INCH-POUND

MIL-DTL-45932/1D
w/AMENDMENT 2
7 June 2016
SUPERSEDING
MIL-DTL-45932/1D
w/AMENDMENT 1
22 February 2016

DETAIL SPECIFICATION SHEET

INSERT, SCREW THREAD – THIN WALL, LOCKED IN

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

The requirements for acquiring the product described herein shall consist of this specification sheet and procurement specification MIL-DTL-45932.

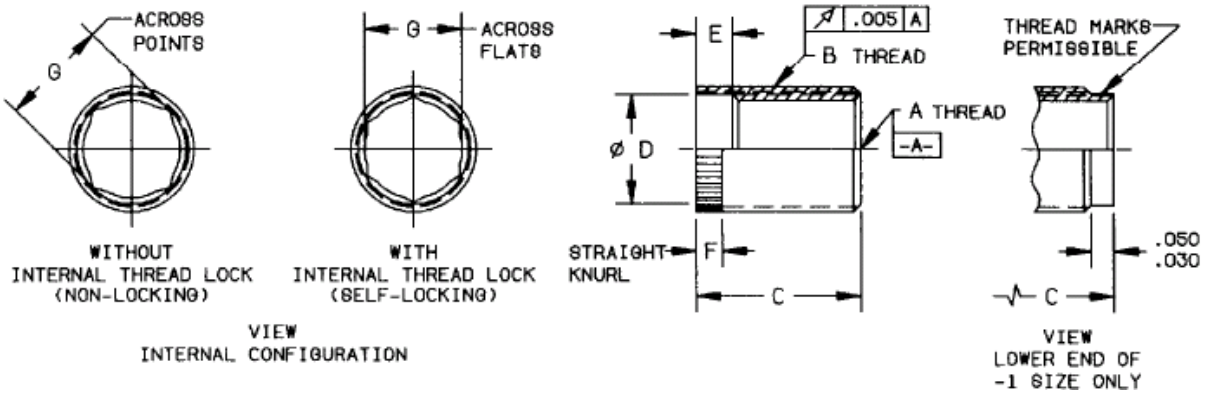


FIGURE 1. INSERT, SCREW THREAD.

TABLE I. Dash Numbers and Characteristics.

2/ 3/ Dash Numbers (Req. 7)				A	B External Thread Altered Minor Dia.		C	ØD	E	F	G	Min Shear Engagement Area Sq. In.
17-4PH Cres 1/	Alloy Steel 1/	A286 Cres 1/ Silver Plated	A286 Cres 1/ Solid Film Lube	Internal Thread Class 3B (Req. 4)	Thread Size	Max Minor Dia.	±.010	+.008 -.002	+.015 -.000	(Ref)	(Ref)	(Note 2)
1 L	1 AL	1 CL	1 DL	0.0860-56 UNC	0.1380-40 UNF	.1073	.170	.086	.042	.032	.073	.0189
2	2 A	2 C	2 D				.130				.080	
3 L	3 AL	3 CL	3 DL	0.1120-40 UNC	0.1640-32 UNC	.1380	.190	.116	.060	.050	.092	.0436
4	4 A	4 C	4 D								.100	
5 L	5 AL	5 CL	5 DL	0.1380-32 UNC	0.1900-32 UNF	.1620	.210	.142	.080	.055	.113	.0542
6	6 A	6 C	6 D								.120	
7 L	7 AL	7 CL	7 DL	0.1640-32 UNC	0.2160-28 UNF	.1890	.250	.169	.080	.055	.138	.0823
8	8 A	8 C	8 D								.150	
9 L	9 AL	9 CL	9 DL	0.1900-32 UNF	0.2500-28 UNF	.2170	.290	.192	.080	.075	.157	.1098
10	10 A	10 C	10 D								.180	
11 L	11 AL	11 CL	11 DL	0.1900-24 UNC							.157	
12	12 A	12 C	12 D								.180	
13 L	13 AL	13 CL	13 DL	0.2500-28 UNF	0.3125-24 UNF	.2785	.380	.252	.095	.075	.210	.2037
14	14 A	14 C	14 D								.240	
15 L	15 AL	15 CL	15 DL	0.2500-20 UNC							.210	
16	16 A	16 C	16 D								.240	
17 L	17 AL	17 CL	17 DL	0.3125-24 UNF	0.3750-24 UNF	.3405	.470	.314	.110	.075	.266	.3306
18	18 A	18 C	18 D								.310	
19 L	19 AL	19 CL	19 DL	0.3125-18 UNC							.266	
20	20 A	20 C	20 D								.310	
21 L	21 AL	21 CL	21 DL	0.3750-24 UNF	0.4375-20 UNF	.4010	.560	.377	.110	.105	.322	.4577
22	22 A	22 C	22 D								.370	
23 L	23 AL	23 CL	23 DL	0.3750-16 UNC							.322	
24	24 A	24 C	24 D								.370	
25 L	25 AL	25 CL	25 DL	0.4375-20 UNF	0.5000-20 UNF	.4630	.660	.439	.135	.105	.377	.6522
26	26 A	26 C	26 D								.430	
27 L	27 AL	27 CL	27 DL	0.4375-14 UNC							.377	
28	28 A	28 C	28 D								.430	
29 L	29 AL	29 CL	29 DL	0.5000-20 UNF	0.5625-24 UNEF	.5290	.750	.505	.135	.105	.439	.8690
30	30 A	30 C	30 D								.490	
31 L	31 AL	31 CL	31 DL	0.5000-13 UNC							.439	
32	32 A	32 C	32 D								.490	
33 L	33 AL	33 CL	33 DL	0.5625-18 UNF	0.6875-12 UN	.6130	.840	.571	.145	.135	.481	1.1328
34	34 A	34 C	34 D								.550	
35 L	35 AL	35 CL	35 DL	0.5625-12 UNC							.481	
36	36 A	36 C	36 D								.550	
37 L	37 AL	37 CL	37 DL	0.6250-18 UNF	0.7500-16 UNF	.6870	.940	.634	.145	.135	.534	1.4014
38	38 A	38 C	38 D								.620	
39 L	39 AL	39 CL	39 DL	0.6250-11 UNC							.534	
40	40 A	40 C	40 D								.620	
41 L	41 AL	41 CL	41 DL	0.7500-16 UNF	0.8750-20 UNEF	.8240	1.120	.756	.170	.150	.648	2.0543
42	42 A	42 C	42 D								.750	
43 L	43 AL	43 CL	43 DL	0.7500-10 UNC							.648	
44	44 A	44 C	44 D								.750	

