MIL-N-21337
10 APRIL 1968

MILITARY SPECIFICATION

NUTS, PLAIN, ROUND, RETAINING, BALL AND ROLLER BEARINGS

This specification has been approved by the Department of Defense and is mandatory for use by the Department of the Army, the Navy, and the Air Force.

1. SCOPE

1.1 Scope. This specification covers procurement requirement for slotted retaining round plain nuts for use in assemblies with ball and roller bearings.

1.2 Classification. The nuts shall be of the following types and classes as specified (see 6.2):

Types:

Type I – Regular series

Class 1 – Carbon steel (plain)

Class 2 – Carbon steel (zinc-plated)

Class 3 – Carbon steel (cadmium plated)

Class 4 – Corrosion resisting steel (passivated)

Type II – Light series

Class 1 – Alloy steel (phosphate coated)

2. APPLICABLE DOCUMENTS

2.1 The following specification, standards, and publications, of the issue in effect on date of invitation for bids, form a part of this specification:

SPECIFICATIONS

FEDERAL

QQ-P-416	–Plating, Cadmium (Electrodeposited).
QQ-Z-325	– Zinc Plating (Electrodeposited).
UU-T-116	– Tape; Paper, Gummed, Water-resistant.
PPP-B-566	–– Boxes; Folding, Paperboard.
PPP-B-585	- Boxes; Wood, Wirebound.
PPP-B-591	– Boxes; Fiberboard, Wood-Cleated (for Domestic Shipment).
PPP-B-601	–– Boxes; Wood, Cleated-plywood.

PPP-B-621 – Boxes; Wood, Nailed and Lock-corner.

PPP-B-636 – Boxes; Fiber.

PPP-B-676 – Boxes; Setup, Paperboard.

PPP-T-76 – Tape; Paper, Water resistant, Pressure-sensitive.

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JAN-P-108 – Packaging and Packing for Overseas Shipment – Boxes, Fiberboard (V-board and W-board), Exterior and Interior.

MIL-P-116 – Preservation, Meth - ods of,

MIL-B-121 –Barrier Material, Greaseproofed, Flexible (Waterproofed).

MIL-C-490 – Cleaning and Preparation of Ferrous and Zinc Coated Surfaces for Organic Protective Coatings.

MIL-B-4229 – Boxes; Paperboard, Metal-stayed.

MIL-I-6868 – Inspection Process, Magnetic Particle.

MIL-L-10547 – Liners, Case, Waterproof.

MIL-C-16232 – Coatings, Phosphate, Heavy (Manganese and Zinc Type) and Phosphate Treating Solutions.

STANDARDS

FEDERAL

FED. STD. No. 66 – Steal; Chemical Composition and Hardenability.

FED. TEST METHOD STD. No. 151 – Metal: Test Methods.

MILITARY

MIL-STD-10 –– Surface Roughness, Waviness and Lay.

MIL-STD-105 – Sampling Procedures and Tables for Inspection by Attributes.

MIL-STD-109 – Inspection Terms and Definitions.

MIL-STD-129 – Marking for Shipment and Storage.

MIL-STD-130 – Identification Marking of U. S, Military Property.

(Copies of specifications and standards required by contractors 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. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply.

NATIONAL BUREAU OF STANDARDS

Handbook H28 – Screw-Thread Standards for Federal Services (1944) and the 1950 Supplement.

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington 25, D.C.)

3. REQUIREMENTS

3.1 Materials. Materials used in the manufacture of nuts shall be homogeneous in structure, free from cracks, pipes, seams, laminations, inclusion of nonmetallic impurities and such other defects as would render the material unsuitable for its intended purpose and shall be in accordance with 3.1.1, 3.1.2, or 3.1.3, as applicable.

3.1.1 Carbon steel. Type I, classes 1, 2, and 3 nuts shall be made from carbon steel

conforming to Federal Standard No. 66 Steel No.'s 1005 to 1035 inclusive.

3.1.2 Corrosion-resisting steel. 'Type I class 4 nuts shall be fabricated from corrosion-resisting steel conforming to Federal Standard No. 66 Steel No.'s 302, 303, or 304.

