MIL-STD -1598
7 April 1978

MILITARY STANDARD

STUDS PREFERRED FOR DESIGN, LISTING OF

FSC 5307

DEPARTMENT OF DEFENSE
Washington, DC 20301

Studs Preferred For Design, Listing of:

MIL-STD-1598

1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Aeronautical Systems Division (AFSC), ATTN: ASD/ENESS, Wright-Patterson Air Force Base, Ohio 45433 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FOREWORD

1. The purpose of this bookform standard is to provide a commodity type parts document on STUDS to aid military equipment designers and engineers in the selection of preferred studs.

2. This document consists of an index of preferred standardization documents and a listing of preferred parts within these documents that have been selected with respect to configuration, sizes, lengths, materials, and finishes for studs.

3. The selection of preferred documents listed in this standard and the selection of part numbers within the preferred documents were made as follows:

a. Selection of Documents

(1) Documents suitable for listing in the Department of Defense Index of Specifications and Standards (DODISS).

(2) Documents which are active for design.

(3) Documents specifying part numbers (dash numbers) which designate specific sizes, materials and finishes.

b. Selection of Part Numbers

(1) By conducting a thorough search and evaluation of existing DoD procurement information.

(2) By evaluation of preferred parts listed in recent weapon system contracts.

(3) By evaluation of preferred parts lists obtained from industry.

4. To increase the scope and versatility of this stud standard, periodic revisions will be developed. Results from Standardization studies, MILITARY PARTS CONTROL ADVISORY GROUP (MPCAG) evaluations, evaluation of a new family of studs and recommendations from interested activities will form the basis for these revisions.

CONTENTS

SECTIONS

SECTIONS - Continued

1. SCOPE

1.1 Scope. This standard provides a listing of preferred studs encompassing the following characteristics:

a. Configuration

b. Size

c. Materials

d. Protective Coatings and Finishes

1.2 Purpose. The purpose of this standard is as follows:

a. provide the designer with a listing of preferred studs to promote their use in design of weapon systems and equipments.

b. control and minimize the variety of studs used in military equipment thereby facilitating logistic support of the equipment during its life cycle.

1.3 Application. To minimize the proliferation of studs, only the preferred part numbers listed herein are authorized for use in new design. All other part numbers, even though shown on current Military Specification Sheets, Military Standards (MS), National Aerospace Standards (NAS), Aeronautical Standards (AS), and Air Force/Navy Aeronautical Standards (AN), are not approved for use in new design.

1.4 Intended use. Implement this standard by including one of the following options in the contract:

a. When an end use type standard such as MIL-STD-1515 is included in the contract, specify this standard as a supplement to it. When thus specified, only the stud part numbers listed in the end use type standard and listed herein are acceptable. Use of other studs requires approval of the Government procuring activity.

b. When an end use type standard is not included in the contract, specify this standard and list in the contract only the studs or groups of studs listed herein that are acceptable. Use of other studs requires approval of the Government procuring activity.

c. When an end use type standard is not included in the contract, specify this standard as a guide for the selection of studs.

2. REFERENCED DOCUMENTS

2.1 Issues of documents. The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this standard to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-S-45933/1 - Stud, Keyring, Locked, 125 KSI FTU, Single Step

MIL-S-45933/2 - Stud, Keyring, Locked, 160 KSI FTU, Double Step

STANDARDS

MILITARY

MS9827 - Stud - Stepped, 2 Dia. Engagement, Steel, .250-20UNJS X .190-32UNJF

MS9828 - Stud - Stepped, 2 Dia. Engagement, Steel, .3125-18UNJS X .250-28UNJF

MS9829 - Stud - Stepped, 2 Dia. Engagement, Steel, .375-16UNJS X .3125-24UNJF

MS9830 - Stud - Stepped, 2 Dia. Engagement, Steel, .4375-14UNJS X .375-24UNJF

MS9831 - Stud - Stepped, 2 Dia. Engagement, Steel, .500-13UNJS X .4375-20UNJF

MS9832 - Stud - Stepped, 2 Dia. Engagement, Steel, .5625-12UNJS X .500-20UNJF

MS9833 - Stud - Stepped, 2 Dia. Engagement, Steel, .625-11UNJS X .5625-18UNJF

MS9834 - Stud - Stepped, Drilled, 2 Dia. Engagement, Steel, .250-20UNJS X .190-32UNJF

STANDARDS

MILITARY - Continued

MS9835 - Stud - Stepped, Drilled, 2 Dia. Engagement, Steel, .3125-18UNJS X .250-28UNJF

MS9836 - Stud - Stepped, Drilled, 2 Dia. Engagement, Steel, .375-16UNJS X .3125-24UNJF

MS9837 - Stud - Stepped, Drilled, 2 Dia. Engagement, Steel, .4375-14UNJS X .375-24UNJF

MS9838 - Stud - Stepped, Drilled, 2 Dia. Engagement, Steel, .500-13UNJS X .4375-20UNJF

MS9839 - Stud - Stepped, Drilled, 2 Dia. Engagement, Steel, .5625-12UNJS X .500-20UNJF

MS9840 - Stud - Stepped, Drilled, 2 Dia. Engagement, Steel, .625-11UNJF X .5625-18UNJF

MS16187 - Stud - Continuous-Thread-(Bolt-Stud), B16 Alloy Steel, High Temperature Service (875° - 1000°F)

MS17293 - Stud-Stepped, 1.5 Dia. Engagement, .250-20 X .190-32 (MIL-S-8879 Thread)

MS17294 - Stud-Stepped, 1.5 Dia. Engagement, .3125-18 X .250-28 (MIL-S-8879 Thread)

MS17295 - Stud-Stepped, 1.5 Dia. Engagement, .375-16 X .3125-24 (MIL-S-8879 Thread)

MS17296 - Stud-Stepped, 1.5 Dia. Engagement, .4375-14 X .375-24 (MIL-S-8879 Thread)

MS17297 - Stud-Stepped, Drilled, 1.5 Dia. Engagement, .3125-18 X .250-28 (MIL-S-8879 Thread)

MS17298 - Stud-Stepped, Drilled, 1.5 Dia. Engagement, .375-16 X .3125-24 (MIL-S-8879 Thread)

MS17299 - Stud-Straight, .190-24 X .190-32 (MIL-S-8879 Thread)

STANDARDS

MILITARY - Continued

MS17300 - Stud-Straight, .250-20 X .250-28 (MIL-S-8879 Thread)

MS17301 - Stud-Straight, .3125-18 X .3125-24 (MIL-S-8879 Thread)

MS17302 - Stud-Straight, Drilled, .250-20 X .250-28 (MIL-S-8879 Thread)

MS17303 - Stud-Straight, Drilled, .3125-18 X .3125-24 (MIL-S-8879 Thread)

MS27951 - Stub (Stud), Welding Turnbuckle, (General Purpose, Manual Weld Application)

MS51833 - Stud, Locked In, Key Locked, Lighweight

MS51834 - Stud, Locked In, Key Locked, Heavy Duty

MS51864 - Stud, Plain, General Purpose
MS51950 - Stud, Shouldered: Wheel Mounting

MS51951 - Stud, Shouldered and Stepped: Wheel Mounting

MS51989 - Stud, Locked In, Ring Locked, Serrated

MS51992 - Stud, Locked In, Ring Locked, Serrated, High Strength

MS52122 - Stud, Shouldered and Stepped: Wheel Mounting

AIR FORCE-NAVY AERONAUTICAL

AN126587 Thru AN126652 - Stud-Straight, .375-16 X .375-24

AN126881 Thru AN127192 - Stud-Straight, Necked, .375-16 X .375-24

AN128363 Thru AN128686 - Stud-Straight, Drilled, .250-20 X .250-28

AN128687 Thru AN128998 - Stud-Straight, Drilled, .3125-18 X .3125-24

AN129293 Thru AN129604 - Stud-Straight, Drilled, Necked, .375-16 X .375-24

STANDARDS

AIR FORCE-NAVY AERONAUTICAL - Continued

AN152601 Thru AN152900 - Stud-Stepped, Drilled, 1.5 Dia. Engagement, .250-20 X .190-32

AN158901 Thru AN159200 - Stud-Stepped, Necked, 1.5 Dia. Engagement, .4375-14 X .375-24

AN162501 Thru AN162800 - Stud-Stepped Drilled, Necked, 2 Dia. Engagement, .4375-14 X .375-24

(Copies of specifications, standards, drawings and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other Publications. The following documents form a part of this standard to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

AEROSPACE INDUSTRIES ASSOCIATION (AIA)

NAS1454 - Rod, Continuous Thread

(Application for copies should be addressed to the Aerospace Industries Association of America, Inc., 1725 DeSales Street, N.W., Washington, DC 20036.)

3. DEFINITIONS

3.1 Adopted Industry Standards. Any Industry Specification or Standard which is listed in this Standard/The Department of Defense Index of Specifications and Standards (DODISS).

3.2 Commodity Type Document. A document which lists preferred parts within a Federal Supply Classification class or Item Name. This document is to be used for selecting preferred parts for a new design when the document is invoked as a contractual requirement in conjunction with a parts control requirement.

3.3 End Use Type Document. A document that lists preferred documents and establishes parts requirements which are contractually binding for the design and construction/manufacture of a weapon system or an established equipment category such as MIL-STD-1515.

3.4 Military Parts Control Advisory Group (MPCAG). A Department of Defense organization which provides advice to the Military Departments and military contractors on the selection of parts in assigned commodity classes, and collects data on nonstandard parts for developing or updating military specifications and standards.

3.5 Definitions of approved item names used in this standard are as follows:

a. Stud, Continuous Thread. A headless fastener not exceeding 12 inches in length having an external thread of one nominal diameter running from end to end.

b. Stud, Locked In. A headless fastener externally threaded on both ends with each threaded portion of one but not necessarily the same nominal diameter. It is designed to be locked in place by either a RING, LOCK, SERRATED or a RING, LOCK, KEYED.

c. Stud, Plain. A headless fastener not exceeding 12 inches in length, threaded externally on both ends with threads of the same nominal diameter. The maximum diameter of the unthreaded portion must not be greater than the nominal thread diameter plus 0.020 inches. The unthreaded portion must be without locking or wrenching provisions. It may be thread relieved.

d. Stud, Stepped. A headless fastener not exceeding 12 inches in length, threaded externally on both ends on which the nominal diameter of one threaded section is greater than the other. The entire unthreaded portion must be of a single diameter equal to or smaller than the maximum major diameter of the larger threaded end. Includes radial grooves or thread reliefs. Excludes items with tapered threads.

e. Stud, Welding. A headed or headless fastener threaded externally on one end only and intended for fastening the unthreaded end or head by welding. If headed, head is not designed to be self-holding, nor to be turned with a wrench or inserted driver, nor does the head have small raised projections on the top or underside to facilitate welding.

