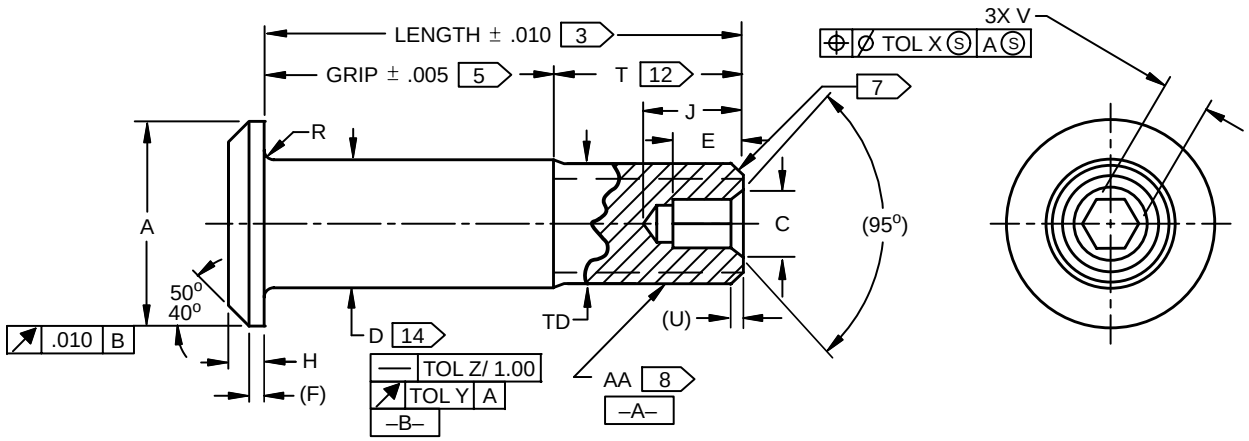


DIMENSIONING AND TOLERANCING PER ANSI Y14.5M–1982.
DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.
DIMENSIONS APPLY AFTER FINISH UNLESS OTHERWISE SPECIFIED.

TECHNICAL CHANGES IDENTIFIED BY REVISION BAR.

TABLE I

BOEING STANDARD NUMBER BACB30FM [4]	AA NOMINAL THREAD SIZE [8]	Ø D						
		BEFORE FINISH				AFTER FINISH		
		CADMIUM PLATE		ALUM COAT ON STEEL	ALUM COAT, SOLID–FILM ON CRES	ALL [11]	ALL EXCEPT PASSIVATE WITH NO LUBE OR CETYL	PASSIVATE WITH NO LUBE OR CETYL
		MAX	MIN	MIN	MIN	MAX	MIN	MIN
5	.1640–32	.1625	.1619	.1617	.1621	.1635	.1625	.1630
6	.1900–32	.1885	.1879	.1877	.1881	.1895	.1885	.1890
8	.2500–28	.2485	.2479	.2477	.2481	.2495	.2485	.2490
10	.3125–24	.3110	.3104	.3102	.3106	.3120	.3110	.3115
12	.3750–24	.3735	.3729	.3727	.3731	.3745	.3735	.3740
14	.4375–20	.4360	.4354	.4352	.4356	.4370	.4360	.4365
16	.5000–20	.4985	.4979	.4977	.4981	.4995	.4985	.4990
18	.5625–18	.5605	.5599	.5597	.5601	.5615	.5605	.5610
20	.6250–18	.6230	.6224	.6222	.6226	.6240	.6230	.6235
24	.7500–16	.7480	.7474	.7472	.7476	.7490	.7480	.7485
28	.8750–14	.8730	.8724	.8722	.8726	.8740	.8730	.8735
32	1.0000–12	.9980	.9974	.9972	.9976	.9990	.9980	.9985

TABLE I (CONTINUED)

