



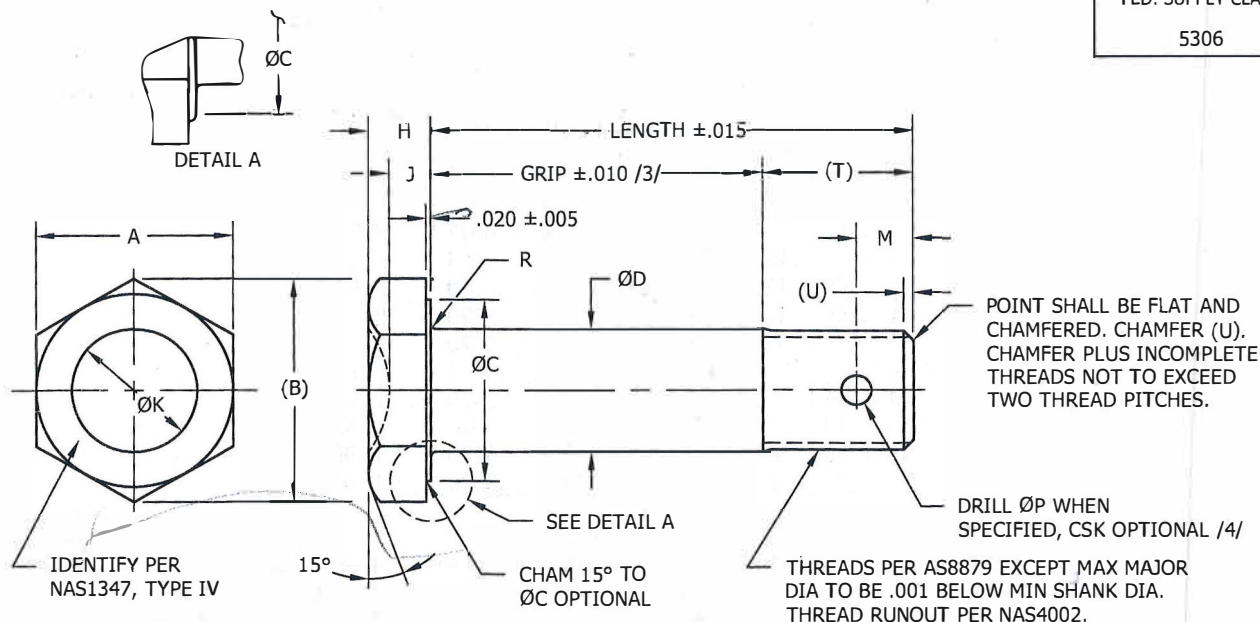
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FED. SUPPLY CLASS

5306



BASIC PART NUMBER	THREAD UNJF-3A	A	(B)	ØC MIN /7/	ØD	H +.015 -0.000	J +.015 -0.000	ØK ±.01	M ±.010	ØP /4/ +.010 -0.000	R RAD
NAS1103	.1900-32	.376 .367	.43	.335	.1895 .1885	.110	.073	.19	.117	.070	.020 .010
NAS1104	.2500-28	.439 .430	.51	.398	.2495 .2485	.125	.083	.25	.116	.076	.020 .010
NAS1105	.3125-24	.502 .492	.58	.460	.3120 .3110	.156	.104	.31	.119	.076	.020 .010
NAS1106	.3750-24	.564 .553	.65	.523	.3745 .3735	.188	.125	.38	.120	.106	.025 .015
NAS1107	.4375-20	.690 .679	.79	.648	.4370 .4360	.219	.146	.44	.124	.106	.025 .015
NAS1108	.5000-20	.752 .741	.87	.710	.4995 .4985	.250	.167	.50	.123	.106	.030 .020
NAS1109	.5625-18	.877 .865	1.01	.835	.5615 .5605	.281	.188	.56	.124	.141	.035 .020
NAS1110	.6250-18	.940 .928	1.09	.898	.6240 .6230	.312	.208	.62	.124	.141	.040 .025
NAS1112	.7500-16	1.064 1.052	1.23	1.023	.7490 .7480	.375	.250	.75	.128	.141	.045 .030
NAS1114	.8750-14	1.252 1.239	1.44	1.210	.8740 .8730	.438	.292	.88	.134	.141	.050 .035
NAS1116	1.0000-12	1.440 1.427	1.66	1.398	.9990 .9980	.500	.333	1.00	.139	.141	.060 .045
NAS1118	1.1250-12	1.627 1.614	1.88	1.585	1.1240 1.1225	.562	.375	1.12	.170	.141	.070 .055
NAS1120	1.2500-12	1.815 1.801	2.10	1.772	1.2490 1.2475	.625	.417	1.25	.170	.141	.075 .060

INACTIVE FOR DESIGN AFTER JULY 1, 1976. SEE NAS6203 THRU NAS6220. FOR DESCRIPTION OF STATUS NOTES, SEE NAS380.