4. GENERAL STATEMENTS

4.1 Selection procedure.

4.1.1 Document selection. The applicable section shall be selected after reviewing the table of contents.

4.1.2 Part number selection (preliminary). A preliminary selection of the applicable part number shall be made after reviewing the nominal parameters (sizes, materials, tensile strength or hardness) listed in the sections.

4.1.3 Part number selection (final). A final selection of the applicable part number shall be made after reviewing the detailed requirements specified in the referenced stud documents for suitability in the particular military equipment being designed (considering the application and environmental conditions).

5. DETAILED REQUIREMENTS

5.1 The detailed requirements for preferred studs are contained in the applicable stud document and associated procurement specification. If there is disagreement between the nominal parameters listed in this standard and the parameters specified in the applicable stud document or associated procurement specification, the parameters specified in the applicable stud document or associated procurement specification shall prevail.

6. NOTES

6.1 Dimensions. Dimensions shown in the sections contained herein are in inches.

Custodians:
Army - AR
Air Force - 11

Review activities:
Army - AT, AV, CE, EL, GL, ME, MI
Navy - MC, SH
Air Force - 99
DLA - IS
NS

User activities:
Navy - OS, YD

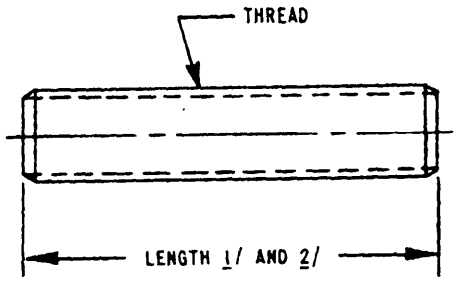
Preparing activity:
Air Force - 11

Agent:
DLA - IS

(Project 5307-0227)

SECTION 101

ROD (STUD) CONTINUOUS THREAD
APPLICABLE DOCUMENT: NAS1454



MATERIAL	PROTECTIVE FINISH
STEEL, CARBON	CADMIUM PLATE
CRES	PASSIVATE

TABLE I

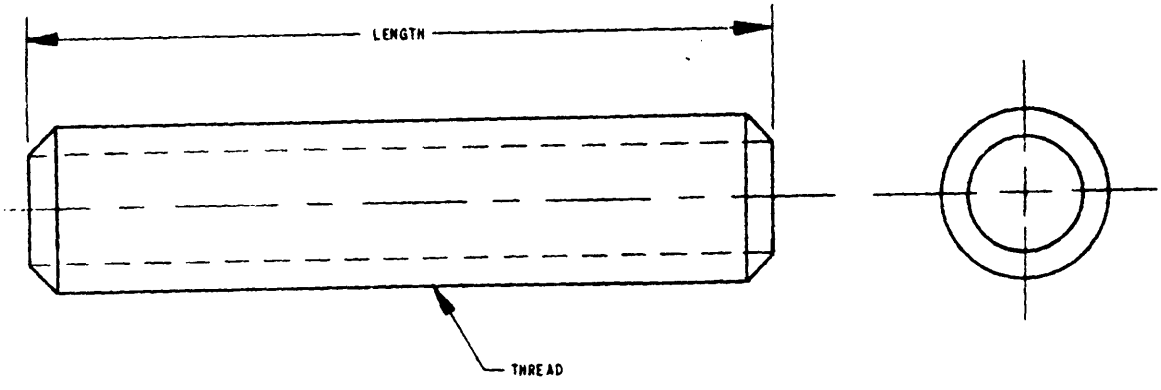
THREAD SIZE	NAS1454
4-40UNC-2A	-04
6-32UNC-2A	-06
8-32UNC-2A	-08
10-32UNF-2A	- 3
1/4-28UNF-2A	- 4
5/16-24UNF-2A	- 5
3/8-24UNF-2A	- 6
1/2-20UNF-2A	- 8
5/8-18UNF-2A	-10
3/4-16UNF-2A	-12
1-12UNF-2A	-16

1/ PREFERRED LENGTHS TO BE IN:
1/8 INCH INCREMENTS UP TO AND INCLUDING 2 INCHES
1/4 INCH INCREMENTS FROM 2-1/4 UP TO AND INCLUDING 6 INCHES
1/2 INCH INCREMENTS FROM 6-1/2 UP TO AND INCLUDING 12 INCHES

2/ LENGTHS ARE NOT TO EXCEED 12 INCHES SO AS TO CONFORM TO THE CONTINUOUS STUD DESCRIPTION

SECTION 102

STUD, CONTINUOUS THREAD, HIGH TEMPERATURE SERVICE (875°-1000°F)
APPLICABLE DOCUMENT: MS16187



MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH
STEEL, ALLOY GRADE 815	125,000	NONE

TABLE I TABULATED LENGTHS

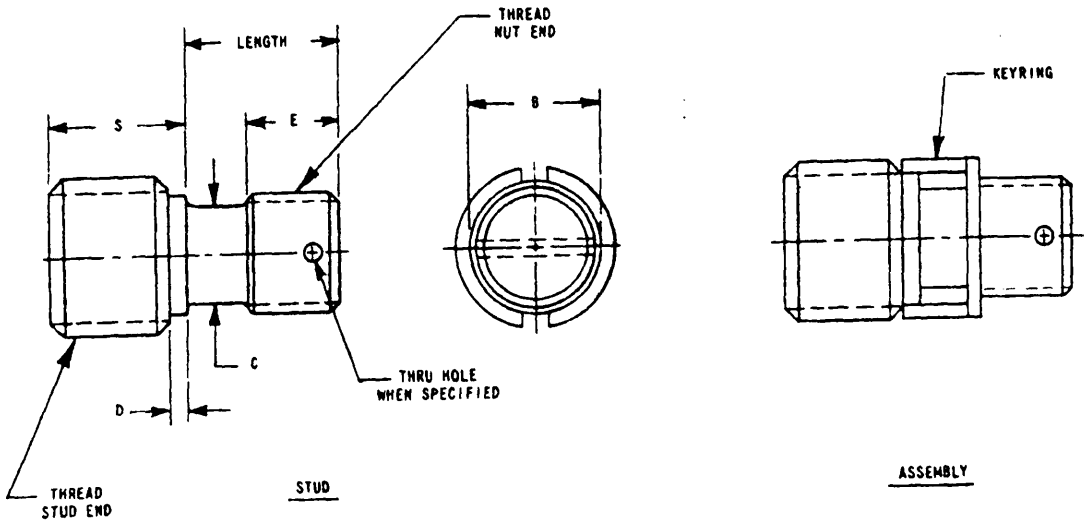
LENGTH	MS16187 (FOR DASH NOS. SEE BELOW)						
	THREAD SIZE						
	1/4-20UNC-2A	5/16-18UNC-2A	3/8-16UNC-2A	1/2-13UNC-2A	5/8-11UNC-2A	3/4-10UNC-2A	1-8UNC-2A
1	-1	-14	-27	—	—	—	—
1-1/4	-2	-15	-28	—	—	—	—
1-1/2	-3	-16	-29	-57	—	—	—
1-3/4	-4	-17	-30	-58	—	—	—
2	-5	-18	-31	-59	—	—	—
2-1/4	-6	-19	-32	-60	—	—	—
2-1/2	-7	-20	-33	-61	-80	—	—
2-3/4	-8	-21	-34	-62	-81	—	—
3	-9	-22	-35	-63	-82	-99	—
3-1/4	-10	-23	-36	-64	-83	-100	—
3-1/2	-11	-24	-37	-65	-84	-101	—
3-3/4	-12	-25	-38	-66	-85	-102	—
4	-13	-26	-39	-67	-86	-103	—
4-1/4	—	—	—	-68	-87	-104	—
4-1/2	—	—	—	-69	-88	-105	-129
4-3/4	—	—	—	-70	-89	-106	-130
5	—	—	—	-71	-90	-107	-131
5-1/2	—	—	—	-72	-91	-108	-132
6	—	—	—	-73	-92	-109	-133
6-1/2	—	—	—	-74	-93	-110	-134
7	—	—	—	-75	-94	-111	-135
7-1/2	—	—	—	-76	-95	-112	-136
8	—	—	—	-77	-96	-113	-137
8-1/2	—	—	—	-78	-97	-114	-138
9	—	—	—	-79	-98	-115	-139

TABLE I TABULATED LENGTHS (CONTINUED)

LENGTH	MS16187 (FOR DASH NOS. SEE BELOW)					
	THREAD SIZE					
	1-1/4-8UN-2A	1-1/2-8UN-2A	1-3/4-8UN-2A	2-8UN-2A	2-1/4-8UN-2A	2-1/2-8UN-2A
5	—	-166	—	—	—	—
5-1/2	—	-167	—	—	—	—
6	-148	-168	-177	-189	-201	-213
6-1/2	-149	-169	-178	-190	-202	-214
7	-150	-170	-179	-191	-203	-215
7-1/2	-151	-171	-180	-192	-204	-216
8	-152	-172	-181	-193	-205	-217
8-1/2	-153	-173	-182	-194	-206	-218
9	-154	-174	-183	-195	-207	-219
9-1/2	—	-175	-184	-196	-208	-220
10	—	-176	-185	-197	-209	-221
10-1/2	—	-249	-186	-198	-210	-222
11	—	-250	-187	-199	-211	-223
12	—	-251	-188	-200	-212	-224

SECTION 201

STUD, KEYRING LOCKED, 125 KSI FTU, SINGLE STEP
APPLICABLE DOCUMENT: MIL-S-45933/1



MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH
STEEL, ALLOY	125,000	CADMIUM PLATE
CRES	125,000	PASSIVATE

TABLE I

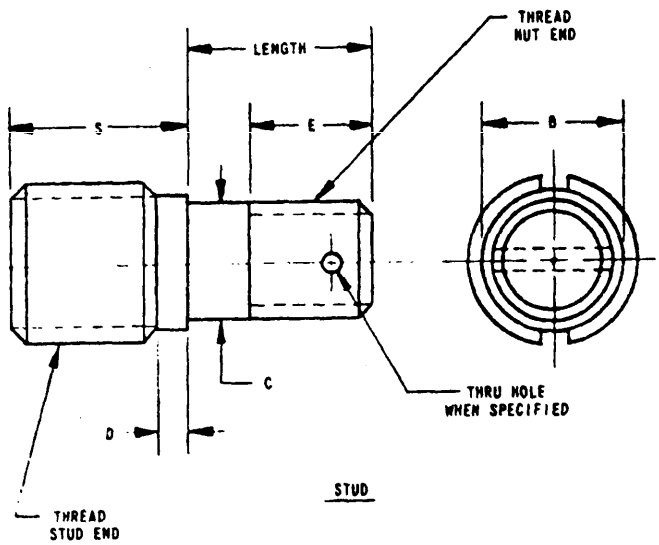
NUT END THREAD SIZE UNJF-3A	STUD END THREAD SIZE UNJF-3A	B	C	D	E	S	MS45933/1
.1900-32	.2500-28	.185	.171	.037	.437	.312	-4
.2500-28	.3125-24	.244	.228	.040	.500	.437	-5
.3125-24	.3750-24	.306	.287	.045	.562	.500	-6
.3750-24	.4375-20	.369	.349	.052	.625	.687	-7