BOEING STANDARD NUMBER BACB30FM (4)	Ø A		Ø C ±.010	E MIN	F REF	H		J MAX	R RAD	
	MAX	MIN				MAX	MIN		MAX	MIN
5	.262	.242	(1)	.115	.020	.047	.037	.178	.025	.015
6	.315	.295	(2)	.115	.025	.055	.045	.178	.025	.015
8	.412	.387	.132	.130	.030	.069	.059	.200	.025	.015
10	.505	.475	.170	.150	.035	.078	.068	.240	.030	.020
12	.600	.565	.207	.180	.040	.088	.078	.275	.030	.020
14	.676	.641	.243	.210	.045	.105	.093	.315	.030	.020
16	.770	.735	.279	.240	.050	.115	.103	.360	.030	.020
18	.864	.829	.316	.270	.055	.127	.112	.400	.040	.025
20	.953	.918	.316	.305	.060	.137	.122	.440	.040	.025
24	1.108	1.066	.388	.365	.070	.151	.136	.520	.045	.030
28	1.285	1.241	.461	.425	.090	.187	.172	.610	.050	.035
32	1.468	1.424	.608	.550	.110	.218	.203	.770	.060	.045

TABLE I (CONTINUED)

BOEING STANDARD NUMBER BACB30FM [4]	T [12]	Ø TD [8]		U REF	Ø V HEX		TOLERANCE		
		MAX	MIN		MAX	MIN	X	Y	Z
5	.312	.1595	.1570	.031	.0801	.0791	.010	.0045	.0040
6	.325	.1840	.1810	.031	.0806	.0791	.010	.0045	.0040
8	.395	.2440	.2410	.031	.0967	.0947	.010	.0045	.0030
10	.500	.3060	.3020	.047	.1295	.1270	.012	.0045	.0030
12	.545	.3680	.3640	.047	.1617	.1582	.014	.0060	.0025
14	.635	.4310	.4260	.047	.1930	.1895	.017	.0060	.0025
16	.685	.4930	.4880	.047	.2242	.2207	.020	.0060	.0020
18	.770	.5550	.5500	.062	.2555	.2520	.023	.0060	.0020
20	.825	.6180	.6120	.062	.2555	.2520	.025	.0060	.0020
24	1.050	.7430	.7370	.062	.3185	.3150	.030	.0090	.0020
28	1.210	.8680	.8610	.078	.3820	.3780	.035	.0090	.0020
32	1.390	.9930	.9860	.078	.5100	.5040	.040	.0090	.0020

NOTES

1. ON SIZE 5 ONLY, COUNTERSINK TO A DEPTH TO BREAK CORNERS OF THE HEX.

2. FOR SIZE 6 ONLY, COUNTERSUNK TO DIAMETER .104 – .119.

3. THE TOLERANCE SHALL BE APPLIED TO A NOMINAL LENGTH DETERMINED BY ADDING THE NOMINAL GRIP LENGTH (GRIP LENGTH NUMBER TIMES .0625) AND “T” FROM TABLE I.

4. SEE CODING UNDER USAGE AND APPLICATION FOR COMPLETE BOEING PART NUMBER.

5. APPLY TOLERANCE TO A NOMINAL GRIP LENGTH DETERMINED BY MULTIPLYING THE GRIP LENGTH NUMBER (SECOND DASH NUMBER) BY .0625. GRIP LENGTH IS MEASURED FROM THE UNDERSIDE OF THE HEAD TO THE END OF THE FULL CYLINDRICAL PORTION OF THE SHANK.

6. BOLTS USED IN LIQUID OXYGEN (LOX) SYSTEMS. BOLTS SHALL NOT HAVE LUBRICANT, PAINT OR DYE.

7. END SHALL BE FLAT AND CHAMFERED. SEE BPS–F–67 FOR DETAILS.

8. THREADS PER AS8879, CLASS UNJF–3A EXCEPT CLASS UNJC–3A FOR SIZE 5. REDUCED MAJOR DIAMETER SHALL CONFORM TO “TD”.

9. SEE INACTIVATION APPLICABILITY BLOCK.

10. SEE QPL TO BMS10–85 FOR APPROVED APPLICATORS. THE INSPECTION REPORT SHALL INCLUDE THE NAME OF THE COATING APPLICATOR, IF OTHER THAN THE FASTENER MANUFACTURER.