(11) COMPLETELY REVISED

ISSUE DATE: SEPTEMBER 1956 REVISION DATE: APRIL 27, 2010



PROCUREMENT SPECIFICATION

CUSTODIAN

NATIONAL AEROSPACE STANDARDS COMMITTEE

REVISION

11

TITLE

BOLT, SHEAR, HEXAGON HEAD

CLASSIFICATION PART STANDARD

NAS1103 THRU 1120

BASIC PART NUMBER	(T)	(U)	INSPECTION DATA			
			X /1/	Y /1/	Z /2/	ULT TNSL LBS MIN /8/
NAS1103	.276	.016	.005	.0045	.0040	2,490
NAS1104	.316	.018	.006	.0045	.0030	4,520
NAS1105	.375	.021	.008	.0045	.0030	7,240
NAS1106	.391	.021	.009	.006	.0025	10,950
NAS1107	.453	.025	.010	.006	.0025	14,800
NAS1108	.453	.025	.011	.006	.0020	19,950
NAS1109	.511	.028	.012	.006	.0020	25,300
NAS1110	.543	.028	.015	.006	.0020	31,950
NAS1112	.572	.031	.018	.009	.0020	46,550
NAS1114	.652	.036	.020	.009	.0020	63,600
NAS1116	.770	.042	.022	.009	.0020	82,800
NAS1118	.864	.042	.025	.009	.0020	106,900
NAS1120	.958	.042	.028	.012	.0020	134,000

MATERIAL: ALLOY STEEL - 4140 (UNS G41400) PER MIL-S-5626, AMS6349 OR AMS6382, E4340 (UNS G43406) PER MIL-S-5000, AMS6415 OR AMS6484, OR 8740 (UNS G87400) PER MIL-S-6049, AMS6322, AMS6325 OR AMS6327 OR 8735 (UNS G87350) MIL-S-6098 OR 6150 (UNS G61500) PER MIL-S-8503.

HEAT TREATMENT: DEVELOP BASIC MATERIAL PROPERTIES AS FOLLOWS, WITH CONTROLS PER AMS-H-6875 OR AMS2759: 160-180 KSI Ft_u

FINISH: NO CODE - CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2.
"W" CODE - CADMIUM PLATE PER AMS-QQ-P-416, TYPE I, CLASS 3.

CODE: DASH NUMBER DESIGNATES GRIP AND LENGTH (SEE SHEET 4).
BASIC PART NUMBER = UNDRILLED SHANK ONLY.
ADD "D" AFTER DASH NUMBER FOR DRILLED BOLTS. /8/
ADD "W" AFTER DASH NUMBER FOR TYPE I PLATING.
ARRANGE CODE LETTERS ALPHABETICALLY, WHERE APPLICABLE.

EXAMPLES: NAS1104-10 = .2500-28 BOLT, .625 GRIP, UNDRILLED SHANK, TYPE II PLATING.
NAS1104-10D = .2500-28 BOLT, .625 GRIP, DRILLED SHANK, TYPE II PLATING.
NAS1104-10W = .2500-28 BOLT, .625 GRIP, UNDRILLED SHANK, TYPE I PLATING.
NAS1104-10DW = .2500-28 BOLT, .625 GRIP, DRILLED SHANK, TYPE I PLATING.

NOTES: /1/ CONCENTRICITY: "ØC" AND "ØD" WITHIN "X" VALUES FIM. "ØD" AND THREAD PITCH DIAMETER WITHIN "Y" VALUES FIM.
/2/ SHANK STRAIGHTNESS: WITHIN "Z" VALUES FIM PER INCH OF LENGTH.
/3/ GRIP LENGTH: FROM UNDERSIDE OF HEAD TO END OF FULL CYLINDRICAL PORTION OF SHANK.
/4/ COTTER PIN HOLE CENTERLINE: WITHIN .010 AND NORMAL WITHIN 2° OF BOLT CENTERLINE.