TABLE II TABULATED LENGTHS

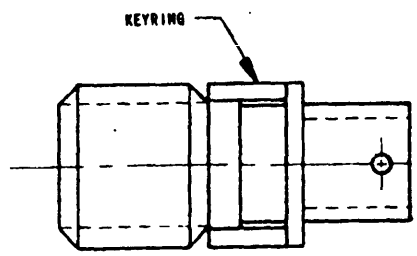
LENGTH NUT END	LENGTH DASH NUMBER			
	NOMINAL DIA (NUT END)			
	.1900	.2500	.3125	.3750
.375	-6	-6	—	—
.437	-7	-7	—	—
.500	-8	-8	—	—
.562	-9	-9	-9	—
.625	-10	-10	-10	-10
.687	-11	-11	-11	-11
.750	-12	-12	-12	-12
.875	-14	-14	-14	-14
1.000	-16	-16	-16	-16
1.125	-18	-18	-18	-18
1.250	-20	-20	-20	-20
1.375	-22	-22	-22	-22
1.500	-24	-24	-24	-24
1.625	-26	-26	-26	-26
1.750	-28	-28	-28	-28
1.875	-30	-30	-30	-30
2.000	-32	-32	-32	-32
2.250	—	-36	-36	-36
2.500	—	-40	-40	-40
2.750	—	-44	-44	-44
3.000	—	-48	-48	-48
3.250	—	-52	-52	-52
3.500	—	-56	-56	-56
3.750	—	-60	-60	-60
4.000	—	-64	-64	-64

SECTION 202

STUD, KEYRING LOCKED, 160 KSI FTU, DOUBLE STEP
APPLICABLE DOCUMENT: MIL-S-45933/2



STUD



ASSEMBLY

MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH
STEEL. ALLOY	160.000	CADMIUM PLATE
CRES	160.000	PASSIVATE

TABLE I

NUT END THREAD SIZE UNJF-3A 1/	STUD END THREAD SIZE UNJF-3A 1/	B	C	D	E	S	M45933/2
.1120-40	.1640-32	.122	.112	.025	.343	.190	-1 1/
.1380-32	.1900-32	.130	.135	.032	.375	.250	-2 1/
.1640-32	.2500-28	.179	.164	.037	.406	.250	-3 1/
.1900-32	.3125-24	.236	.190	.040	.437	.312	-4
.2500-28	.3750-24	.289	.250	.045	.500	.437	-5
.3125-24	.4375-20	.338	.312	.052	.562	.562	-6
.3750-24	.5625-18	.447	.375	.060	.625	.625	-7
.4375-20	.6250-18	.507	.437	.060	.687	.750	-8
.5000-20	.7500-16	.619	.500	.067	.812	.875	-9
.5625-18	.8750-14	.728	.562	.075	.875	.937	-10
.6250-18	1.0000-12	.836	.625	.083	.937	1.000	-11
.7500-16	1.1250-12	.930	.750	.099	1.062	1.250	-12
1.0000-12	1.5000-12	1.273	1.000	.114	1.312	1.625	-16

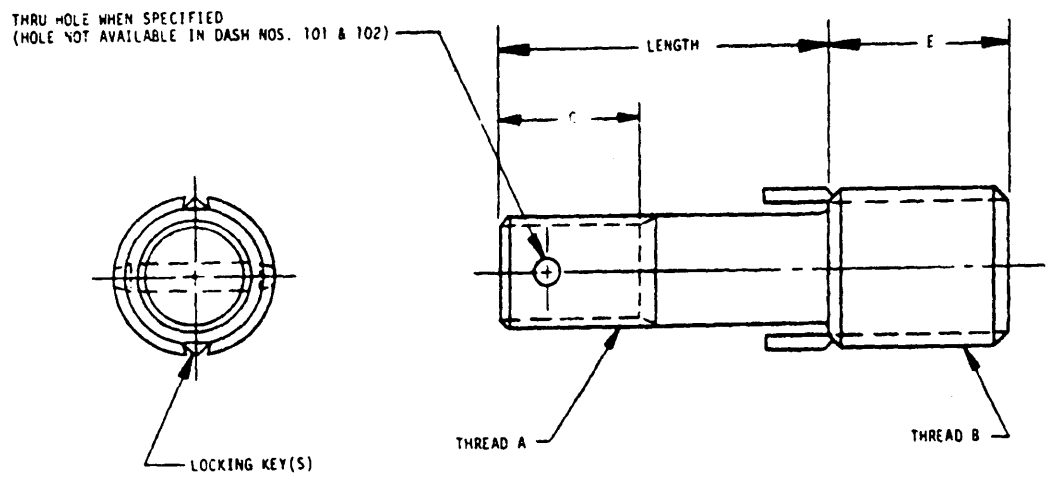
1/ DASH 1, -2 AND -3 NUT END THREADS ARE UNJC-3A. DASH 1 STUD END IS UNJC-3A.

TABLE II TABULATED LENGTHS

LENGTH NUT END	LENGTH DASH NUMBER												
	NOMINAL DIA (NUT END)												
	.1120	.1380	.1640	.1900	.2500	.3125	.3750	.4375	.5000	.5625	.6250	.7500	1.000
.250	-4	-4	—	—	—	—	—	—	—	—	—	—	—
.312	-5	-5	—	—	—	—	—	—	—	—	—	—	—
.375	-6	-6	-6	-6	-6	—	—	—	—	—	—	—	—
.437	-7	-7	-7	-7	-7	—	—	—	—	—	—	—	—
.500	-8	-8	-8	-8	-8	—	—	—	—	—	—	—	—
.562	-9	-9	-9	-9	-9	-9	—	—	—	—	—	—	—
.625	-10	-10	-10	-10	-10	-10	-10	-10	—	—	—	—	—
.687	—	—	-11	-11	-11	-11	-11	-11	—	—	—	—	—
.750	—	—	-12	-12	-12	-12	-12	-12	-12	—	—	—	—
1.000	—	—	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	—
1.125	—	—	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18
1.250	—	—	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20
1.375	—	—	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22
1.500	—	—	—	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24
1.625	—	—	—	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26
1.750	—	—	—	-28	-28	-28	-28	-28	-28	-28	-28	-28	-28
1.875	—	—	—	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30
2.000	—	—	—	-32	-32	-32	-32	-32	-32	-32	-32	-32	-32
2.250	—	—	—	—	-36	-36	-36	-36	-36	-36	-36	-36	-36
2.500	—	—	—	—	-40	-40	-40	-40	-40	-40	-40	-40	-40
2.750	—	—	—	—	-44	-44	-44	-44	-44	-44	-44	-44	-44
3.000	—	—	—	—	-48	-48	-48	-48	-48	-48	-48	-48	-48
3.250	—	—	—	—	-52	-52	-52	-52	-52	-52	-52	-52	-52
3.500	—	—	—	—	-56	-56	-56	-56	-56	-56	-56	-56	-56
3.750	—	—	—	—	-60	-60	-60	-60	-60	-60	-60	-60	-60
4.000	—	—	—	—	-64	-64	-64	-64	-64	-64	-64	-64	-64

SECTION 203

STUD, LOCKED-IN, KEY LOCKED HEAVY DUTY
APPLICABLE DOCUMENT: MS51834



MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH
STEEL, ALLOY	160,000	CADMIUM PLATE
CRES, A286	140,000	PASSIVATE

TABLE I (COARSE THREAD NUT END)

A NUT END THREAD SIZE UNJC-3A	B STUD END THREAD SIZE MOD MINOR DIA	C 1/	E	MS51834
.164-32	.3125-18UNC-2A	.410	.312	-101
.190-24	.375-16UNC-2A	.410	.312	-102
.250-20	.4375-14UNC-2A	.470	.375	-103
.3125-18	.500-13UNC-2A	.530	.437	-104
.375-16	.5625-12UNC-2A	.640	.500	-105
.4375-14	.625-11UNC-2A	.660	.625	-106
.500-13	.6875-11UNS-2A	.780	.688	-107
.625-11	.875-14UNF-2A	.950	.875	-109
.750-10	1.125-12UNF-2A	1.090	1.125	-110
.875-9	1.250-12UNF-2A	1.250	1.250	-111
1.000-8	1.375-12UNF-2A	1.370	1.375	-112

TABLE II (FINE THREAD NUT END)

A NUT END THREAD SIZE UNJF-3A	B STUD END THREAD SIZE MOD MINOR DIA	C	E	MS51834
.164-36	.3125-18UNC-2A	.410	.312	-201
.190-32	.375-16UNC-2A	.410	.312	-202
.250-28	.4375-14UNC-2A	.470	.375	-203
.3125-24	.500-13UNC-2A	.530	.437	-204
.375-24	.5625-12UNC-2A	.640	.500	-205
.4375-20	.625-11UNC-2A	.660	.625	-206
.500-20	.6875-11UNS-2A	.780	.688	-207
.625-18	.875-14UNF-2A	.950	.875	-209
.750-16	1.125-12UNF-2A	1.090	1.125	-210
.875-14	1.250-12UNF-2A	1.250	1.250	-211
1.000-12	1.375-12UNF-2A	1.370	1.375	-212

1/ THIS DIMENSION DOES NOT APPLY TO DASH NUMBERS IN TABLE III ABOVE HEAVY LINES.

