**INCH-POUND** 

MS51835B 13 May 2014 SUPERSEDING MS51835A 25 November 1970

### **DETAILED SPECIFICATION SHEET**

INSERTS AND STUDS, LOCKED IN - KEY LOCKED, HOLE DIMENSIONS FOR AND ASSEMBLY OF

This specification sheet is approved for all Departments and Agencies of the Department of Defense.

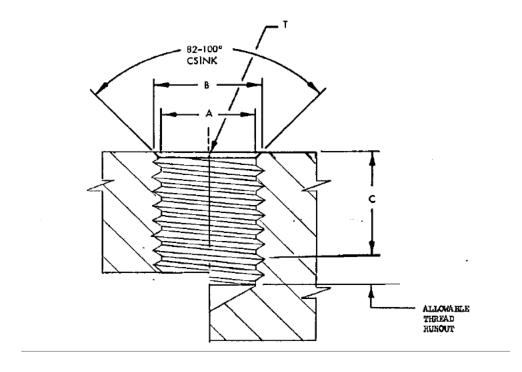


FIGURE 1. Configuration for Tables I, II and III.

AMSC N/A FSC 53GP

TABLE I. Installation hole dimensions for MS51830 and NASM51833.

External Thread Size for Insert and Stud     Insert MS51830 Dash Number (Ref)     Stud MS51833 Dash Number (Ref)     Diameter H010 Diameter Later H010 Diame	Nominal	MS51830	NASM51833	Α	В	Т	С
Thread Size for Insert and Stud     MS51830 Dash Number (Ref)     MS51833 Dash Number (Ref)     Diameter + .010 National Class 2B     Thread National Class 2B       .164-32     -101      .137 (133)     .166     .164-32UNC     .140       .190-32     -102      .164 (160)     .194     .190-32UNF     .160       .216-28     -103      .191 (186)     .220     .216-28UNF     .160       .250-28     -104      .231 (227)     .255     .250-28UNF     .210       .3125-18     -105 (-201)     -101 (276) (271)     .323     .3125-18UNC     .370       .375-16     -106 (-202)     -202 (333)     .385     .375-16UNC     .430       .4375-14     -107 (-203)     -203 (396)     .447     .4375-14UNC     .500       .500-13     -108 (-204)     -104 (457) (452)     .510 (500-13UNC)     .560       .5625-12     -109 (-205)     -205 (515)     .572 (5625-12UNC)     .620       .5625-11     -110     -106 (580)     .583 (635)     .625-11UNC     .680						Thread	_
for Insert and Stud     Dash Number (Ref)     Dash Number (Ref)     +.010000     National Class 2B       .164-32     -101     -     .137 / .133     .166     .164-32UNC     .140       .190-32     -102     -     .164 / .160     .194     .190-32UNF     .160       .216-28     -103     -     .191 / .186     .220     .216-28UNF     .160       .250-28     -104     -     .231 / .227     .255     .250-28UNF     .210       .3125-18     -105 / .201     -101 / .276 / .271     .323     .3125-18UNC     .370       .375-16     -106 / .202     -202     .331     .385     .375-16UNC     .430       .4375-14     -107 / .203     -203     .396     .447     .4375-14UNC     .500       .500-13     -108 / .204     -204     .457 / .452     .510     .500-13UNC     .560       .5625-12     -109 / .205     -205 / .205     .515     .572 / .5625-12UNC     .620       .5521 / .205     -205 / .205     .515     .583     .635 / .11UNC     .680							
and Stud     (Ref)     (Ref)    000     Class 2B       .164-32     -101     -     .137 .133     .166     .164-32UNC     .140       .190-32     -102     -     .164 .160     .194     .190-32UNF     .160       .216-28     -103     -     .191 .186     .220     .216-28UNF     .160       .250-28     -104     -     .231 .227     .255     .250-28UNF     .210       .3125-18     -105 -201     -101 -201     .276 .271     .323     .3125-18UNC     .370       .375-16     -106 -202     -202     .331     .385     .375-16UNC     .430       .4375-14     -107 -203     -103 -203     .401 -203     .447     .4375-14UNC     .500       .500-13     -108 -204     -104 -204     .457 -204     .510     .500-13UNC     .560       .5625-12     -109 -205     -205 -205     .515 -205     .572 -515     .5625-12UNC     .620							
.164-32   -101    .137 (133)   .166   .164-32UNC   .140     .190-32   -102    .164 (160)   .194 (190-32UNF)   .160     .216-28   -103    .191 (186)   .220 (190-32UNF)   .160     .250-28   -104    .231 (227)   .255 (250-28UNF)   .210     .3125-18   -105 (271)   .276 (271)   .323 (3125-18UNC)   .370     .375-16   -106 (202)   -201 (271)   .323 (3125-18UNC)   .370     .375-16   -106 (202)   -202 (331)   .385 (375-16UNC)   .430     .4375-14   -107 (203)   -203 (396)   .447 (4375-14UNC)   .500     .500-13   -108 (204)   -104 (457)   .510 (500-13UNC)   .560     .5625-12   -109 (205)   -205 (515)   .572 (5625-12UNC)   .620     .5521 (205)   -205 (511)   -510 (620)   .5625-11UNC   .680	and Stud				000		
