FEDERAL SUPPLY CLASS
5307

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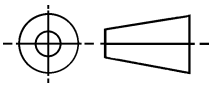
THIRD ANGLE PROJECTION



ISSUED 1999-04

PREPARED BY SAE COMMITTEE E-25

PROCUREMENT SPECIFICATION: MIL-S-45909

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AEROSPACE STANDARD

STUD, LOCKED IN-RING LOCKED, SERRATED

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SHEET 1 OF 5

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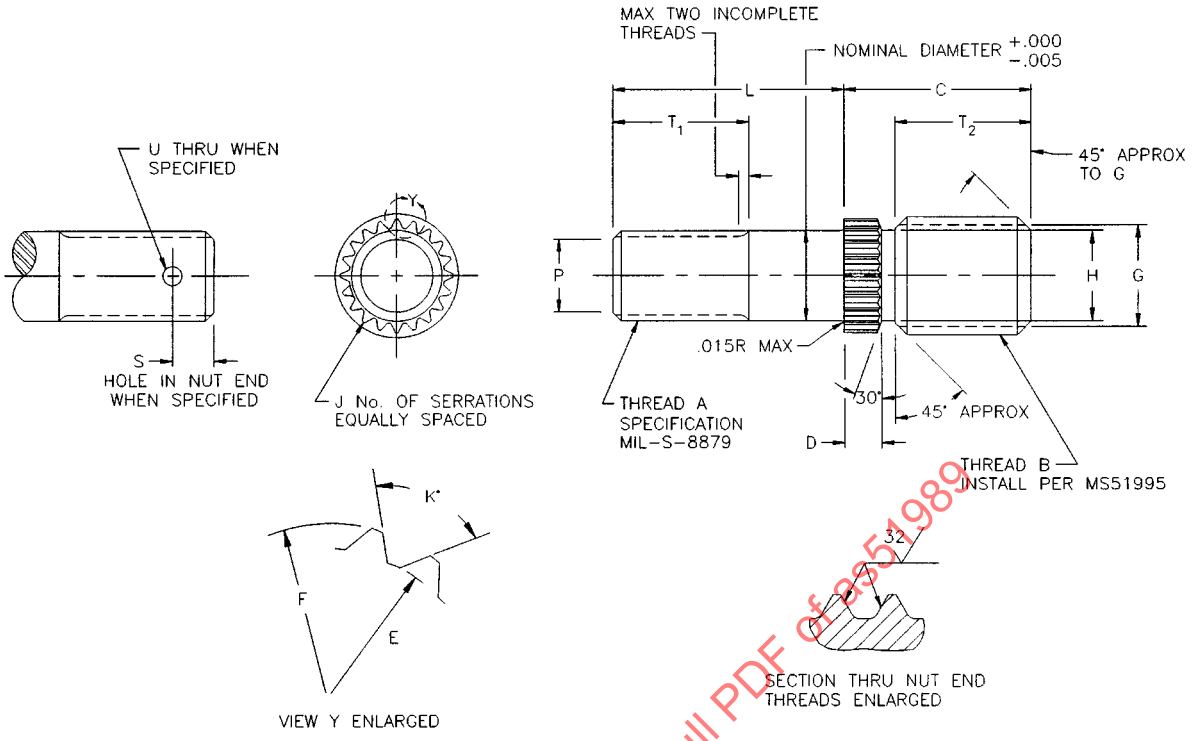

TABLE I – (FINE THD NUT END – COARSE THD STUD END)