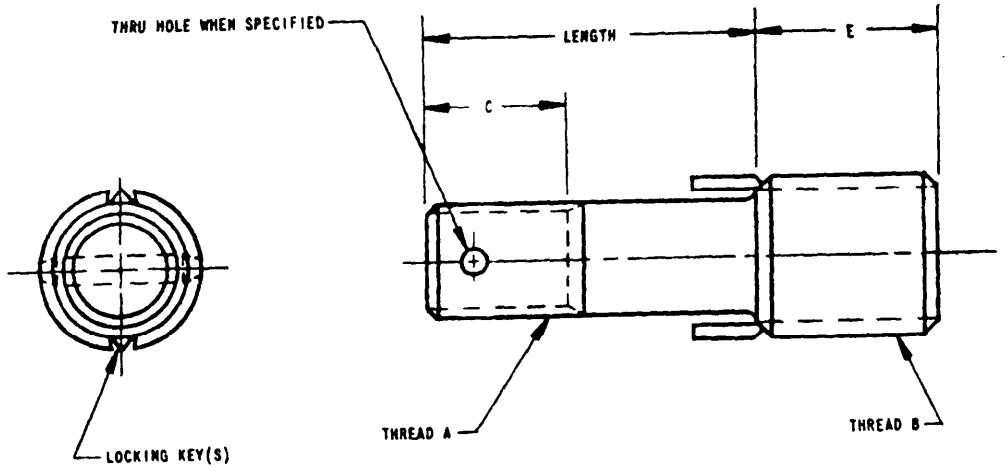
TABLE III - TABULATED LENGTHS

LENGTH NUT END	LENGTH DASH NUMBER 2/ (TABLE APPLICABLE TO TABLES I AND II) NOMINAL DIA (NUT END)										
	.164	.190	.250	.3125	.375	.4375	.500	.625	.750	.875	1.000
.312	-5	—	—	—	—	—	—	—	—	—	—
.375	-6	-6	-6	—	—	—	—	—	—	—	—
.438	-7	-7	-7	—	—	—	—	—	—	—	—
.500	-8	-8	-8	-8	—	—	—	—	—	—	—
.562	-9	-9	-9	-9	-9	—	—	—	—	—	—
.625	-10	-10	-10	-10	-10	-10	—	—	—	—	—
.750	-12	-12	-12	-12	-12	-12	-12	—	—	—	—
.875	-14	-14	-14	-14	-14	-14	-14	—	—	—	—
1.000	-16	-16	-16	-16	-16	-16	-16	-16	—	—	—
1.125	-18	-18	-18	-18	-18	-18	-18	-18	-18	—	—
1.250	-20	-20	-20	-20	-20	-20	-20	-20	-20	—	—
1.375	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22
1.500	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24
1.625	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26
1.750	-28	-28	-28	-28	-28	-28	-28	-28	-28	-28	-28
1.875	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30
2.000	-32	-32	-32	-32	-32	-32	-32	-32	-32	-32	-32
2.250	—	-36	-36	-36	-36	-36	-36	-36	-36	-36	-36
2.500	—	-40	-40	-40	-40	-40	-40	-40	-40	-40	-40
2.750	—	-44	-44	-44	-44	-44	-44	-44	-44	-44	-44
3.000	—	-48	-48	-48	-48	-48	-48	-48	-48	-48	-48
3.250	—	-52	-52	-52	-52	—	-52	—	-52	-52	-52
3.500	—	-56	-56	-56	-56	—	-56	—	-56	-56	-56
3.750	—	-60	-60	-60	-60	—	-60	—	-60	-60	-60
4.000	—	—	-64	-64	-64	—	-64	—	-64	-64	-64

2/ DASH NUMBERED PARTS ABOVE THE HEAVY LINE ARE THREADED TO THE STUD END. THE MAXIMUM DISTANCE FROM THE STUD END TO THE FIRST FULL THREAD IS EQUAL TO THE SUM OF THE MAXIMUM FILLET RADIUS (.075R) AND A MAXIMUM OF TWO INCOMPLETE THREADS.

SECTION 204

STUD, LOCKED IN, KEY LOCKED, LIGHTWEIGHT
(APPLICABLE DOCUMENT: MS51833)



MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH
STEEL, ALLOY	160,000	CADMIUM PLATE
CRES, A-286	140,000	PASSIVATE

TABLE I (COARSE THREAD NUT END)

A NUT END THREAD SIZE UNJC-3A	B STUD END THREAD SIZE MOD MINOR DIA	C 1/	E	MS51833
.190-24	.3125-18UNC-2A	.410	.312	-101
.250-20	.375-16UNC-2A	.470	.375	-102
.3125-18	.4375-14UNC-2A	.530	.437	-103
.375-16	.500-13UNC-2A	.640	.500	-104
.500-13	.625-11UNC-2A	.780	.625	-106

TABLE II (FINE THREAD NUT END)

A NUT END THREAD SIZE UNJF-3A	B STUD END THREAD SIZE MOD MINOR DIA	C	E	MS51833
.190-32	.3125-18UNC-2A	.410	.312	-201
.250-28	.375-16UNC-2A	.470	.375	-202
.3125-24	.4375-14UNC-2A	.530	.437	-203
.375-24	.500-13UNC-2A	.640	.500	-204
.500-20	.625-11UNC-2A	.780	.625	-206

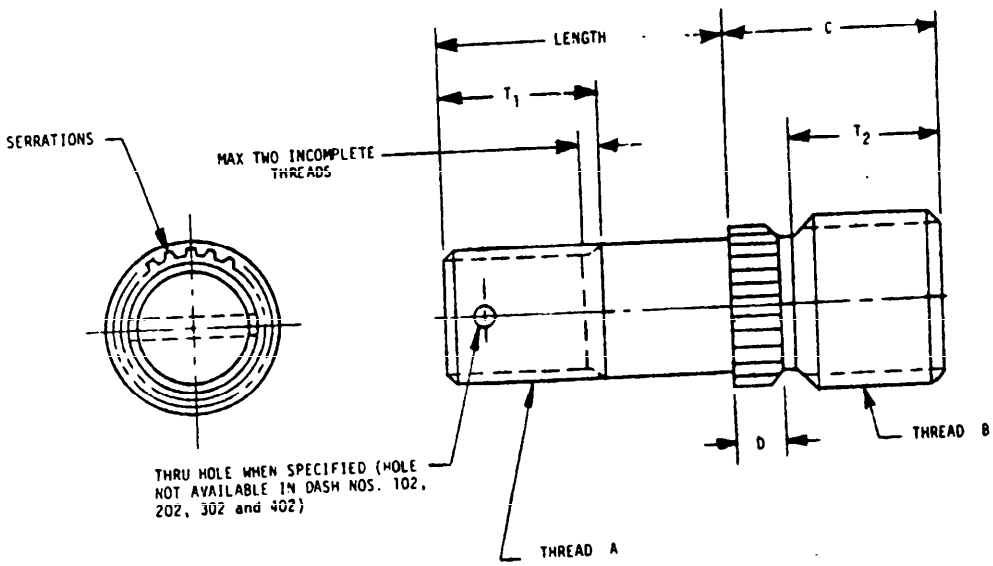
1/ THIS DIMENSION DOES NOT APPLY TO DASH NUMBER IN TABLE ABOVE HEAVY LINES.

TABLE III (TABULATED LENGTHS)

LENGTH NUT END	LENGTH DASH NUMBER (TABLE APPLICABLE TO TABLES I AND II) NOMINAL DIA (NUT END)				
	.190	.250	.3125	.375	.500
.375	-6	-6	—	—	—
.438	-7	-7	—	—	—
.500	-8	-8	—	—	—
.562	-9	-9	-9	—	—
.625	-10	-10	-10	-10	—
.750	-12	-12	-12	-12	-12
.875	-14	-14	-14	-14	-14
1.000	-16	-16	-16	-16	-16
1.125	-18	-18	-18	-18	-18
1.188	-19	-19	-19	-19	-19
1.250	-20	-20	-20	-20	-20
1.375	-22	-22	-22	-22	-22
1.500	-24	-24	-24	-24	-24
1.625	-26	-26	-26	-26	-26
1.750	-28	-28	-28	-28	-28
1.875	-30	-30	-30	-30	-30
2.000	-32	-32	-32	-32	-32
2.250	-36	-36	-36	-36	-36
2.500	-40	-40	-40	-40	-40
2.750	—	-44	-44	-44	-44
3.000	—	-48	-48	-48	-48
3.250	—	-52	-52	-52	-52
3.500	—	-56	-56	-56	-56
3.750	—	-60	-60	-60	-60
4.000	—	-64	-64	-64	-64

SECTION 205

STUD, LOCKED IN, RING LOCKED, SERRATED
APPLICABLE DOCUMENT: MS51989



MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH
STEEL, ALLOY	125,000	CADMIUM PLATE
CRES	125,000	PASSIVATE

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

A NUT END THREAD SIZE UNF-3A	B STUD END THREAD SIZE (COARSE) SEE NOTE 1/	C	D	T_1	T_2	MS51989
.138-40	.164-32	.250	.060	.380	.140	-102
.164-36	.190-24	.380	.080	.410	.230	-103
.190-32	.250-20	.440	.080	.440	.280	-104
.250-28	.3125-18	.560	.080	.500	.390	-105
.3125-24	.375-16	.690	.080	.560	.510	-106
.375-24	.4375-14	.750	.120	.620	.520	-107
.4375-20	.500-13	.810	.120	.690	.570	-108
.500-20	.5625-12	.880	.120	.810	.630	-109
.5625-18	.625-11	1.000	.140	.940	.720	-110
.625-18	.750-10	1.120	.160	1.000	.820	-111
.750-16	.875-9	1.310	.160	1.120	.990	-112

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

A NUT END THREAD SIZE UNF-3A	B STUD END THREAD SIZE (FINE) SEE NOTE 1/	C	D	T_1	T_2	MS51989
.138-30	.164-36	.250	.060	.380	.140	-202
.164-36	.190-32	.380	.080	.410	.250	-203
.190-32	.250-28	.440	.080	.440	.310	-204
.250-28	.3125-24	.560	.080	.500	.420	-205
.3125-24	.375-24	.690	.080	.560	.550	-206
.375-24	.4375-20	.750	.120	.620	.550	-207
.4375-20	.500-20	.810	.120	.690	.610	-208
.500-20	.5625-18	.880	.120	.810	.670	-209
.5625-18	.625-18	1.000	.140	.940	.780	-210
.625-18	.750-16	1.120	.160	1.000	.880	-211
.750-16	.875-14	1.310	.160	1.120	1.050	-212

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

A NUT END THREAD SIZE UNC-3A	B STUD END THREAD SIZE (COARSE) SEE NOTE 1/	C	D	T_1	T_2	MS51989
.138-32	.164-32	.250	.060	.380	.140	-302
.164-32	.190-24	.380	.080	.410	.230	-303
.190-24	.250-20	.440	.080	.440	.280	-304
.250-20	.3125-18	.560	.080	.500	.390	-305
.3125-18	.375-16	.690	.080	.560	.510	-306
.375-16	.4375-14	.750	.120	.620	.520	-307
.4375-14	.500-13	.810	.120	.690	.570	-308
.500-13	.5625-12	.880	.120	.810	.630	-309
.5625-12	.625-11	1.000	.140	.940	.720	-310
.625-11	.750-10	1.120	.160	1.000	.820	-311
.750-10	.875-9	1.310	.160	1.120	.990	-312

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

A NUT END THREAD SIZE UNC-3A	B STUD END THREAD SIZE (FINE) SEE NOTE 1/	C	D	T_1	T_2	MS51989
.138-32	.164-36	.250	.060	.380	.140	-402
.164-32	.190-32	.380	.080	.410	.250	-403
.190-24	.250-28	.440	.080	.440	.310	-404
.250-20	.3125-24	.560	.080	.500	.420	-405
.3125-18	.375-24	.690	.080	.560	.550	-406
.375-16	.4375-20	.750	.120	.620	.550	-407
.4375-14	.500-20	.810	.120	.690	.610	-408
.500-13	.5625-18	.880	.120	.810	.670	-409
.5625-12	.625-18	1.000	.140	.940	.780	-410
.625-11	.750-16	1.120	.160	1.000	.880	-411
.750-10	.375-14	1.310	.160	1.120	1.050	-412

1/ THE STUD END THREAD HAS A SPECIAL PITCH DIAMETER AND MINOR DIAMETER WHICH INSTALLS INTO A NATIONAL CLASS 3 TAPPED HOLE.

