THE BOEING COMPANY
AERO-SPACE DIVISION
LAUNCH SYSTEMS BRANCH

DOCUMENT NO. T5-6539-83

VOLUME ____ OF ____

TITLE EVALUATION OF BACB30BG AND BACB30BH BOLTS

MODEL NO. ____ CONTRACT NO. ____

ISSUE NO. M-12 ISSUED TO Scientific & Tech. Info. Fac.

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REV. SYM. ____

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5-406-65-20 ORIG. 4/65

CHANGE RECORD

REV. SYM.	SECT.	PAGES REVISED	PAGES ADDED	PAGES DELETED	REV. SYM.	SECT.	PAGES REVISED	PAGES ADDED	PAGES DELETED

REV. SYM. _____

REVISIONS			
REV. SYM.	DESCRIPTION	DATE	APPROVED

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S-406-35-11 ORIG. 1/64

ABSTRACT

This report lists test data on BACB30BG and BACB30BH to determine their compliance with the BAC standard pages.

KEY WORDS

BOLT, HEX HEAD

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1.0 OBJECT

The object of this test was to compare the properties of the physical part with the requirements of the specifications on the BAC standard pages. This was done as back up data for inclusion in the preferred parts list of D5-11228-2.

2.0 BACKGROUND

Qualification data on BACB30BG and BACB30BH was needed as these parts were being used on the Saturn S-IC. A search was made for data on qualification of this part but little was located. The only data that was found was a receiving report that is included in the appendix. Since the information was insufficient, tests were conducted to provide the needed data.

3.0 CONCLUSIONS

All parts examined and tested were within specification limits. The test parts were selected at random and it is felt that these results are representative of the entire lot. Based on this test data the parts are considered qualified.

4.0 PROCEDURES AND RESULTS

Procedure - Five samples of each bolt were drawn at random from stock. These samples were visually and dimensionally inspected for compliance with the BAC standard pages. The threads were checked with a go-not go thread gage and the parts were subjected to tensile and subsequent double shear tests to destruction.

Results - The only part found to be out of tolerance on a critical dimension: that is a dimension that was not a reference dimension, was the first sample of BACB30BH. The diameter of this bolt was found to be .0001 above the maximum specified on the BAC standard page. It is felt that this deviation is minor, and because it was the only one discovered these parts are considered dimensionally acceptable.

Results of tensile and double shear tests were all above the minimum specified on the BAC standard page. Tabulated results appear in Tables I & II.

These parts are considered preferred for use on the Saturn S-IC and will be listed as such in document D5-11228-2 "Preferred and Approved Parts List For Saturn S-IC System-Mechanical Parts".

APPENDIX

BOLT BAC B30 BG-3

SAMPLE		DIMENSIONS					TEST RESULTS			REMARKS		
		A	B	C	D	T	GO GAGE	TENSILE (120KSI)	DOUBLE SHEAR			
				REF.	± .016	REF.						
	STANDARD	.1894 .1885	.377 .365	.430	.125	.406		2590	4410			
	1	.1888	.371	.426	.115	.404	✓	4240	5980			
	2	.1889	.373	.430	.115	.406	✓	4240	5900			
	3	.1888	.372	.427	.112	.406	✓	4280	5920			
	4	.1887	.372	.429	.114	.406	✓	4280	5920			
	5	.1886	.372	.426	.113	.406	✓	4260	5980			

TABLE I

QUALIFICATION OF BAC B 30 BG

TEST NO. 75
ENG. J. HART

CALC
CHECK
APR
APR
REVISED
DATE

BOEING NO. T5-6539-83
PAGE 3

US 4041 0000

BOLT BAC B30 BH-4C

SAMPLE		DIMENSIONS					TEST RESULTS			REMARKS		
		A	B	C	D	T	GO GAGE	TENSILE (130 KSI)	DOUBLE SHEAR			
				REF	±.016	REF						
	STANDARD	.2492 .2487	.440 .428	.510	.125	.334		4710	7660			
	1	.2493 .2490	.434	.497	.126	.34	✓	5920	10400			
	2	.2489 .2488	.434	.497	.134	.34	✓	6040	10480			
	3	.2491 .2490	.434	.498	.132	.34	✓	6160	10440			
	4	.2491 .2490	.434	.497	.133	.34	✓	6000	10720			
	5	.2490 .2489	.434	.497	.132	.34	✓	6380	10700			

TABLE II

QUALIFICATION OF BAC B30 BH

TEST No. 76

ENG. J. HART

CALC | CHECK | APR | APR | REVISED | DATE

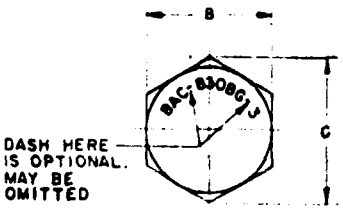
BOEING

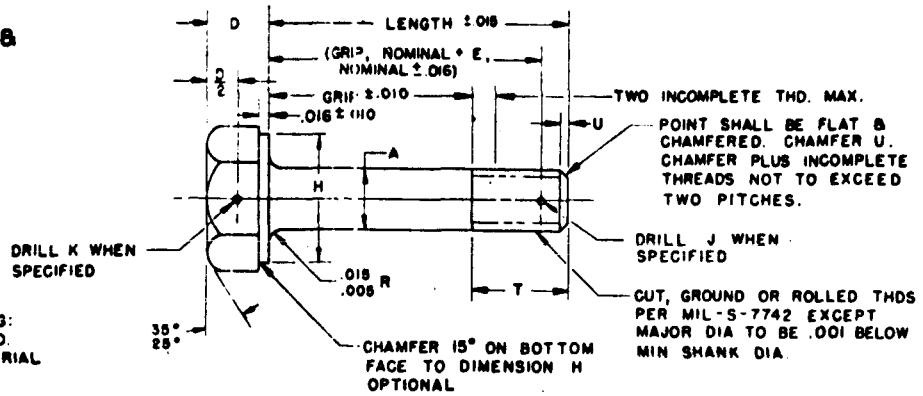
NO. T5-6539-83

PAGE 4

US 4041 0000

SEE SHEET 2 FOR GRIP & LENGTH DIMENSIONS





RAISED OR INDENTED HEAD MARKING: BAC-B30BG (PLUS FIRST DASH NO. AS APPLICABLE, INCLUDE MATERIAL CODE LETTER WHEN APPLICABLE). MFR'S TRADEMARK OPTIONAL.

