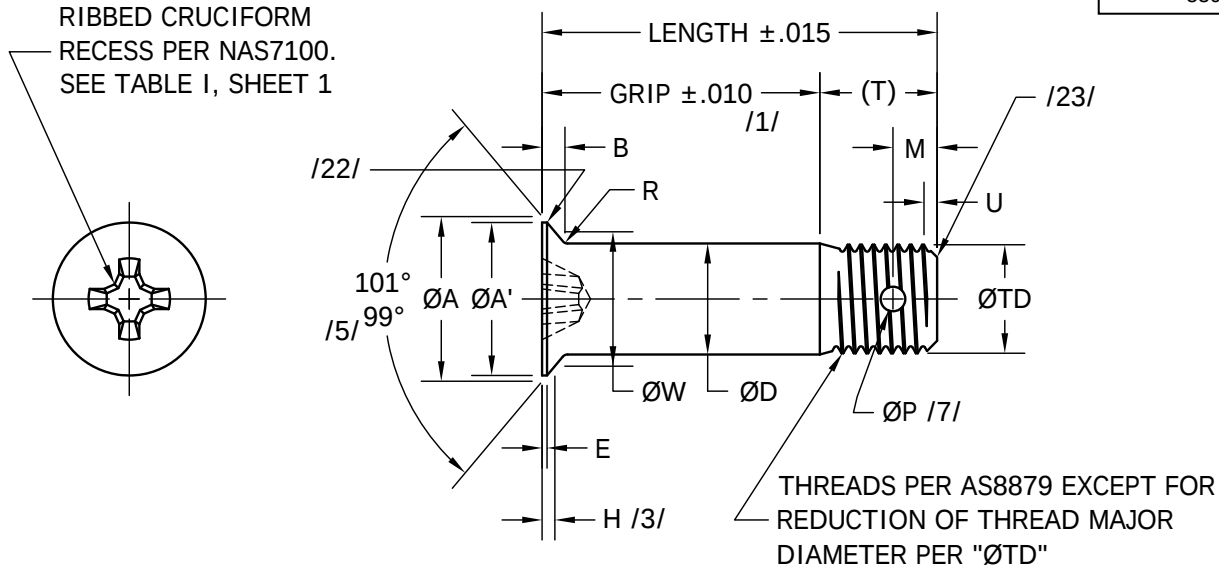


RIBBED CRUCIFORM
RECESS PER NAS7100.
SEE TABLE I, SHEET 1



HEAD MARKING SHALL BE DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

MARK WITH BASIC NUMBER ("NAS" OPTIONAL), EXCEPT MARK .1900-32 SIZE WITH "10" AND MARK .1640-32 SIZE WITH "8", THESE SIZES ALSO TO BE MARKED "C" FOR A286. MARK WITH MANUFACTURER'S SYMBOL, GRIP DASH NUMBER, "D" WHEN APPLICABLE /8/ AND RECESS NUMBER ENCIRCLED. RECESS NUMBER TO BE APPROXIMATELY 25% LARGER THAN OTHER NUMBERS. "D" IDENTIFIES BOLT WITH DRILLED SHANK.

TABLE I – DIMENSIONS (CONTINUED ON SHEET 2)

BASIC NUMBER **	NOMINAL THREAD SIZE UNJF- 3A EXCEPT AS NOTED	ØA MAX. /2/	ØA' ABSOLUTE MINIMUM /2/	B MAX. /2/	ØD				E MAX.	RECESS SIZE
					UNPLATED		PLATED OR COATED BOLTS			
					MAX.	MIN.	MAX.	MIN.		
NAS8702	.1640-32 UNJC-3A	.257	.226	.039	.1635	.1630	.1635	.1625	.010	2
NAS8703	.1900-32	.303	.266	.049	.1895	.1890	.1895	.1885	.012	2
NAS8704	.2500-28	.397	.355	.063	.2495	.2490	.2495	.2485	.014	2
NAS8705	.3125-24	.477	.429	.071	.3120	.3115	.3120	.3110	.016	3
NAS8706	.3750-24	.564	.510	.081	.3745	.3740	.3745	.3735	.018	4
NAS8707	.4375-20	.672	.612	.101	.4370	.4365	.4370	.4360	.020	4
NAS8708	.5000-20	.755	.688	.109	.4995	.4990	.4995	.4985	.022	4
NAS8709	.5625-18	.838	.766	.119	.5615	.5610	.5615	.5605	.024	4
NAS8710	.6250-18	.925	.848	.129	.6240	.6235	.6240	.6230	.026	4
NAS8712	.7500-16	1.099	1.010	.150	.7490	.7485	.7490	.7480	.030	5
NAS8714	.8750-14	1.323	1.219	.192	.8740	.8735	.8740	.8730	.034	5
NAS8716	1.0000-12	1.522	1.406	.224	.9990	.9985	.9990	.9980	.038	6

**THE LAST TWO DIGITS OF THE BASIC NUMBER DESIGNATE THE SIZE. SEE SHEET 3 FOR "A", "D" & "U" CODES, SEE SHEETS 5 AND 6 FOR GRIP DASH NUMBERS.