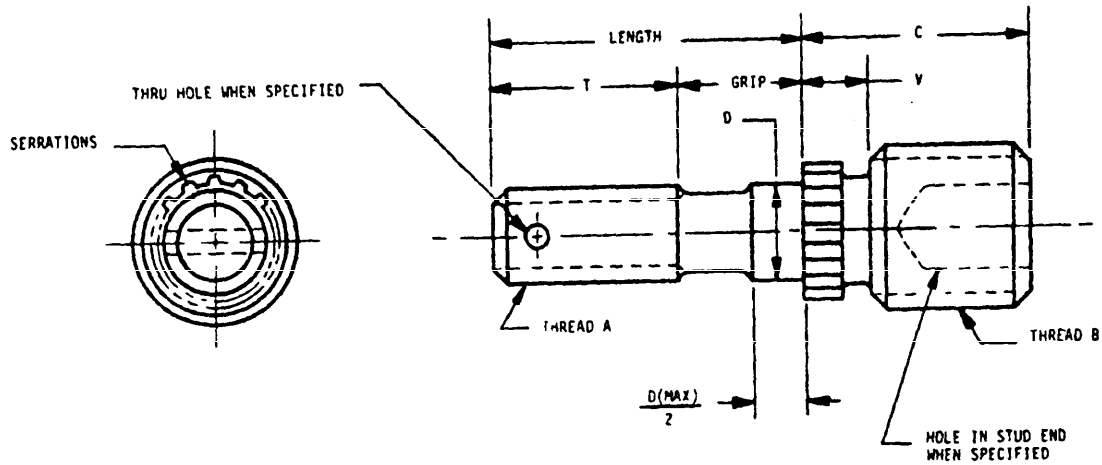
TABLE V
TABULATED LENGTHS (NUT END)

LENGTH NUT END	LENGTH DASH NUMBER 1/ (TABLE APPLICABLE TO TABLES I, II, III, AND IV)										
	NOMINAL DIA (NUT END)										
	.138	.164	.190	.250	.3125	.375	.4375	.500	.5625	.625	.750
.250	-4	—	—	—	—	—	—	—	—	—	—
.312	-5	-5	—	—	—	—	—	—	—	—	—
.375	-6	-6	-6	-6	—	—	—	—	—	—	—
.438	-7	-7	-7	-7	—	—	—	—	—	—	—
.500	-8	-8	-8	-8	-8	—	—	—	—	—	—
.562	-9	-9	-9	-9	-9	-9	—	—	—	—	—
.625	-10	-10	-10	-10	-10	-10	-10	—	—	—	—
.688	—	—	-11	-11	-11	—	—	—	—	—	—
.750	-12	-12	-12	-12	-12	-12	-12	-12	—	—	—
.875	-14	-14	-14	-14	-14	-14	-14	-14	-14	—	—
1.000	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	—
1.125	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18
1.250	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20
1.375	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22
1.500	—	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24
1.625	—	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26
1.750	—	-28	-28	-28	-28	-28	-28	-28	-28	-28	-28
1.875	—	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30
2.000	—	-32	-32	-32	-32	-32	-32	-32	-32	-32	-32
2.250	—	—	-36	-36	-36	-36	-36	-36	-36	-36	-36
2.500	—	—	-40	-40	-40	-40	—	-40	-40	—	-40
2.750	—	—	-44	-44	-44	-44	—	-44	-44	—	-44
3.000	—	—	-48	-48	-48	-48	—	-48	-48	—	-48
3.250	—	—	-52	-52	-52	-52	—	-52	-52	—	—
3.500	—	—	-56	-56	-56	-56	—	-56	-56	—	—
3.750	—	—	-60	-60	-60	-60	—	-60	-60	—	—
4.000	—	—	—	-64	-64	-64	—	—	—	—	—

1/ DASH NUMBERED PARTS ABOVE THE HEAVY LINE ARE THREADED TO THE SERRATED COLLAR. THE MAXIMUM DISTANCE FROM THE SERRATED COLLAR TO THE FIRST FULL THREAD IS EQUAL TO THE SUM OF THE MAXIMUM FILLET RADIUS (.015R) AND A MAXIMUM OF TWO INCOMPLETE THREADS.

SECTION 206

STUD, LOCKED IN, RING LOCKED, SERRATED, HIGH STRENGTH
APPLICABLE DOCUMENT: MS51992



MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH	MATERIAL CODE LETTER	MS51992 APPLICABLE DASH NUMBERS
STEEL, ALLOY	160,000	CADMIUM PLATE	A	-642 THRU -648 & -802 THRU -808
STEEL, ALLOY	180,000	CADMIUM PLATE	B	-502 THRU -508
CRES	140,000	PASSIVATE	C	-642 THRU -648
NICKEL BASE ALLOY	180,000	NONE	D	-502 THRU -508
TITANIUM, ALLOY	160,000	NONE	E	-642 THRU -648 -802 THRU -808

TABLE I (FINE THREAD NUT END AND FINE THREAD STUD END-SHORT LENGTH)

A NUT END THREAD SIZE UNJF-3A	B STUD END THREAD SIZE SEE NOTE 1/	C	D DIA MAX	T	V	MS51992
.1900-32	.3125-24	.386	.189	.469	.128	-502
.2500-28	.3750-24	.486	.249	.594	.142	-503
.3125-24	.4375-20	.627	.312	.688	.176	-504
.3750-24	.5000-20	.762	.374	.750	.200	-505
.4375-20	.6250-18	.808	.437	.812	.200	-506
.5000-20	.7500-16	.883	.499	.875	.200	-507
.6250-18	.8750-14	1.153	.624	1.000	.255	-508

TABLE II (FINE THREAD NUT END AND FINE THREAD STUD END-MEDIUM LENGTH)

A NUT END THREAD SIZE UNJF-3A	B STUD END THREAD SIZE SEE NOTE 1/	C	D DIA MAX	T	V	MS51992
.1900-32	.3125-24	.433	.189	.469	.128	-642
.2500-28	.3750-24	.558	.249	.594	.142	-643
.3125-24	.4375-20	.725	.312	.688	.176	-644
.3750-24	.5000-20	.893	.374	.750	.200	-645
.4375-20	.6250-18	.948	.437	.812	.200	-646
.5000-20	.7500-16	1.038	.499	.875	.200	-647
.6250-18	.8750-14	1.364	.624	1.000	.255	-648

TABLE III (FINE THREAD NUT END AND COARSE THREAD STUD END-LONG LENGTH)

A NUT END THREAD SIZE UNJF-3A	B STUD END THREAD SIZE SEE NOTE 1/	C	D DIA MAX	T	V	MS51992
.1900-32	.3125-18	.511	.189	.469	.128	-802
.2500-28	.3750-16	.673	.249	.594	.142	-803
.3125-24	.4375-14	.868	.312	.688	.176	-804
.3750-24	.5000-13	1.076	.374	.750	.200	-805
.4375-20	.6250-11	1.155	.437	.812	.200	-806
.5000-20	.7500-10	1.267	.499	.875	.200	-807
.6250-18	.8750-9	1.656	.624	1.000	.255	-808

NOTE:
1/ THE STUD END THREAD HAS A SPECIAL PITCH DIAMETER AND MINOR DIAMETER WHICH INSTALLS INTO A CLASS 3B TAPPED HOLE.

TABLE IV TABULATED LENGTHS (NUT END)

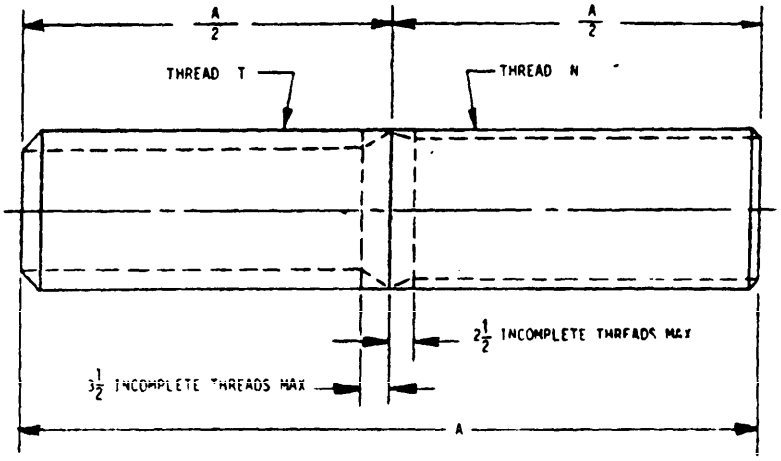
DASH NO.	LENGTH NUT END	GRIP LENGTH (REF) (APPLICABLE TO TABLES I, II AND III) 2/ NOMINAL DIA (NUT END) .1900	.2500	.3125	.3750	.4375	.5000	.6250
-9	.562	.093						
-10	.625	.156						
-12	.750	.281	.156					
-14	.875	.406	.281	.187	.125			
-16	1.000	.531	.406	.312	.250	.188		
-18	1.125	.656	.531	.437	.375	.313	.250	
-20	1.250	.781	.656	.562	.500	.438	.375	.250
-22	1.375	.906	.781	.687	.625	.563	.500	.375
-24	1.500	1.031	.906	.812	.750	.688	.625	.500
-26	1.625	1.156	1.031	.937	.875	.813	.750	.625
-28	1.750	1.281	1.156	1.062	1.000	.938	.875	.750
-30	1.875	1.406	1.281	1.187	1.125	1.063	1.000	.875
-32	2.000	1.531	1.406	1.312	1.250	1.188	1.125	1.000
-36	2.250	1.781	1.656	1.562	1.500	1.438	1.375	1.250
-40	2.500	2.031	1.906	1.812	1.750	1.688	1.625	1.500
-44	2.750	2.281	2.156	2.062	2.000	1.938	1.875	1.750
-48	3.000	2.531	2.406	2.312	2.250	2.188	2.125	2.000
-52	3.250	2.781	2.656	2.562	2.500	2.438	2.375	2.250
-56	3.500	3.031	2.906	2.812	2.750	2.688	2.625	2.500
-60	3.750	3.281	3.156	3.062	3.000	2.938	2.875	2.750
-64	4.000	3.531	3.406	3.312	3.250	3.188	3.125	3.000