DASH NO.	A NUT END THREAD UNJF-3A	B STUD END THREAD (COARSE) SEE THREAD NOTE			C ±.015	D ±.015	E DIA +.005 -.004	F DIA +.007 -.002	G DIA ±.010	H DIA	J	K° +2° -1°	T_1 ±.015	T_2 ±.015	P DIA ±.010	S ±.015	U DIA	LOCKRING PART NO. (REF) SEE NOTE 16
	SIZE	SIZE	PITCH DIA	MINOR DIA														
-102	.138-40	.164-32	.1461 .1446	.1280 .1215	.250	.060	.152	.175	.113	.116	14	102°	.380	.140	.096	-	-	MS51990-102P
-103	.164-36	.190-24	.1654 .1639	.1413 .1334	.380	.080	.178	.201	.122	.128	16	90°	.410	.230	.117	.110	.070	MS51990-103P
-104	.190-32	.250-20	.2204 .2187	.1915 .1824	.440	.080	.203	.230	.169	.177	13	102°	.440	.280	.137	.120	.070	MS51990-104P
-105	.250-28	.3125-18	.2795 .2778	.2474 .2373	.560	.080	.255	.284	.222	.232	17	86°	.500	.390	.190	.160	.076	MS51990-105P
-106	.3125-24	.375-16	.3378 .3358	.3017 .2906	.690	.080	.316	.345	.274	.285	20	102°	.560	.510	.242	.160	.076	MS51990-106P
-107	.375-24	.4375-14	.3946 .3926	.3534 .3411	.750	.120	.380	.407	.322	.336	24	102°	.620	.570	.305	.170	.106	MS51990-107P
-108	.4375-20	.500-13	.4537 .4512	.4093 .3963	.810	.120	.456	.487	.375	.391	26	102°	.690	.570	.354	.170	.106	MS51990-108P
-109	.500-20	.5625-12	.5122 .5097	.4641 .4503	.880	.120	.567	.601	.427	.445	26	111°	.810	.630	.416	.190	.106	MS51990-109P
-110	.5625-18	.625-11	.5699 .5674	.5174 .5028	1.000	.140	.567	.601	.477	.497	26	111°	.940	.720	.469	.220	.141	MS51990-109P
-111	.625-18	.750-10	.6891 .6866	.6314 .6156	1.120	.160	.687	.721	.588	.610	30	111°	1.000	.820	.532	.220	.141	MS51990-110P
-112	.750-16	.875-9	.8071 .8046	.7430 .7257	1.310	.160	.783	.820	.695	.721	30	111°	1.120	.990	.645	.220	.141	MS51990-111P

TABLE II (FINE THD NUT END – FINE THD STUD END)

DASH NO.	A NUT END THREAD UNJF-3A SIZE	B STUD END THREAD (FINE) SEE THREAD NOTE SIZE	PITCH DIA	MINOR DIA	C ±.015	D ±.015	E DIA +.003 -.004	F DIA +.007 -.002	G DIA ±.010	H DIA	J	K° +2° -1°	T_1 ±.015	T_2 ±.015	P DIA ±.010	S ±.015	U DIA	LOCKRING PART NO. (REF) SEE NOTE 16
-202	.138-40	.164-36	.1483 .1468	.1323 .1262	.250	.060	.152	.175	.119	.121	14	102°	.380	.140	.096	-	-	MS51990-102P
-203	.164-36	.190-32	.1721 .1706	.1541 .1475	.380	.080	.178	.201	.139	.143	16	90°	.410	.250	.117	.110	.070	MS51990-103P
-204	.190-32	.250-28	.2296 .2281	.2090 .2014	.440	.080	.203	.230	.192	.197	13	102°	.440	.310	.137	.120	.070	MS51990-104P
-205	.250-28	.3125-24	.2884 .2869	.2643 .2559	.560	.080	.255	.284	.245	.251	17	86°	.500	.420	.190	.160	.076	MS51990-105P
-206	.3125-24	.375-24	.3512 .3497	.3271 .3185	.690	.080	.316	.345	.307	.306	20	102°	.560	.550	.242	.160	.076	MS51990-106P
-207	.375-24	.4375-20	.4084 .4067	.3795 .3700	.750	.120	.380	.407	.356	.365	24	102°	.620	.550	.305	.170	.106	MS51990-107P
-208	.4375-20	.500-20	.4711 .4694	.4422 .4325	.810	.120	.456	.487	.419	.427	26	102°	.690	.610	.354	.170	.106	MS51990-108P
-209	.500-20	.5625-18	.5301 .5784	.4980 .4873	.880	.120	.567	.601	.472	.482	26	111°	.810	.670	.416	.190	.106	MS51990-109P
-210	.5625-18	.625-18	.5927 .5910	.5606 .5498	1.000	.140	.567	.601	.535	.545	26	111°	.940	.780	.469	.220	.141	MS51990-109P
-211	.625-18	.750-16	.7134 .7114	.6773 .6656	1.120	.160	.687	.721	.648	.661	30	111°	1.000	.880	.532	.220	.141	MS51990-110P
-212	.750-16	.875-14	.8328 .8308	.7916 .7786	1.310	.160	.783	.820	.759	.773	30	111°	1.120	1.050	.645	.220	.141	MS51990-111P

