

FED. SUPPLY CLASS

5306

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
J WILSON BLVD.
FALLS CHURCH, VA 22049

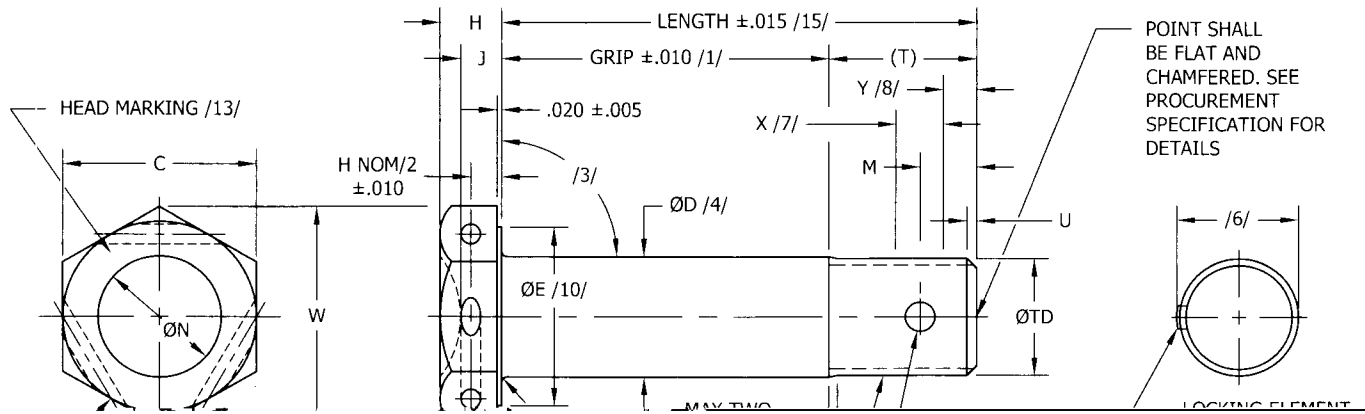


TABLE I - DIMENSIONS (CONTINUED)

BASIC NUMBER	ØN ±.01	ØP ±.005 /9/	R RAD		(T) /2/	ØTD		U MAX	W MIN	X /7/	Y /8/	INSPECTION DATA		
			MAX	MIN		MAX	MIN					AA /4/	BB /5/	CC /4/
NAS6203	.19	.075	.020	.010	.323	.1840	.1810	.039	.410	.156	.094	.0045	.0040	.005
NAS6204	.25	.081	.020	.010	.370	.2440	.2410	.045	.480	.179	.107	.0045	.0030	.006
NAS6205	.31	.081	.020	.010	.438	.3060	.3020	.052	.552	.208	.125	.0045	.0030	.008
NAS6206	.38	.111	.025	.015	.454	.3680	.3640	.052	.623	.208	.125	.0045	.0025	.009
NAS6207	.44	.111	.025	.015	.528	.4310	.4260	.062	.764	.250	.150	.0060	.0025	.010
NAS6208	.50	.111	.030	.020	.528	.4930	.4880	.062	.836	.250	.150	.0060	.0020	.011
NAS6209	.56	.146	.035	.020	.594	.5550	.5500	.068	.978	.278	.167	.0060	.0020	.012
NAS6210	.62	.146	.040	.025	.626	.6180	.6120	.068	1.050	.278	.167	.0060	.0020	.015
NAS6212	.75	.146	.045	.030	.666	.7430	.7370	.078	1.191	.312	.188	.0060	.0020	.018
NAS6214	.88	.146	.050	.035	.759	.8680	.8610	.089	1.405	.357	.214	.0090	.0020	.020
NAS6216	1.00	.146	.060	.045	.895	.9930	.9860	.104	1.619	.417	.250	.0090	.0020	.022
NAS6218	1.12	.146	.070	.055	.989	1.1180	1.1110	.104	1.832	.417	.250	.0090	.0020	.025
NAS6220	1.25	.146	.075	.060	1.083	1.2430	1.2360	.104	2.046	.417	.250	.0090	.0020	.028

MATERIAL: ALLOY STEEL – 4140 (UNS G41400) PER AMS6349 OR AMS6382, 4340 (UNS G43406) PER AMS6415 OR AMS6484 OR 8740 (UNS G87400) PER AMS6322 OR MIL-S-6049, (10) AMS6325 OR AMS6327.
LOCKING ELEMENT – NYLON OR EQUIVALENT PER MIL-DTL-18240 AND QPL-18240.