11. MAXIMUM “D” DIAMETER MAY BE EXCEEDED BY .0002 FOR SOLID–FILM LUBED BOLTS.

12. THE “T” DIMENSION IS NOMINAL AND DOES NOT HAVE AN APPLIED TOLERANCE. DIMENSION “T” IS NOT TO BE INSPECTED, BUT IS USED IN CALCULATION OF NOMINAL BOLT LENGTH. 3

13. TO DETERMINE THE GRIP LENGTH NUMBER, DIVIDE THE TOTAL THICKNESS OF PARTS BEING JOINED BY .0625. ROUND OFF DECIMALS TO NEXT LARGER WHOLE NUMBER.

14. RUNOUT OF THE “D” DIAMETER TO THE THREAD PITCH DIAMETER WITHIN “Y” FIM WHEN HELD ON THE PITCH DIAMETER OF THE COMPLETE THREADS NEAREST THE SHANK AND CHECKED ON THE SHANK WITHIN ONE DIAMETER OF THE THREAD RUNOUT.

15. HUCK LAKEWOOD (FORMERLY DEUTSCH FASTENER CORP) IS NO LONGER IN OPERATION. PARTS MANUFACTURED AT THAT FACILITY (CAGE CODE 97928) UNDER EITHER NAME PRIOR TO OCTOBER 1, 1999 MAY BE PROCURED AND USED BY BOEING AND ITS SUBCONTRACTORS UNTIL STOCKS ARE DEPLETED.

NOTES (CONTINUED)

16 FAIRCHILD FASTENERS (TEMPLE) IS NOW ALCOA FASTENING SYSTEMS – INDUSTRY (TEMPLE). THIS CHANGE WAS A NAME CHANGE ONLY. STOCK MANUFACTURED UNDER THE FAIRCHILD NAME MAY BE PROCURED AND USED UNTIL DEPLETED.

17 FAIRCHILD FASTENERS (UNRUH) IS NOW ALCOA FASTENING SYSTEMS – INDUSTRY (UNRUH). THIS CHANGE WAS A NAME CHANGE ONLY. STOCK MANUFACTURED UNDER THE FAIRCHILD NAME MAY BE PROCURED AND USED UNTIL DEPLETED.

18 HUCK INTERNATIONAL INC (CARSON) IS NOW ALCOA FASTENING SYSTEMS – CARSON. THIS CHANGE WAS A NAME CHANGE ONLY. STOCK MANUFACTURED UNDER THE HUCK NAME MAY BE PROCURED AND USED UNTIL DEPLETED.

19 HI–SHEAR CORP IS NOW LISI AEROSPACE – HI–SHEAR PRODUCTS. THIS CHANGE WAS A NAME CHANGE ONLY. STOCK MANUFACTURED UNDER THE "HI–SHEAR CORP" NAME MAY BE PROCURED AND USED UNTIL DEPLETED.

PROCUREMENT SPECIFICATION

BPS–F–67.

MATERIAL

ALLOY STEEL – 4130 PER AMS–S–6758 OR MIL–S–6758, 4140 PER AMS 6382, AMS 6349, OR MIL–S–5626, 8740 PER AMS 6322, AMS 6325, AMS 6327, OR MIL–S–6049, OR 4340 PER AMS 6415 OR AMS 6484.

A286 CRES – PER AMS 5731 OR AMS 5737.

FINISH

ALLOY STEEL:

ALUMINUM PIGMENTED COATING PER BMS10–85, TYPE I, CLASS A. IDENTIFY WITH BLACK DYE OR PAINT ON THREAD END BEFORE LUBRICATION. COVERAGE OF DYE OR PAINT MAY INCLUDE THE CHAMFER DIMENSION PLUS ONE PITCH. 9 10

CADMIUM PLATE PER AMS–QQ–P–416, TYPE II, CLASS 2. EMBRITTLEMENT TEST PER AMS–QQ–P–416 DOES NOT APPLY (SEE PROCUREMENT SPECIFICATION).

A286 CRES:

ALUMINUM PIGMENTED COATING PER BMS10–85, TYPE I, CLASS A. IDENTIFY WITH BLACK DYE OR PAINT ON THREAD END BEFORE LUBRICATION. COVERAGE OF DYE OR PAINT MAY INCLUDE THE CHAMFER DIMENSION PLUS ONE PITCH. 10

CADMIUM PLATE PER AMS–QQ–P–416, TYPE II, CLASS 2, EMBRITTLEMENT TEST DOES NOT APPLY. IDENTIFY WITH GREEN DYE OR PAINT ON THREAD END BEFORE LUBRICATION. COVERAGE OF DYE OR PAINT MAY INCLUDE CHAMFER DIMENSION PLUS ONE PITCH.