DASH NO.	THD SIZE (NF-3A)	B [1]	E BEFORE PLATING	E AFTER PLATING	D	C REF	D ±.016	E REF	H DIA ±.016	J +.005 -.000	K +.005 -.000	T REF	U REF	INSPECTION TEST VALUES (MIN. LBS.) [3] AMS5721 (19-9DL) TENSILE (120KSI)	AMS5721 (19-9DL) DOUBLE SHEAR (72KSI)	AMS5735 (A286) TENSILE (130KSI)	AMS5735 (A286) DOUBLE SHEAR (78KSI)	QQ-C-530 (CU-BE) QQ-N-286 (K-MONEL) TENSILE (140KSI)	QQ-C-530 (CU-BE) QQ-N-286 (K-MONEL) DOUBLE SHEAR (79KSI)
3	10-32	.1[illegible] .1[illegible]	.1[illegible] .1[illegible]	.1694 .1685	.377 .365	.430	.125	.266	.375	.070	.040	.406	.016	2,380	4,060	2,590	4,410	2,790	4,250
4	1/4-28	.24[illegible] .24[illegible]	.2474 .2479	.2492 .2483	.440 .429	.510	.156	.312	.438	.076	.040	.469	.018	4,340	7,070	4,710	7,660	5,070	7,360
5	5/16-24	.3117 .3112	.3102 .3104	.3117 .3108	.502 .490	.580	.188	.359	.500	.076	.070	.531	.021	6,940	11,040	7,530	11,970	8,110	11,500
6	3/8-24	.3742 .3737	.3734 .3729	.3742 .3733	.565 .553	.650	.219	.438	.563	.106	.070	.641	.021	10,500	15,900	11,400	17,200	12,300	16,500
7	7/16-20	.4367 .4362	.4359 .4354	.4367 .4358	.627 .615	.720	.250	.484	.625	.106	.070	.656	.025	14,200	21,600	15,400	23,400	16,600	22,500
8	1/2-20	.4991 .4986	.4983 .4988	.4991 .4992	.752 .740	.870	.281	.609	.750	.106	.070	.781	.025	19,100	28,300	20,800	30,600	22,400	29,400
9	9/16-18	.5616 .5611	.5608 .5603	.5616 .5607	.877 .865	1.010	.312	.656	.875	.141	.070	.906	.028	24,300	35,800	26,300	38,800	28,400	37,400
10	5/8-18	.6240 .6234	.6232 .6228	.6240 .6230	.940 .928	1.090	.344	.734	.938	.141	.070	.953	.028	30,600	44,000	33,200	47,900	35,800	46,000
12	3/4-16	.7486 .7481	.7480 .7473	.7488 .7477	1.066 1.053	1.230	.406	.875	1.063	.141	.070	1.094	.031	44,600	63,600	46,400	68,900	52,100	66,300
14	7/8-14	.8737 .8729	.8729 .8721	.8737 .8725	1.253 1.240	1.440	.469	.984	1.250	.141	.070	1.250	.036	61,100	86,600	66,100	93,800	71,200	90,100
16	1-14	.9975 .9975	.9977 .9967	.9975 .9971	1.441 1.428	1.660	.531	1.094	1.438	.141	.070	1.375	.036	81,500	113,100	88,300	122,500	95,100	117,800
18	1-1/8-12	1.1240 1.1230	1.1232 1.1222	1.1240 1.1225	1.626 1.615	1.880	.594	1.188	1.625	.141	.070	1.500	.042	102,600	143,100	111,100	155,100	119,700	147,500
20	1-1/4-12	1.2490 1.2480	1.2482 1.2472	1.2490 1.2476	1.815 1.802	2.090	.656	1.375	1.812	.141	.070	1.689	.042	128,700	176,700	139,400	191,400	150,100	182,100

1. UNPLATED SHANK DIMENSIONS APPLY TO CORROSION AND HEAT RESISTANT STEEL BOLTS ONLY.
2. PLATED SHANK DIMENSIONS APPLY TO COPPER BERYLLIUM AND K MONEL BOLTS ONLY.
3. ULTIMATE TENSILE STRENGTH: VALUES CALCULATED FROM BASIC STRENGTH AND STRESS AREA OF THREAD PER H28.
   ULTIMATE DOUBLE SHEAR: MINIMUM VALUES WHEN TESTED IN JIG PER MIL-B-7838. VALUES ARE CALCULATED FROM BASIC SHEAR STRENGTH AND NOMINAL SHANK AREA.

MATERIAL: NO LETTER = STEEL, CORROSION AND HEAT RESISTANT PER SPECIFICATION AMS5721 (19-9DL) OR AMS5735 (A286).
K = COPPER - BERYLLIUM PER SPEC QQ-C-530, CONDITION A; OR K MONEL PER SPEC QQ-N-286, CLASS A
C = CORROSION AND HEAT RESISTANT STEEL (A286) PER AMS5735, THREADS ROLLED AFTER AGING.

HEAT TREAT (AFTER HEADING): COPPER BERYLLIUM - 600° ±5°F FOR 3 HOURS MINIMUM TENSILE STRESS 140,000 PSI. K - MONEL - 1080° ±10°F FOR 8 HOURS MINIMUM TENSILE STRESS 140,000 PSI.