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

FINISH: CADMIUM PLATED BOLTS - CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2. EMBRITTLEMENT REQUIREMENT PER NAS4002.

CHROMIUM PLATED BOLTS – CHROMIUM PLATE PER AMS-QQ-C-320, CLASS 2 ON SHANK ONLY. ALL OTHER SURFACES CADMIUM PLATED. NO CHROMIUM WITHIN .020 OF LINE OF TANGENCY OF HEAD TO SHANK FILLET. CHROMIUM IN THREAD RUNOUT PERMITTED. CHROMIUM PLATED BOLTS NOT AVAILABLE WITH GRIP DASH NUMBER 1 OR NUMBER 2.

CODE: NO FINISH CODE AFTER BASIC NUMBER FOR CADMIUM PLATED BOLTS.
ADD "C" AFTER BASIC NUMBER FOR CHROMIUM PLATED BOLTS.
ADD "L" AFTER BASIC NUMBER FOR SELF-LOCKING BOLT WITH LOCKING ELEMENT TYPE OPTIONAL;
SEE PROCUREMENT SPEC BELOW. DO NOT USE "L" WITH "D" OR "P" CODE.
ADD "P" AFTER BASIC NUMBER FOR SELF-LOCKING BOLT WITH PATCH TYPE LOCKING ELEMENT ONLY;
SEE PROCUREMENT SPEC BELOW. DO NOT USE "P" WITH "D" OR "L" CODE.
GRIP DASH NUMBER INDICATES GRIP IN .0625 INCREMENTS (CONVERTED TO THREE DECIMAL PLACES PER ANSI Y14.5-1982). SEE TABLE II FOR TABULATIONS OF GRIP AND LENGTH DIMENSIONS. /15/
(10) ADD "D" AFTER GRIP DASH NUMBER FOR DRILLED THREAD BOLTS. DO NOT USE WITH "L" OR "P" CODE. /12/
ADD "H" AFTER GRIP DASH NUMBER FOR BOLT WITH DRILLED HEAD.
CODE LETTER "X" AND "Y" FOLLOWING THE GRIP DASH NUMBER INDICATES REPLACEMENT OVERSIZE REPAIR BOLT. (SEE LAST SHEET)
IF MORE THAN ONE CODE LETTER IS USED IN SEQUENCE, ARRANGE THE LETTERS ALPHABETICALLY.

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NAS6203 THRU NAS6220
SHEET 2

EXAMPLE OF PART NUMBER: (SEE LAST SHEET FOR OVERSIZE BOLTS.)

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NAS6204-10	=	BOLT, .2500-28 THREAD, .625 GRIP, UNDRILLED, NONLOCKING, CADMIUM PLATED.
NAS6204-10D	=	BOLT, .2500-28 THREAD, .625 GRIP, DRILLED THREAD, NONLOCKING, CADMIUM PLATED.
NAS6204-10DH	=	BOLT, .2500-28 THREAD, .625 GRIP, DRILLED THREAD, DRILLED HEAD, NONLOCKING, CADMIUM PLATED.
NAS6204C10H	=	BOLT, .2500-28 THREAD, .625 GRIP, DRILLED HEAD, UNDRILLED THREAD, NONLOCKING, CHROMIUM PLATED.
NAS6204L10	=	BOLT, .2500-28 THREAD, .625 GRIP, UNDRILLED, SELF-LOCKING (LOCKING TYPE OPTIONAL), CADMIUM PLATED.
NAS6204P10	=	BOLT, .2500-28 THREAD, .625 GRIP, UNDRILLED, SELF-LOCKING (PATCH TYPE), CADMIUM PLATED.
NAS6204C10	=	BOLT, .2500-28 THREAD, .625 GRIP, UNDRILLED, NONLOCKING, CHROMIUM PLATED.

