12-UNJF-3B	1.625	.812	1.156
1.2500-12-UNJF-3B	1.812	.875	1.281

NOTE: Nuts shall be fabricated from the same material as the fasteners and shall be plain and unplated with the exception of nuts used with cadmium plated fasteners.

TABLE IV. Qualification tests and samples required

	Paragraph	Class I	Class II
Tensile strength	4.5.1.1	5	5
Stress rupture	4.5.1.2	-	5
Examination of product	4.5.2	5	5
Torque	4.5.3	10	10
Torque (heat conditioned)	4.5.4	10	10
Minimum breakaway torque at temp.	4.5.5	10	10
Reusability	4.5.6	10	10
Vibration	4.5.7	10	10

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4.4.1.3 For examination of product.- Sample sizes for examination of product shall be in accordance with inspection level I of MIL-STD-105. The acceptance and rejection criteria shall be applied for the following Acceptable Quality Levels (AQL's) applying to the corresponding class of characteristics:

Major 2.5 percent
 Minor A 4.0 percent
 Minor B 6.5 percent

4.4.1.3.1 Classification of defects.- All dimensional characteristics are considered defective when out of tolerance. The classification of defects for self-locking fasteners shall be as follows:

Major:

101 Locking element missing (see applicable standard)

Minor A:

201 Locking element location (see applicable standard)

Minor B:

301 Burrs and slivers (see applicable standard)

302 Identification of product (see applicable standard)

4.4.1.4 For maximum torque, minimum breakaway torque, and reusability.- Sampling for these tests shall be in accordance with the attribute plan shown in table V. The same sample shall be used throughout for these tests. The acceptance and rejection numbers shall apply to these tests taken separately, i.e., a fastener may be classified as defective for maximum torque, minimum breakaway torque, or reusability.

TABLE V. Attribute plan

Lot size	Sample size	Acceptance number
Under 10,000	5	0
10,000 through 50,000	10	0
50,000 through 100,000	15	0
Over 100,000	27	1

4.4.2 Examination and tests.- The examination and tests shall consist of the following:

- (a) Tensile strength (4.5.1.1)
- (b) Examination of product (4.5.2)
- (c) Maximum torque (4.5.3.1)
- (d) Minimum breakaway torque (4.5.3.2)
- (e) Reusability (4.5.6)

Also, self-locking fasteners shall meet any of the other tests herein specified which are considered necessary to determine conformance with this specification.

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4.4.3 Nondry film lubricant removability.- Nondry film lubricant coated panels made of the same material and containing the same finish as the fastener product, shall be submerged for 10 \pm 1 minutes in the cleaner specified in table VI. The panel shall then be wiped dry with a clean non-oily cloth or tissue. Failure of all lubricant to be removed from the panel by the above process shall be cause for rejection of the fastener product.

TABLE VI. Formulation of cleaner

Ingredient	Specification	Percent by volume
Aromatic naphtha	TT-N-97, type I grade B	50
Ethyl acetate	TT-E-751	20
Methyl-ethyl-ketone	TT-M-261	20
Isopropyl alcohol	TT-I-735	10

4.5 Test methods.-

4.5.1 General.- The fastener shall be tested as specified in the applicable supplementary fastener specification (see 6.6.9), except as specified in 4.5.1.1 through 4.5.7.

4.5.1.1 Tensile strength.- The tensile test shall be performed using nuts which meet the materials and dimensional requirements of table III. The nuts shall engage the threads of fasteners which have grip portions, to within one to three thread pitches of the thread runout. Fasteners that do not have grip portions shall be engaged by the nut until the fastener protrudes from the top of the nut a distance of two thread pitches including chamfer, if any. The nuts shall be of sufficient strength to fail the fastener. At least 2 samples in assembly with nuts shall be baked at the temperature applicable to the class for 6 hours, then cooled at room temperature for not less than 1 hour. The baked assemblies, and at least two others in the "as-received" condition, shall subsequently be tested in tension in accordance with the loads specified in table VII.