FINISH: STEEL - NONE.
COPPER BERYLLIUM AND K MONEL - CADMIUM PLATE PER SPEC QQ-P-416, TYPE I, CLASS 3.

PROCUREMENT SPECIFICATION: MIL-B-6812 AS APPLICABLE. AMS7479 SHALL APPLY TO "C" BOLTS EXCEPT MATERIAL IS LIMITED TO AMS5735.

PROCUREMENT: MAY BE PROCURED FROM ANY AVAILABLE SATISFACTORY SOURCE.

USAGE AND APPLICATION INFORMATION

CORROSION AND HEAT RESISTANT STEEL BOLTS MAY BE USED IN ELEVATED TEMPERATURE APPLICATIONS OR IN ATO COMPARTMENTS WHERE SUBJECT TO NITRIC ACID FUMES. CONSULT STANDARDS UNIT REGARDING TEMPERATURE, TIME, AND STRESS LIMITATIONS.
COPPER BERYLLIUM OR K MONEL BOLTS ARE INTENDED FOR APPLICATIONS REQUIRING BOLTS OF LOW MAGNETIC PERMEABILITY.

CODE: FIRST DASH NUMBER INDICATES NOMINAL DIAMETER OF BOLT IN 16THS AS SHOWN IN TABULATION ABOVE.
SECOND DASH NUMBER INDICATES GRIP OF BOLT IN 16THS AND CORRESPONDING LENGTH. ONLY .125 INCREMENTS ARE TABULATED ON BACB30B0, SHEET 2. FOR INTERMEDIATE VALUES OF GRIP LENGTH USE ODD DASH NUMBERS (SEE EXAMPLE).
NO LETTER AFTER SECOND DASH NUMBER FOR DRILLED SHANK ONLY.
ADD A AFTER SECOND DASH NUMBER FOR UNDRILLED BOLT.
ADD H BEFORE SECOND DASH NUMBER FOR BOLT WITH DRILLED HEAD ONLY.
ADD K BETWEEN FIRST AND SECOND DASH NUMBER FOR COPPER BERYLLIUM OR K MONEL PER SPEC QQ-N-286, CLASS A.

EXAMPLE OF PART NUMBERS:
BACB30B04K4 = 1/4-28 COPPER-BERYLLIUM OR K MONEL BOLT .250 GRIP AND .719 LONG, DRILLED SHANK ONLY.
BACB30B04-4A = 1/4-28 A286 OR 19-9DL BOLT. 250 GRIP, .719 LONG, UNDRILLED.
BACB30B04H5 = 1/4-28 A286 OR 19-9DL BOLT .312 GRIP, .781 LONG, DRILLED HEAD ONLY.
BACB30B04KH4 = 1/4-28 COPPER-BERYLLIUM OR K MONEL BOLT .250 GRIP AND .719 LONG, DRILLED HEAD ONLY.
BACB30B04C4 = 1/4-28, A286 BOLT, .250 GRIP, .719 LONG, DRILLED SHANK ONLY.

SEE PREFACE FOR GENERAL USAGE NOTES.