1/ "L" Suffix shown indicates self-locking insert.
2/ Dash numbers B & BL, 1 thru 16 inclusive, previously listed in Table I of revision A of this specification are cancelled and have been removed.
3/ All dash numbers shown are for aerospace applications. For non-aerospace applications, except silver plated "C" and "CL" inserts, add "M" to the dash number.

REQUIREMENTS:

1. Material:
   Steel, alloy, grade 4130 (UNS G41300) per SAE AMS6370 or grade 8740 (UNS G87400) per SAE AMS6322.
   Steel, corrosion-resistant, type 17-4 PH (UNS S17400) per SAE AMS5643.
   Steel, corrosion-resistant, type A286 (UNS S66286) per SAE AMS5731, SAE AMS5732, SAE AMS5734 or SAE AMS5737.

2. Protective coating or treatment:
   Steel, alloy, shall be cadmium plated in accordance with SAE AMS-QQ-P-416, Type III, Class 3 (see Note 6) plus solid film lubricant coating*. As an alternative to cadmium plating, may be ZnNi plated in accordance with ASTM F1941/F1941M Fe/Zn-Ni 8ET alkaline zinc nickel electroplate, 12%-16% mass percent nickel, with chemical conversion coating per MIL-DTL-5541 TYPE II CLASS.
   1A plus solid film lubricant coating*.
   Steel, corrosion-resistant, type 17-4 PH, shall be solid film lubricant coated*.
   Steel, corrosion-resistant, type A286,
   Dash C & CL shall be silver plated per SAE AMS2411 grade B, .0002 thick minimum.
   Dash D & DL shall be solid film lubricant coated*.

   *Inserts for aerospace applications shall be solid film lubricated in accordance with SAE AS5272 Type I (see Note 7). Inserts for non-aerospace applications shall be dry film lubricated in accordance with MIL-PRF-46010 (see Note 8).

3. Surface roughness:
   Machined surfaces shall be 125 microinches in accordance with ASME B46.1 except knurling.

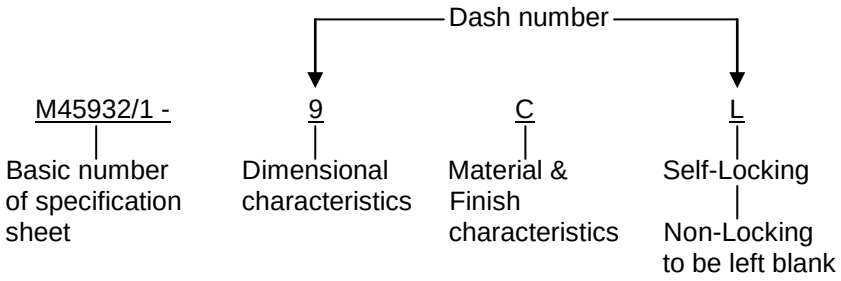
4. Threads:
   Threads shall be in accordance with SAE AS8879 except as noted in Table I and shall accept external SAE AS8879 threads. All coarse internal threads have an increased minor diameter. Threads are prior to the addition of solid film lubricant.