**INACTIVE FOR DESIGN AFTER JULY 1, 1976. SEE NAS6203 THRU NAS6220.
FOR DESCRIPTION OF STATUS NOTES, SEE NAS380.**

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NAS1103 THRU 1120
SHEET 2



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- (5) REMOVE ALL BURRS AND SHARP EDGES.
- (6) SURFACE ROUGHNESS: "ØD", UNDERSIDE OF HEAD, AND SIDES AND ROOT OF THREADS 32 MICROINCHES Ra, ALL OTHER SURFACES 125 MICROINCHES Ra PER ASME B46.1.
- /7/ "ØC" MAXIMUM NOT TO EXCEED "A"; MINIMUM DIA AT TOP OF HEAD NOT LESS THAN "ØC".
- /8/ TENSILE TEST: SAMPLING PLAN PER NAS498 TABLE XI. PERFORM MIL-STD-1312-8 TENSILE TEST IN ACCORDANCE WITH NASM1312-8. TENSILE TEST IS NOT REQUIRED FOR PARTS WITH A GRIP LESS THAN 2 X THE NOMINAL DIAMETER. IF REQUIRED, TENSILE TESTING OF BOLTS REQUIRING CROSS-DRILLED THREADS SHALL BE PERFORMED PRIOR TO DRILLING AND THE APPLICATION OF PLATING-AND/OR COATINGS. WHEN BOLTS HAVE BEEN DRILLED, STRENGTH MAY BE VERIFIED BY SHEAR TESTING, IN LIEU OF TENSILE TESTING, IN ACCORDANCE WITH NASM1312. USERS SHOULD BE AWARE THAT FASTENERS WITH CROSS DRILLED THREADS MAY EXHIBIT A REDUCTION IN TENSILE STRENGTH.
- (9) DIMENSIONS IN INCHES AND APPLY AFTER FINISH UNLESS OTHERWISE SPECIFIED.
- (10) TOLERANCES UNLESS OTHERWISE SPECIFIED: ANGLES $\pm 5^\circ$
- (11) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.
- (12) REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BID.
- (13) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.
- (14) DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
- /15/ DASH NUMBER INDICATES GRIP IN .0625 INCREMENTS. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBERS ONLY.

PROCUREMENT SPECIFICATION: NAS498 TENSION LOAD INSPECTION VALUES AS TABULATED ABOVE.

**INACTIVE FOR DESIGN AFTER JULY 1, 1976. SEE NAS6203 THRU NAS6220.
FOR DESCRIPTION OF STATUS NOTES, SEE NAS380.**

(11) COMPLETELY REVISED

REVISION

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NAS1103 THRU 1120
SHEET 3

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1000 WILSON BLVD.
ARLINGTON, VA 22209

THIS DRAWING SUPERSEDES ALL ANTECEDENT STANDARD DRAWINGS FOR THE SAME
PRODUCT AND SHALL BECOME EFFECTIVE NO LATER THAN SIX MONTHS FROM THE LAST
REVISION DATE.