1	REV L	2	REV D
LIST OF ACTIVE SHEETS			

CODE 81205

BAC B30BG SH 1 OF 2

BOLT, HEX HEAD, CLOSE TOLERANCE
CORROSION & HEAT RESISTANT OR LOW MAGNETIC PERMEABILITY

BAC B30BG SH 1 OF 2

BOEING STANDARD

BACB30BG GRIP & LENGTH DIMENSIONS

SEE PAGE 1 FOR OTHER DIMENSIONS & ENGINEERING INFORMATION

SHK DIA. NUMBER	GRIP (ALL SIZES)	LENGTHS FOR SIZES INDICATED													GRIP (ALL SIZES)	SECOND DASH NUMBER
		10-32	1/4-28	5/16-24	3/8-24	7/16-20	1/2-20	9/16-18	5/8-18	3/4-16	7/8-14	1-14	1-1/8-12	1-1/4-12		
2	.125	.531	.599	.656	.766	.781	.906	1.031	1.078	1.219	1.375	1.500	1.625	1.814	.125	2
4	.250	.656	.719	.781	.891	.906	1.031	1.156	1.203	1.344	1.500	1.625	1.750	1.939	.250	4
6	.375	.781	.844	.906	1.016	1.031	1.156	1.281	1.328	1.469	1.625	1.750	1.875	2.064	.375	6
8	.500	.906	.969	1.031	1.141	1.156	1.281	1.406	1.453	1.594	1.750	1.875	2.000	2.189	.500	8
10	.625	1.031	1.094	1.156	1.266	1.281	1.406	1.531	1.578	1.719	1.875	2.000	2.125	2.314	.625	10
12	.750	1.156	1.219	1.281	1.391	1.406	1.531	1.656	1.703	1.844	2.000	2.125	2.250	2.439	.750	12
14	.875	1.281	1.344	1.406	1.516	1.531	1.656	1.781	1.828	1.969	2.125	2.250	2.375	2.564	.875	14
16	1.000	1.406	1.469	1.531	1.641	1.656	1.781	1.906	1.953	2.094	2.250	2.375	2.500	2.689	1.000	16
18	1.125	1.531	1.594	1.656	1.766	1.781	1.906	2.031	2.078	2.219	2.375	2.500	2.625	2.814	1.125	18
20	1.250	1.656	1.719	1.781	1.891	1.906	2.031	2.156	2.203	2.344	2.500	2.625	2.750	2.939	1.250	20
22	1.375	1.781	1.844	1.906	2.016	2.031	2.156	2.281	2.328	2.469	2.625	2.750	2.875	3.064	1.375	22
24	1.500	1.906	1.969	2.031	2.141	2.156	2.281	2.406	2.453	2.594	2.750	2.875	3.000	3.189	1.500	24
26	1.625	2.031	2.094	2.156	2.266	2.281	2.406	2.531	2.578	2.719	2.875	3.000	3.125	3.314	1.625	26
28	1.750	2.156	2.219	2.281	2.391	2.406	2.531	2.656	2.703	2.844	3.000	3.125	3.250	3.439	1.750	28
30	1.875	2.281	2.344	2.406	2.516	2.531	2.656	2.781	2.828	2.969	3.125	3.250	3.375	3.564	1.875	30
32	2.000	2.406	2.469	2.531	2.641	2.656	2.781	2.906	2.953	3.094	3.250	3.375	3.500	3.689	2.000	32
34	2.125	2.531	2.594	2.656	2.766	2.781	2.906	3.031	3.078	3.219	3.375	3.500	3.625	3.814	2.125	34
36	2.250	2.656	2.719	2.781	2.891	2.906	3.031	3.156	3.203	3.344	3.500	3.625	3.750	3.939	2.250	36
38	2.375	2.781	2.844	2.906	3.016	3.031	3.156	3.281	3.328	3.469	3.625	3.750	3.875	4.064	2.375	38
40	2.500	2.906	2.969	3.031	3.141	3.156	3.281	3.406	3.453	3.594	3.750	3.875	4.000	4.189	2.500	40
42	2.625	3.031	3.094	3.156	3.266	3.281	3.406	3.531	3.578	3.719	3.875	4.000	4.125	4.314	2.625	42
44	2.750	3.156	3.219	3.281	3.391	3.406	3.531	3.656	3.703	3.844	4.000	4.125	4.250	4.439	2.750	44
46	2.875	3.281	3.344	3.406	3.516	3.531	3.656	3.781	3.828	3.969	4.125	4.250	4.375	4.564	2.875	46
48	3.000	3.406	3.469	3.531	3.641	3.656	3.781	3.906	3.953	4.094	4.250	4.375	4.500	4.689	3.000	48
50	3.125	3.531	3.594	3.656	3.766	3.781	3.906	4.031	4.078	4.219	4.375	4.500	4.625	4.814	3.125	50
52	3.250	3.656	3.719	3.781	3.891	3.906	4.031	4.156	4.203	4.344	4.500	4.625	4.750	4.939	3.250	52
54	3.375	3.781	3.844	3.901	4.016	4.031	4.156	4.281	4.328	4.469	4.625	4.750	4.875	5.064	3.375	54
56	3.500	3.906	3.969	4.031	4.141	4.156	4.281	4.406	4.453	4.594	4.750	4.875	5.000	5.189	3.500	56
58	3.625	4.031	4.094	4.156	4.266	4.281	4.406	4.531	4.578	4.719	4.875	5.000	5.125	5.314	3.625	58
60	3.750	4.156	4.219	4.281	4.391	4.406	4.531	4.656	4.703	4.844	5.000	5.125	5.250	5.439	3.750	60