PASSIVATE PER AMS 2700, TYPE 2 OR TYPE 8.

SURFACE TEXTURE

PER ASME B46.1. HEAD TO SHANK FILLET, THREAD ROOT, THREAD FLANKS AND SHANK, 32 MICROINCHES Ra; BEARING SURFACE OF HEAD, 63 MICROINCHES Ra; OTHER SURFACES, 125 MICROINCHES Ra.

BROACH TEARS ON HEXAGON WALLS OF ALLOY STEEL FASTENERS ARE PERMITTED TO THE DEPTHS LISTED IN TABLE II, MEASURED NORMAL TO THE FLATS. CRACKS EMANATING FROM THE CORNERS OF THE HEXAGON SOCKET ARE UNACCEPTABLE. HEXAGON SOCKET MUST MEET ALL OTHER REQUIREMENTS OF BPS–F–67.

TABLE II

NOMINAL DIAMETER	MAXIMUM DEPTH
.1900 AND SMALLER	.002
.2500 THROUGH .3750	.003
.4375 AND LARGER	.005

LUBRICATION

CETYL ALCOHOL LUBE PER MIL–L–87132, TYPE I OR TYPE III, GRADE OPTIONAL.

SOLID FILM PER MIL–L–46010, TYPE I (INACTIVE FOR DESIGN AND PROCUREMENT, SEE MIL–L–46010SUP) OR AS5272, TYPE I. AS5272 SHALL BE IN ACCORDANCE WITH THE QPL IN AS5272SUP.

MARKING

BOLT HEADS SHALL BE MARKED WITH MANUFACTURER'S BASIC NUMBER, AND MANUFACTURER'S SYMBOL/INSIGNIA PER TABLE IV, MIL–HDBK–57 OR REGISTERED WITH THE U.S. PATENT AND TRADEMARK OFFICE (PTO) OF THE U.S. DEPARTMENT OF COMMERCE, DIAMETER SIZE NUMBER MAY BE INCLUDED. MARKING SHALL BE INDENTED .010 MAXIMUM, ARRANGEMENT OPTIONAL.

PROCUREMENT

AIR INDUSTRIES CORP (CAGE CODE 06725)

ALCOA FASTENING SYSTEMS – CARSON (CAGE CODE 17446) 18
(FOR SIZES 5 THRU 8, ALLOY STEEL ONLY)

ALCOA FASTENING SYSTEMS – INDUSTRY (TEMPLE) (CAGE CODE 06950) 16
(FOR SIZES 5 THRU 16 ONLY)

ALCOA FASTENING SYSTEMS – INDUSTRY (UNRUH) (CAGE CODE 1RC86) 17
(FOR SIZES 5 THRU 16 ONLY)

LISI AEROSPACE – HI–SHEAR PRODUCTS (CAGE CODE 73197) 19

HUCK INTERNATIONAL, LAKEWOOD OPERATIONS (CAGE CODE 97928) 15

SPS TECHNOLOGIES INC, AEROSPACE AND INDUSTRIAL PRODUCTS DIV,
(CAGE CODE 56878)

WEST COAST AEROSPACE INC, (CAGE CODE 60516)
(FOR SIZES 5 THRU 24 ONLY)

THE MANUFACTURERS LISTED IN BPS–F–67SUP AND THEIR AUTHORIZED DISTRIBUTORS ARE THE ONLY APPROVED SOURCES FOR THE ABOVE QUALIFIED PRODUCTS. SEE BPS–F–67SUP FOR PLANT ADDRESSES. NO CHANGES IN PRODUCT DESIGN, BASIC METHODS OF MANUFACTURE, PLANT SITE OR QUALITY LEVEL SHALL BE MADE WITHOUT PRIOR NOTIFICATION AND PRIOR APPROVAL IN WRITING FROM THE BOEING COMPANY. MANUFACTURERS OF COMPETITIVE PRODUCTS MAY APPLY TO A SUPPLIER MANAGEMENT AND PROCUREMENT DEPARTMENT OF THE BOEING COMPANY FOR QUALIFICATION. IF A MANUFACTURER IS SHOWN ON THIS STANDARD, BUT NOT LISTED IN THE SUPPLEMENT, CONTACT THE DIVISIONAL ENGINEERING STANDARDS FOCAL POINT OR ENGINEERING STANDARDS FOR VERIFICATION.