NOTES:

- /1/ GRIP LENGTH: FROM UNDER SIDE OF HEAD TO END OF FULL CYLINDRICAL PORTION OF SHANK.
- /2/ REFERENCE DIMENSIONS ARE FOR DESIGN PURPOSES ONLY AND ARE NOT AN INSPECTION REQUIREMENT.
- /3/ BEARING SURFACE SQUARENESS: WITHIN .003 FIM OF "ØD".
- /4/ CONCENTRICITY: "ØD" AND MAJOR THREAD DIA WITHIN "AA" VALUES FIM. "ØD" AND "ØE" WITHIN "CC" VALUES FIM.
- /5/ SHANK STRAIGHTNESS: WITHIN "BB" VALUES FIM PER INCH OF LENGTH.
- /6/ PROTRUSION OF LOCKING ELEMENT SHALL BE CONTROLLED SO THAT IT WILL PASS FREELY, OR WITH FINGER PRESSURE, THROUGH A RING GAGE WITH DIAMETER OF .010 (+.001, -.000) GREATER THAN MAXIMUM MAJOR DIAMETER OF BOLT THREAD.
- ⑩ /7/ "X" MIN (5 THREAD PITCHES) = REGION OF MINIMUM ENGAGEMENT WITH INTERNAL THREAD REQUIRED TO MEET MIL-DTL-18240 REQUIREMENTS. LOCKING ELEMENT WITHIN "X" REGION MUST DEVELOP REQUIRED TORQUE WHEN TESTED PER MIL-DTL-18240.
- /8/ FOR EASE IN STARTING, LOCKING ELEMENT SHALL NOT BE EFFECTIVE IN "Y" AREA (3 THREAD PITCHES).
- /9/ "ØP" HOLE CENTERLINE WITHIN .010 AND NORMAL WITHIN 2° OF BOLT CENTERLINE.
- ⑩ /10/ "ØE" MAX NOT TO EXCEED ACTUAL WIDTH ACROSS FLATS; MIN AS TABULATED IN TABLE I.
- ~~(11) PLATING THICKNESS MINIMUM TO BE .0003 PER AMS QQ-P-416, CLASS 2.~~
- ⑩ /12/ 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.

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NAS6203 THRU NAS6220
SHEET 3

- (10) /13/ HEAD MARKING: BASIC NUMBER PLUS GRIP DASH NUMBER PLUS "D", "L", OR "P", WHEN APPLICABLE, PLUS MANUFACTURER'S SYMBOL, RAISED OR DEPRESSED .010 MAX. ARRANGEMENT OPTIONAL.
"D" IDENTIFIES BOLT WITH DRILLED THREAD.
"L" IDENTIFIES BOLT WITH LOCKING ELEMENT (OPTIONAL TYPE).
"P" IDENTIFIES BOLT WITH PATCH TYPE LOCKING ELEMENT ONLY.
"C", CHROMIUM PLATED CODE NEED NOT APPEAR ON BOLT HEAD.
- (10) (14) SURFACE ROUGHNESS: "ØD", BEARING SURFACE OF HEAD, THREAD FLANKS AND THREAD ROOT: 32 MICROINCHES Ra; ALL OTHER SURFACES: 125 MICROINCHES Ra PER ASME B46.1.
- /15/ INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY THE USE OF WHOLE GRIP DASH NUMBERS ONLY. NOMINAL LENGTH EQUALS NOMINAL GRIP PLUS "T".
- (10) (16) DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
- /17/ LOCKWIRE HOLES SHALL BE DRILLED WITHIN .010 OF CENTER OF HEX FLAT WHEN SPECIFIED BY PART NUMBER.
- (10) (18) DIMENSIONS IN INCHES AND APPLY AFTER FINISH UNLESS OTHERWISE SPECIFIED.
- (19) REMOVE ALL BURRS AND SHARP EDGES.
- (20) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.
- (10) (21) 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.
- (22) UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.