62	3.875	4.281	4.344	4.406	4.516	4.531	4.656	4.781	4.828	4.969	5.125	5.250	5.375	5.564	3.875	62
64	4.000	4.406	4.469	4.531	4.641	4.656	4.781	4.906	4.953	5.094	5.250	5.375	5.500	5.689	4.000	64
66	4.125	4.531	4.594	4.656	4.766	4.781	4.906	5.031	5.078	5.219	5.375	5.500	5.625	5.814	4.125	66
68	4.250	4.656	4.719	4.781	4.891	4.906	5.031	5.156	5.203	5.344	5.500	5.625	5.750	5.939	4.250	68
70	4.375	4.781	4.844	4.901	5.016	5.031	5.156	5.281	5.328	5.469	5.625	5.750	5.875	6.064	4.375	70
72	4.500	4.906	4.969	5.031	5.141	5.156	5.281	5.406	5.453	5.594	5.750	5.875	6.000	6.189	4.500	72
74	4.625	5.031	5.094	5.156	5.266	5.281	5.406	5.531	5.578	5.719	5.875	6.000	6.125	6.314	4.625	74
76	4.750	5.156	5.219	5.281	5.391	5.406	5.531	5.656	5.703	5.844	6.000	6.125	6.250	6.439	4.750	76
78	4.875	5.281	5.344	5.406	5.516	5.531	5.656	5.781	5.828	5.969	6.125	6.250	6.375	6.564	4.875	78
8	5.000	5.406	5.469	5.531	5.641	5.656	5.781	5.906	5.953	6.094	6.250	6.375	6.500	6.689	5.000	80
82	5.125	5.531	5.594	5.656	5.766	5.781	5.906	6.031	6.078	6.219	6.375	6.500	6.625	6.814	5.125	82
84	5.250	5.656	5.719	5.781	5.891	5.906	6.031	6.156	6.203	6.344	6.500	6.625	6.750	6.939	5.250	84
86	5.375	5.781	5.844	5.901	6.016	6.031	6.156	6.281	6.328	6.469	6.625	6.750	6.875	7.064	5.375	86
88	5.500	5.906	5.969	6.031	6.141	6.156	6.281	6.406	6.453	6.594	6.750	6.875	7.000	7.189	5.500	88
90	5.625	6.031	6.094	6.156	6.266	6.281	6.406	6.531	6.578	6.719	6.875	7.000	7.125	7.314	5.625	90
92	5.750	6.156	6.219	6.281	6.391	6.406	6.531	6.656	6.703	6.844	7.000	7.125	7.250	7.439	5.750	92
94	5.875	6.281	6.344	6.406	6.516	6.531	6.656	6.781	6.828	6.969	7.125	7.250	7.375	7.564	5.875	94
96	6.000	6.406	6.469	6.531	6.641	6.656	6.781	6.906	6.953	7.094	7.250	7.375	7.500	7.689	6.000	96
98	6.125	6.531	6.594	6.656	6.766	6.781	6.906	7.031	7.078	7.219	7.375	7.500	7.625	7.814	6.125	98
100	6.250	6.656	6.719	6.781	6.891	6.906	7.031	7.156	7.203	7.344	7.500	7.625	7.750	7.939	6.250	100
102	6.375	6.781	6.844	6.901	7.016	7.031	7.156	7.281	7.328	7.469	7.625	7.750	7.875	8.064	6.375	102
104	6.500	6.906	6.969	7.031	7.141	7.156	7.281	7.406	7.453	7.594	7.750	7.875	8.000	8.189	6.500	104
106	6.625	7.031	7.094	7.156	7.266	7.281	7.406	7.531	7.578	7.719	7.875	8.000	8.125	8.314	6.625	106
108	6.750	7.156	7.219	7.281	7.391	7.406	7.531	7.656	7.703	7.844	8.000	8.125	8.250	8.439	6.750	108
110	6.875	7.281	7.344	7.406	7.516	7.531	7.656	7.781	7.828	7.969	8.125	8.250	8.375	8.564	6.875	110
112	7.000	7.406	7.469	7.531	7.641	7.656	7.781	7.906	7.953	8.094	8.250	8.375	8.500	8.689	7.000	112
114	7.125	7.531	7.594	7.656	7.766	7.781	7.906	8.031	8.078	8.219	8.375	8.500	8.625	8.814	7.125	114
116	7.250	7.656	7.719	7.781	7.891	7.906	8.031	8.156	8.203	8.344	8.500	8.625	8.750	8.939	7.250	116
118	7.375	7.781	7.844	7.901	8.016	8.031	8.156	8.281	8.328	8.465	8.625	8.750	8.875	9.064	7.375	118
120	7.500	7.906	7.969	8.031	8.141	8.156	8.281	8.406	8.453	8.594	8.750	8.875	9.000	9.189	7.500	120
122	7.625	8.031	8.094	8.156	8.266	8.281	8.406	8.531	8.578	8.719	8.875	9.000	9.125	9.314	7.625	122
124	7.750	8.156	8.219	8.281	8.391	8.406	8.531	8.656	8.703	8.844	9.000	9.125	9.250	9.439	7.750	124
126	7.875	8.281	8.344	8.406	8.516	8.531	8.656	8.781	8.828	8.969	9.125	9.250	9.375	9.564	7.875	126
128	8.000	8.406	8.469	8.531	8.641	8.656	8.781	8.906	8.953	9.094	9.250	9.375	9.500	9.689	8.000	128