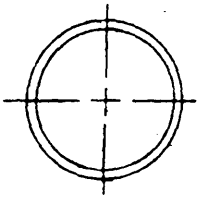
2/ DASH NUMBER PARTS BELOW HEAVY LINE HAVE LENGTH OF SHANK D EQUAL TO $\frac{D(MAX)}{2}$

DASH NUMBER PARTS ABOVE HEAVY LINE HAVE LENGTH OF SHANK D SHORTER THAN $\frac{D(MAX)}{2}$

SECTION 301

STUD, PLAIN, GENERAL PURPOSE
APPLICABLE DOCUMENT: MS51864





MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH
STEEL, CARBON OR ALLOY SIZES ¼ THRU 1	120,000	CADMIUM PLATE
OVER 1 TO 1½	105,000	
CRES	80,000	PASSIVATE
BRASS	60,000	BLACK CHEMICAL FINISH
NICKEL-COPPER ALLOY	80,000	NONE

TABLE I - (TAP END THREAD DESIGNATION CLASS 5HF)

T TAP END THREAD SIZE NC-5 HF	N NUT END THREAD SIZE UNF-2A	MS51864 (STEEL)
.2500-20	.2500-28	-102
.3125-18	.3125-24	-103
.3750-16	.3750-24	-104
.5000-13	.5000-20	-106
.6250-11	.6250-18	-108
.7500-10	.7500-16	-109
1.0000- 8	1.0000-12	-111
1.2500- 7	1.2500-12	-113

TABLE II - (TAP END THREAD DESIGNATION CLASS 5 CSF)

T TAP END THREAD SIZE NC-5 CSF	N NUT END THREAD SIZE UNF-2A	MS51864	
		(CRES)	(BRASS)
.2500-20	.2500-28	-202	-302
.3125-18	.3125-24	-203	-303
.3750-16	.3750-24	-204	-304
.5000-13	.5000-20	-206	-306
.6250-11	.6250-18	-208	-308
.7500-10	.7500-16	-209	-309
1.0000- 8	1.0000-12	-211	-311
1.2500- 7	1.2500-12	-213	-313

TABLE III - (TAP END THREAD DESIGNATION CLASS 5 ONF)

T TAP END THREAD SIZE NC-5 ONF	N NUT END THREAD SIZE UNF-2A	MS51864 (NI-CU)
.2500-20	.2500-28	-402
.3750-16	.3750-24	-404
.5000-13	.5000-20	-406
.6250-11	.6250-18	-408
.7500-10	.7500-16	-409
1.0000- 8	1.0000-12	-411
1.2500- 7	1.2500-12	-413

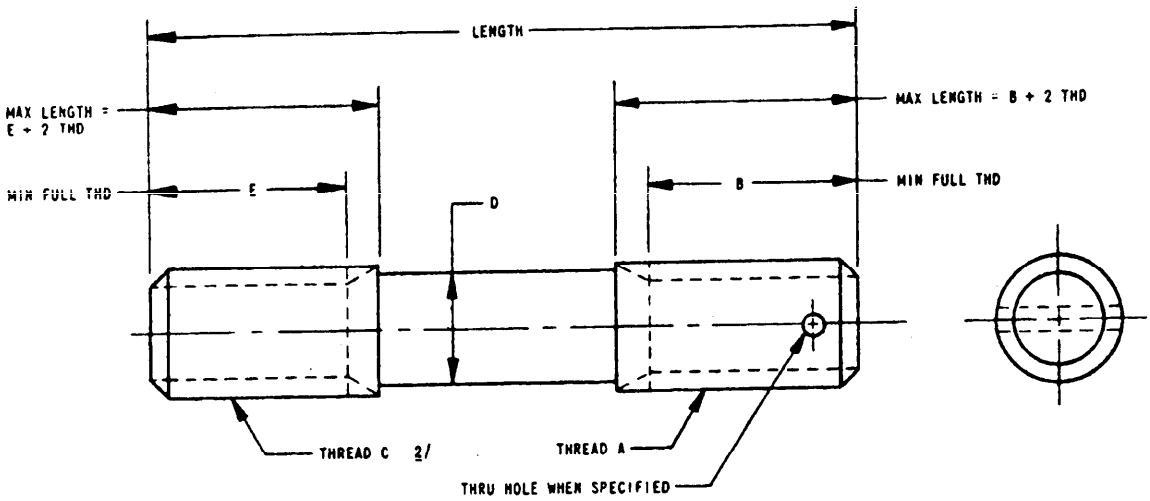
TABLE II TABULATED LENGTHS

LENGTH DASH NUMBER	DIAMETER DASH NUMBERS							
	102 202 302 402	103 203 303	104 204 304 404	106 206 306 406	108 208 308 408	109 209 309 409	111 211 311 411	113 213 313 413
	A	A	A	A	A	A	A	A
12	1.500	—	—	—	—	—	—	—
14	1.750	1.750	—	—	—	—	—	—
16	2.000	2.000	2.000	—	—	—	—	—
18	2.250	2.250	2.250	—	—	—	—	—
20	2.500	2.500	2.500	2.500	—	—	—	—
22	2.750	2.750	2.750	2.750	—	—	—	—
24	3.000	3.000	3.000	3.000	3.000	—	—	—
26	—	—	3.250	3.250	3.250	—	—	—
28	—	—	3.500	3.500	3.500	3.500	—	—
30	—	—	3.750	3.750	3.750	3.750	—	—
32	—	—	4.000	4.000	4.000	4.000	—	—
34	—	—	—	4.250	4.250	4.250	—	—
36	—	—	—	4.500	4.500	4.500	4.500	—
38	—	—	—	4.750	4.750	4.750	4.750	—
40	—	—	—	5.000	5.000	5.000	5.000	—
44	—	—	—	5.500	5.500	5.500	5.500	5.500
48	—	—	—	6.000	6.000	6.000	6.000	6.000
52	—	—	—	—	—	—	—	6.500
56	—	—	—	—	—	—	—	7.000
60	—	—	—	—	—	—	—	7.500
64	—	—	—	—	—	—	—	8.000

SECTION 302

STUD, STRAIGHT

APPLICABLE DOCUMENTS: AN126587 THRU AN126652, AN128363 THRU AN128686, AN128687 THRU AN128998 MS17299, MS17300, MS17301, MS17302, MS17303



MATERIAL	HARDNESS	PROTECTIVE FINISH
STEEL, ALLOY	ROCKWELL C-26-32	CADMIUM PLATE

TABLE I PART NUMBERS

A NUT END THREAD SIZE	B	C 2/ STUD END THREAD SIZE	D (NOM)	E	LENGTH (NOM)	1/ PART NUMBER	
						DRILLED	UNDRILLED
.190-32UNJF-3A	.375	.190-24UNJS	.169	.375	.875	—	MS17299-016
.190-32UNJF-3A	.500	.190-24UNJS	.169	.375	1.000	—	MS17299-026
.190-32UNJF-3A	.500	.190-24UNJS	.169	.375	1.125	—	MS17299-036
.190-32UNJF-3A	.500	.190-24UNJS	.169	.375	1.250	—	MS17299-046
.190-32UNJF-3A	.500	.190-24UNJS	.169	.375	1.375	—	MS17299-056
.190-32UNJF-3A	.500	.190-24UNJS	.169	.375	1.500	—	MS17299-066
.190-32UNJF-3A	.500	.190-24UNJS	.169	.375	1.625	—	MS17299-076
.250-28UNJF-3A	.438	.250-20UNJS	.226	.500	1.000	—	MS17300-011
.250-28UNJF-3A	.438	.250-20UNJS	.226	.500	1.125	MS17302-016	MS17300-021
.250-28UNJF-3A	.438	.250-20UNJS	.226	.500	1.250	MS17302-026	MS17300-031
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	1.375	MS17302-036	MS17300-051
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	1.500	MS17302-046	—
.250-28UNJF-3A	.688	.250-20UNJS	.226	.500	1.500	—	MS17300-061
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	1.625	MS17302-056	MS17300-071
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	1.750	MS17302-066	MS17300-081
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	1.875	MS17302-076	MS17300-091
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	2.000	MS17302-086	MS17300-101
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	2.125	MS17302-096	MS17300-111
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	2.250	MS17302-106	MS17300-121
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	2.375	MS17302-111	MS17300-126
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	2.500	MS17302-116	MS17300-131
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	2.750	MS17302-126	MS17300-141
.250-28UNJF-3A	.562	.250-20UNJS	.226	.500	3.000	MS17302-136	MS17300-151
.250-28UNF-3A	.562	.250-20UNS	.226	.688	3.250	AN128538	—
.250-28UNF-3A	.562	.250-20UNS	.226	.688	3.500	AN128550	—
.250-28UNF-3A	.562	.250-20UNS	.226	.688	3.750	AN128562	—
.250-28UNF-3A	.562	.250-20UNS	.226	.688	4.000	AN128574	—
.250-28UNF-3A	.562	.250-20UNS	.226	.688	4.250	AN128586	—
.250-28UNF-3A	.562	.250-20UNS	.226	.688	4.500	AN128598	—
.250-28UNF-3A	.562	.250-20UNS	.226	.688	4.750	AN128610	—
.250-28UNF-3A	.562	.250-20UNS	.226	.688	5.000	AN128622	—

TABLE I PART NUMBERS (CONTINUED)

A NUT END THREAD SIZE	B	C STUD END THREAD SIZE 2/	D (NOM)	E	LENGTH (NOM)	1/ PART NUMBER	
						DRILLED	UNDRILLED
.3125-24UNJF-3A	.500	.3125-18UNJS	.284	.625	1.250	MS17303-011	MS17301-011
.3125-24UNJF-3A	.562	.3125-18UNJS	.284	.625	1.375	MS17303-021	MS17301-021
.3125-24UNJF-3A	.500	.3125-18UNJS	.284	.625	1.500	MS17303-031	MS17301-031
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	1.625	MS17303-041	MS17301-051
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	1.750	MS17303-051	MS17301-066
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	1.875	MS17303-061	MS17301-081
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	2.000	MS17303-071	MS17301-091
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	2.125	MS17303-081	MS17301-101
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	2.250	MS17303-091	MS17301-111
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	2.375	MS17303-101	MS17301-121
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	2.500	MS17303-106	MS17301-126
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	2.750	MS17303-116	MS17301-136
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	3.000	MS17303-126	MS17301-146
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	3.250	MS17303-136	MS17301-156
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	3.500	MS17303-146	MS17301-166
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	3.750	MS17303-156	MS17301-176
.3125-24UNJF-3A	.625	.3125-18UNJS	.284	.625	4.000	MS17303-166	MS17301-186
.3125-24UNF-3A	.625	.3125-18UNS	.284	.844	4.250	AN128898	—
.3125-24UNF-3A	.625	.3125-18UNS	.284	.844	4.500	AN128910	—
.3125-24UNF-3A	.625	.3125-18UNS	.284	.844	4.750	AN128922	—
.3125-24UNF-3A	.625	.3125-18UNS	.284	.844	5.000	AN128934	—
.375-24UNF-3A	.562	.375-16UNS	.347	.750	1.438	—	AN126600
.375-24UNF-3A	.562	.375-16UNS	.347	.812	1.500	—	AN126606
.375-24UNF-3A	.562	.375-16UNS	.347	.938	1.625	—	AN126612
.375-24UNF-3A	.938	.375-16UNS	.347	.750	1.781	—	AN126624
.375-24UNF-3A	.938	.375-16UNS	.347	.750	1.875	—	AN126630
.375-24UNF-3A	.938	.375-16UNS	.347	.938	2.062	—	AN126642