3.1.3 Alloy steel. Type II class 1 nuts shall be made from alloy steel conforming to Federal Standard No. 66 Steel No.'s 8740 or 8742.

3.2 Threads. Threads shall be American National Form class NS3B in accordance with Screw-Thread Standard for Federal Services, Handbook H28 and 1950 Supplement thereto.

3.3 Finish and tolerances.

3.3.1 Surface roughness. Surface roughness of types I and II nuts shall not be greater than a roughness height rating of 125 except as specified in figure 2. Surface roughness shall be interpreted in accordance with the provisions of Standard MILSTD-10.

3.3.2 Tolerances. Tolerances for type I and type II nuts shall be plus or minus .010-inch for linear dimensions and plus or minus 2 degrees for angular dimensions except as specified on figure 1 and table I or figure 2 and table H, as applicable.

3.4 Sharp edges. Unless otherwise specified herein sharp edges shall be rounded, chamfered, or broken not less than 0.003-inch not more than 0.015-inch.

3.5 Designs, sizes. and dimensions. Unless otherwise specified in the contract or order, nuts shall conform to the designs, sizes, and dimensions specified on figure 1 and table I or figure 2 and table II, as applicable. Type I nuts shall have either 4 or 8 slots, at the option of the manufacturer. Type H nuts shall have 8 slots.

3.6 Protective coating and treatment. Unless otherwise specified in the contract or order (see 6.2), nuts shall be plated, coated, or treated in accordance with 3.6.1, 3.6.2, 3.6.3, or 3.6.4, as applicable.

3.6.1 Zinc plating. Zinc plating shall be in accordance with Specification QQ-Z-325, class 3, type II.

3.6.2 Cadmium plating. Cadmium plating shall be in accordance with Specification QQ-P-416, type H, class C.

3.6.3 Phosphate coding. Phosphate coating shall be in accordance with Specification MIL-C-16232, type II without supplementary finish.

3.6.4 Passivation. Corrosion-resistant steel nuts shall be passivated in acid, subsequent to the final machining (metal removing) operation, in accordance with the following. method:

(a) Solvent-clean (immersion, spray, or vapor) in accordance with grade II, type 3 of Specification MIL-C-490.

(b) Dip the parts in a 20% aqueous solution of nitric acid at ordinary room temperature for about 30 minutes, or at approximately 150°F. for about 10 minutes.

3.6.4.1 Other methods of passivation may be substituted, in lieu of 3.6.4, only upon prior approval of the procuring activity.

3.7 Hardness.

3.7.1 Carbon std. The hardness of carbon steel nuts shall be Rockwell B66 minimum to Rockwell B92 maximum.

3.7.2 Corrosion-resisting steel. Corrosion-resisting steel nuts shall be in the annealed condition and at a hardness of Rockwell B90 maximum.