DATE 31 AUG 50 REV. (C) 4 FEB 58 (D) 30 SEP 63

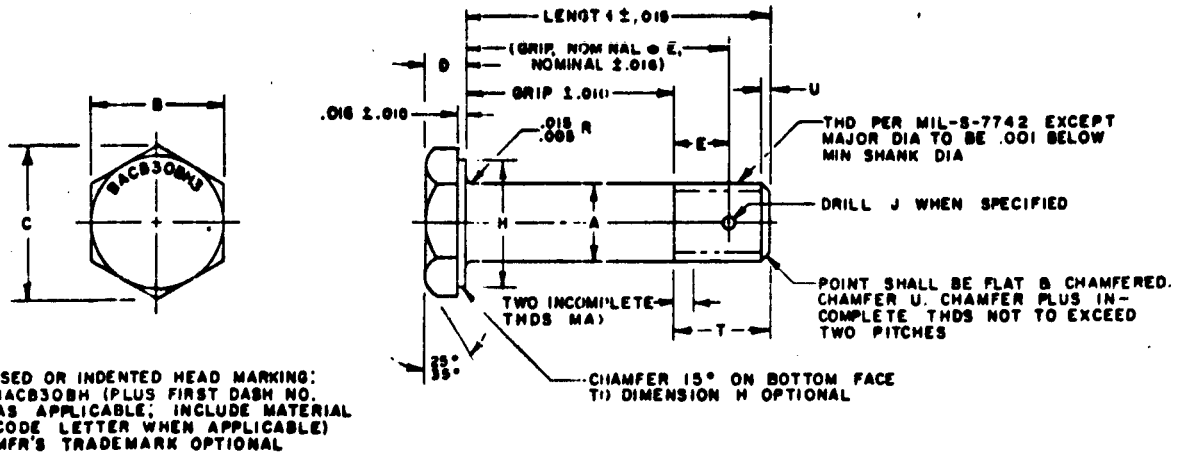
CODE 81205

BAC B30BG SH 2

BOLT, HEX HEAD, CLOSE TOLERANCE
CORROSION & HEAT RESISTANT
OR LOW MAGNETIC PERMEABILITY

BAC B30BG SH 2

BOEING STANDARD



FIRST DASH NUMBER	THREAD	A DIA	B	C (REF)	D ±.016	E	H DIA ±.016	J +.005 -.000	T (REF)	U (REF)	INSPECTION TEST VALUES (MIN. LBS.) (1) AMS5721 (19-9DL) TENSILE (120 KSI)	AMS5721 (19-9DL) DOUBLE SHEAR (72 KSI)	AMS5735 (A286) TENSILE (130 KSI)	AMS5735 (A286) DOUBLE SHEAR (78 KSI)
3	10-32-NF-3A	.1894 .1889	.377 .365	.430	.094	.188	.375	.070	.344	.016	2,380	4,080	2,590	4,410
4	1/4-28 UNF-3A	.2492 .2487	.440 .428	.510	.125	.188	.438	.076	.344	.018	4,340	7,070	4,710	7,660
5	5/16-24 UNF-3A	.3117 .3112	.502 .490	.580	.156	.188	.500	.076	.359	.021	6,940	11,000	7,530	11,970
6	3/8-24 UNF-3A	.3742 .3737	.565 .553	.650	.188	.219	.563	.106	.359	.021	10,500	15,900	11,400	17,200
7	7/16-20 UNF-3A	.4367 .4362	.627 .615	.720	.219	.219	.625	.106	.422	.025	14,200	21,600	15,400	23,400
8	1/2-20 UNF-3A	.4991 .4986	.752 .740	.870	.250	.250	.750	.106	.422	.025	19,100	28,300	20,800	30,600
9	9/16-18 UNF-3	.5616 .5611	.877 .865	1.010	.281	.312	.875	.141	.500	.028	24,300	35,800	26,300	38,800
10	5/8-18 UNF-3A	.6240 .6234	.940 .928	1.090	.312	.312	.938	.141	.500	.028	30,600	44,000	33,200	47,900
12	3/4-16 UNF-3A	.7488 .7481	1.066 1.053	1.230	.375	.375	1.063	.141	.562	.031	44,600	63,600	48,400	68,900
14	7/8-14 UNF-3A	.8737 .8729	1.253 1.240	1.440	.437	.438	1.250	.141	.641	.036	61,100	86,600	66,100	93,800
16	1-14 NF-3A	.9986 .9975	1.441 1.428	1.660	.500	.500	1.438	.141	.703	.036	81,500	113,100	88,300	122,500

(1) ULTIMATE TENSILE STRENGTH: VALUES ARE CALCULATED FROM BASIC TENSILE STRENGTH AND STRESS AREA OF THREAD PER H28.
ULTIMATE DOUBLE SHEAR: MIN. VALUES WHEN TESTED IN JIG PER D2-2860. VALUES ARE CALCULATED FROM BASIC SHEAR STRENGTH AND NOM. SHANK AREA.

PROCUREMENT SPECIFICATION: MIL-B-6812 AS APPLICABLE. AMS7479 SHALL APPLY TO "C" BOLTS EXCEPT MATERIAL IS LIMITED TO AMS5735.

MATERIAL: NO LETTER = CORROSION AND HEAT RESISTANT STEEL PER AMS5721 (19-9DL) OR AMS5735 (A286).
C = CORROSION AND HEAT RESISTANT STEEL PER AMS5735 (A286) WITH THREADS ROLLED AFTER AGING.

FINISH: NONE.

PROCUREMENT: MAY BE PROCURED FROM ANY AVAILABLE SATISFACTORY SOURCE.

USAGE AND APPLICATION INFORMATION

THESE BOLTS MAY BE USED IN CORROSIVE ENVIRONMENTS UP TO 1200°F.

CODE: FIRST DASH NUMBER INDICATES NOMINAL DIAMETER OF BOLT IN 16THS. AS SHOWN IN TABULATION ABOVE.
SECOND DASH NUMBER INDICATES GRIP OF BOLT IN .062 INCREMENTS WITH CORRESPONDING LENGTH. ONLY .125 INCREMENTS ARE TABULATED ON BACB30BH, PAGE 2. FOR INTERMEDIATE GRIP LENGTHS USE OTHER DASH NUMBERS (SEE EXAMPLE).

ADD "C" BETWEEN FIRST AND SECOND DASH NUMBERS FOR A286 MATERIAL. NO LETTER INDICATES 19-9DL STEEL OR A286.
ADD "A" AFTER SECOND DASH NUMBER FOR UNDRILLED BOLTS.
BACB30BH3-8 = 10-32 BOLT, 19-9DL OR A286 STEEL .500 GRIP, .844 LENGTH, DRILLED SHANK.
BACB30BH3-8A = 10-32 BOLT, 19-9DL OR A286 STEEL .500 GRIP, .844 LENGTH, UNDRILLED SHANK.
BACB30BH3-9A = 10-32 BOLT, 19-9DL OR A286 STEEL .562 GRIP, .906 LENGTH, UNDRILLED SHANK.
BACB30BH3C8 = 10-32 BOLT, A286 STEEL, .500 GRIP, .844 LENGTH, DRILLED SHANK.

SEE SHEET 2 FOR GRIP AND LENGTH DIMENSIONS.

SEE PREFACE FOR GENERAL USAGE NOTES.

