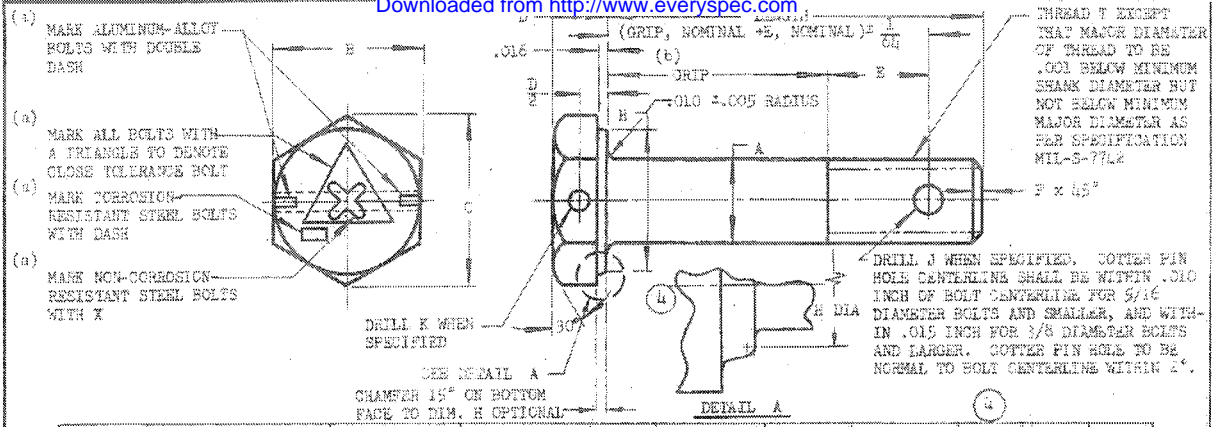


NOTE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government hereby incurs no responsibility, nor any obligation whatsoever, and the fact that the Government name may be mentioned in connection with the drawings, specifications, or other data is not to be regarded as an implication or acknowledgment in any manner whatsoever, by the Government, of any other purpose of preparation, or conveying any rights or permission in manufacture, use, or sale of any patented invention that may in any way be related thereto.



PART AND PART NO.	THREAD T	A DIA		B		C REF	D		E REF	F		(d) H DIA	J DRILL DIA +.010 - .000	K DRILL DIA +.010 - .000
		MAX	MIN	MAX	MIN		MAX	MIN		MAX	MIN	MIN		
ANI73	NO. 10-32 NF-3A	.1874	.1889	.377	.365	.430	.211	.409	17/64	.047	.015	.335	.070	.086
ANI74	1/8-28 UNF-3A	.2492	.2477	.440	.428	.510	.272	.410	5/16	.047	.015	.398	.076	.086
ANI75	5/16-24 UNF-3A	.3117	.3112	.502	.490	.580	.324	.472	23/64	.063	.031	.450	.076	.070
ANI76	3/8-24 UNF-3A	.3742	.3737	.565	.553	.650	.385	.523	7/16	.063	.031	.523	.106	.070
ANI77	7/16-20 UNF-3A	.4367	.4362	.627	.615	.720	.469	.631	31/64	.063	.031	.585	.106	.070
ANI78	1/2-20 UNF-3A	.4991	.4986	.752	.740	.870	.547	.725	39/64	.063	.031	.710	.106	.070
ANI79	9/16-18 UNF-3A	.5616	.5611	.877	.865	1.010	.629	.826	21/32	.078	.046	.822	.111	.070
ANI80	5/8-18 UNF-3A	.6240	.6235	.940	.928	1.090	.700	.928	47/64	.078	.046	.898	.111	.070
ANI82	3/4-16 UNF-3A	.7152	.7147	1.066	1.053	1.230	.822	.990	7/8	.078	.046	1.023	.111	.070
ANI83	7/8-14 UNF-3A	.8737	.8732	1.253	1.240	1.410	.985	1.153	53/64	.094	.062	1.230	.111	.070
ANI85	1-14 NF-3A	.9935	.9930	1.441	1.428	1.660	1.153	1.325	1-3/32	.094	.062	1.395	.111	.070