PROCUREMENT SPECIFICATION:

NAS4002, EXCEPT AS NOTED. COLD WORK OF HEAD TO SHANK FILLET RADIUS AND FATIGUE TESTING ARE NOT REQUIRED FOR NAS6203 BOLTS. LOCKING ELEMENT FOR SELF-LOCKING BOLTS: PER NASM15981 AND MIL-DTL-18240. LOCKING ELEMENT TYPE, INCLUDING PATCH TYPE, IS OPTIONAL. WHEN "L" CODE IS SPECIFIED. PATCH TYPE LOCKING ELEMENT (WITH NO METAL REMOVED) IS REQUIRED WHEN "P" CODE IS SPECIFIED. LOCKING ELEMENT MUST BE SUPPLIED BY A QUALIFIED SOURCE LISTED IN QPL-18240 OR APPROVED FOR LISTING IN QPL-18240. SHIPPING NOTICE SHOULD IDENTIFY SUPPLIER OF BOLT AND LOCKING ELEMENT SEPARATELY.

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NAS6203 THRU NAS6220
SHEET 4

TABLE II - GRIP AND LENGTH DIMENSIONS

GRIP DASH NO.	GRIP ±.010	LENGTH ± .015 /15/												
		BASIC NUMBER AND THREAD SIZE												
		NAS6203	NAS6204	NAS6205	NAS6206	NAS6207	NAS6208	NAS6209	NAS6210	NAS6212	NAS6214	NAS6216	NAS6218	NAS6220
		.1900-32	.2500-28	.3125-24	.3750-24	.4375-20	.5000-20	.5625-18	.6250-18	.7500-16	.8750-14	1.0000-12	1.1250-12	1.2500-12
1	.062	.385	.432	.500	.516	.590	.590	.656	.688	.728	.821	.957	1.051	1.145
2	.125	.448	.495	.563	.579	.653	.653	.719	.751	.791	.884	1.020	1.114	1.208
3	.188	.511	.558	.626	.642	.716	.716	.782	.814	.854	.947	1.083	1.177	1.271
4	.250	.573	.620	.688	.704	.778	.778	.844	.876	.916	1.009	1.145	1.239	1.333
5	.312	.635	.682	.750	.766	.840	.840	.906	.938	.978	1.071	1.207	1.301	1.395
6	.375	.698	.745	.813	.829	.903	.903	.969	1.001	1.041	1.134	1.270	1.364	1.458
7	.438	.761	.808	.876	.892	.966	.966	1.032	1.064	1.104	1.197	1.333	1.427	1.521
8	.500	.823	.870	.938	.954	1.028	1.028	1.094	1.126	1.166	1.259	1.395	1.489	1.583
9	.562	.885	.932	1.000	1.016	1.090	1.090	1.156	1.188	1.228	1.321	1.457	1.551	1.645
10	.625	.948	.995	1.063	1.079	1.153	1.153	1.219	1.251	1.291	1.384	1.520	1.614	1.708
11	.688	1.011	1.058	1.126	1.142	1.216	1.216	1.282	1.314	1.354	1.447	1.583	1.677	1.771
12	.750	1.073	1.120	1.188	1.204	1.278	1.278	1.344	1.376	1.416	1.509	1.645	1.739	1.833
13	.812	1.135	1.182	1.250	1.266	1.340	1.340	1.406	1.438	1.478	1.571	1.707	1.801	1.895
14	.875	1.198	1.245	1.313	1.329	1.403	1.403	1.469	1.501	1.541	1.634	1.770	1.864	1.958