1	REV J	2	REV C
LIST OF ACTIVE SHEETS			

DATE 3 AUG 50 REV. (H) 22 MAY 64 (J) 20 AUG 64

CODE IDENT. NO. 81205

BAC B30BH SH 1 OF 2

BOLT, SHEAR, THIN HEX HEAD, SHORT THREAD, CORROSION & HEAT RESISTANT

BAC B30BH SH 1 OF 2

BACB30H GRIP & LENGTH DIMENSIONS

SEE SHEET 1 FOR OTHER DIMENSIONS AND INFORMATION

SECOND DASH NUMBER	GRIP (ALL SIZES)	LENGTH FOR SIZES INDICATED											GRIP (ALL SIZES)	SECOND DASH NUMBER
		10-32	1/4-28	5/16-24	3/8-24	7/16-20	1/2-20	9/16-18	5/8-16	3/4-16	7/8-14	1-14		
2	.125	.469	.469	.484	.484	.547	.547	.625	.625	.687	.766	.828	.125	2
4	.250	.594	.594	.609	.609	.672	.672	.750	.750	.812	.891	.953	.250	4
6	.375	.719	.719	.734	.734	.796	.796	.875	.875	.937	1.016	1.078	.375	6
8	.500	.844	.844	.859	.859	.922	.922	1.000	1.000	1.062	1.141	1.203	.500	8
10	.625	.969	.969	.984	.984	1.047	1.047	1.125	1.125	1.187	1.266	1.328	.625	10
12	.750	1.094	1.094	1.109	1.109	1.172	1.172	1.250	1.250	1.312	1.391	1.453	.750	12
14	.875	1.219	1.219	1.234	1.234	1.297	1.297	1.375	1.375	1.437	1.516	1.578	.875	14
16	1.000	1.344	1.344	1.359	1.359	1.422	1.422	1.500	1.500	1.562	1.641	1.703	1.000	16
18	1.125	1.469	1.469	1.484	1.484	1.547	1.547	1.625	1.625	1.687	1.766	1.828	1.125	18
20	1.250	1.594	1.594	1.609	1.609	1.672	1.672	1.750	1.750	1.812	1.891	1.953	1.250	20
22	1.375	1.719	1.719	1.734	1.734	1.797	1.797	1.875	1.875	1.937	2.016	2.078	1.375	22
24	1.500	1.844	1.844	1.859	1.859	1.922	1.922	2.000	2.000	2.062	2.141	2.203	1.500	24
26	1.625	1.969	1.969	1.984	1.984	2.047	2.047	2.125	2.125	2.187	2.266	2.328	1.625	26
28	1.750	2.094	2.094	2.109	2.109	2.172	2.172	2.250	2.250	2.312	2.391	2.453	1.750	28
30	1.875	2.219	2.219	2.234	2.234	2.297	2.297	2.375	2.375	2.437	2.516	2.578	1.875	30
32	2.000	2.344	2.344	2.359	2.359	2.422	2.422	2.500	2.500	2.562	2.641	2.703	2.000	32
34	2.125	2.469	2.469	2.484	2.484	2.547	2.547	2.625	2.625	2.687	2.766	2.828	2.125	34
36	2.250	2.594	2.594	2.609	2.609	2.672	2.672	2.750	2.750	2.812	2.891	2.953	2.250	36
38	2.375	2.719	2.719	2.734	2.734	2.797	2.797	2.875	2.875	2.937	3.016	3.078	2.375	38
40	2.500	2.844	2.844	2.859	2.859	2.922	2.922	3.000	3.000	3.062	3.141	3.203	2.500	40
42	2.625	2.969	2.969	2.984	2.984	3.047	3.047	3.125	3.125	3.187	3.266	3.328	2.625	42
44	2.750	3.094	3.094	3.109	3.109	3.172	3.172	3.250	3.250	3.312	3.391	3.453	2.750	44
46	2.875	3.219	3.219	3.234	3.234	3.297	3.297	3.375	3.375	3.437	3.516	3.578	2.875	46
48	3.000	3.344	3.344	3.359	3.359	3.422	3.422	3.500	3.500	3.562	3.641	3.703	3.000	48
50	3.125	3.469	3.469	3.484	3.484	3.547	3.547	3.625	3.625	3.687	3.766	3.828	3.215	50
52	3.250	3.594	3.594	3.609	3.609	3.672	3.672	3.750	3.750	3.812	3.891	3.953	3.250	52
54	3.375	3.719	3.719	3.734	3.734	3.797	3.797	3.875	3.875	3.937	4.016	4.078	3.375	54
56	3.500	3.844	3.844	3.859	3.859	3.922	3.922	4.000	4.000	4.062	4.141	4.203	3.500	56
58	3.625	3.969	3.969	3.984	3.984	4.047	4.047	4.125	4.125	4.187	4.266	4.328	3.625	58
60	3.750	4.094	4.094	4.109	4.109	4.172	4.172	4.250	4.250	4.312	4.391	4.453	3.750	60
62	3.875	4.219	4.219	4.234	4.234	4.297	4.297	4.375	4.375	4.437	4.516	4.578	3.875	62
64	4.000	4.344	4.344	4.359	4.359	4.422	4.422	4.500	4.500	4.562	4.641	4.703	4.000	64
66	4.125	4.469	4.469	4.484	4.484	4.547	4.547	4.625	4.625	4.687	4.766	4.828	4.125	66
68	4.250	4.594	4.594	4.609	4.609	4.672	4.672	4.750	4.750	4.812	4.891	4.953	4.250	68
70	4.375	4.719	4.719	4.734	4.734	4.797	4.797	4.875	4.875	4.937	5.016	5.078	4.375	70
72	4.500	4.844	4.844	4.859	4.859	4.922	4.922	5.000	5.000	5.062	5.141	5.203	4.500	72
74	4.625	4.969	4.969	4.984	4.984	5.047	5.047	5.125	5.125	5.187	5.266	5.328	4.625	74
76	4.750	5.094	5.094	5.109	5.109	5.172	5.172	5.250	5.250	5.312	5.391	5.453	4.750	76
78	4.875	5.219	5.219	5.234	5.234	5.297	5.297	5.375	5.375	5.437	5.516	5.578	4.875	78
80	5.000	5.344	5.344	5.359	5.359	5.422	5.422	5.500	5.500	5.562	5.641	5.703	5.000	80
82	5.125	5.469	5.469	5.484	5.484	5.547	5.547	5.625	5.625	5.687	5.766	5.828	5.125	82
84	5.250	5.594	5.594	5.609	5.609	5.672	5.672	5.750	5.750	5.812	5.891	5.953	5.250	84
86	5.375	5.719	5.719	5.734	5.734	5.797	5.797	5.875	5.875	5.937	6.016	6.078	5.375	86
88	5.500	5.844	5.844	5.859	5.859	5.922	5.922	6.000	6.000	6.062	6.141	6.203	5.500	88
90	5.625	5.969	5.969	5.984	5.984	6.047	6.047	6.125	6.125	6.187	6.266	6.328	5.625	90
92	5.750	6.094	6.094	6.109	6.109	6.172	6.172	6.250	6.250	6.312	6.391	6.453	5.750	92
94	5.875	6.219	6.219	6.234	6.234	6.297	6.297	6.375	6.375	6.437	6.516	6.578	5.875	94
96	6.000	6.344	6.344	6.359	6.359	6.422	6.422	6.500	6.500	6.562	6.641	6.703	6.000	96
98	6.125	6.469	6.469	6.484	6.484	6.547	6.547	6.625	6.625	6.687	6.766	6.828	6.125	98
100	6.250	6.594	6.594	6.609	6.609	6.672	6.672	6.750	6.750	6.812	6.891	6.953	6.250	100
102	6.375	6.719	6.719	6.734	6.734	6.797	6.797	6.875	6.875	6.937	7.016	7.078	6.375	102
104	6.500	6.844	6.844	6.859	6.859	6.922	6.922	7.000	7.000	7.062	7.141	7.203	6.500	104
106	6.625	6.969	6.969	6.984	6.984	7.047	7.047	7.125	7.125	7.187	7.266	7.328	6.625	106
108	6.750	7.094	7.094	7.109	7.109	7.172	7.172	7.250	7.250	7.312	7.391	7.453	6.750	108
110	6.875	7.219	7.219	7.234	7.234	7.297	7.297	7.375	7.375	7.437	7.516	7.578	6.875	110
112	7.000	7.344	7.344	7.359	7.359	7.422	7.422	7.500	7.500	7.562	7.641	7.703	7.000	112
114	7.125	7.469	7.469	7.484	7.484	7.547	7.547	7.625	7.625	7.687	7.766	7.828	7.125	114
116	7.250	7.594	7.594	7.609	7.609	7.672	7.672	7.750	7.750	7.812	7.891	7.953	7.250	116
118	7.375	7.719	7.719	7.734	7.734	7.797	7.797	7.875	7.875	7.937	8.016	8.078	7.375	118
120	7.500	7.844	7.844	7.859	7.859	7.922	7.922	8.000	8.000	8.062	8.141	8.203	7.500	120
122	7.625	7.969	7.969	7.984	7.984	8.047	8.047	8.125	8.125	8.187	8.266	8.328	7.625	122
124	7.750	8.094	8.094	8.109	8.109	8.172	8.172	8.250	8.250	8.312	8.391	8.453	7.750	124
126	7.875	8.219	8.219	8.234	8.234	8.297	8.297	8.375	8.375	8.437	8.516	8.578	7.875	126
128	8.000	8.344	8.344	8.359	8.359	8.422	8.422	8.500	8.500	8.562	8.641	8.703	8.000	128

