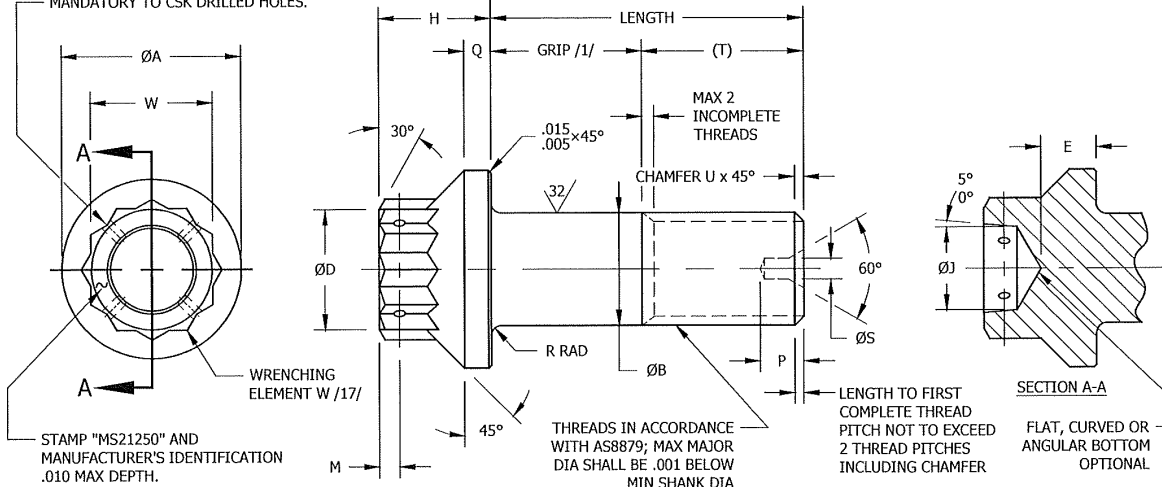


FED. SUPPLY CLASS

5306

WHEN REQUIRED, DRILL $\varnothing N$,
4 HOLES EQUALLY SPACED AS SHOWN,
MANDATORY TO CSK DRILLED HOLES.



MATERIAL:

ALLOY STEEL - 4140 (UNS G41400) PER MIL-S-5626 AMS6382, E4340 (UNS G43400) PER MIL-S-5000
AMS-S-5000 OR AMS6484, 4340 (UNS G43406) PER AMS6415 OR AMS6484, OR 8740 (UNS G87400) PER MIL-S-
6049 AMS6322 AMS6325 OR AMS6327, OR 6150 (UNS G61500) PER AMS6448.

FINISH:

CADMIUM PLATE IN ACCORDANCE WITH AMS-QQ-P-416, TYPE II, CLASS 2.

HARDNESS:

39-43HRC.

CODE:

ADD LETTER "H" BEFORE DASH NO. TO DESIGNATE DRILLED HEAD.
FIRST TWO DASH NUMBERS DESIGNATE DIAMETER IN SIXTEENTHS.
LAST THREE DASH NUMBERS DESIGNATE GRIP LENGTH IN SIXTEENTHS.
SEE TABLE II FOR PREFERRED GRIP DASH NUMBERS.
UNASSIGNED INTERMEDIATE OR LONGER GRIP LENGTHS NOT INCLUDED IN TABLE II MAY BE SPECIFIED BY
THE USE OF WHOLE DASH NUMBERS ONLY.

② COMPLETELY REVISED

THE INITIAL RELEASE OF THIS DOCUMENT SUPERSEDES MS21250, REVISION L. PART NUMBERS REMAIN MS21250.

THIRD ANGLE PROJECTION	CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE	REVISION 2
PROCUREMENT SPECIFICATION NASM8831	TITLE BOLT, TENSION, STEEL, EXTERNAL WRENCHING, FLANGED, 12-POINT, 180 KSI Ft_u, 450 °F	CLASSIFICATION PART STANDARD NASM21250 SHEET 1 OF 4

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TABLE I – DIMENSIONS AND STRENGTH VALUES