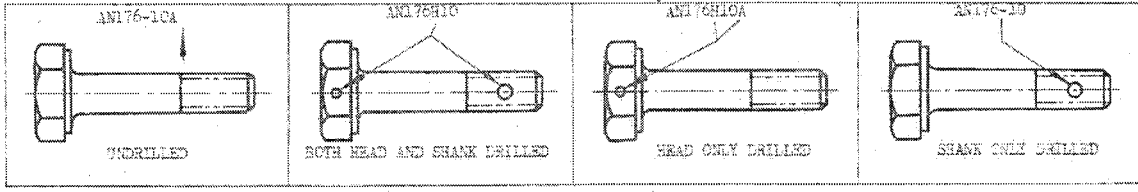
SEE SHEET 3 FOR NOTES (a), (b), AND (c).
 (d) THE DIAMETER OF THE WASHER FACE SHALL NOT EXCEED THE ACTUAL WIDTH ACROSS FLATS.

MATERIAL: NON-CORROSION-RESISTANT STEEL, CORROSION-RESISTANT STEEL, OR ALUMINUM ALLOY. SEE PROCUREMENT SPECIFICATION

FINISH: SEE PROCUREMENT SPECIFICATION, EXCEPT AS NOTED.
 PLATING MAY BE GROUND OFF SHANK OR UNDERSIDE OF HEAD. SMALL AREAS OF CADMIUM PLATING REMAINING ON THE GROUND PORTION OF BOLTS SHALL NOT BE CAUSE FOR REJECTION. UNPLATED SURFACES SHALL BE COATED WITH COMPOUND, SPECIFICATION MIL-C-11796 OR MIL-C-16174. SURFACE ROUGHNESS IN RMS MICHG INCHES BEFORE PLATING SHALL BE: 63 MAX FOR SHANK AND UNDERSIDE OF HEAD, 125 MAX FOR THREADS (VISUAL COMPARISON ONLY), 250 MAX FOR ALL OTHER AREAS (VISUAL COMPARISON ONLY).

ADD C BEFORE DASH NUMBER FOR CORROSION-RESISTANT STEEL BOLT. (SEE (c) NOTE.)
 ADD DD BEFORE DASH NUMBER FOR ALUMINUM-ALLOY BOLT. (SEE (c) NOTE.)
 ADD A AFTER DASH NUMBER FOR UNDRILLED BOLT. SEE ILLUSTRATION.
 ADD H BEFORE DASH NUMBER FOR BOLT WITH DRILLED HEAD AND SHANK. SEE ILLUSTRATION.
 ADD R BEFORE DASH NUMBER AND A AFTER DASH NUMBER FOR BOLT WITH DRILLED HEAD ONLY. SEE ILLUSTRATION

- EXAMPLES OF PART NUMBERS:
- ANI76-10 = 3/8 NON-CORROSION-RESISTANT STEEL BOLT 1-5/64 LONG, 7/16 GRIP WITH DRILLED SHANK ONLY. SEE ILLUSTRATION.
 - ANI76C10 = 3/8 CORROSION-RESISTANT STEEL BOLT 1-5/64 LONG, 7/16 GRIP WITH DRILLED SHANK ONLY. SEE ILLUSTRATION. (SEE (c) NOTE.)
 - ANI76DD10 = 3/8 ALUMINUM-ALLOY BOLT 1-5/64 LONG, 7/16 GRIP WITH DRILLED SHANK ONLY. SEE ILLUSTRATION. (SEE (c) NOTE.)
 - ANI76DR10A = 3/8 ALUMINUM-ALLOY BOLT 1-5/64 LONG, 7/16 GRIP, UNDRILLED HEAD AND SHANK. SEE ILLUSTRATION. (SEE (c) NOTE.)
 - ANI76DRH10 = 3/8 ALUMINUM-ALLOY BOLT 1-5/64 LONG, 7/16 GRIP WITH DRILLED HEAD AND SHANK. SEE ILLUSTRATION. (SEE (c) NOTE.)
 - ANI76DRH10A = 3/8 ALUMINUM-ALLOY BOLT 1-5/64 LONG, 7/16 GRIP WITH DRILLED HEAD ONLY. SEE ILLUSTRATION. (SEE (c) NOTE.)