4.5.1.2 Stress rupture.(class II only).- The sample in assembly as specified in 4.5.1.1 with a nut which meets the materials and dimensional requirements of table III shall be maintained at 1,200° \pm 10° F. While at this temperature, an axial tensile load as specified in table VII shall be applied continuously for 23 hours. Rupture of the sample within the specified time shall be cause for rejection.

4.5.2 Examination of product.- The fasteners shall be examined for conformance to the applicable standard, relative to:

- (a) Presence of locking element
- (b) Location of locking element
- (c) Measurement over locking element
- (d) Presence of burrs or slivers
- (e) Identification of product

TABLE VII. Qualification test bolt strength requirements

Size	Tensile area (in. ²)	Minimum tensile breaking strength ^{1/} (lbs.)				
		Class I		Class II		
		Room temp.	Room temp. after bake ^{2/}	Room temp.	Room temp. after bake ^{2/}	23 hours 1,200° F rupture ^{3/}
.2500-28	0.0388	7,200	5,000	5,400	3,780	2,100
.3125-24	.0614	11,400	7,900	8,600	6,000	3,400
.3750-24	.0950	17,000	11,900	11,900	9,300	5,250
.4375-20	.1288	23,000	16,100	18,000	12,600	7,075
.5000-20	.1717	30,700	21,500	24,000	16,800	9,650
.5625-18	.2176	38,900	27,200	30,000	21,300	12,275
.6250-18	.2724	48,700	34,000	38,100	26,700	15,600
.7500-16	.3952	70,800	49,500	55,300	38,700	22,800
.8750-14	.5392	96,600	67,600	75,500	52,900	31,200
1.0000-12	.7027	125,900	88,000	98,400	68,900	40,600
1.1250-12	.9007	161,000	113,000	126,000	88,200	52,800
1.2500-12	1.1233	201,000	142,000	157,000	109,900	66,500

- ^{1/} Ultimate tensile strength = $F_{tu}A$ where F_{tu} = 180,000 psi for class I and 140,000 psi for class II. A - in square inches as defined in NAS 1348.
- ^{2/} Tensile loads after baking are 70 percent of the tensile loads at room temperature.
- ^{3/} Rupture strength based on F_{tu} = 65,000 psi.

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4.5.3 Torque.-- The nuts used for this test shall be as specified in table III, and shall assemble freely on the fastener up to the self-locking device. Each nut shall be screwed on and off the fastener a total of 15 consecutive installations and removals. Each installation shall consist of either turning the fastener until the nut's bearing surface has traveled completely along the thread length of the effective area of the specific element design or at least five complete turns of the nut after the threads of the nut have initially engaged the locking device, whichever provides the greater number of turns. For quality conformance inspection on fasteners, without sufficient thread length for "X min" of MS15981, only a positive indication of torque is required for 15 installations and removals. Each removal shall consist of the same number of complete turns, in the opposite direction, as was required for installation. The torque test shall run at a rate slow enough to yield a dependable measure of torque, and the temperature rise of the nut being tested shall not exceed 75° F. At every fourth, ninth, and fourteenth installation cycle, the test bolt shall be seated against a hardened steel bushing and torqued to develop the tensile preload specified in table I. On the seventh and fifteenth removal cycle, the minimum breakaway torque shall not be less than the applicable value specified in table I. A new nut and fastener shall be used for each test. For qualification, ten of the sample fasteners supplied shall be used for this test.

4.5.3.1 Maximum torque.-- Maximum torque shall be the maximum value indicated by the torque device during the 15 installations and removals. This torque value shall not exceed the applicable value shown in table I.

4.5.3.2 Minimum breakaway torque.-- Minimum breakaway torque shall be the minimum torque required to start removal of the nut from the installed position. It shall be determined at the start of the first and fifteenth removal. This torque value shall not be less than the applicable values shown on table I.