DIA. DASH NO.	THREAD AS8879	ØA	ØB	NOM SIZE W /17/	ØD	E MIN	H	ØJ +.010 -.030	M	ØN ±.005	P MAX /16/	Q	R RAD	ØS MAX /16/	(T) MIN /15/	U ±.016	DRILL SIZE REF	CONCENTRICITY /12/ /13/ /14/			DOUBLE SHEAR LBF MIN	ULTIMATE TENSILE LBF MIN
																		X	Y	Z		
02	.1640-32 UNJC-3A	.300 .290	.1635 .1625	.2188	.219 .204	.076	.250	.100	.062	.037	—	.050	.041 .031	—	.385	.031	—	.004	.003	.003	4,600	2,950
03	.1900-32 UNJF-3A	.350 .340	.1895 .1885	.2500	.250 .235	.092	.265	.125			—	.055		—	.420		—				6,100	3,910
04	.2500-28 UNJF-3A	.438 .428	.2495 .2485	.3125	.312 .297	.135	.300	.180			—	.069		—	.492		—				10,600	6,980
05	.3125-24 UNJF-3A	.531 .521	.3120 .3110	.3750	.375 .360	.162	.348	.215	.070	.055	—	.082	.057 .047	—	.579	.047	—	.006	.005	.0045	16,600	11,100
06	.3750-24 UNJF-3A	.649 .639	.3745 .3735	.4375	.437 .422	.197	.388	.260			—	.091		—	.625		—				23,900	17,100
07	.4375-20 UNJF-3A	.750 .740	.4370 .4360	.5000	.500 .485	.228	.435	.320			—	.099		—	.721		—				32,500	23,200
08	.5000-20 UNJF-3A	.828 .818	.4995 .4985	.5625	.562 .547	.254	.504	.380	.094	.123	—	.123	.057 .047	—	.768	.062	—	.010	.008	.006	42,400	30,900
09	.5625-18 UNJF-3A	.938 .928	.5615 .5605	.6250	.625 .610	.287	.557	.440			—	.133		—	.852		—				53,700	39,200
10	.6250-18 UNJF-3A	1.050 1.040	.6240 .6230	.6875	.687 .672	.327	.618	.500			—	.150		—	.899		—				66,300	49,000
12	.7500-16 UNJF-3A	1.230 1.220	.7490 .7480	.8125	.812 .797	.380	.711	.570	.055	.200	.178	.073 .063	.187 .250	1.036	.078	.062	2	.015	.012	.009	95,400	71,100
14	.8750-14 UNJF-3A	1.438 1.428	.8740 .8730	.9375	.937 .922	.438	.808	.650			.198			1.244			3	.018	.014		129,900	97,100
16	1.0000-12 UNJF-3A	1.625 1.615	.9990 .9980	1.0625	1.062 1.047	.493	.923	.740			.222			1.479			3	.020	.016		169,600	126,000
18	1.1250-12 UNJF-3A	1.875 1.865	1.1240 1.1225	1.2500	1.250 1.235	.556	1.051	.840	.125	.258	.269	.089 .077	.312	1.650	.094	.094	4	.022	.019	.012	214,700	162,000
20	1.2500-12 UNJF-3A	2.125 2.115	1.2490 1.2475	1.3125	1.312 1.297	.636	1.155	.950						1.760			4	.025	.021		265,100	202,000
22	1.3750-12 UNJF-3A	2.313 2.303	1.3740 1.3725	1.4375	1.437 1.422	.698	1.266	1.070						1.885			4	.028	.023		320,700	247,000
24	1.5000-12 UNJF-3A	2.500 2.490	1.4990 1.4975	1.6250	1.625 1.610	.750	1.434	1.200	.188	.320	.274	.335	.089 .077	.312	2.010	.094	.030	.025	.012	.009	381,700	296,000

EXAMPLE OF PART NUMBER:

PREFERRED:

MS21250-04008 = BOLT, UNDRILLED HEAD, .2500-28, .500 GRIP LENGTH.

MS21250H04008 = BOLT, DRILLED HEAD, .2500-28, .500 GRIP LENGTH.

UNASSIGNED:

MS21250-04009 = BOLT, UNDRILLED HEAD, .2500-28, .562 GRIP LENGTH.

MS21250H04009 = BOLT, DRILLED HEAD, .2500-28, .562 GRIP LENGTH.