BOLTS SHALL BE FREE FROM ALL HANGING BURRS AND SLIVERS WHICH MIGHT BECOME DISLOADED UNDER USAGE. COUNTERSINKING OF DRILLED HOLES IN HEAD IS MANDATORY. COUNTERSINKING OF DRILLED HOLES IN SHANK IS OPTIONAL.

DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: DECIMALS ±.010, ANGLES ±5°.

PROCUREMENT SPECIFICATION MIL-S-8712	AIR FORCE-NAVY AERONAUTICAL STANDARD BOLT - I	ANI73 THRU ANI86
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APPROVED 29 Mar 54 BY REVISED 14 Mar 52 230 Oct 52 15 Mar 55 14 6 Apr 54

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Table with columns for DASH NO., AN173, AN174, AN175, AN176, AN177, AN178, AN179. Each column contains sub-columns for GRIP and LENGTH with various fractional values.

NO. 1: This drawing was approved by joint action of the Air Force and Navy Departments as the standard drawing for the same product and shall be used for this product. This drawing supersedes all associated standard drawings for the same product and shall be the same as the drawing of the procurement of aeronautical supplies, or the use in new design, not more than 6 months after the latest date of approval shown. It may be put into effect, however, at an earlier date after promulgation.

APPROVED 29 Mar 49

MIL-9-6812 AIR FORCE-NAVY AERONAUTICAL STANDARD BOLT - I

ARM72 THRU AN186

DRAWN 4 OF 4

REVISED 10 Jul Mar 52 FOR CHANGES SEE SHEET 1

NOTE: This drawing was prepared by joint action of the Navy Department and the Navy Aircraft Division. This drawing supersedes all unapproved drawings for use in new orders, not later than 6 months after the issue date of approval shown. It may be put into effect, however, at an earlier date after promulgation.

NOTE: This drawing was prepared by joint action of the Navy Department and the Navy Aircraft Division. This drawing supersedes all unapproved drawings for use in new orders, not later than 6 months after the issue date of approval shown. It may be put into effect, however, at an earlier date after promulgation.