TABLE III (COARSE THD NUT END – COARSE THD STUD END)

DASH NO.	A NUT END THREAD UNC-3A SIZE	B STUD END THREAD (COARSE) SEE THREAD NOTE SIZE	PITCH DIA	MINOR DIA	C ±.015	D ±.015	E DIA +.005 -.004	F DIA +.007 -.002	G DIA ±.010	H DIA	J	K° +2° -1°	T_1 ±.015	T_2 ±.015	P DIA ±.010	S ±.015	U DIA	LOCKRING PART NO. (REF) SEE NOTE 16
-302	.138-32	.164-32	.1461 .1446	.1280 .1215	.250	.060	.152	.175	.113	.116	14	102°	.380	.140	.085	-	-	MS51990-102P
-303	.164-32	.190-24	.1654 .1639	.1413 .1334	.380	.080	.178	.201	.122	.128	16	90°	.410	.230	.111	.110	.070	MS51990-103P
-304	.190-24	.250-20	.2204 .2187	.1915 .1824	.440	.080	.203	.230	.169	.177	13	102°	.440	.280	.120	.120	.070	MS51990-104P
-305	.250-20	.3125-18	.2795 .2778	.2474 .2373	.560	.080	.255	.284	.222	.232	17	86°	.500	.390	.166	.160	.076	MS51990-105P
-306	.3125-18	.375-16	.3378 .3358	.3017 .2906	.590	.080	.316	.345	.274	.285	20	102°	.560	.510	.219	.160	.076	MS51990-106P
-307	.375-16	.4375-1?	.3946 .3926	.3534 .3411	.750	.120	.380	.407	.322	.336	24	102°	.620	.520	.270	.170	.106	MS51990-107P
-308	.4375-14	.500-13	.4537 .4512	.4093 .3963	.810	.120	.456	.487	.375	.391	26	102°	.690	.570	.318	.170	.106	MS51990-108P
-309	.500-13	.5625-12	.5122 .5097	.4641 .4503	.880	.120	.567	.601	.427	.445	26	111°	.810	.630	.371	.190	.106	MS51990-109P
-310	.5625-12	.625-11	.5699 .5674	.5174 .5028	1.000	.140	.567	.601	.477	.497	26	111°	.940	.720	.423	.220	.141	MS51990-109P
-311	.625-11	.750-10	.6891 .6866	.6314 .6156	1.120	.160	.687	.721	.588	.610	30	111°	1.000	.820	.473	.220	.141	MS51990-110P
-312	.750-10	.875-9	.8071 .8046	.7430 .7257	1.310	.160	.783	.820	.695	.721	30	111°	1.120	.990	.583	.220	.141	MS51990-111P

TABLE IV – (COARSE THD NUT END – FINE STUD END)