└─ THREADS PER INCH
└─ DIAMETER OF THREAD

NOTES:

- /1/ GRIP LENGTH OF BOLT SHALL BE MEASURED FROM UNDERSIDE OF HEAD TO THE END OF FULL CYLINDRICAL PORTION OF THE SHANK.
- (2) DIMENSION IN INCHES AND APPLY AFTER FINISH UNLESS OTHERWISE SPECIFIED.
- (3) TOLERANCES UNLESS OTHERWISE SPECIFIED: DECIMALS ± .010, ANGLES ± 2°.
- (4) TENSILE STRENGTH TO BE 180,000 TO 200,000 PSI.

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REVISION

2

NASM21250

SHEET 2

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- (5) DIAMETER DASH NO. AT TOP OF TABLE, SHEET 4, PLUS GRIP DASH NO. FIRST COLUMN ON LEFT OF TABLE CONSTITUTE A COMPLETE DASH NO. IDENTIFYING SPECIFIED LENGTHS OF A GIVEN SIZE OF BOLT. GRIP EQUALS LAST THREE DASH NUMBERS TIMES .0625.
- (6) REMOVE ALL BURRS AND SHARP EDGES.
- (7) DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
- (8) SURFACE ROUGHNESS: BEARING SURFACE OF HEAD AND SHANK: 32 MICROINCHES Ra; ALL OTHER SURFACES: 125 MICROINCHES Ra PER ASME B46.1.
- (9) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.
- (10) UNLESS OTHERWISE SPECIFIED HEREIN, REFERENCED DOCUMENTS SHALL BE THE ISSUE IN EFFECT ON DATE OF MANUFACTURE. HOWEVER, EXISTING MATERIAL INVENTORY CERTIFIED TO A PREVIOUS REVISION OF THE APPLICABLE MATERIAL SPECIFICATION(S) IS ACCEPTABLE FOR USE UNTIL DEPLETION.
- (11) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.
- /12/ DIMENSIONS "ØA", "ØB" AND "ØJ" SHALL BE CONCENTRIC TO EACH OTHER WITHIN VALUES SPECIFIED FOR X FIM.
- /13/ DIMENSIONS "W" AND "ØJ" SHALL BE CONCENTRIC TO EACH OTHER WITHIN VALUES SPECIFIED FOR Y FIM.
- /14/ DIMENSIONS "ØB" AND THREAD PITCH DIAMETER SHALL BE CONCENTRIC TO EACH OTHER WITHIN VALUES SPECIFIED FOR Z FIM.
- /15/ REFERENCE DIMENSIONS ARE FOR DESIGN PURPOSES ONLY AND ARE NOT AN INSPECTION OR MANUFACTURING REQUIREMENT.
- /16/ ON BOLTS 3/4 INCH AND LARGER, CENTER DRILLING OF SHANK IS OPTIONAL FOR MANUFACTURER.
- /17/ WRENCHING ELEMENT SHALL BE IN ACCORDANCE WITH AS870.

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2
NASM21250
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1000 WILSON BLVD.
ARLINGTON, VA 22209

THIS DRAWING SUPERSEDES ALL ANTECEDENT STANDARD DRAWINGS FOR THE SAME
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REVISION DATE.

FORM 09-01



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TABLE II – DIAMETER DASH NUMBERS