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THIRD ANGLE PROJECTION	CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE	REVISION 1
PROCUREMENT SPECIFICATION NOTED	TITLE ① BOLT, SHEAR, 100° REDUCED HEAD, RIBBED CRUCIFORM RECESS, CLOSE TOLERANCE, A286, SHORT THREAD	CLASSIFICATION PART STANDARD
		NAS8702 THRU NAS8716 SHEET 1 OF 7

TABLE I – DIMENSIONS (CONTINUED)

BASIC NUMBER	H GAGE PROTRUSION /3/		ØW GAGE +.0002 -.0000
	NOM	TOL	
NAS8702	.0213	.0013	.2026
NAS8703	.0230	.0013	.2438
NAS8704	.0255	.0015	.3312
NAS8705	.0280	.0017	.4045
NAS8706	.0305	.0019	.4852
NAS8707	.0400	.0021	.5696
NAS8708	.0408	.0023	.6498
NAS8709	.0463	.0025	.7198
NAS8710	.0400	.0027	.8212
NAS8712	.0500	.0031	.9700
NAS8714	.0832	.0035	1.1122
NAS8716	.0918	.0039	1.2894

TABLE I – DIMENSIONS (CONTINUED)

BASIC NUMBER	M ±.010 /7/ /12/	ØP +.005 -.000 /7/ /12/	R RADIUS		(T) /4/	ØTD		U MAX.	Y /5/	Z /6/
			MAX.	MIN.		MAX.	MIN.			
NAS8702	--	--	.020	.010	.323	.1595	.157	.039	.0045	.0040
NAS8703	.164	.070	.020	.010	.323	.184	.181	.039	.0045	.0040
NAS8704	.170	.076	.020	.010	.370	.244	.241	.045	.0045	.0030
NAS8705	.182	.076	.025	.010	.438	.306	.302	.052	.0045	.0030
NAS8706	.183	.106	.030	.015	.454	.368	.364	.052	.0045	.0025
NAS8707	.199	.106	.030	.015	.528	.431	.426	.062	.006	.0025
NAS8708	.198	.106	.030	.015	.528	.493	.488	.062	.006	.0020
NAS8709	.207	.141	.030	.015	.594	.555	.550	.068	.006	.0020
NAS8710	.207	.141	.030	.015	.626	.618	.612	.068	.006	.0020
NAS8712	.222	.141	.030	.015	.666	.743	.737	.078	.006	.0020
NAS8714	.241	.141	.030	.015	.759	.868	.861	.089	.009	.0020
NAS8716	.264	.141	.030	.015	.895	.993	.986	.104	.009	.0020

TABLE II – RECESS PERFORMANCE

BASIC NUMBER	MINIMUM TORQUE /10/	
	TORQUE INCH POUNDS	RECESS NUMBER
NAS8702	--	2
NAS8703	35	2
NAS8704	50	2
NAS8705	125	3
NAS8706	--	4
NAS8707	--	4
NAS8708	--	4
NAS8709	--	4
NAS8710	--	4
NAS8712	--	5
NAS8714	--	5
NAS8716	--	6

MATERIAL: CRES - A286 (UNS S66286) CONFORMING TO THE CHEMISTRY OF AMS5731, AMS5732, AMS5737 OR AMS5853.

HEAT TREAT: DEVELOP BASIC MATERIAL PROPERTIES AS FOLLOWS, WITH CONTROLS PER AMS2759. CRES: 160-190 KSI FTU; 95 KSI MINIMUM FSU. /21/

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**NAS8702 THRU
NAS8716
SHEET 2**



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Full document details: AIA NAS8702-8716 2012

FINISH: UNPLATED BOLTS - PASSIVATE PER AMS2700, METHOD 1, CLASS 4.
 PLATED BOLTS - CADMIUM PLATE PER AMS-QQ-P-416, TYPE II, CLASS 2. CADMIUM PLATED A286 CRES BOLTS SHALL BE IDENTIFIED WITH GREEN DYE OR PAINT ON THE THREAD END. MAXIMUM COVERAGE MAY INCLUDE THE CHAMFER PLUS ONE INCOMPLETE THREAD.
 COATED BOLTS - ALUMINUM COATING PER NAS4006.