15	.938	1.261	1.308	1.376	1.392	1.466	1.466	1.532	1.564	1.604	1.697	1.833	1.927	2.021
16	1.000	1.323	1.370	1.438	1.454	1.528	1.528	1.594	1.626	1.666	1.759	1.895	1.989	2.083
17	1.062	1.385	1.432	1.500	1.516	1.590	1.590	1.656	1.688	1.728	1.821	1.957	2.051	2.145
18	1.125	1.448	1.495	1.563	1.579	1.653	1.653	1.719	1.751	1.791	1.884	2.020	2.114	2.208
19	1.188	1.511	1.558	1.626	1.642	1.716	1.716	1.782	1.814	1.854	1.947	2.083	2.177	2.271
20	1.250	1.573	1.620	1.688	1.704	1.778	1.778	1.844	1.876	1.916	2.009	2.145	2.239	2.333
21	1.312	1.635	1.682	1.750	1.766	1.840	1.840	1.906	1.938	1.978	2.071	2.207	2.301	2.395
22	1.375	1.698	1.745	1.813	1.829	1.903	1.903	1.969	2.001	2.041	2.134	2.270	2.364	2.458
23	1.438	1.761	1.808	1.876	1.892	1.966	1.966	2.032	2.064	2.104	2.197	2.333	2.427	2.521
24	1.500	1.823	1.870	1.938	1.954	2.028	2.028	2.094	2.126	2.166	2.259	2.395	2.489	2.583
25	1.562	1.885	1.932	2.000	2.016	2.090	2.090	2.156	2.188	2.228	2.321	2.457	2.551	2.645
26	1.625	1.948	1.995	2.063	2.079	2.153	2.153	2.219	2.251	2.291	2.384	2.520	2.614	2.708
27	1.688	2.011	2.058	2.126	2.142	2.216	2.216	2.282	2.314	2.354	2.447	2.583	2.677	2.771
28	1.750	2.073	2.120	2.188	2.204	2.278	2.278	2.344	2.376	2.416	2.509	2.645	2.739	2.833
29	1.812	2.135	2.182	2.250	2.266	2.340	2.340	2.406	2.438	2.478	2.571	2.707	2.801	2.895
30	1.875	2.198	2.245	2.313	2.329	2.403	2.403	2.469	2.501	2.541	2.634	2.770	2.864	2.958
31	1.938	2.261	2.308	2.376	2.392	2.466	2.466	2.532	2.564	2.604	2.697	2.833	2.927	3.021
32	2.000	2.323	2.370	2.438	2.454	2.528	2.528	2.594	2.626	2.666	2.759	2.895	2.989	3.083
34	2.125	2.448	2.495	2.563	2.579	2.653	2.653	2.719	2.751	2.791	2.884	3.020	3.114	3.208
36	2.250	2.573	2.620	2.688	2.704	2.778	2.778	2.844	2.876	2.916	3.009	3.145	3.239	3.333

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
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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

REVISION

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NAS6203 THRU NAS6220
SHEET 5



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TABLE II - GRIP AND LENGTH DIMENSIONS (CONTINUED)