GRIP DASH NO.	GRIP ±.010 /1/	02	03	04	05	06	07	08	09	10	12	14	16	18	20	22	24
LENGTH																	
004	.250	.655	.690	.762	.849	.895	.991	1.038									
006	.375	.780	.815	.887	.974	1.020	1.116	1.163	1.247	1.294	1.431						
008	.500	.905	.940	1.012	1.099	1.145	1.241	1.288	1.372	1.419	1.556	1.764	1.999	2.170			
010	.625	1.030	1.065	1.137	1.224	1.270	1.366	1.413	1.497	1.544	1.681	1.889	2.124	2.295	2.405	2.530	2.655
012	.750	1.155	1.190	1.262	1.349	1.395	1.491	1.538	1.622	1.669	1.806	2.014	2.249	2.420	2.530	2.655	2.780
014	.875	1.280	1.315	1.387	1.474	1.520	1.616	1.663	1.747	1.794	1.931	2.139	2.374	2.545	2.655	2.780	2.905
016	1.000	1.405	1.440	1.512	1.599	1.645	1.741	1.788	1.872	1.919	2.056	2.264	2.499	2.670	2.780	2.905	3.030
018	1.125	1.530	1.565	1.637	1.724	1.770	1.866	1.913	1.997	2.044	2.181	2.389	2.624	2.795	2.905	3.030	3.155
020	1.250	1.655	1.690	1.762	1.849	1.895	1.991	2.038	2.122	2.169	2.306	2.514	2.749	2.920	3.030	3.155	3.280
022	1.375	1.780	1.815	1.887	1.974	2.020	2.116	2.163	2.247	2.294	2.431	2.639	2.874	3.045	3.155	3.280	3.405
024	1.500	1.905	1.940	2.012	2.099	2.145	2.241	2.288	2.372	2.419	2.556	2.764	2.999	3.170	3.280	3.405	3.530
026	1.625	2.030	2.065	2.137	2.224	2.270	2.366	2.413	2.497	2.544	2.681	2.889	3.124	3.295	3.405	3.530	3.655
028	1.750	2.155	2.190	2.262	2.349	2.395	2.491	2.538	2.622	2.669	2.806	3.014	3.249	3.420	3.530	3.655	3.780
030	1.875	2.280	2.315	2.387	2.474	2.520	2.616	2.663	2.747	2.794	2.931	3.139	3.374	3.545	3.655	3.780	3.905
032	2.000	2.405	2.440	2.512	2.599	2.645	2.741	2.788	2.872	2.919	3.056	3.264	3.499	3.670	3.780	3.905	4.030
034	2.125	2.530	2.565	2.637	2.724	2.770	2.866	2.913	2.997	3.044	3.181	3.389	3.624	3.795	3.905	4.030	4.155
035	2.187					2.833											
036	2.250	2.655	2.690	2.762	2.849	2.895	2.991	3.038	3.122	3.169	3.306	3.514	3.749	3.920	4.030	4.155	4.280
038	2.375	2.780	2.815	2.887	2.974	3.020	3.116	3.163	3.247	3.294	3.431	3.639	3.874	4.045	4.155	4.280	4.405
039	2.437							3.225									
040	2.500	2.905	2.940	3.012	3.099	3.145	3.241	3.288	3.372	3.419	3.556	3.764	3.999	4.170	4.280	4.405	4.530
042	2.625	3.030	3.065	3.137	3.224	3.270	3.366	3.413	3.497	3.544	3.681	3.889	4.124	4.295	4.405	4.530	4.655
044	2.750	3.155	3.190	3.262	3.349	3.395	3.491	3.538	3.622	3.669	3.806	4.014	4.249	4.420	4.530	4.655	4.780
046	2.875	3.280	3.315	3.387	3.474	3.520	3.616	3.663	3.747	3.794	3.931	4.139	4.374	4.545	4.655	4.780	4.905
048	3.000	3.405	3.440	3.512	3.599	3.645	3.741	3.788	3.872	3.919	4.056	4.264	4.499	4.670	4.780	4.905	5.030
050	3.125	3.530	3.565	3.637	3.724	3.770	3.866	3.913	3.997	4.044	4.181	4.389	4.624	4.795	4.905	5.030	5.155
052	3.250	3.655	3.690	3.762	3.849	3.895	3.991	4.038	4.122	4.169	4.306	4.514	4.749	4.920	5.030	5.155	5.280
054	3.375	3.780	3.815	3.887	3.974	4.020	4.116	4.163	4.247	4.294	4.431	4.639	4.874	5.045	5.155	5.280	5.405
056	3.500	3.905	3.940	4.012	4.099	4.145	4.241	4.288	4.372	4.419	4.556	4.764	4.999	5.170	5.280	5.405	5.530
058	3.625	4.030	4.065	4.137	4.224	4.270	4.366	4.413	4.497	4.544	4.681	4.889	5.124	5.295	5.405	5.530	5.655