THIS IS A MANUFACTURER–DESIGNED PRODUCT. BOEING MAKES NO REPRESENTATION WHATEVER REGARDING PATENT OR OTHER RIGHTS AFFECTING THE PRODUCT. THE LISTING OF ANY SUPPLIER DOES NOT IMPLY ANY DETERMINATION BY THE BOEING COMPANY OR BY ANY OTHER LISTED MANUFACTURER AS TO THE RIGHTS OF SUCH MANUFACTURER.

USAGE AND APPLICATION INFORMATION

THESE BOLTS WITH BACC30M COLLARS MAY BE USED TO REPLACE SHEAR LOCKBOLTS AND COLLARS OR HI–SHEAR RIVETS AND COLLARS AS AUTHORIZED IN BAC5004–2.

TO REPLACE .0156, .0312 AND .0468 OVERSIZE BACB30FM5 BOLTS, USE BACB30FM6, BACB30FP6 AND BACB30KK6, RESPECTIVELY.

TO REPLACE .0156, .0312 AND .0468 OVERSIZE BACB30FM6 BOLTS, USE BACB30MC, BACB30MD AND BACB30MA, RESPECTIVELY.

EXCEPT AS NOTED ABOVE, FOR .0156, .0312 AND .0468 OVERSIZE BOLTS, SEE BACB30FP, BACB30KK AND BACB30MA RESPECTIVELY.

THESE BOLTS AND MATING COLLARS WITH COUNTERBORE ARE DESIGNED SO THAT NOMINAL GRIP DIMENSION EQUALS MAXIMUM MATERIAL THICKNESS. ALLOWABLE MINIMUM MATERIAL THICKNESS IS NOMINAL GRIP DIMENSION LESS .062. WHEN MATERIAL THICKNESS IS MINIMUM, .062 OF UNTHREADED SHANK ENTERS COUNTERBORE OF NUT. THIS DESIGN AVOIDS THREADS IN BEARING.

INSTALL PER BAC5004–2 OR BAC5063–2, AS APPLICABLE.

FASTENER CODE

SEE BACD2074 FOR APPLICABLE FASTENER CODES.

CODING

FIRST DASH NUMBER DESIGNATES NOMINAL THREAD SIZE PER TABLE I.

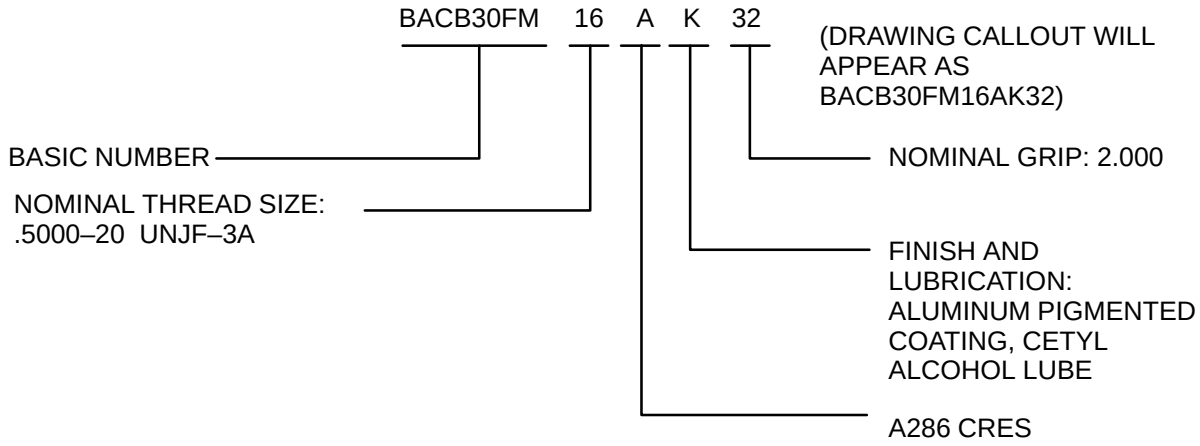
MATERIAL, FINISH AND LUBRICATION CODES FOLLOW FIRST AND SECOND DASH NUMBER PER TABLE III.