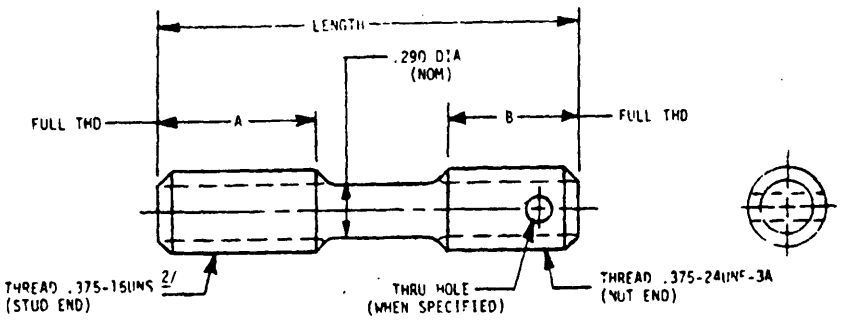
1/ REFER TO STANDARD SIZE COLUMN ON APPLICABLE DOCUMENT FOR PITCH DIAMETER OF PREFERRED PARTS LISTED.

2/ IT IS PERMISSIBLE TO USE UNDERSIZE AND OVERSIZE THREAD PITCH DIAMETERS SPECIFIED ON THE APPLICABLE DOCUMENTS IN PLACE OF STANDARD PITCH DIAMETERS IF REQUIRED TO ACHIEVE NECESSARY TORQUE VALUES DURING INITIAL INSTALLATION. HOWEVER, THIS PRACTICE IS NOT RECOMMENDED.

SECTION 303

STUD, STRAIGHT, NECKED

APPLICABLE DOCUMENTS: AN126881 THRU AN127192, AN129293 THRU AN129604



MATERIAL	HARDNESS	PROTECTIVE FINISH
STEEL, ALLOY	ROCKWELL C-26-32	CADMIUM PLATE

TABLE I. PART NUMBERS

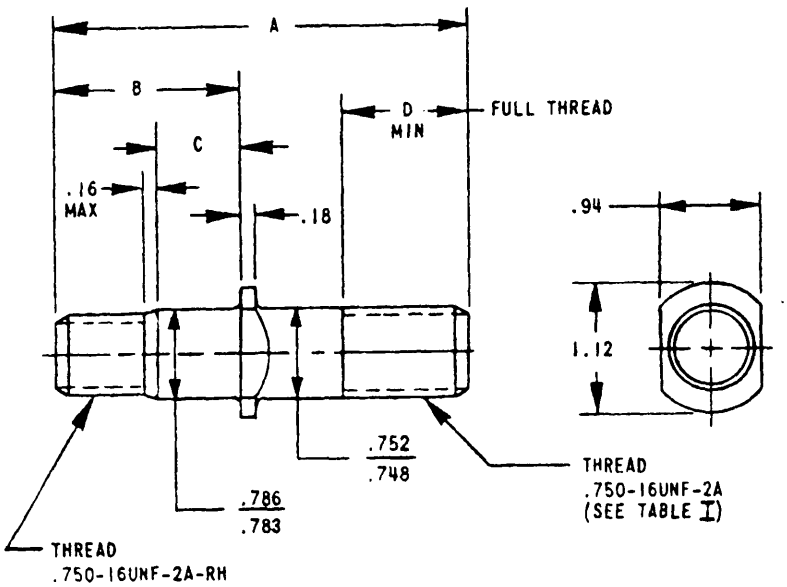
A	B	LENGTH (NOM)	PART NUMBER 1/	
			DRILLED	UNDRILLED
.750	.625	1.625	AN129312	AN126900
.938	.562	1.750	AN129324	AN126912
↑	.688	1.875	AN129336	AN126924
↑	↑	1.938	———	AN126930
↑	↑	2.000	AN129348	AN126936
↑	↑	2.062	———	AN126942
↑	↑	2.125	AN129360	AN126948
↑	↑	2.250	AN129372	AN126960
↑	↑	2.312	———	AN126966
↑	↑	2.375	AN129384	AN126972
↑	↑	2.500	AN129396	AN126984
↑	↑	2.625	———	AN126990
↑	↑	2.750	AN129408	AN126996
↑	↑	2.875	———	AN127002
↑	↑	3.000	AN129420	AN127008
↑	↑	3.250	AN129432	AN127020
↑	↑	3.500	AN129444	AN127032
↓	↑	3.750	AN129456	AN127044
.938	↑	3.875	———	AN127050
1.375	↑	4.000	AN129468	AN127056
↑	↑	4.250	AN129480	AN127068
↑	↑	4.500	AN129492	AN127080
↑	↑	4.750	AN129504	AN127092
↑	↑	5.000	AN129516	AN127104
↓	↓	5.250	AN129528	AN127116
1.375	.688	5.500	AN129540	AN127128

1/ REFER TO STANDARD SIZE COLUMN ON APPLICABLE DOCUMENT FOR PITCH DIAMETER OF PREFERRED PARTS LISTED.

2/ IT IS PERMISSIBLE TO USE UNDERSIZE AND OVERSIZE THREAD PITCH DIAMETERS SPECIFIED ON THE APPLICABLE DOCUMENTS IN PLACE OF STANDARD PITCH DIAMETERS IF REQUIRED TO ACHIEVE NECESSARY TORQUE VALUES DURING INITIAL INSTALLATION. HOWEVER, THIS PRACTICE IS NOT RECOMMENDED

SECTION 401

STUD, SHOULDERED, WHEEL MOUNTING
APPLICABLE DOCUMENT: MS51950



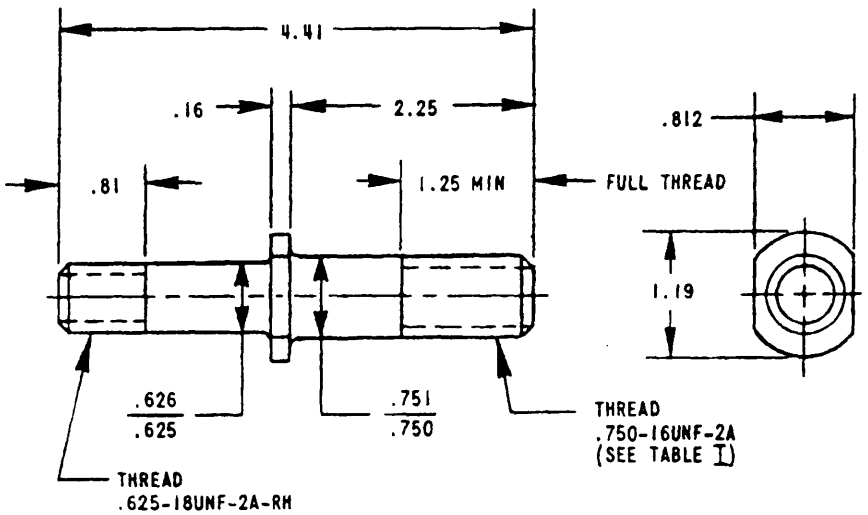
MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH
STEEL, ALLOY	120,000	ZINC OR CADMIUM PLATE

TABLE I

THREAD	A	B	C	D	MS51950
LH	3.59	2.06	.88	1.14	-1
RH	3.59	2.06	.88	1.14	-2
LH	3.81	1.63	.72	1.20	-3
RH	3.81	1.63	.72	1.20	-4
LH	4.03	2.50	1.50	1.14	-5
RH	4.03	2.50	1.50	1.14	-6

SECTION 501

STUD, SHOULDERED AND STEPPED, WHEEL MOUNTING
(.625-18UNF-2A X.750-16UNF-2A)
APPLICABLE DOCUMENT: MS52122



MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH
STEEL, ALLOY	120,000	ZINC OR CADMIUM PLATE

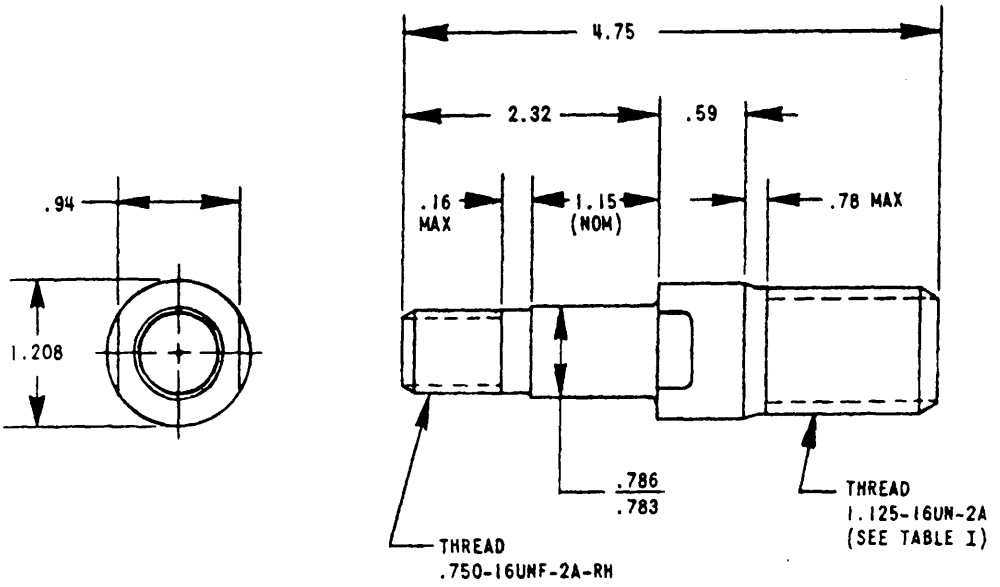
TABLE I

THREAD	MS52122
LH	-1
RH	-2

SECTION 502

STUD, SHOULDERED AND STEPPED, WHEEL MOUNTING
(.750-16UNF-2A X 1.125-16UN-2A)