DASH NO.	AN180		AN182		AN181		AN186	
	GRIP 11/64	LENGTH +1/32 -1/64	GRIP 11/64	LENGTH +1/32 -1/64	GRIP 11/64	LENGTH +1/32 -1/64	GRIP 11/64	LENGTH +1/32 -1/64
7	2-1/16	1-1/64						
10	3/16	1-9/64	1/16	1-5/32				
11	5/16	1-17/64	3/16	1-9/32	1/16	1-5/16		
12	7/16	1-25/64	5/16	1-13/32	3/16	1-7/16	1/8	1-1/2
13	9/16	1-33/64	7/16	1-17/32	5/16	1-9/16	1/4	1-5/8
14	11/16	1-41/64	9/16	1-21/32	7/16	1-11/16	3/8	1-3/4
15	13/16	1-49/64	11/16	1-25/32	9/16	1-13/16	1/2	1-7/8
16	15/16	1-57/64	13/16	1-29/32	11/16	1-15/16	5/8	2
17	1-1/16	2-1/64	15/16	2-1/32	13/16	2-1/16	3/4	2-1/8
20	1-3/16	2-9/64	1-1/16	2-5/32	15/16	2-3/16	7/8	2-1/4
21	1-5/16	2-17/64	2-3/16	2-9/32	1-1/16	2-5/16	1	2-3/8
22	1-7/16	2-25/64	2-5/16	2-13/32	1-3/16	2-7/16	1-1/8	2-1/2
23	1-9/16	2-33/64	1-7/16	2-17/32	1-5/16	2-9/16	1-1/4	2-5/8
24	1-11/16	2-41/64	1-9/16	2-21/32	1-7/16	2-11/16	1-3/8	2-3/4
25	1-13/16	2-49/64	1-11/16	2-25/32	1-9/16	2-13/16	1-1/2	2-7/8
26	1-15/16	2-57/64	1-13/16	2-29/32	1-11/16	2-15/16	1-5/8	3
27	2-1/16	3-1/64	1-15/16	3-1/32	1-13/16	3-1/16	1-3/4	3-1/8
30	2-3/16	3-9/64	2-1/16	3-5/32	1-15/16	3-3/16	1-7/8	3-1/4
31	2-5/16	3-17/64	2-3/16	3-9/32	2-1/16	3-5/16	2	3-3/8
32	2-7/16	3-25/64	2-5/16	3-13/32	2-3/16	3-7/16	2-1/8	3-1/2
33	2-9/16	3-33/64	2-7/16	3-17/32	2-5/16	3-9/16	2-1/4	3-5/8
34	2-11/16	3-41/64	2-9/16	3-21/32	2-7/16	3-11/16	2-3/8	3-3/4
35	2-13/16	3-49/64	2-11/16	3-25/32	2-9/16	3-13/16	2-1/2	3-7/8
36	2-15/16	3-57/64	2-13/16	3-29/32	2-11/16	3-15/16	2-5/8	4
37	3-1/16	4-1/64	2-15/16	4-1/32	2-13/16	4-1/16	2-3/4	4-1/8
40	3-3/16	4-9/64	3-1/16	4-5/32	2-15/16	4-3/16	2-7/8	4-1/4
41	3-5/16	4-17/64	3-3/16	4-9/32	3-1/16	4-5/16	3	4-3/8
42	3-7/16	4-25/64	3-5/16	4-13/32	3-3/16	4-7/16	3-1/8	4-1/2
43	3-9/16	4-33/64	3-7/16	4-17/32	3-5/16	4-9/16	3-1/4	4-5/8
44	3-11/16	4-41/64	3-9/16	4-21/32	3-7/16	4-11/16	3-3/8	4-3/4
45	3-13/16	4-49/64	3-11/16	4-25/32	3-9/16	4-13/16	3-1/2	4-7/8
46	3-15/16	4-57/64	3-13/16	4-29/32	3-11/16	4-15/16	3-5/8	5
47	4-1/16	5-1/64	3-15/16	5-1/32	3-13/16	5-1/16	3-3/4	5-1/8
50	4-3/16	5-9/64	4-1/16	5-5/32	3-15/16	5-3/16	3-7/8	5-1/4
51	4-5/16	5-17/64	4-3/16	5-9/32	4-1/16	5-5/16	4	5-3/8
52	4-7/16	5-25/64	4-5/16	5-13/32	4-3/16	5-7/16	4-1/8	5-1/2
53	4-9/16	5-33/64	4-7/16	5-17/32	4-5/16	5-9/16	4-1/4	5-5/8
54	4-11/16	5-41/64	4-9/16	5-21/32	4-7/16	5-11/16	4-3/8	5-3/4
55	4-13/16	5-49/64	4-11/16	5-25/32	4-9/16	5-13/16	4-1/2	5-7/8
56	4-15/16	5-57/64	4-13/16	5-29/32	4-11/16	5-15/16	4-5/8	6
57	5-1/16	6-1/64	4-15/16	6-1/32	4-13/16	6-1/16	4-3/4	6-1/8
60	5-3/16	6-9/64	5-1/16	6-5/32	4-15/16	6-3/16	4-7/8	6-1/4
61	5-5/16	6-17/64	5-3/16	6-9/32	5-1/16	6-5/16	5	6-3/8
62	5-7/16	6-25/64	5-5/16	6-13/32	5-3/16	6-7/16	5-1/8	6-1/2
63	5-9/16	6-33/64	5-7/16	6-17/32	5-5/16	6-9/16	5-1/4	6-5/8
64	5-11/16	6-41/64	5-9/16	6-21/32	5-7/16	6-11/16	5-3/8	6-3/4
65	5-13/16	6-49/64	5-11/16	6-25/32	5-9/16	6-13/16	5-1/2	6-7/8
66	5-15/16	6-57/64	5-13/16	6-29/32	5-11/16	6-15/16	5-5/8	7
67	6-1/16	7-1/64	5-15/16	7-1/32	5-13/16	7-1/16	5-3/4	7-1/8
70	6-3/16	7-9/64	6-1/16	7-5/32	5-15/16	7-3/16	5-7/8	7-1/4
71	6-5/16	7-17/64	6-3/16	7-9/32	6-1/16	7-5/16	6	7-3/8
72	6-7/16	7-25/64	6-5/16	7-13/32	6-3/16	7-7/16	6-1/8	7-1/2
73	6-9/16	7-33/64	6-7/16	7-17/32	6-5/16	7-9/16	6-1/4	7-5/8
74	6-11/16	7-41/64	6-9/16	7-21/32	6-7/16	7-11/16	6-3/8	7-3/4
75	6-13/16	7-49/64	6-11/16	7-25/32	6-9/16	7-13/16	6-1/2	7-7/8
76	6-15/16	7-57/64	6-13/16	7-29/32	6-11/16	7-15/16	6-5/8	8
77	7-1/16	8-1/64	6-15/16	8-1/32	6-13/16	8-1/16	6-3/4	8-1/8
80	7-3/16	8-9/64	7-1/16	8-5/32	6-15/16	8-3/16	6-7/8	8-1/4
81							7	8-3/8
82							7-1/8	8-1/2