.164-32		(1331)	(* 151)		1000		
.190-32   -102   -   .164	.164-32	-101			.166	.164-32UNC	.140
.190-32							
.216-28   -103    .191	.190-32	-102			.194	.190-32UNF	.160
.210-28 -103  .186 .220 .216-280NF .160   .250-28 -104  .231				.160			
.250-28 -104  .231	040.00	400		.191	000	040 001 NE	400
.250-28	.216-28	-103		.186	.220	.216-28UNF	.160
.250-28				224			
.3125-18 -105 -201 -101 -201 .276 .271 .323 .3125-18UNC .370   .375-16 -106 -202 -102 -202 .336 .331 .385 .375-16UNC .430   .4375-14 -107 -203 -103 -203 .401 .396 .447 .4375-14UNC .500   .500-13 -108 -204 -104 -204 .457 .452 .510 .500-13UNC .560   .5625-12 -109 -205 -105 -205 .521 .515 .572 .5625-12UNC .620   .625-11 -110 -106 .583 .635 .625-11UNC .680	.250-28	-104			.255	.250-28UNF	.210
.3125-18 -201 -201 .271 .323 .3125-18UNC .370   .375-16 -106 -202 -102 -202 .336 .331 .385 .375-16UNC .430   .4375-14 -107 -203 -103 -203 .401 .396 .447 .4375-14UNC .500   .500-13 -108 -204 -104 -204 .457 .452 .510 .500-13UNC .560   .5625-12 -109 -205 -105 -205 .521 .515 .572 .5625-12UNC .620   .625-11 -110 -106 .583 .635 .625-11UNC .680				.221			
.375-16	2125 10	-105	-101	.276	222	2425 40LINIC	270
.375-16 -202 .331 .385 .375-16UNC .430   .4375-14 -107	.3125-16	-201	-201	.271	.525	.3125-16UNC	.370
.375-16 -202 .331 .385 .375-16UNC .430   .4375-14 -107		106	102	336			
.4375-14 -107	.375-16				.385	.375-16UNC	.430
.4375-14 -203 .396 .447 .4375-14UNC .500   .500-13 -108				.551			
.500-13 -108 -204 -104 -204 .457 .452 .510 .500-13UNC .560   .5625-12 -109 -205 -105 -205 .521 .515 .572 .5625-12UNC .620   .625-11 -110 -106 .583 .635 .625-11UNC .680	4375-14	_		_	447	4375-14LINC	500
.500-13 -204 -204 .452 .510 .500-13UNC .560   .5625-12 -109	.4070-14	-203	-203	.396		.4070-14010	.500
.500-13 -204 -204 .452 .510 .500-13UNC .560   .5625-12 -109		-108	-104	457			
.5625-12 -109 -105 .521 .572 .5625-12UNC .620 .625-11 -110 -106 .583 .635 .625-11UNC .680	.500-13			_	.510	.500-13UNC	.560
-205 -205 .515 .572 .5625-12UNC .620 625-11 -110 -106 .583 635 625-11UNC 680							
-205 -205 .515 -211 -110 -106 .583 635 625-11 INC 680	.5625-12				.572	.5625-12UNC	.620
625-11     635   625-11110(:   680		-205	-205	.515		12320 120110	
625-11	005.44	-110	-106	.583	005	005 441110	000
, , , , , , , , , , , , , , , , , , , ,	.625-11	-206	-206	.577	.635	.625-11UNC	.680

TABLE II. Installation hole dimensions for MS51831 and NASM51834.

Nominal MS51831 NASM51834 A B T C						
External	Insert	Stud	Diameter	CSINK	Thread	Min Full
Thread Size	MS51831		Diameter			
		MS51834		Diameter	Unified	Thread
for Insert	Dash Number	Dash Number		+.010	National	
and Stud	(Ref)	(Ref)		000	Class 2A	
.3125-18		-101 -201	.276 .271	.323	.3125-18UNC	.370
.375-16	-101 -201	-102 -202	.336 .331	.385	.375-16UNC	.370
.4375-14	-102 -202	-103 -203	.401 .396	.447	.4375-14UNC	.430
.500-13	-103 -203	-104 -204	.457 .452	.510	.500-13UNC	.500
.5625-12	-104 -204	-105 -205	.521 .515	.572	.5625-12UNC	.560
.625-11	-105 -205	-106 -206	.583 .577	.635	.625-11UNC	.680
.6875-11	-106 -206	-107 -207	.646 .640	.700	.6875-11NS	.750
.8125-16	-107 -207	-108 -208	.771 .765	.822	.8125-16UN	.940
.875-14	-108 -208	-109 -209	.833 .827	.885	.875-14UNF	1.000
1.125-12	-109(L) -209(L)	-110 -210	1.067 1.061	1.145	1.125-12UNF	1.310 (L)1.440
1.250-12	-110(L) -210(L)	-111 -211	1.192 1.186	1.270	1.250-12UNF	1.440 (L)1.560
1.375-12	-111(L) -211(L)	-112 -212	1.317 1.311	1.395	1.375-12UNF	1.560 (L)1.680

TABLE III. Installation hole dimensions for MS51832.