GRIP DASH NO.	GRIP ±.010	LENGTH ± .015 /15/												
		BASIC NUMBER AND THREAD SIZE												
		NAS6203	NAS6204	NAS6205	NAS6206	NAS6207	NAS6208	NAS6209	NAS6210	NAS6212	NAS6214	NAS6216	NAS6218	NAS6220
		.1900-32	.2500-28	.3125-24	.3750-24	.4375-20	.5000-20	.5625-18	.6250-18	.7500-16	.8750-14	1.0000-12	1.1250-12	1.2500-12
38	2.375	2.698	2.745	2.813	2.829	2.903	2.903	2.969	3.001	3.041	3.134	3.270	3.364	3.458
40	2.500	2.823	2.870	2.938	2.954	3.028	3.028	3.094	3.126	3.166	3.259	3.395	3.489	3.583
42	2.625	2.948	2.995	3.063	3.079	3.153	3.153	3.219	3.251	3.291	3.384	3.520	3.614	3.708
44	2.750	3.073	3.120	3.188	3.204	3.278	3.278	3.344	3.376	3.416	3.509	3.645	3.739	3.833
46	2.875	3.198	3.245	3.313	3.329	3.403	3.403	3.469	3.501	3.541	3.634	3.770	3.864	3.958
48	3.000	3.323	3.370	3.438	3.454	3.528	3.528	3.594	3.626	3.666	3.759	3.895	3.989	4.083
50	3.125	3.448	3.495	3.563	3.579	3.653	3.653	3.719	3.751	3.791	3.884	4.020	4.114	4.208
52	3.250	3.573	3.620	3.688	3.704	3.778	3.778	3.844	3.876	3.916	4.009	4.145	4.239	4.333
54	3.375	3.698	3.745	3.813	3.829	3.903	3.903	3.969	4.001	4.041	4.134	4.270	4.364	4.458
56	3.500	3.823	3.870	3.938	3.954	4.028	4.028	4.094	4.126	4.166	4.259	4.395	4.489	4.583
58	3.625	3.948	3.995	4.063	4.079	4.153	4.153	4.219	4.251	4.291	4.384	4.520	4.614	4.708
60	3.750	4.073	4.120	4.188	4.204	4.278	4.278	4.344	4.376	4.416	4.509	4.645	4.739	4.833
62	3.875	4.198	4.245	4.313	4.329	4.403	4.403	4.469	4.501	4.541	4.634	4.770	4.864	4.958
64	4.000	4.323	4.370	4.438	4.454	4.528	4.528	4.594	4.626	4.666	4.759	4.895	4.989	5.083
66	4.125	4.448	4.495	4.563	4.579	4.653	4.653	4.719	4.751	4.791	4.884	5.020	5.114	5.208
68	4.250	4.573	4.620	4.688	4.704	4.778	4.778	4.844	4.876	4.916	5.009	5.145	5.239	5.333
70	4.375	4.698	4.745	4.813	4.829	4.903	4.903	4.969	5.001	5.041	5.134	5.270	5.364	5.458
72	4.500	4.823	4.870	4.938	4.954	5.028	5.028	5.094	5.126	5.166	5.259	5.395	5.489	5.583
74	4.625	4.948	4.995	5.063	5.079	5.153	5.153	5.219	5.251	5.291	5.384	5.520	5.614	5.708
76	4.750	5.073	5.120	5.188	5.204	5.278	5.278	5.344	5.376	5.416	5.509	5.645	5.739	5.833
78	4.875	5.198	5.245	5.313	5.329	5.403	5.403	5.469	5.501	5.541	5.634	5.770	5.864	5.958
80	5.000	5.323	5.370	5.438	5.454	5.528	5.528	5.594	5.626	5.666	5.759	5.895	5.989	6.083
82	5.125	5.448	5.495	5.563	5.579	5.653	5.653	5.719	5.751	5.791	5.884	6.020	6.114	6.208
84	5.250	5.573	5.620	5.688	5.704	5.778	5.778	5.844	5.876	5.916	6.009	6.145	6.239	6.333
86	5.375	5.698	5.745	5.813	5.829	5.903	5.903	5.969	6.001	6.041	6.134	6.270	6.364	6.458
88	5.500	5.823	5.870	5.938	5.954	6.028	6.028	6.094	6.126	6.166	6.259	6.395	6.489	6.583
90	5.625	5.948	5.995	6.063	6.079	6.153	6.153	6.219	6.251	6.291	6.384	6.520	6.614	6.708
92	5.750	6.073	6.120	6.188	6.204	6.278	6.278	6.344	6.376	6.416	6.509	6.645	6.739	6.833
94	5.875	6.198	6.245	6.313	6.329	6.403	6.403	6.469	6.501	6.541	6.634	6.770	6.864	6.958
96	6.000	6.323	6.370	6.438	6.454	6.528	6.528	6.594	6.626	6.666	6.759	6.895	6.989	7.083

REVISION

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NAS6203 THRU NAS6220
SHEET 6

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