

FED. SUP CLASS
5340

REVIEWER: MU, IS, AV, MI, EL, AT, NS
USER: WV, MC, OS, YD, GL, EA, PA

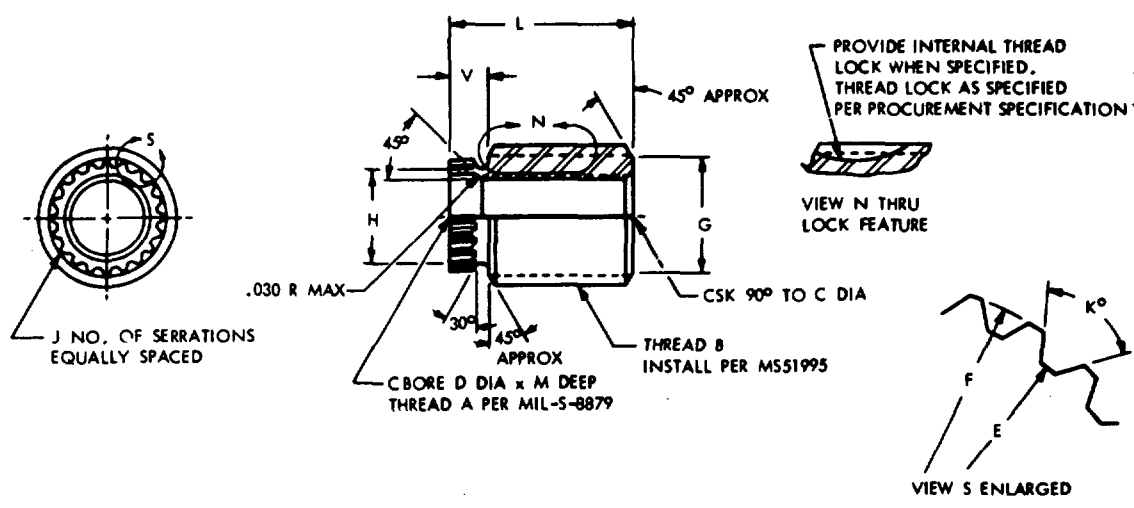


TABLE I (FINE INTERNAL AND FINE EXTERNAL - SHORT LENGTH)

DASH NO.	A INTERNAL THD UNJF-3B	B EXTERNAL THD			C	D	E DIA +.005 - .004	F DIA +.007 - .002	G DIA +.000 - .015	H DIA MIN.	J	K° +2° -1°	L ±.020	M ±.015	V ±.015	LOCKRING PART NO.
		SEE THD NOTE	PITCH DIA	MINOR DIA												
-503	.1900-32	.3750-24	.3498 .3479	.3257 .3185	.206 .196	.201	.255	.284	.318	.233	17	86°	.400	.078	.142	MS51997-103
-504	.2500-28	.4375-20	.4073 .4053	.3784 .3700	.267 .257	.261	.316	.345	.370	.294	20	102°	.542	.089	.176	MS51997-104
-505	.3125-24	.5000-20	.4698 .4678	.4409 .4325	.336 .321	.324	.380	.407	.432	.357	24	102°	.678	.099	.200	MS51997-105
-506	.3750-24	.6250-18	.5914 .5894	.5593 .5498	.398 .383	.386	.456	.487	.549	.433	26	102°	.750	.099	.200	MS51997-106
-507	.4375-20	.7500-16	.7122 .7097	.6761 .6656	.462 .447	.449	.567	.601	.665	.535	26	111°	.813	.117	.200	MS51997-107
-508	.5000-20	.8750-14	.8316 .8291	.7904 .7786	.525 .510	.511	.687	.721	.778	.645	30	111°	.948	.117	.255	MS51997-108

TABLE II (FINE INTERNAL AND FINE EXTERNAL - MEDIUM LENGTH)

DASH NO.	A INTERNAL THD UNJF-3B	B EXTERNAL THD			C	D	E DIA +.005 - .004	F DIA +.007 - .002	G DIA +.000 - .015	H DIA MIN.	J	K° +2° -1°	L ±.020	M ±.015	V ±.015	LOCKRING PART NO.
		SEE THD NOTE	PITCH DIA	MINOR DIA												
-643	.1900-32	.3750-24	.3498 .3479	.3257 .3185	.206 .196	.201	.255	.284	.318	.233	17	86°	.448	.078	.142	MS51997-103
-644	.2500-28	.4375-20	.4073 .4053	.3784 .3700	.267 .257	.261	.316	.345	.370	.294	20	102°	.616	.089	.176	MS51997-104
-645	.3125-24	.5000-20	.4698 .4678	.4409 .4325	.336 .321	.324	.380	.407	.432	.357	24	102°	.776	.099	.200	MS51997-105
-646	.3750-24	.6250-18	.5914 .5894	.5593 .5498	.398 .383	.386	.456	.487	.549	.433	26	102°	.872	.099	.200	MS51997-106
-647	.4375-20	.7500-16	.7122 .7097	.6761 .6656	.462 .447	.449	.567	.601	.665	.535	26	111°	.948	.117	.200	MS51997-107
-648	.5000-20	.8750-14	.8316 .8291	.7904 .7786	.525 .510	.511	.687	.721	.778	.645	30	111°	1.101	.117	.255	MS51997-108

NOTE: For material, finish and other pertinent data, see sheet 2.

(A) For changes see sheet 2

This military standard is approved for use by all Departments and Agencies of the Department of Defense. Selection for all new engineering and design applications and for repetitive use shall be made from this document when applicable.