- (a) MARKING MAY BE EITHER RAISED OR DEPRESSED. THE HEIGHT OR DEPTH OF THE MARKINGS SHALL NOT EXCEED THE FOLLOWING VALUES:
 .025 INCH FOR 9/16 DIAMETER BOLTS AND SMALLER;
 .030 INCH FOR 5/8 DIAMETER BOLTS AND LARGER.
 HEAD MARKING MAY INCLUDE MANUFACTURER'S MARKINGS.
- (b) GRIP LENGTH OF BOLTS SHALL BE MEASURED FROM THE UNDERSIDE OF THE HEAD TO THE END OF THE FULL CYLINDRICAL PORTION OF THE SHANK. COMPLETE THREADS SHALL BEGIN WITHIN TWO THREAD PITCH MAXIMUM. TWO THREAD PITCH MAXIMUM MAY CONSIST OF INCOMPLETE THREAD OR EXTRUSION ANGLE.
- (c) CORROSION RESISTING STEEL BOLTS AND ALUMINUM ALLOY BOLTS INACTIVE FOR DESIGN AFTER 24 MARCH 1952. FOR DEFINITION AND APPLICATION OF DRAWING STATUS NOTES, SEE ANA BULLETIN NO. 337.

PROCUREMENT SPECIFICATION

AIR FORCE-NAVY AERONAUTICAL STANDARD

AN173 THRU AN186

MIL-A-6612

BOLT-

APPROVED 26 Mar 52 REVISED 1 24 Mar 52 (2) FOR CHANGES SEE SHEET 1

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NOTE—This drawing was approved by joint action of the Air Force and Navy Department as the Air Force-Navy standard for this product. This drawing supersedes all antecedent standard drawings for the same product and shall become effective for the procurement of aeronautical supplies, or for use in new designs, not later than six months after the latest date of approval shown.

BASIC PART NO.	THREAD T	RATED STRENGTH (POUNDS)					
		ULTIMATE TENSILE AT ROOT DIA		YIELD TENSILE AT ROOT DIA		SINGLE SHEAR AT FULL DIA	
		STEEL	AL ALLOY	STEEL	AL ALLOY	STEEL	AL ALLOY
AN173	No. 10-32 NF-3A	2 210	1 100	1 690	710	2 125	990
AN174	1/4 -28 UNF-3A	4 060	2 030	3 130	1 310	3 680	1 715
AN175	5/16-24 UNF-3A	6 500	3 220	4 980	2 080	5 750	2 685
AN176	3/8 -24 UNF-3A	10 100	5 020	7 740	3 240	8 280	3 870
AN177	7/16-20 UNF-3A	13 600	6 750	10 430	4 350	11 250	5 250
AN178	1/2 -20 UNF-3A	18 500	9 180	14 190	5 920	14 700	6 850
AN179	9/16-18 UNF-3A	23 600	11 700	18 100	7 550	18 700	8 700
AN180	5/8 -18 UNF-3A	30 100	14 900	23 080	9 610	23 000	10 750
AN182	3/4 -16 UNF-3A	44 000	21 800	33 730	14 100	33 150	15 500
AN184	7/8 -14 UNF-3A	60 000	29 800	46 000	19 200	45 050	21 050
AN186	1 -14 NF-3A	80 700	40 000	61 870	25 800	58 900	27 500

APPROVED 24 Mar 52 REVISED 1 FOR CHANGES SEE SHEET 1

PROCUREMENT SPECIFICATION MIL-B-6812

AIR FORCE-NAVY AERONAUTICAL STANDARDS

BOLT -

U AN86

SHEET 1 OF 1