Nominal	MS51832	A	B	T	С
External	Insert	Diameter	CSINK	Thread	Min Full
Thread Size	MS51832	Diameter	Diameter	Unified	Thread
for Insert	Dash Number		+.010	National	Tilleda
101 IIIOCIT	(Ref)		000	Class 2B	
			.000	Oldoo 2B	
.4375-14	-101	.401	.447	.4375-14UNC	.370
.4373-14	-201	.396		.4373-140110	.570
	-102	.457			
.500-13	-202	.452	.510	.500-13UNC	.440
.5625-12	-103	.521	.572	.5625-12UNC	.500
.0020 12	-203	.515	.072	.0020 120110	.000
	-104	.583			
.625-11	-204	.577	.635	.625-11UNC	.560
.6875-11	-105	.646	.700	.6875-11NS	.680
	-205	.640			
0.40= 40	-106	.771	000	0405 401111	
.8125-16	-206	.765	.822	.8125-16UN	.750
.875-14	-107	.833	.885	.875-14UNC	.940
	-207	.827			
4 000 40	-108	.942	4 000	4 000 401115	4.000
1.000-12	-208	.936	1.020	1.000-12UNF	1.000
	400(1)	4.400			4.040
1.250-12	-109(L)	1.192	1.270	1.250-12UNF	1.310
	-209(L)	1.186			(L)1.440
4 075 40	-110(L)	1.317	4 205	4 075 40UNE	1.440
1.375-12	-210(L)	1.311	1.395	1.375-12UNF	(L)1.560
	` '				, ,
1.500-12	-111(L)	1.442	1.520	1.500-12UNF	1.560
	-211(L)	1.437			(L)1.680

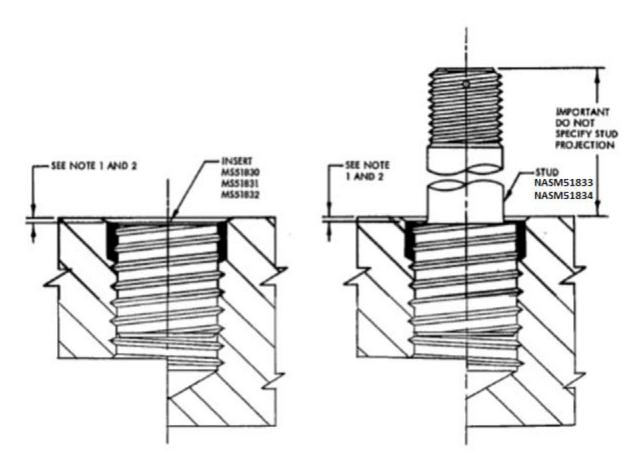
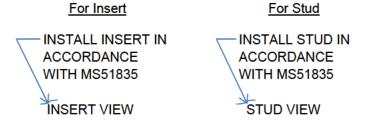


FIGURE 2. Assembly of Inserts and Studs.

#### REQUIREMENTS:

Hole preparation in accordance with Tables I, II and III per applicable thread size of part and corresponding dash number.

- 1. Install insert or stud as shown. (Keys locate correct depth.)
- 2. Drive keys as shown.
- 3. Typical drawing callout to be located in vicinity of part identification.



- 4. Replacement of inserts and studs is made with same size parts as those removed and in same manner as originally installed.
- 5. In materials harder than 150 Brinnell, key slots, broached prior to insert installation, may be required.

### NOTES:

- 1. Axis of hole to be normal to entry surface or provide spot face when required.
- 2. Unified National Class 2B or 3B threads.
- 3. Surface roughness: Unless otherwise specified, machined surfaces to be 125 microinches in accordance with ASME B46.1.
- 4. Nominal use, for installation of key locked inserts and studs conforming to MS51830, MS51831, MS51832, NASM51833, and NASM51834, as applicable.
- 5. Installation procedure and installation of key locked inserts and studs, see Figure II.
- 6. Remove all burrs and sharp edges.
- 7. Dimensions in inches. Unless otherwise specified, tolerances, linear dimensions ± .005.
- 8. Illustrations are for identification and are not intended to restrict designs and shapes of inserts and studs which otherwise conform to requirements.
- 9. This is a design standard and shall not be used as a part number.
- 10. Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians: Preparing Activity:

Army - AR DLA - IS Navy - AS

Air Force - 99 (Project 53GP-2014-001)

Review activities:

Army – AT, AV, CR, MI, Navy - MC

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