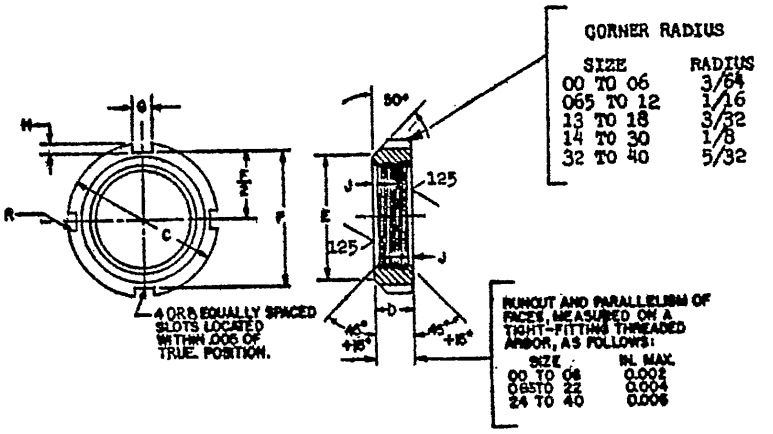

FIGURE 1. *Type I, Nuts*

Table I - Type I, Nuts

SIZE DES.	D THICKNESS MIN.	D THICKNESS MAX.	C OUTSIDE DIAM. +.005 -.015	E FACE DIAM. MIN.	E FACE DIAM. MAX.	J CHAMF OF THREAD	SLOT DIMENSIONS F DIA. +.010 -.020	SLOT DIMENSIONS G WIDTH MIN.	SLOT DIMENSIONS G WIDTH MAX.	SLOT DIMENSIONS H NOM.	SLOT DIMENSIONS R MAX.	THREAD DATA THDS. PER INCH	THREAD DATA MINOR DIAM. MIN.	THREAD DATA MINOR DIAM. MAX.	THREAD DATA PITCH DIAM. MIN.	THREAD DATA PITCH DIAM. MAX.	THREAD DATA MIN. MAJOR DIA.	1/ APPROX. WT. LB.
	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH		INCH	INCH	INCH	INCH	INCH	
00	0.209	0.229	.750	0.605	0.625	.031	.625	.120	.130	.062	.010	32	0.3572	0.3606	0.3707	0.3733	0.391	.016
01	0.303	0.323	.875	0.699	0.719	.031	.750	.120	.130	.062	.010	32	0.4352	0.4386	0.4487	0.4513	0.469	.033
02	0.303	0.323	1.000	0.793	0.813	.031	.812	.120	.130	.094	.010	32	0.5522	0.5556	0.5657	0.5687	0.586	.039
03	0.334	0.354	1.125	0.918	0.938	.031	.937	.120	.130	.094	.010	32	0.6302	0.6336	0.6437	0.6467	0.664	.053
04	0.365	0.385	1.375	1.105	1.125	.031	1.187	.178	.198	.094	.015	32	0.7472	0.7506	0.7607	0.7641	0.781	.093
05	0.396	0.416	1.562	1.261	1.281	.031	1.375	.178	.198	.094	.015	32	0.9352	0.9386	0.9487	0.9521	0.969	.114
06	0.396	0.416	1.750	1.480	1.500	.047	1.562	.178	.198	.094	.015	18	1.1129	1.1189	1.1369	1.1409	1.173	.140
065	0.428	0.448	2.062	1.793	1.813	.047	1.875	.178	.198	.094	.015	18	1.2584	1.2584	1.2764	1.2804	1.3125	.175
07	0.428	0.448	2.062	1.793	1.813	.047	1.875	.178	.198	.094	.015	18	1.3159	1.3219	1.3399	1.3439	1.376	.210
08	0.428	0.448	2.250	1.960	2.000	.047	2.062	.240	.260	.094	.020	18	1.5029	1.5089	1.5269	1.5314	1.563	.292
09	0.428	0.448	2.531	2.261	2.281	.047	2.343	.240	.260	.094	.020	18	1.7069	1.7129	1.7309	1.7354	1.767	.292
10	0.490	0.510	2.687	2.418	2.438	.047	2.500	.240	.260	.094	.020	18	1.9069	1.9129	1.9309	1.9354	1.967	.342
11	0.490	0.510	2.968	2.636	2.656	.047	2.718	.240	.260	.125	.020	18	2.0969	2.1029	2.1209	2.1260	2.157	.410
12	0.521	0.541	3.156	2.824	2.844	.047	2.906	.240	.260	.125	.020	18	2.2999	2.3059	2.3239	2.3290	2.360	.469
13	0.553	0.573	3.375	3.043	3.063	.047	3.125	.240	.260	.125	.020	18	2.4879	2.4939	2.5119	2.5170	2.548	.556
14	0.553	0.573	3.625	3.283	3.313	.047	3.375	.240	.260	.125	.020	18	2.6909	2.6969	2.7149	2.7200	2.751	.641
15	0.584	0.604	3.875	3.533	3.563	.078	3.625	.360	.385	.125	.025	12	2.8428	2.8518	2.8789	2.8843	2.933	.788
155	0.584	0.604	3.875	3.533	3.563	.078	3.625	.360	.385	.125	.025	11	2.8428	2.8518	2.8789	2.8843	2.933	.788