5. Hardness:
   Alloy steel, 25-34 HRC
   Corrosion-resistant steel, 17-4 PH, 35-42 HRC
   Corrosion-resistant steel, A286, 32-40 HRC

6. Internal thread locking feature:
   The centerline of the internal thread locking feature shall be approximately mid-length of internal thread except -1 size is located on a pilot at the bottom of insert.

7. Part Identifying Number (PIN):
   Consists of the letter M, the basic number of this specification sheet, and a dash number taken from Table I for aerospace applications. For non-aerospace applications, except silver plated C and CL inserts, add M to the dash number.

   Example of PIN:



M45932/1-9CL Insert, Screw Thread - Thin Wall, Locked In, 0.01900-32 UNF-3B Internal Thread, A286 Corrosion Resistant Steel, Silver Plated, Self-Locking, Aerospace and Non-Aerospace Applications

M45932/1-10D Insert, Screw Thread - Thin Wall, Locked In, 0.01900-32 UNF-3B Internal Thread, A286 Corrosion Resistant Steel, Solid Film, Lubricant Coated, Non-Locking, Aerospace Applications

NOTES: Table I

1. Dimensions:
   All dimensions are in inches, to be met after plating and before the addition of solid film lubricant (see requirement 2 herein).

2. Shear engagement area:
   Shear engagement area is the assembled dimensional value for the overall engaged area of mating thread members. It does not represent a dimension of either of the members in an unassembled condition.

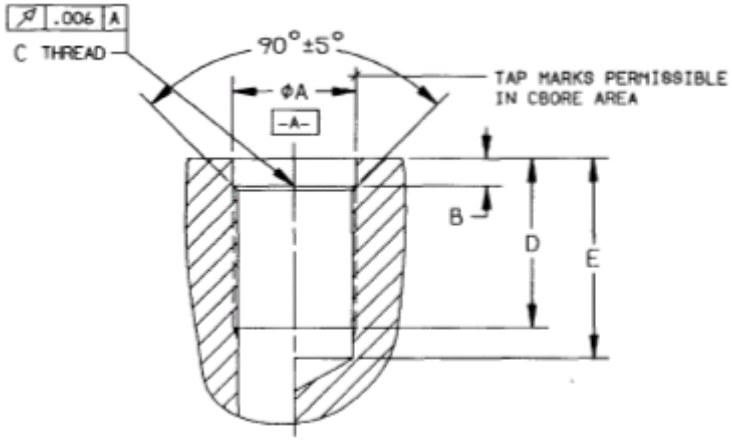


FIGURE 2. HOLE PREPARATION, INSTALLATION & REMOVAL REQUIREMENTS.

TABLE II. Installation & removal criteria.

Nominal External Thread Size of Insert (Ref)	Insert Dash Number M45932/1 (Ref)	ØA C Bore +.004 -.001	B C Bore Depth (Note 4a) ±.005	C Thread SAE AS8879		D Medium Full Thread Depth	E Minimum Drill Depth Blind Hole	Insert Removal Drill Size (Note 5)
				Class-3B Except Minor Ø	Controlled Minor Ø			
0.1380-40	1 2	.138	.045-.050	0.1380-40 UNJF	.112-.117	.160	.223	#30
0.1640-32	3 4	.164	.052	0.1640-32 UNJC	.139-.144	.220	.298	5/32
0.1900-32	5 6	.187	.065	0.1900-32 UNJF	.165-.170	.240	.318	#17
0.2160-28	7 8	.216	.065	0.2160-28 UNJF	.190-.195	.280	.369	#5
0.2500-28	9 10 11 12	.250	.082	0.2500-28 UNJF	.220-.225	.325	.414	15/64
0.3125-24	13 14 15 16	.312	.082	0.3125-24 UNJF	.280-.285	.415	.519	19/64
0.3750-24	17 18 19 20	.375	.082	0.3750-24 UNJF	.342-.347	.505	.609	23/64
0.4375-20	21 22 23 24	.437	.113	0.4375-20 UNJF	.403-.408	.595	.720	27/64
0.5000-20	25 26 27 28	.500	.113	0.5000-20 UNJF	.467-.472	.695	.820	31/64
0.5625-24	29 30 31 32	.562	.113	0.5625-24 UNJEF	.530-.535	.785	.889	35/64
0.6875-12	33 34 35 36	.687	.150	0.6875-12 UNJ	.624-.629	.873	1.081	43/64
0.7500-16	37 38 39 40	.750	.156	0.7500-16 UNJF	.702-.707	.967	1.123	47/64
0.8750-20	41 42 43 44	.875	.156	0.8750-20 UNJEF	.835-.840	1.155	1.280	55/64