DATE 3 AUG 50 REV. (C) 22 MAY 64

CODE IDENT NO. 81205

BAC B30BH SH 2

BOLT, SHEAR, THIN HEX HEAD, SHORT THREAD, CORROSION & HEAT RESISTANT

BAC B30BH SH 2

BOEING STANDARD

#5469

DATE 7-11-66 (5)

CUSTOMER Boeing Lo 493 [illegible] 072 P. O. NO. a 4102-1 [illegible]

JOB NO. Y17988Y63437 QTY. 10100 QUANTITY

PART NO. BAE-030BG3K6 MFG. SPEC. MIL B 6812A

MATERIAL K Monel SPEC. QQ5258 HEAT NO. M 9056

INSPECTION AND TEST RESULTS

CHARACTERISTICS	CODE	ACC	REJ		CODE	ACC	REJ		CODE	ACC	REJ
THREAD SIZE & FORM	101	300		BURRS & TOOL MARKS	113	300		DRILLED HOLE DIA.LOC.& DEPTH			
SHANK DIA.	102	300		CONCENTRICITY				CHAMFER ON THREADED END	301	300	
IMPERFECT THREAD	103	300		HEADS - SHANKS THREADS				LAND HEIGHT			
GRIP LENGTH	104	300		SURFACE ROUGHNESS	110	300		CHAM. TOP SURF. HEX HEAD BOLTS			
RADIUS UNDER HEAD	105	300		SURFACE FINISH. PLATING	111	300		WASHER FACE DIM.			
DRILLED COTTER PIN & LOCK WIRE HOLE	[illegible]	300		IDENTIFICATION	112	300		CONCENTRICITY - SOCKET & HEAD			
RETRIS IN HEAD				OVERALL LENGTH	201	300		SLOT DIM. & LOCATION			
SHANK - STRAIGHT	109	300		HEAD DIA. WIDTH ACROSS FLATS	202	300					
HEAD HEIGHT	203	300		RECESS DIMENSIONS							
HEX SOCKET RADII				LAND HEIGHT							

CHEMICAL / MECHANICAL	1	2	3	4	5
TENSILE STRENGTH	3640	3560	3580	3600	3540
DOUBLE SHEAR	4760	4760	4740	4800	4750
FATIGUE					
STRESS RUPTURE					
STRESS RUPTURE					
HARDNESS	C31	C30	C31	C30	C31

HEAT NO.	CAR	MANG	PHOS	SUL	SIL	NIC	CHR	MOLY	VA	TI
M 9056	14	58	[illegible]	005	17	65.07				53

MANUFACTURER	AL	CB	CU	FE	ZN	MG	W	TIN	CO	OTHER
Inco Alloy	2.67		30.29	50						

5 SPECIMEN

METALLURGICAL

GRAIN SIZE	HEAD STRUCTURE per spec
FILLET COLD WORK	DECARBURIZATION
GRAIN FLOW - HEAD	GRAIN FLOW - THREADS
LAPS 1 acc	SEAMS 1 acc
CRACKS 1 acc	THREAD RUN-OUT per spec

MICRO-STRUCTURE per spec

CARBURIZATION

INSPECTION

MAGNETIC PARTICLE	INSPECTION PENETRANT mil I 6866
CARRIER PER MIL-STD-105 TIGHTENED INSPECTION MODE	

	AQL	MAJ	REJ
MAJOR	6.5	21	22
MINOR A	6.5	21	22
MINOR B	10.0	32	33

DAA 33

Product Assurance Department
material specifications
table specifications
subject to examination

NO. 25-65319-83

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