16	0.584	0.604	4.156	3.814	3.844	.078	3.906	.360	.385	.125	.025	12	3.0468	3.0558	3.0829	3.0888	3.137	.913
165	0.584	0.604	4.156	3.814	3.844	.078	3.906	.360	.385	.125	.025	11	3.0468	3.0558	3.0829	3.0888	3.137	.913
17	0.615	0.635	4.406	4.001	4.031	.078	4.093	.360	.385	.156	.025	12	3.2403	3.2588	3.2859	3.2933	3.340	1.050
175	0.615	0.635	4.406	4.001	4.031	.078	4.093	.360	.385	.156	.025	11	3.2498	3.2588	3.2859	3.2933	3.340	1.050
18	0.678	0.698	4.656	4.251	4.281	.078	4.343	.360	.385	.156	.025	12	3.4368	3.4458	3.4729	3.4803	3.527	1.300
185	0.678	0.698	4.656	4.251	4.281	.078	4.343	.360	.385	.156	.025	11	3.4368	3.4458	3.4729	3.4803	3.527	1.300
19	0.709	0.729	4.937	4.533	4.563	.078	4.625	.360	.385	.156	.025	12	3.6398	3.6488	3.6759	3.6833	3.730	1.563
195	0.709	0.729	4.937	4.533	4.563	.078	4.625	.360	.385	.156	.025	11	3.6398	3.6488	3.6759	3.6833	3.730	1.563
20	0.735	0.760	5.187	4.783	4.813	.078	4.875	.360	.385	.156	.025	12	3.8278	3.8368	3.8639	3.8713	3.918	1.800
205	0.735	0.760	5.187	4.783	4.313	.078	4.875	.360	.385	.156	.025	11	3.8278	3.8368	3.8639	3.8713	3.918	1.800
21	0.735	0.760	5.437	4.970	5.000	.078	5.062	.485	.510	.188	.030	12	4.0318	4.0408	4.0679	4.0762	4.122	1.950
22	0.766	0.791	5.718	5.251	5.281	.078	5.343	.485	.510	.188	.030	12	4.2348	4.2438	4.2709	4.2792	4.325	2.225
24	0.798	0.823	6.125	5.658	5.688	.078	5.750	.485	.510	.188	.030	12	4.6258	4.6348	4.6619	4.6702	4.716	2.525
26	0.860	0.885	6.750	6.158	6.188	.078	6.250	.610	.635	.250	.030	12	5.0158	5.0248	5.0519	5.0602	5.106	3.187
28	0.923	0.948	7.093	6.501	6.531	.078	6.593	.610	.635	.250	.030	12	5.4068	5.4158	5.4429	5.4512	5.497	3.500
285	0.923	0.948	7.093	6.501	6.531	.078	6.593	.610	.635	.250	.030	11	5.4068	5.4158	5.4429	5.4512	5.497	3.500
30	0.954	0.979	7.687	7.033	7.063	.078	7.125	.610	.635	.281	.030	12	5.7978	5.8068	5.8339	5.8422	5.888	4.458
32	1.016	1.041	8.062	7.398	7.438	.094	7.500	.610	.635	.281	.030	8	6.1407	6.1622	6.2028	6.2119	6.284	5.094
34	1.048	1.073	8.656	7.991	8.031	.094	8.093	.610	.635	.281	.030	8	6.5237	6.5372	6.5778	6.5869	6.659	6.250
36	1.079	1.104	9.062	8.335	8.375	.094	8.437	.735	.760	.312	.030	8	6.9307	6.9442	6.9848	6.9939	7.066	6.630
38	1.110	1.135	9.468	8.741	8.781	.094	8.843	.735	.760	.312	.030	8	7.3367	7.3502	7.3908	7.3999	7.472	7.188
385	1.110	1.135	9.468	8.741	8.781	.094	8.843	.735	.760	.312	.030	11	7.3367	7.3502	7.3908	7.3999	7.472	7.188
40	1.173	1.198	9.843	9.116	9.156	.094	9.218	.735	.760	.312	.030	8	7.7117	7.7252	7.7658	7.7772	7.847	8.000