APPROVED 12 DEC 67 REVISED (A) 28 JUN 1978

P.A. WC Other Cust 82 AS	TITLE INSERT, SCREW THREAD-LOCKED IN, RING LOCKED, SERRATED, HIGH STRENGTH	MILITARY STANDARD MS51993
PROCUREMENT SPECIFICATION MIL-I-45910	SUPERSEDES:	SHEET 1 OF 2

TABLE III (FINE INTERNAL AND COARSE EXTERNAL - LONG LENGTH)

DASH NO.	A INTERNAL THD UNJF-3B	B EXTERNAL THD		C	D	E DIA +.005 -.004	F DIA +.007 -.002	G DIA +.000 -.015	H DIA MIN	J	K ^o + 2 ^o - 1 ^o	L ±.020	M ±.015	V ±.015	LOCKRING PART NO.	
		SEE THD NOTE	PITCH DIA													MINOR DIA
-803	.1900-32	.3750-16	.3372 .3347	.3011 .2906	.206 .196	.201	.255	.284	.290	.233	17	86 ^o	.538	.078	.142	MS51997-103
-804	.2500-28	.4375-14	.3941 .3916	.3529 .3411	.267 .257	.261	.316	.345	.341	.294	20	102 ^o	.731	.089	.176	MS51997-104
-805	.3125-24	.5000-13	.4531 .4506	.4087 .3963	.336 .321	.324	.380	.407	.396	.357	24	102 ^o	.932	.099	.200	MS51997-105
-806	.3750-24	.6250-11	.5693 .5668	.5168 .5028	.398 .383	.386	.456	.487	.502	.433	26	102 ^o	1.061	.099	.200	MS51997-106
-807	.4375-20	.7500-10	.6885 .6860	.6308 .6156	.462 .447	.449	.567	.601	.615	.535	26	111 ^o	1.156	.117	.200	MS51997-107
-808	.5000-20	.8750-9	.8065 .8040	.7424 .7257	.525 .510	.511	.687	.721	.725	.645	30	111 ^o	1.333	.117	.255	MS51997-108

NOTES:

- MATERIAL:**
(See material code letters under mechanical properties) **(A)** Steel, alloy 4140 per MIL-5-5626.
Steel, corrosion resistant A-286 per AMS5731, AMS5734 or AMS5736.
Titanium, alloy 6 Al-4V per MIL-T-9047 composition 6.
- PROTECTIVE COATING:**
Steel, alloy, shall be cadmium plated in accordance with QQ-P-416, Type II, Class 3.
Steel, corrosion resistant, material code letter "S" shall be passivated in accordance with QQ-P-35 when internal non-lock thread is specified by part number.
Steel, corrosion resistant, material code letter "S" shall be silver plated in accordance with QQ-S-365, Type II, Grade B, .0002 thick when internal locking thread is specified by part number.
(A) Titanium, alloy, shall have an anodic coating.
- SURFACE ROUGHNESS:**
Machined surfaces to be 125 microinches in accordance with ANSI B46.1, except serrated collar.
- THREADS:**
The external thread has a special pitch diameter and minor diameter which installs into MIL-S-8879 Class 3B Tapped Hole. Threads shall be in accordance with procurement specifications.
- HEAT TREATMENT:**
Inserts shall be heat treated to develop the mechanical properties specified herein.
- MECHANICAL PROPERTIES:**
All of the above insert sizes in either short, medium, or long lengths are capable of developing 220,000 PSI load rating based on the tensile stress area of the applicable bolt. Resistance to pullout of the insert from the parent material is a function of shear engagement area of the external thread of the insert as defined in the procurement specification. Material code letters with pertinent length dash numbers are listed below:

Material Code Letters	Material
M	Steel, 4140 alloy
S	Steel, A-286 cres
T	Titanium, 6 Al-4V alloy

("T" code only available as non-locking insert)
- HARDNESS:**
Steel, alloy (code M) Rockwell C33 minimum
Steel, cres (code S) Brinell 248 minimum
Titanium, alloy (code T) Rockwell C39 maximum
- FILLETS:**
.030 R Maximum
- EDGES:**
Edges broken .003 - .015 unless otherwise specified.
- DIMENSIONS:**
Dimensions in inches; to be met after plating.
- TOLERANCES:**
Linear dimensions ± .005, angular dimensions ± 2^o.
- PART NUMBERS:**
The MS part number consists of the MS number, plus the material code, plus the dash number.
Add "L" as suffix for internal thread lock. Example:
MS51993 M 505 Insert, alloy steel, non-locking
MS51993 S 505 Insert, cres, non-locking
MS51993 T 805 Insert, Titanium alloy, non-locking
* MS51993 M 505 L Insert, alloy steel, internal thread lock

(A) * The same condition can exist for all of the above materials except "T" code.
- For design feature purposes, this standard takes precedence over procurement documents referenced herein.
- Referenced documents shall be of the issue in effect on date of invitations for bid.

(A) TABLE IV
INTERCHANGEABILITY

CANCELLED (CRES 17-10P)	NEW (CRES A-286)
MS51993	MS51993
P643	S643
P644	S644
P645	S645
P647	S647
P648	S648

The P640 Series cres insert in the original issue of this standard are cancelled/inactive. The cancelled inserts shall be used on existing callouts until stock is depleted. Use the new S640 series cres inserts for replacement of P640 series cres inserts in accordance with Table IV.

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For changes see sheet 2

APPROVED 12 DEC 67

P.A. Other Cuel	WC 82 AS	TITLE INSERT, SCREW THREAD - LOCKED IN, RING LOCKED, SERRATED, HIGH STRENGTH	MILITARY STANDARD MS51993
PROCUREMENT SPECIFICATION MIL-I-45910	SUPERSEDES:	SHEET	2 OF 2