SECOND DASH NUMBER DESIGNATES NOMINAL GRIP LENGTH IN .0625 INCREMENTS. 13

TABLE III

BOEING STANDARD NUMBER BACB30FM	MATERIAL	FINISH	LUBRICANT
( )–( ) 9	ALLOY STEEL	CADMIUM PLATE	CETYL ALCOHOL
( )A( )	A286 CRES	CADMIUM PLATE	CETYL ALCOHOL
( )A( )U	A286 CRES	PASSIVATE	CETYL ALCOHOL
( )A( )SU	A286 CRES	PASSIVATE	SOLID FILM LUBE
( )A( )N 6	A286 CRES	CADMIUM PLATE	NO PAINT, DYE OR LUBE
( )A( )NU 6	A286 CRES	PASSIVATE	NO LUBE
( )K( ) 9	ALLOY STEEL	ALUMINUM COAT	CETYL ALCOHOL
( )AK( )	A286 CRES	ALUMINUM COAT	CETYL ALCOHOL

EXAMPLE OF PART NUMBER



FOR STATUS OF INACTIVATION
SEE APPLICABILITY BLOCK

TABLE IV

MANUFACTURER	MANUFACTURER'S BASIC NUMBER					SYMBOL/ INSIGNIA
	ALLOY STEEL		A286 CRES			
	CADMIUM PLATED	ALUMINUM COATED	CADMIUM PLATED	PASSIVATED	ALUMINUM COATED	
AIC	HL18 OR L–805	HL18 OR L–805	HL440 OR L–805	HL40 OR L–805	HL440 OR L–805	♣
DEUTSCH 15	HL18	HL18	HL440	HL40	HL440	DA OR DF
FAIRCHILD	HL18	HL18	HL440	HL40	HL440	VS OR O
LISI AEROSPACE – HI–SHEAR 19 PRODUCTS	HL18	HL18	HL440	HL40	HL440	H, HS OR NONE
HUCK	HL18	HL18	HL440	HL40	HL440	✕
SPS	HL18	HL18	HL440	HL40	HL440	SPS OR S
WESTCOAST	HL18	HL18	HL440	HL40	HL440	WC
THE LISTED BASIC PART NUMBERS ARE FOR INTERCHANGEABILITY PURPOSES ONLY AND ARE NOT TO BE USED FOR DRAWING CALLOUT, PROCUREMENT OR RECEIVING INSPECTION PURPOSES OTHER THAN HEAD MARKING.						

SEE D–590–PREFACE (INDEX) FOR INACTIVATION DEFINITIONS. SEE D–590–SUPERSESSION–LIST FOR SUPERSESSION CLASS DEFINITIONS AND SUPERSESSION LIST. SEE D–590–BOEING–TO–VENDOR FOR VENDOR PART NUMBERS.

INACTIVATION APPLICABILITY

BCA, BH, IDS – BACB30FM( )–( )K AND BACB30FM( )A( )K ARE INACTIVE FOR DESIGN AND PROCUREMENT.
BACB30FM( )K( ) AND BACB30FM( )AK( ) ARE CLASS II SUPERSESSIONS, RESPECTIVELY.

BACB30FM( )A( )LU (LUBECO 2123) IS INACTIVE FOR DESIGN AND PROCUREMENT.
NO SUPERSEDING PARTS.

BCA – BACB30FM(18, 20, 24, 28, 32)(ALL CODES) ARE INACTIVE FOR NEW DESIGN.

BACB30FM( )–( ) IS INACTIVE FOR DESIGN AND PROCUREMENT.
BACB30FM( )A( ) IS A CLASS II SUPERSESSION.

BACB30FM( )K( ) IS INACTIVE FOR DESIGN AND PROCUREMENT.
BACB30FM( )A( ) IS A CLASS II SUPERSESSION.