1/ Weights for reference purposes only.

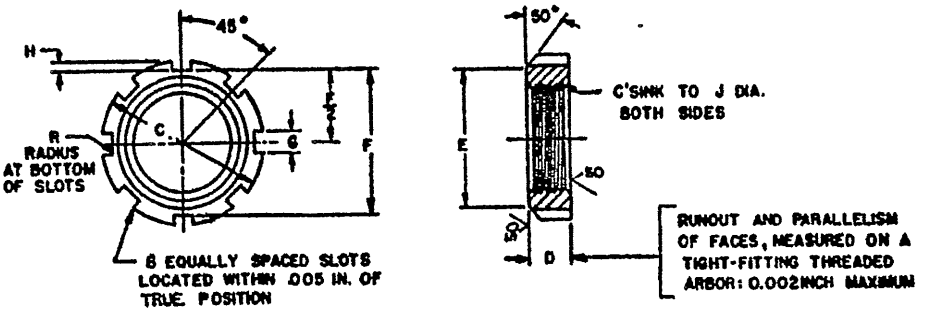

FIGURE 2. *Type II, Nuts*

Table II- Type II, Nuts

SIZE DES.	D THICK-NESS	C O.D. +.005 -.015	E FACE DIA. +.000 -.020	J C'SINK DIA.	SLOT DIMENSIONS F	G	H	R	THREAD DATA NO. PER INCH	MINOR DIAM. MIN.	MINOR DIAM. MAX.	PITCH DIAM MIN	PITCH DIAM MAX	MIN. MAJOR DIAM.	EST. WT LB. 1/
A00	.188	.719	.531	.401	.594	.125	.062	.010	32	.3572	.3606	.3707	.3733	.391	.010
A01	.188	.812	.625	.479	.688	.125	.062	.010	32	.4352	.4386	.4487	.4513	.469	.014
A02	.219	.938	.750	.596	.812	.125	.062	.010	32	.5522	.5556	.5657	.5687	.586	.021
A03	.219	1.062	.875	.674	.938	.125	.062	.010	32	.6302	.6336	.6437	.6467	.664	.028
A04	.250	1.156	.969	.791	1.031	.188	.062	.015	32	.7472	.7506	.7607	.7641	.781	.034
A05	.250	1.375	1.188	.979	1.250	.188	.062	.015	32	.9352	.9386	.9487	.9521	.969	.045
A06	.281	1.688	1.438	1.183	1.500	.188	.094	.015	18	1.1129	1.1189	1.1369	1.1409	1.173	.055
A07	.281	1.906	1.656	1.386	1.719	.188	.094	.015	18	1.3159	1.3219	1.3399	1.3439	1.376	.067
A08	.281	2.094	1.844	1.573	1.906	.250	.094	.020	18	1.5029	1.5089	1.5269	1.5314	1.563	.074
A09	.312	2.312	2.062	1.777	2.125	.250	.094	.020	18	1.7069	1.7129	1.7309	1.7354	1.767	.134
A10	.312	2.500	2.250	1.977	2.312	.250	.094	.020	18	1.9069	1.9129	1.9309	1.9354	1.967	.144
A11	.312	2.750	2.500	2.167	2.562	.250	.094	.020	18	2.0969	2.1029	2.1209	2.1260	2.157	.180
A12	.344	2.938	2.688	2.370	2.750	.250	.094	.020	18	2.2999	2.3059	2.3239	2.3290	2.360	.211
A13	.344	3.125	2.875	2.558	2.937	.250	.094	.020	18	2.4879	2.4939	2.5119	2.5170	2.548	.266
A14	.344	3.344	3.094	2.761	3.156	.250	.094	.020	18	2.6909	2.6969	2.7149	2.7200	2.751	.252
A15	.375	3.688	3.375	2.943	3.438	.375	.125	.025	12	2.8428	2.8518	2.8789	2.8843	2.933	.371
A16	.375	3.906	3.594	3.147	3.656	.375	.125	.025	12	3.0468	3.0558	3.0829	3.0888	3.137	.405
A17	.375	4.125	3.812	3.350	3.875	.375	.125	.025	12	3.2498	3.2588	3.2859	3.2933	3.340	.440
A18	.375	4.312	4.000	3.537	4.062	.375	.125	.025	12	3.4368	3.4458	3.4729	3.4803	3.527	.464
A19	.406	4.531	4.219	3.740	4.281	.375	.125	.025	12	3.6398	3.6488	3.6759	3.6833	3.730	.546
A20	.406	4.719	4.406	3.928	4.469	.375	.125	.025	12	3.8278	3.8368	3.8639	3.8713	3.918	.572
A21	.406	4.906	4.594	4.132	4.656	.500	.125	.030	12	4.0318	4.0408	4.0679	4.0762	4.122	.577
A22	.406	5.125	4.812	4.335	4.875	.500	.125	.030	12	4.2348	4.2438	4.2709	4.2792	4.325	.620

1/ Weights for reference purposes only.