060	3.750	4.155	4.190	4.262	4.349	4.395	4.491	4.538	4.622	4.669	4.806	5.014	5.249	5.420	5.530	5.655	5.780
062	3.875	4.280	4.315	4.387	4.474	4.520	4.616	4.663	4.747	4.794	4.931	5.139	5.374	5.545	5.655	5.780	5.905
064	4.000	4.405	4.440	4.512	4.599	4.645	4.741	4.788	4.872	4.919	5.056	5.264	5.499	5.670	5.780	5.905	6.030
066	4.125	4.530	4.565	4.637	4.724	4.770	4.866	4.913	4.997	5.044	5.181	5.389	5.624	5.795	5.905	6.030	6.155
068	4.250	4.655	4.690	4.762	4.849	4.895	4.991	5.038	5.122	5.169	5.306	5.514	5.749	5.920	6.030	6.155	6.280
070	4.375	4.780	4.815	4.887	4.974	5.020	5.116	5.163	5.247	5.294	5.431	5.639	5.874	6.045	6.155	6.280	6.405
072	4.500	4.905	4.940	5.012	5.099	5.145	5.241	5.288	5.372	5.419	5.556	5.764	5.999	6.170	6.280	6.405	6.530
074	4.625	5.030	5.065	5.137	5.224	5.270	5.366	5.413	5.497	5.544	5.681	5.889	6.124	6.295	6.405	6.530	6.655
076	4.750	5.155	5.190	5.262	5.349	5.395	5.491	5.538	5.622	5.669	5.806	6.014	6.249	6.420	6.530	6.655	6.780
078	4.875	5.280	5.315	5.387	5.474	5.520	5.616	5.663	5.747	5.794	5.931	6.139	6.374	6.545	6.655	6.780	6.905
080	5.000	5.405	5.440	5.512	5.599	5.645	5.741	5.788	5.872	5.919	6.056	6.264	6.499	6.670	6.780	6.905	7.030
082	5.125	5.530	5.565	5.637	5.724	5.770	5.866	5.913	5.997	6.044	6.181	6.389	6.624	6.795	6.905	7.030	7.155
084	5.250	5.655	5.690	5.762	5.849	5.895	5.991	6.038	6.122	6.169	6.306	6.514	6.749	6.920	7.030	7.155	7.280
086	5.375	5.780	5.815	5.887	5.974	6.020	6.116	6.163	6.247	6.294	6.431	6.639	6.874	7.045	7.155	7.280	7.405
088	5.500	5.905	5.940	6.012	6.099	6.145	6.241	6.288	6.372	6.419	6.556	6.764	6.999	7.170	7.280	7.405	7.530
090	5.625	6.030	6.065	6.137	6.224	6.270	6.366	6.413	6.497	6.544	6.681	6.889	7.124	7.295	7.405	7.530	7.655
092	5.750	6.155	6.190	6.262	6.349	6.395	6.491	6.538	6.622	6.669	6.806	7.014	7.249	7.420	7.530	7.655	7.780
094	5.875	6.280	6.315	6.387	6.474	6.520	6.616	6.663	6.747	6.794	6.931	7.139	7.374	7.545	7.655	7.780	7.905
096	6.000	6.405	6.440	6.512	6.599	6.645	6.741	6.788	6.872	6.919	7.056	7.264	7.499	7.670	7.780	7.905	8.030
098	6.125								6.997	7.044	7.181	7.389	7.624	7.795	7.905	8.030	8.155
100	6.250								7.122	7.169	7.306	7.514	7.749	7.920	8.030	8.155	8.280
102	6.375								7.247	7.294	7.431	7.639	7.874	8.045	8.155	8.280	8.405
104	6.500								7.372	7.419	7.556	7.764	7.999	8.170	8.280	8.405	8.530
106	6.625								7.497	7.544	7.681	7.889	8.124	8.295	8.405	8.530	8.655
108	6.750								7.622	7.669	7.806	8.014	8.249	8.420	8.530	8.655	8.780
110	6.875								7.747	7.794	7.931	8.139	8.374	8.545	8.655	8.780	8.905
112	7.000								7.872	7.919	8.056	8.264	8.499	8.670	8.780	8.905	9.030
114	7.125													8.795	8.905	9.030	9.155
116	7.250													8.920	9.030	9.155	9.280
118	7.375													9.045	9.155	9.280	9.405
120	7.500													9.170	9.280	9.405	9.530
122	7.625													9.295	9.405	9.530	9.655
124	7.750													9.420	9.530	9.655	9.780
126	7.875													9.545	9.655	9.780	9.905
128	8.000													9.670	9.780	9.905	10.030

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2

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SHEET 4

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