DASH NO.	A NUT END THREAD UNC-3A	B STUD END THREAD (FINE) SEE THREAD NOTE			C ±.015	D ±.015	E DIA +.005 -.004	F DIA +.007 -.002	G DIA ±.010	H DIA	J	K° +2° -1°	T_1 ±.015	T_2 ±.015	P DIA ±.010	S ±.015	U DIA	LOCKRING PART NO. (REF) SEE NOTE 16
	SIZE	SIZE	PITCH DIA	MINOR DIA														
-402	.138-32	.164-36	.1483 .1468	.1323 .1262	.250	.060	.152	.175	.119	.121	14	102°	.380	.140	.085	-	-	MS51990-102P
-403	.164-32	.190-32	.1721 .1706	.1541 .1475	.380	.080	.178	.201	.139	.143	16	90°	.410	.250	.111	.110	.070	MS51990-103P
-404	.190-24	.250-28	.2296 .2281	.2090 .2014	.440	.080	.203	.230	.192	.197	13	102°	.440	.310	.120	.120	.070	MS51990-104P
-405	.250-20	.3125-24	.2864 .2869	.2643 .2559	.560	.080	.255	.284	.245	.251	17	86°	.500	.420	.166	.160	.076	MS51990-105P
-406	.3125-18	.375-24	.3512 .3497	.3271 .3185	.690	.080	.316	.345	.307	.306	20	102°	.560	.550	.219	.160	.076	MS51990-106P
-407	.375-16	.4375-20	.4084 .4067	.3795 .3700	.750	.120	.380	.407	.356	.365	24	102°	.620	.550	.270	.170	.106	MS51990-107P
-408	.4375-14	.500-20	.4711 .4694	.4422 .4325	.810	.120	.456	.487	.419	.427	26	102°	.690	.610	.318	.170	.106	MS51990-108P
-409	.500-13	.5625-18	.5301 .5784	.4980 .4873	.880	.120	.567	.601	.472	.482	26	111°	.810	.670	.371	.190	.106	MS51990-109P
-410	.5625-12	.625-18	.5927 .5910	.5606 .5498	1.000	.140	.567	.601	.535	.545	26	111°	.940	.780	.423	.220	.141	MS51990-109P
-411	.625-11	.750-16	.7134 .7114	.6773 .6656	1.120	.160	.687	.721	.648	.661	30	111°	1.000	.880	.473	.220	.141	MS51990-110P
-412	.750-10	.875-14	.8328 .8308	.7916 .7786	1.310	.160	.783	.820	.759	.773	30	111°	1.120	1.050	.583	.220	.141	MS51990-111P

1. MATERIAL: Steel, alloy, composition 4130 per MIL-S-6758
   Steel, corrosion resistant, A-286 per AMS5731, AMS5732, AMS5734 or AMS5737.
2. PROTECTIVE COATING: Steel, alloy, shall be cadmium plated in accordance with QQ-P-416, Type II, Class 3.
   Steel, corrosion resistant, shall be passivated in accordance with QQ-P-35.
3. SURFACE ROUGHNESS: Machined surfaces to be 125 microinchesin accordance with USAS B46.1, except serrated collar.
4. THREADS: The stud end thread has a special pitch diameter and minor diameter which installs into a national class 3 tapped hole. Threads shall be in accordance with procurement specification.
5. HEAT TREATMENT: Studs shall be heat treated 125,000 PSI minimum tensile strength in accordance with procurement specification.
6. HARDNESS: Steel, alloy, Rockwell C 26 minimum.
   Steel, corrosion resistant, Brinell 269 minimum.
7. CONCENTRICITY: Shank of nut end shall be concentric with serrated collar within .006 TIR.
8. FILLETS: .015 R maximum
9. EDGES: Break sharp edges .003-.015 unless otherwise specified.
10. DIMENSIONS: Dimensions in inches to be met after plating.
11. TOLERANCES: Linear dimensions ±.005, angular dimensions ±2°.
12. MANUFACTURING SPECIFICATION: MIL-S-45909
13. PART NUMBERS: The MS part number consists of the MS number, plus the dash number, plus the length dash number (table V). Add "E" in lieu of the first "dash" for corrosion resistant steels. Add "D" in lieu of the second "dash" for drilled hole in nut end. Example:
    MS51989-105-24 Stud, Alloy Steel, 1.5 inch nut end length
    MS51989E105-24 Stud, Cres, 1.5 inch nut end length
    MS51989-105D24 Stud, Alloy steel, drilled hole, 1.5 inch nut end length
    MS51989E105D24 Stud, Cres, drilled hole, 1.5 inch nut end length.