3.7.3 Alloy steel. Alloy steel nuts shall be hardened by quenching in oil from the hardening temperature and tempered to a Rockwell "C" hardness of 26 to 32,

3.8 Magnetic particle inspection. Alloy and carbon steel nuts shall pass the magnetic particle inspection of 4.4,2.

3.9 Side runout and parallelism of sides. The runout and parallelism of sides of the nut when tested in accordance with the procedures of 4.5.2.1 shall conform to the tolerances specified in figures 1 or 2, as applicable,

3.10 Identification marking. Each nut shall be permanently and legibly marked with the manufacturer's name or trademark and part number by a steel stamp, acid or electric etching, or engraving in accordance with the provisions of MIL-STD-130.

3.11 Workmanship. Workmanship shall be in accordance with high grade commercial practice governing this type of material which will insure compliance with all the requirements of this specification. Each nut shall be free from hanging burrs and slivers, gouges, porosity, objectionable scale or any other defects which may adversely affect the nut's serviceability.

4. QUAULITY ASSURANCE PROVISIONS

4.1 General. When this specification and the applicable documents thereto specifies action by the Government inspector, it shall be performed by or under the supervision of the Government inspector.

4.1.1 Definitions. Terms, designated standard names, and associated terminology for examination and testing shall be interpreted in accordance with definitions outlined in Standard MIL-STD-109.

4.2 Lot, A lot shall consist of all the nuts of the same type, class and size submitted for acceptance inspection and test at one time.

4.3 Sampling.

4.3.1 For lot acceptance inspection. Unless otherwise specified, sampling shall be in accordance with the provisions of Standard MIL-STD-105 at inspection level II.

4.3.2 For lot acceptance tests.

4.3.2.1 For composition and hardness. Unless otherwise specified (see 6.2), sampling for composition and hardness shall be in accordance with inspection level L3, MIL-STD-105 (Appendix). Disposition of the lot with respect to these tests shall be in accordance with the criteria for the acceptance quality level (AQL) 10.0 percent defective of MIL-STD-105 for each test.

4.4 Inspection,

4.4.1 Lot acceptance inspection. Sample nuts selected in accordance with 4.3.1 shall be visually and dimensionally inspected in accordance with 4,4.5 for conformance to the requirements of this specification and the contract or order.

4.4.2 Magnetic particle inspection. The presence of cracks, seams, inclusions, and flaws in alloy and carbon steel nuts selected in accordance with 4.3.1, shall be determined by magnetic particle inspection unless visual inspection -discloses defects which would preclude the necessity for magnetic particle inspection. Magnetic particle inspection shall be performed in accordance with Specification MIL-I-6868.

4.4.3 Packaging, packing, and marking inspection. The Government inspector shall ascertain that packaging, packing, and 'marking of nuts and the marking of containers is in accordance with the requirements of this specification and the contract or order.

4.4.4 Place of inspection. Unless otherwise specified in the contract or order (see 6.2), inspection and test shall be conducted at the place of manufacture.

4.4.5 Classification of defects. Inspection shall be conducted for the following:

Catagories and defects	Method of Inspection
Major – AQL 1.5 percent	
1. Runout and parallelism of faces	See 4,5.2.1
2* Thread pitch and minor diameters	Gage
3. "1?" diameter (see Tables I & 11)	* SMI or gage
4. Cracks, seams, inclusions and flaws	Visual and magnetic particle inspection.
Minor – AQL 4.0 percent	
51. "D" thickness (see Tables I & II)	* SMI or gage
52* Surface roughness ,	Visual
53. "C" outside diameter	* SMI or gage
54. Protective coating	Visual
55. Slots equally spaced within 0,006 of basic position S.,	Gage
56. Burrs or sharp edges	Visual

* Standard measuring instrument e.g. scale, calipers, micrometers, etc.