FORM 09-01

DASH NUMBER /15/	GRIP	LENGTH												
		NAS1103	NAS1104	NAS1105	NAS1106	NAS1107	NAS1108	NAS1109	NAS1110	NAS1112	NAS1114	NAS1116	NAS1118	NAS1120
1	.062	.338	.378	.437	.453	.515	.515	.573	.605	.634	.714	.832	.926	1.020
2	.125	.401	.441	.500	.516	.578	.578	.636	.668	.697	.777	.895	.989	1.083
3	.188	.464	.504	.563	.579	.641	.641	.699	.731	.760	.840	.958	1.052	1.146
4	.250	.526	.566	.625	.641	.703	.703	.761	.793	.822	.902	1.020	1.114	1.208
5	.312	.588	.628	.687	.703	.765	.765	.823	.855	.884	.964	1.082	1.176	1.270
6	.375	.651	.691	.750	.766	.828	.828	.886	.918	.947	1.027	1.145	1.239	1.333
7	.438	.714	.754	.813	.829	.891	.891	.949	.981	1.010	1.090	1.208	1.302	1.396
8	.500	.776	.816	.875	.891	.953	.953	1.011	1.043	1.072	1.152	1.270	1.364	1.458
9	.562	.838	.878	.937	.953	1.015	1.015	1.073	1.105	1.134	1.214	1.332	1.426	1.520
10	.625	.901	.941	1.000	1.016	1.078	1.078	1.136	1.168	1.197	1.277	1.395	1.489	1.583
11	.688	.964	1.004	1.063	1.079	1.141	1.141	1.199	1.231	1.260	1.340	1.458	1.552	1.646
12	.750	1.026	1.066	1.125	1.141	1.203	1.203	1.261	1.291	1.322	1.402	1.520	1.614	1.708
13	.812	1.088	1.128	1.187	1.203	1.265	1.265	1.323	1.355	1.384	1.464	1.582	1.676	1.770
14	.875	1.151	1.191	1.250	1.266	1.328	1.328	1.386	1.418	1.447	1.527	1.645	1.739	1.833
15	.938	1.214	1.254	1.313	1.329	1.391	1.391	1.449	1.481	1.510	1.590	1.708	1.802	1.896
16	1.000	1.276	1.316	1.375	1.391	1.453	1.453	1.511	1.543	1.572	1.652	1.770	1.864	1.958
17	1.062	1.338	1.378	1.437	1.453	1.515	1.515	1.573	1.605	1.634	1.714	1.832	1.926	2.020
18	1.125	1.401	1.441	1.500	1.516	1.578	1.578	1.636	1.668	1.697	1.777	1.895	1.989	2.083
19	1.188	1.464	1.504	1.563	1.579	1.641	1.641	1.699	1.731	1.760	1.840	1.958	2.052	2.146
20	1.250	1.526	1.566	1.625	1.641	1.703	1.703	1.761	1.793	1.822	1.902	2.020	2.114	2.208
21	1.312	1.588	1.628	1.687	1.703	1.765	1.765	1.823	1.855	1.884	1.964	2.082	2.176	2.270
22	1.375	1.651	1.691	1.750	1.766	1.828	1.828	1.886	1.918	1.947	2.027	2.145	2.239	2.333
23	1.438	1.714	1.754	1.813	1.829	1.891	1.891	1.949	1.981	2.010	2.090	2.208	2.302	2.396
24	1.500	1.776	1.816	1.875	1.891	1.953	1.953	2.011	2.043	2.072	2.152	2.270	2.364	2.458
25	1.562	1.838	1.878	1.937	1.953	2.015	2.015	2.073	2.105	2.134	2.214	2.332	2.426	2.520
26	1.625	1.901	1.941	2.000	2.016	2.078	2.078	2.136	2.168	2.197	2.277	2.395	2.489	2.583
27	1.688	1.964	2.004	2.063	2.079	2.141	2.141	2.199	2.231	2.260	2.340	2.458	2.552	2.646
28	1.750	2.026	2.066	2.125	2.141	2.203	2.203	2.261	2.291	2.322	2.402	2.520	2.614	2.708
29	1.812	2.088	2.128	2.187	2.203	2.265	2.265	2.323	2.355	2.384	2.464	2.582	2.676	2.770
30	1.875	2.151	2.191	2.250	2.266	2.328	2.328	2.386	2.418	2.447	2.527	2.645	2.739	2.833
31	1.938	2.214	2.254	2.313	2.329	2.391	2.391	2.449	2.481	2.510	2.590	2.708	2.802	2.896
32	2.000	2.276	2.316	2.375	2.391	2.453	2.453	2.511	2.543	2.572	2.652	2.770	2.864	2.958
34	2.125	2.401	2.441	2.500	2.516	2.578	2.578	2.636	2.668	2.697	2.777	2.895	2.989	3.083