4.5.4 Torque (with heat-conditioned fasteners).-- The nuts used in this test shall be as specified in table III. The nuts shall be screwed on the fastener until the bearing surface of the nut has traveled completely along the thread length of the effective area of the specific locking design feature or at least five complete turns after the threads of the nuts have initially engaged the locking design feature, whichever provides the greatest number of turns. Ten new fasteners shall be subjected to this test. These assemblies shall be conditioned at the applicable temperature of 450° F, 1,200° F for 6 hours, as applicable. The assemblies shall be conditioned in air to room temperature for not less than 1 hour. The assemblies shall then be tested as specified in 4.5.3. Maximum locking torque readings shall be taken at each installation and removal of the nut.

4.5.4.1 Maximum torque.-- Maximum torque shall be the maximum value indicated by the torque device during the installation and removal. This value shall not exceed 150 percent of the applicable value shown in table I.

4.5.5 Minimum breakaway torque at temperature.-- Using the same assemblies tested in accordance with 4.5.4, minimum breakaway torque shall be determined on the first removal cycle at temperature while the fastener engagement with the nut is made in accordance with 4.5.3 and after the fastener assembly has been preheated 6 hours at 450° F, and 1,200° F, as applicable, and held at this temperature during test. This torque value shall not be less than the applicable requirement of table I.

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4.5.6 Reusability.- The threads of the fasteners and nuts used in the torque tests shall show no distortion or scratches deep enough to reduce the efficiency of the threads. The threads of the fasteners and nuts shall remain in a serviceable condition and shall freely permit the installation, with the fingers, of a new nut up to the self-locking element.

4.5.7 Accelerated vibration.- The fasteners shall be assembled in accordance with figure 1, with nuts as specified in table III, to the assembly torque values specified in table VIII. The nuts shall then be removed and reinstalled to this torque four additional times. The assembled specimens shall be vibrated at room temperature and five after-bakings at 450° F or 1,200° F, as applicable, for 6 hours. Reference lines shall be inscribed on the bolts and nuts to determine relative motion or loosening. Prior to vibration testing, the sliding surfaces of the test fixtures under the flange elements shall be slightly lubricated in order that the nut-bolt assembly will freely traverse the slots of the vibration fixture. Vibration tests on bolts larger than the 1/2-inch size are waived, providing that 1/2-inch bolts and smaller of the same type and design of locking device have satisfactorily passed the vibration test. The fixture shall then be vibrated with an essentially sinusoidal waveform at a frequency of 1,750 to 1,800 cycles per minute and an amplitude of 0.450 inch, +0.015, -.000. Determinations shall be made throughout the test to guarantee that the assembly is traversing the entire length of the slots in the test fixture. The test shall be run for 30,000 cycles except that it shall be stopped prior to the completion of the 30,000 cycles in the event a nut becomes disassembled from the fastener. Upon completion of the test, the relative rotation between each nut and the fastener shall be measured. The fastener samples shall be examined under 10X magnification for cracks. The relative rotation between any nut and fastener shall not exceed 360 degrees. The samples shall not have developed any cracks.

TABLE VIII. Vibration requirements

Bolt or screw size	Max. assembly torque after bake (in. - pounds)
0.2500	60
.3125	120
.3750	160
.4375	200
.5000	300