4.5 Tests.

4.5.1 Lot acceptance tests.

4.5.1.1 Side runout and parallelism of faces. Each sample nut selected in accordance with 4.3.1 shall be subjected to a runout and parallelism test in accordance with the procedures of 4.5,2.1 to determine conformance to the tolerance specified in figures 1 or 2, as applicable.

4.5.1.2 Chemical composition. Sample nuts selected in accordance with 4.3.2.1 shall be tested for the composition requirements of 3.1.1, 3.1.2, or 3.1.3, as applicable, and in accordance with test procedures of 4.5.2.2.

4.5.1.3 Hardness. Sample nuts selected in accordance with 4.2,2.2 shall be tested for the hardness requirements of 3.7.1, 3.7.2, or 3.7.3, as applicable, and in accordance with test procedures of 4.5.2.2.

4.5.2 Test and inspection procedures.

4.5.2,1 Side runout and parallelism of faces. The sample nut shall be mounted on a tight fitting threaded arbor, (a tapered arbor is not acceptable for this purpose), and a calibrated indicator "applied against the contact or chamfered side of the nut (see fig. 3). The thread dimensions of the arbor employed shall conform to the thread data and tolerances specified in tables I and II for the applicable type and class of nut.

4.5.2.2 Composition and hardness. The test procedures for the composition and hardness of nut shall be as described in FED. TEST METHOD STD. No. 151.

4.6 Rejected lot. A rejected lot maybe resubmitted for Government acceptance in accordance with the provisions of Standard MIL-STD-105.

5. PREPARATION FOR DELIVERY

5.1 General. Nuts shall be prepared for shipment in accordance with Level A, Level B, or Level C, as specified in the contractor order (see 6.2).

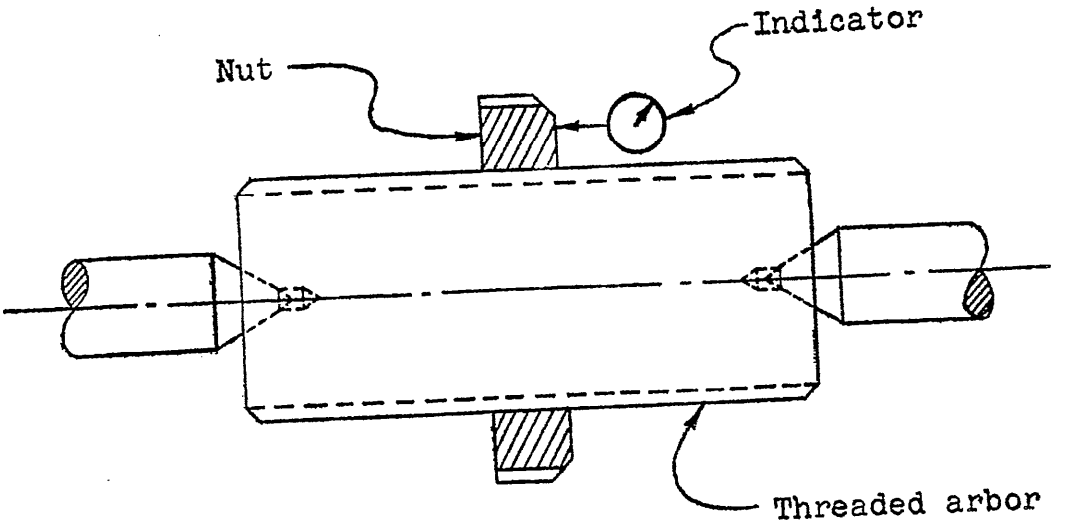

FIGURE 8. *Mounting of nut on arbor.*

5.2 Cleaning and preservation

5.2.1 Level A.

5.2.1.1 Cleaning. Phosphate-coated nuts shall be cleaned in accordance with Method C-3 of Specification MIL-P-116. Unplated nuts shall be cleaned in accordance with Method C-1 of Specification MIL-P-116. Zinc-plated, cadmium-plated,. and corrosion-resisting nuts will not require cleaning.

5.2.1.2 Preservation. Unless otherwise specified, zinc-plated, cadmium-plated, unplated, and phosphate-coated nuts shall be coated with type P-2 preservative in accordance with Specification MIL-P-116. Corrosion-resisting nuts will not require preservation.