CODE: BASIC PART NUMBER = PLATED BOLT WITH UNDRILLED THREADS.
 ADD "A" AFTER BASIC NUMBER FOR ALUMINUM COATED BOLTS. /8/
 ADD "D" AFTER BASIC NUMBER FOR DRILLED THREADS BOLT.
 ADD "U" AFTER BASIC NUMBER FOR UNPLATED BOLT. MAY BE USED WITH "D" CODE. /8/
 DASH NUMBER INDICATES GRIP IN .0625 INCREMENTS. SEE SHEETS 4 AND 5 FOR TABULATIONS OF GRIP AND LENGTH DIMENSIONS. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USAGE OF WHOLE DASH NUMBER ONLY.

EXAMPLES OF PART NUMBERS: (SEE SHEET 6 FOR OVERSIZE BOLTS.)

NAS8703-10 = BOLT, .1900-32 THREAD, .625 GRIP, UNDRILLED THREADS, PLATED.
 NAS8703A10 = BOLT, .1900-32 THREAD, .625 GRIP, UNDRILLED THREADS, ALUMINUM COATED.
 NAS8703U10 = BOLT, .1900-32 THREAD, .625 GRIP, UNDRILLED THREADS, UNPLATED.
 NAS8703D10 = BOLT, .1900-32 THREAD, .625 GRIP, DRILLED THREADS, PLATED.
 NAS8703DU10 = BOLT, .1900-32 THREAD, .625 GRIP, DRILLED THREADS, UNPLATED.

- NOTES:**
- /1/ GRIP LENGTH OF BOLT SHALL BE MEASURED FROM THE TOP OF BOLT HEAD TO THE END OF THE FULL CYLINDRICAL PORTION OF THE SHANK.
 - /2/ DIMENSIONS ØA, ØA' AND B ARE INCLUDED FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION. VALUES ØA, ØA' AND B ARE CALCULATED LIMITS RESULTING FROM TOLERANCES ON "E", "H", "ØW" AND HEAD ANGLE.
 - /3/ FLUSHNESS GAGE PROTRUSION SHALL BE INSPECTED PER NAS9800. FLUSHNESS GAGE PROTRUSION FOR .0312 (Y) OVERSIZE SHANK REPAIR BOLTS SHALL CONFORM TO TABLE III.
 - /4/ REFERENCE DIMENSIONS ARE FOR DESIGN PURPOSES ONLY. NOT AN INSPECTION REQUIREMENT.
 - /5/ CONCENTRICITY: CONICAL SURFACE OF HEAD TO "ØD" WITHIN .003 FIM. "ØD" TO THREAD PITCH DIAMETER WITHIN "Y" FIM.
 - /6/ SHANK STRAIGHTNESS: WITHIN "Z" FIM PER INCH OF LENGTH.
 - /7/ DRILL ØP WHEN SPECIFIED BY PART NUMBER. CSK OPTIONAL. COTTER PIN HOLE CENTERLINE: WITHIN .010 AND NORMAL WITHIN 2° OF BOLT CENTERLINE.
 - /8/ "A", ALUMINUM COATED AND "U", UNPLATED CODES NEED NOT APPEAR ON THE HEAD OF THE BOLT.
 - (9) MAGNETIC PERMEABILITY SHALL BE LESS THAN 2.0 (AIR = 1.0) FOR A FIELD STRENGTH H = 200 OERSTEDS USING A MAGNETIC PERMEABILITY INDICATOR PER ASTM A 342/A 342M, TEST METHOD 3.
 - /10/ MINIMUM TORQUE VALUES (IN-LBF) WHICH RECESS MUST DEVELOP DURING REMOVAL MODE WITH APPROPRIATE NAS8500 THRU 8506 DRIVER AND 5 POUND MAXIMUM END LOAD. CAMOUT OR EXCESSIVE DEFORMATION OF THE RECESS SHALL BE CAUSE FOR REJECTION OF THE LOT.
 - (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/ 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.
 - (13) DIMENSIONS APPLY AFTER FINISH UNLESS OTHERWISE SPECIFIED.
 - (14) DIMENSIONS IN INCHES.
 - (15) THIS STANDARD TAKES PRECEDENCE OVER DOCUMENTS REFERENCED HEREIN.
 - (16) REMOVE ALL BURRS AND SHARP EDGES.

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NAS8702 THRU NAS8716 SHEET 3



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