NOTES:

1. Axis of hole shall be normal to entry surface or provide spot face when required.
2. Machine surfaces shall be 125 microinches in accordance with ASME B46.1.
3. All dimensions are in inches.

4. Install insert:
   (a) These inserts are primarily designed for use in aluminum, magnesium and other non-ferrous materials that do not exceed 187 HB (3000 kg load and 10 mm ball). Use in corrosion-resistant steels, titanium and hardened ferrous materials will require broach serrations in counterbore to accept the insert knurls during swaging operation. Installation in steel will also require counterbore depth “B” in Table II to be increased by .015 inches.

   (b) Install inserts -1 thru -8 into hole until the top of insert is .010-.020 below boss surface and -9 thru -44 inserts .015-.025 below boss surface.

   (c) Place swage tool in insert and apply a downward force sufficient to effect full swageout and External lock setting.

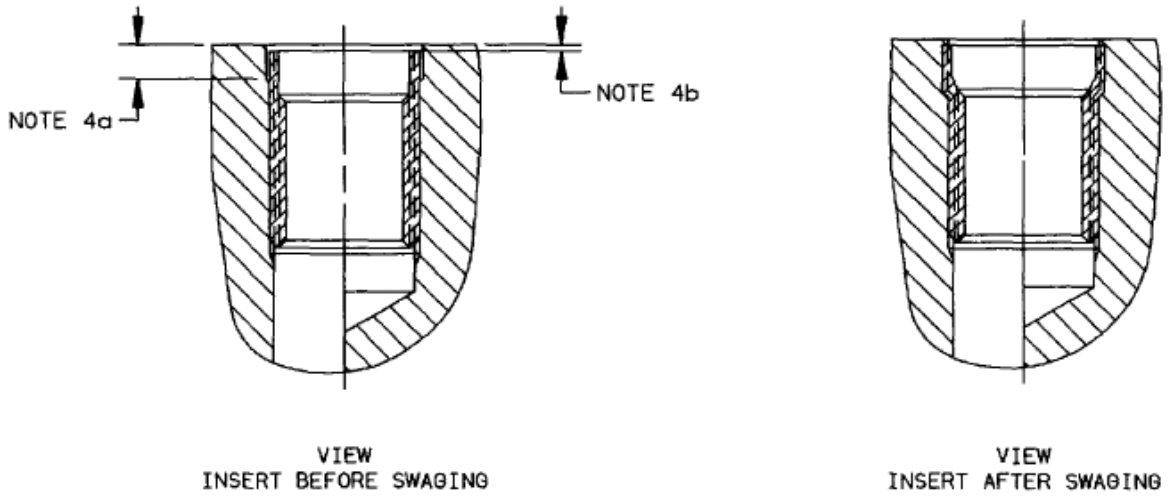


FIGURE 3. INSERT INSTALLATION.

5. Replacement of inserts are made with same size inserts as those removed. Using removal drill size shown in Table II, drill to depth “B” + .025 then back-out insert using installation wrench or a square type screw extractor. Remove loose chips, re-inspect hole and then re-install per note 4.

6. Cadmium is not recommended. To the users of this document, it is recommended that cadmium plating be used only when other materials and finishes specified in this document cannot meet performance requirements.

7. SAE AS5272 Type I lubricant is technically equivalent to MIL-L-46010 Type I lubricant used in previous revisions.

8. MIL-PRF-46010 lubricant is lead (Pb) free and is not technically equivalent to MIL-L-46010 Type I lubricant used in previous revisions. Use of MIL-PRF-46010 in aerospace applications should first be validated.

9. Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

MILITARY INTEREST

Custodians:
Army - AR
Navy - AS
Air Force - 99

Preparing activity:
DLA - IS

(Project 5325-2016-006)

Review activities:
Army - AT, AV, CR4
Navy - MC, OS
Air Force - 71
Other - NS

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.