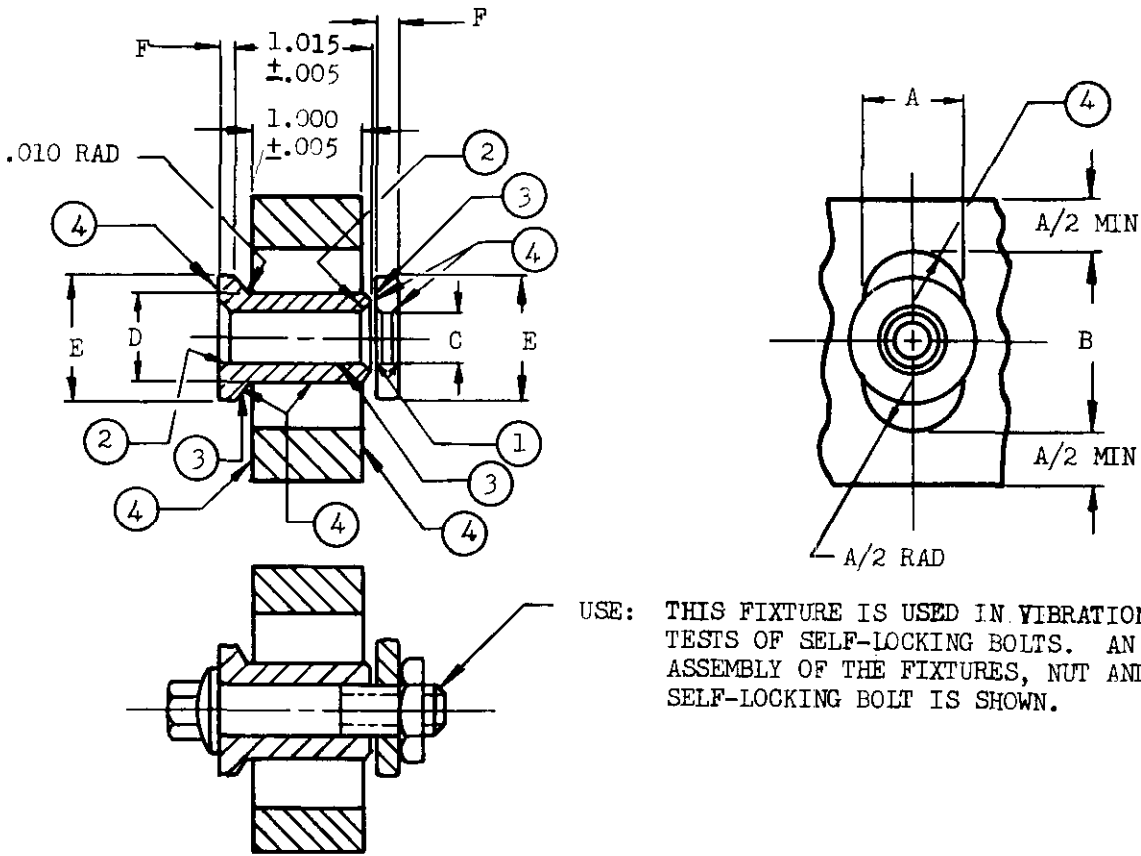
4.6 Packaging, packing, and marking.- Preparation for delivery shall be examined for conformance to section 5.

5. PREPARATION FOR DELIVERY

5.1 Levels A, B, and C.- The fastener shall be preserved and packaged in accordance with MIL-H-3892.

5.2 Packing.- The fastener shall be packed in accordance with MIL-H-3982. Unless otherwise specified by the procuring activity, quantities per unit package shall be in accordance with MIL-H-3982.

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- ① CHAMFER 45° x .010
- ② CHAMFER 45° x .020
- ③ CHAMFER 45° x .032

SIZE	SLOT WIDTH A +.005 -.002	SLOT HEIGHT B ±.002	WASHER AND CYLINDER I.D. C ±.002	CYLINDER O.D. D ±.002	WASHER O.D. E ±.005	WASHER FACE THICKNESS F ±.002
.2500	.500	1.240	.265	.495	.750	.163
.3125	.625	1.365	.328	.875		
.3750	.750	1.490	.390	1.000		
.4375	.875	1.615	.452	.870	1.200	.188
.5000	1.000	1.735	.515	.990	1.375	

MATERIAL: STEEL

HEAT TREATMENT: R_c 40-45

ON SURFACES CODED ④ THE FINISH SHALL BE 32 MICROINCHES RHR MAX.

FIGURE 1. Vibration test fixture - room temperature

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5.3 Marking.-- Marking shall be in accordance with MIL-H-3982.