36	2.250	2.526	2.566	2.625	2.641	2.703	2.703	2.761	2.793	2.822	2.902	3.020	3.114	3.208
38	2.375	2.651	2.691	2.750	2.766	2.828	2.828	2.886	2.918	2.947	3.027	3.145	3.239	3.333
40	2.500	2.776	2.816	2.875	2.891	2.953	2.953	3.011	3.043	3.072	3.152	3.270	3.364	3.458
42	2.625	2.901	2.941	3.000	3.016	3.078	3.078	3.136	3.168	3.197	3.277	3.395	3.489	3.583
44	2.750	3.026	3.066	3.125	3.141	3.203	3.203	3.261	3.291	3.322	3.402	3.520	3.614	3.708
46	2.875	3.151	3.191	3.250	3.266	3.328	3.328	3.386	3.418	3.447	3.527	3.645	3.739	3.833
48	3.000	3.276	3.316	3.375	3.391	3.453	3.453	3.511	3.543	3.572	3.652	3.770	3.864	3.958
50	3.125	3.401	3.441	3.500	3.516	3.578	3.578	3.636	3.668	3.697	3.777	3.895	3.989	4.083
52	3.250	3.526	3.566	3.625	3.641	3.703	3.703	3.761	3.793	3.822	3.902	4.020	4.114	4.208
54	3.375	3.651	3.691	3.750	3.766	3.828	3.828	3.886	3.918	3.947	4.027	4.145	4.239	4.333
56	3.500	3.776	3.816	3.875	3.891	3.953	3.953	4.011	4.043	4.072	4.152	4.270	4.364	4.458
58	3.625	3.901	3.941	4.000	4.016	4.078	4.078	4.136	4.168	4.197	4.277	4.395	4.489	4.583
60	3.750	4.026	4.066	4.125	4.141	4.203	4.203	4.261	4.291	4.322	4.402	4.520	4.614	4.708
62	3.875	4.151	4.191	4.250	4.266	4.328	4.328	4.386	4.418	4.447	4.527	4.645	4.739	4.833
64	4.000	4.276	4.316	4.375	4.391	4.453	4.453	4.511	4.543	4.572	4.652	4.770	4.864	4.958
66	4.125	4.401	4.441	4.500	4.516	4.578	4.578	4.636	4.668	4.697	4.777	4.895	4.989	5.083
68	4.250	4.526	4.566	4.625	4.641	4.703	4.703	4.761	4.793	4.822	4.902	5.020	5.114	5.208
70	4.375	4.651	4.691	4.750	4.766	4.828	4.828	4.886	4.918	4.947	5.027	5.145	5.239	5.333
72	4.500	4.776	4.816	4.875	4.891	4.953	4.953	5.011	5.043	5.072	5.152	5.270	5.364	5.458
74	4.625	4.901	4.941	5.000	5.016	5.078	5.078	5.136	5.168	5.197	5.277	5.395	5.489	5.583
76	4.750	5.026	5.066	5.125	5.141	5.203	5.203	5.261	5.291	5.322	5.402	5.520	5.614	5.708
78	4.875	5.151	5.191	5.250	5.266	5.328	5.328	5.386	5.418	5.447	5.527	5.645	5.739	5.833
80	5.000	5.276	5.316	5.375	5.391	5.453	5.453	5.511	5.543	5.572	5.652	5.770	5.864	5.958
82	5.125	5.401	5.441	5.500	5.516	5.578	5.578	5.636	5.668	5.697	5.777	5.895	5.989	6.083
84	5.250	5.526	5.566	5.625	5.641	5.703	5.703	5.761	5.793	5.822	5.902	6.020	6.114	6.208
86	5.375	5.651	5.691	5.750	5.766	5.828	5.828	5.886	5.918	5.947	6.027	6.145	6.239	6.333
88	5.500	5.776	5.816	5.875	5.891	5.953	5.953	6.011	6.043	6.072	6.152	6.270	6.364	6.458
90	5.625	5.901	5.941	6.000	6.016	6.078	6.078	6.136	6.168	6.197	6.277	6.395	6.489	6.583
92	5.750	6.026	6.066	6.125	6.141	6.203	6.203	6.261	6.291	6.322	6.402	6.520	6.614	6.708
94	5.875	6.151	6.191	6.250	6.266	6.328	6.328	6.386	6.418	6.447	6.527	6.645	6.739	6.833
96	6.000	6.276	6.316	6.375	6.391	6.453	6.453	6.511	6.543	6.572	6.652	6.770	6.864	6.958

**INACTIVE FOR DESIGN AFTER JULY 1, 1976. SEE NAS6203 THRU NAS6220.
FOR DESCRIPTION OF STATUS NOTES, SEE NAS380.**

11 COMPLETELY REVISED

REVISION

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NAS1103 THRU 112
SHEET 4

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