5.2.2 Level R Not applicable,

5.2.3 Level C. Nuts shall be cleaned and preserved in accordance with standard commercial practice.

5.3 Packaging. Nuts shall be packaged in accordance with 5.3.1, 5.3.2, and 5.3.3 as applicable. Individual unit packages, intermediate packages, and secondary intermediate packages shall contain nuts of one type, class, and size.

5.3.1 Unit packaging.

5.3.1.1 Level A. Nuts shall be packaged in quantities of 50, 25, 10, 5, or fraction thereof dependent on weight. Unit package quantities of nuts coated with a preservative (see 5.2) shall be wrapped in grade A, greaseproof barrier material conforming to Specification MIL-B-121, prior to placing them in containers. Nuts shall be packaged in folding cartons, setup boxes, or metal edge boxes conforming to Specification PPP-B-566, PPP-B-676, or MIL-B-4229, as applicable. Unless otherwise specified, gross weight of unit packages shall not exceed 10 pounds.

5.3.1.2 Level C. Unit packaging shall be in accordance with the manufacturer's commercial practice.

5.3.2 Intermediate packaging.

5.3.2.1 Level A. Unit packages shall be further packaged in folding cartons, set-up, metal-stayed or fiberboard boxes conforming to Specification PPP-B-566, PPP-B-676, MIL-B-4229, PPP-B-636, or JAN-P-108. A1l seams and joints, including manufacturer's joints, shall be covered with water-resistant tape conforming to Specification UU-T-116 or PPP-T-76. Unless otherwise specified, gross weights shall be in accordance

with applicable box specifications and for PPP-B-636, and JAN-P-108 shall not exceed 20 pounds.

5.3.2.2 Level C. Intermediate packaging shall be in accordance with the manufacturer's standard practice.

5.4 Packing.

5.4.1 Level A. Unless otherwise specified in the contractor order (see 6.2), nuts shall be packed in such a manner to prevent shifting of contents in wood-wirebound, wood-cleated plywood or nailed wood boxes conforming to Specification PPP-B-585 (class 3), PPP-B-601 (overseas type) or PPP-B-621 (class 2). Gross weight of shipping containers shall not exceed 200 pounds.

5.4.1.1 Liners, Each shipping container shall be lined with a sealed waterproof case liner conforming to class 2 of Specification MIL-L-10547 and sealed in accordance with the appendix thereto. When intermediate container conforming to Specification JAN-P-108 are used, case liners will not be required.

5.4.2 Level B. When Level B packing is specified in the contract or order (see 6.2), nuts shall be packed in such a manner to prevent shifting of contents in wood-cleated fiberboard, wood-wirebound, wood-cleated plywood boxes conforming to Specification PPP-B-591, PPP-B-585 (class 1 or 2) or PPP-B-601 (domestic type) or in fiber boxes conforming to the special requirements of Specification PPP-B-636. Gross weight of wood and wood-cleated boxes shall not exceed 200 pounds.

5.4.3 Level C. When Level C packing is specified in the contract or order (see 6.2), nuts packaged in accordance with 5.3.1 or 5.3.2 shall be packed for shipment in accordance with the manufacturer's practice.

5.5 Marking. In addition to any special marking that may be required by the contract or order (see 6.2), all interior packages, and all shipping containers shall be marked in accordance with Standard MIL-STD-129.

6. NOTES

6.1 Intended use. Slotted retaining nuts, covered by this specification are primarily intended for use with pronged lockwashers in securing and locking ball and roller bearings in position against shaft shoulders. This specification covers the requirements for MS 19067 to MS19068.

6.2 Ordering data, Procurement documents should specify the following:

(a) Title, date, and number of this specification.

(b) Type, class, and size of nut required (see 1.2 and 3.5).

(c) Protective finish required (see 3.6).

(d) Sampling required, if different from 4.3.

(e) Place of inspection if different from 4.4.4.

(f) Whether preservation shall be Level A or Level C (see 5.2).

(g) Whether packaging shall be Level A or Level C (see 5.3).

(h) Whether packing shall be Level A, Level B, or Level C (see 5.4).

(i) Special marking if required (see 5.5) l

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