6. NOTES

6.1 Intended use.-- The self-locking fasteners are intended for use in tapped holes in place of lock-wire bolts and screws. Their use shall be in accordance with MS15981 and is limited to applications where the applicable maximum temperatures do not exceed 450° F or 1,200° F.

6.2 Ordering data.-- Procurement documents should specify:

- (a) Title, number, and date of this specification.
- (b) Part number in accordance with applicable standard.
- (c) Levels of preservation, packaging, and packing (see 5.1 and 5.2).

6.3 Qualification approval for the locking design is based on testing and evaluation of the design incorporated in 3A coarse threads for sizes smaller than No. 10 and 3A fine threads for size No. 10 and larger. Locking designs shall pass the quality conformance inspection (4.4) and conform to the dimensional limitations of MS15981.

6.4 Use of standard and nonstandard self-locking externally threaded fastener.

6.4.1 Standard self-locking externally threaded fasteners.-- The release for use of standard self-locking externally threaded fasteners is governed by the requirements of the weapon system or equipment general or detail specification (see 6.6.1).

6.4.2 Nonstandard self-locking externally threaded fasteners.-- Self-locking externally threaded fasteners formed by incorporation of the self-locking design listed on the Qualified Products List into fasteners that are in accordance with specifications and standards approved by the weapon system or equipment specification and, as assemblies, are in accordance with this specification, will be considered to have been released by the procuring activity for use for specific applications at the time the procuring activity has received notice of the specific applications and complete descriptions of the items being specified. This release for use does not constitute waiver of the other applicable requirements of the weapons system or equipment specification. The use of other nonstandard externally threaded fasteners will require prior release for use (see 6.6.2).

6.5 Qualification.-- With respect to products incorporating locking designs requiring qualification, awards will be made only for such products as have, prior to the time set for opening of bids, been tested and approved for inclusion in the applicable Qualified Products Lists, whether or not such products have actually been so listed by that date. The attention of the suppliers is called to this requirement, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the product covered by this specification. The activity responsible for the Qualified Products List is the Naval Air Systems Command, Navy Department, Washington, D.C. 20360; however, information pertaining to qualification of products may be obtained from the Naval Air Development Center (NAEM), Johnsville, Warminster, Penn. 18974.

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6.5.1 Qualification tests will be authorized only upon presentation of certified test reports indicating that the fasteners have met or will meet the requirements of this specification.

6.6 Definitions.-

6.6.1 Standard self-locking externally threaded fasteners.- "Standard self-locking externally threaded fastener" refers to fasteners that incorporate self-locking designs conforming to this specification, and are completely described as assemblies by specifications and standards released for weapon design and construction by weapon equipment specifications.

6.6.2 Nonstandard self-locking externally threaded fastener.- A "nonstandard self-locking externally threaded fastener" refers to all fasteners incorporated with self-locking design, except standard self-locking externally threaded fasteners.

6.6.3 Installed.- A nut is considered installed when a minimum of two threads plus the chamfer of the external thread extends beyond the top of the nut.

6.6.4 Removal cycle.- The removal cycle shall be considered complete when the self-locking device is disengaged.

6.6.5 Minimum breakaway torque.- The minimum breakaway torque is that torque required to start nut rotation from a fixed position during removal cycle with no load on the base of the nut.

6.6.6 Maximum locking torque.- Maximum locking torque is the highest self-locking torque encountered in any installation or removal cycle with no load on the base of the nut.

6.6.7 Product design change.- A product design change is any change in product design or description.

6.6.8 Supplementary specification (s).- "Supplementary specification(s)" refers to the fastener specification(s) that contains the requirements for the fastener, with the exception of the locking element design, which is covered by this specification. The supplementary specification(s), as well as this specification, should be listed as the procurement specifications on the self-locking fastener drawing.

Custodians:
Navy - AS
Air Force - 11

Preparing activity:
Navy - AS

Reviewer activities:
Navy - AS
Air Force - 11

User Activities:
Navy -
Air Force -

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NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

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