APPLICABLE DOCUMENT: MS51951



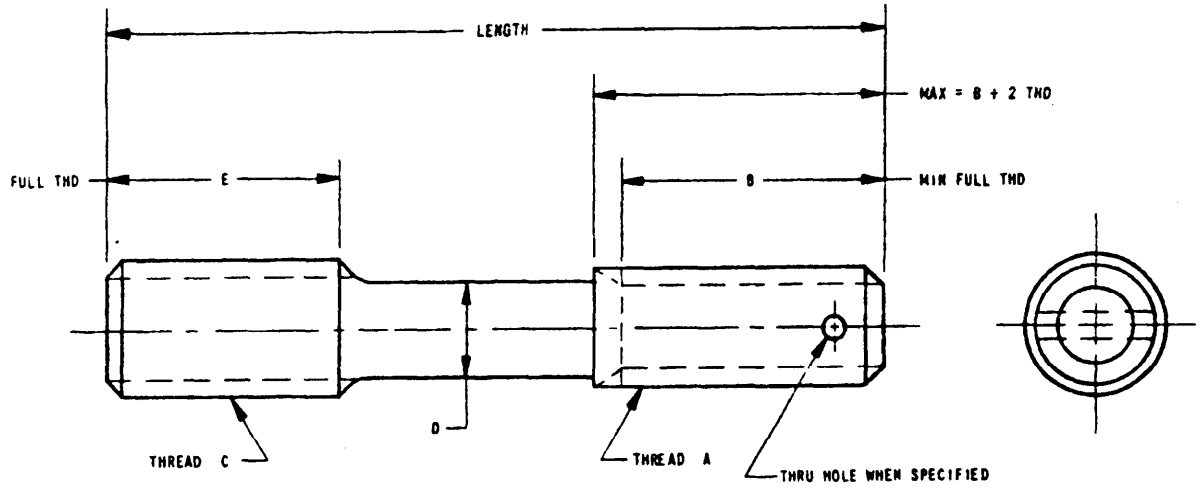
MATERIAL	TENSILE STRENGTH (PSI) MIN	PROTECTIVE FINISH
STEEL, ALLOY	120.000	ZINC OR CADMIUM PLATE

TABLE I

THREAD	MS51951
LH	-1
RH	-2

SECTION 601

STUD, STEPPED, 1.5 DIA ENGAGEMENT
APPLICABLE DOCUMENTS: AN152601 THRU AN152900,
MS17293, MS17294, MS 17295 MS17296, MS17297, MS17298



MATERIAL	HARDNESS	PROTECTIVE FINISH
STEEL, ALLOY	ROCKWELL C-26-32	CADMIUM PLATE

TABLE I PART NUMBERS

A NUT END THREAD SIZE	B	C STUD END THREAD SIZE 2/	D (NOM)	E (NOM)	LENGTH	1/ PART NUMBER	
						DRILLED	UNDRILLED
.190-32UNF-3A	.375	.250-20UNS	.169	.375	.875	AN152620	—
.190-32UNF-3A	.500	.250-20UNS	.169	.375	1.000	AN152632	—
.190-32UNF-3A	.500	.250-20UNS	.169	.375	1.125	AN152644	—
.190-32UNF-3A	.500	.250-20UNS	.169	.375	1.250	AN152656	—
.190-32UNF-3A	.500	.250-20UNS	.169	.375	1.375	AN152668	—
.190-32UNF-3A	.500	.250-20UNS	.169	.375	1.500	AN152680	—
.190-32UNF-3A	.500	.250-20UNS	.169	.375	1.625	AN152692	—
.190-32UNJF-3A	.375	.250-20UNJS	.169	.375	.875	—	MS17293-011
.190-32UNJF-3A	.500	.250-20UNJS	.169	.375	1.000	—	MS17293-021
.190-32UNJF-3A	.500	.250-20UNJS	.169	.375	1.125	—	MS17293-031
.190-32UNJF-3A	.500	.250-20UNJS	.169	.375	1.250	—	MS17293-041
.190-32UNJF-3A	.500	.250-20UNJS	.169	.375	1.375	—	MS17293-051
.190-32UNJF-3A	.500	.250-20UNJS	.169	.375	1.500	—	MS17293-061
.190-32UNJF-3A	.500	.250-20UNJS	.169	.375	1.625	—	MS17293-071
.250-28UNJF-3A	.438	.3125-18UNJS	.226	.469	1.031	MS17297-011	MS17294-011
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	1.156	MS17297-021	MS17294-021
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	1.281	MS17297-031	—
.250-28UNJF-3A	.656	.3125-18UNJS	.226	.469	1.281	—	MS17294-031
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	1.406	MS17297-041	—
.250-28UNJF-3A	.688	.3125-18UNJS	.226	.469	1.406	—	MS17294-041
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	1.531	MS17297-051	MS17294-051
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	1.656	MS17297-061	MS17294-061
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	1.781	MS17297-071	MS17294-071
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	1.906	MS17297-081	MS17294-081
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	2.031	MS17297-091	MS17294-091
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	2.156	MS17297-101	MS17294-101
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	2.344	MS17297-111	MS17294-111
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	2.594	MS17297-121	MS17294-121
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	2.844	MS17297-131	MS17294-131
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	3.094	MS17297-141	MS17294-141
.250-28UNJF-3A	.562	.3125-18UNJS	.226	.469	3.344	MS17297-151	MS17294-151

TABLE I PART NUMBERS (CONTINUED)

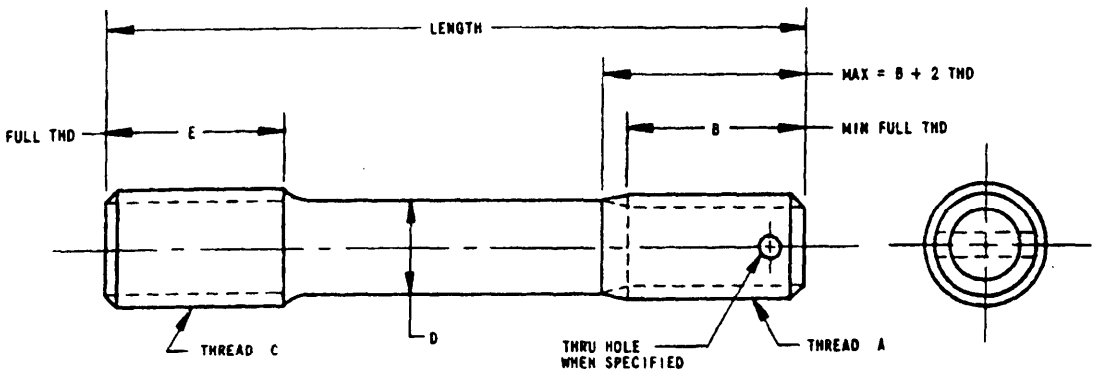
A NUT END THREAD SIZE	B	C 2/ STUD END THREAD SIZE	D (NOM)	E (NOM)	LENGTH	1/ PART NUMBER	
						DRILLED	UNDRILLED
.3125-24UNJF-3A	.562	.375-16UNJS	.284	.562	1.250	MS17298-016	MS17295-016
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	1.375	MS17298-026	MS17295-026
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	1.500	MS17298-036	—
.3125-24UNJF-3A	.719	.375-16UNJS	.284	.562	1.500	—	MS17295-036
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	1.625	MS17298-046	—
.3125-24UNJF-3A	.812	.375-16UNJS	.284	.562	1.625	—	MS17295-051
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	1.750	MS17298-056	MS17295-061
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	1.875	MS17298-066	MS17295-071
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	2.000	MS17298-076	MS17295-081
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	2.125	MS17298-086	MS17295-091
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	2.250	MS17298-096	MS17295-101
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	2.562	MS17298-111	MS17295-116
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	2.812	MS17298-121	MS17295-126
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	3.062	MS17298-131	MS17295-136
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	3.312	MS17298-141	MS17295-146
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	3.562	MS17298-151	MS17295-156
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	3.812	MS17298-161	MS17295-166
.3125-24UNJF-3A	.625	.375-16UNJS	.284	.562	4.062	MS17298-171	MS17295-176
.375-24UNJF-3A	.625	.4375-14UNJS	.347	.656	1.406	—	MS17296-016
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	1.531	—	MS17296-026
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	1.656	—	MS17296-036
.375-24UNJF-3A	.938	.4375-14UNJS	.347	.656	1.750	—	MS17296-046
.375-24UNJF-3A	.938	.4375-14UNJS	.347	.656	1.844	—	MS17296-056
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	2.031	—	MS17296-066
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	2.281	—	MS17296-086
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	2.531	—	MS17296-101
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	2.781	—	MS17296-111
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	3.031	—	MS17296-121
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	3.281	—	MS17296-131
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	3.531	—	MS17296-141
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	3.781	—	MS17296-151
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	4.031	—	MS17296-161
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	4.281	—	MS17296-171
.375-24UNJF-3A	.688	.4375-14UNJS	.347	.656	4.531	—	MS17296-181

1/ REFER TO STANDARD SIZE COLUMN ON APPLICABLE DOCUMENT FOR PITCH DIAMETER OF PREFERRED PARTS LISTED.

2/ IT IS PERMISSIBLE TO USE UNDERSIZE AND OVERSIZE THREAD PITCH DIAMETERS SPECIFIED ON THE APPLICABLE DOCUMENTS IN PLACE OF STANDARD PITCH DIAMETERS IF REQUIRED TO ACHIEVE NECESSARY TORQUE VALUES DURING INITIAL INSTALLATION. HOWEVER, THIS PRACTICE IS NOT RECOMMENDED

SECTION 602

STUD, STEPPED, 2 DIA ENGAGEMENT
APPLICABLE DOCUMENTS: MS9827 THRU MS9840



MATERIAL	HARDNESS	PROTECTIVE FINISH
STEEL, ALLOY	ROCKWELL C-26-32	CADMIUM PLATE

TABLE I PART NUMBERS

A NUT END THREAD SIZE	B	C 2/ STUD END THREAD SIZE	D (NOM)	E	LENGTH (NOM)	1/ PART NUMBER	
						DRILLED	UNDRILLED
.190-32UNJF-3A	.375	.250-20UNJS	.169	.500	1.000	MS9834-011	MS9827-011
.190-32UNJF-3A	.500	.250-20UNJS	.169	.500	1.125	MS9834-021	MS9827-021
.190-32UNJF-3A	.500	.250-20UNJS	.169	.500	1.250	MS9834-031	MS9827-031
.190-32UNJF-3A	.500	.250-20UNJS	.169	.500	1.375	MS9834-041	MS9827-041
.190-32UNJF-3A	.500	.250-20UNJS	.169	.500	1.500	MS9834-051	MS9827-051
.190-32UNJF-3A	.500	.250-20UNJS	.169	.500	1.625	MS9834-061	MS9827-061
.190-32UNJF-3A	.500	.250-20UNJS	.169	.500	1.750	MS9834-071	MS9827-071
.250-28UNJF-3A	.500	.3125-18UNJS	.227	.625	1.250	MS9835-016	MS9828-016
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	1.375	MS9835-026	MS9828-026
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	1.500	MS9835-036	MS9828-036
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	1.625	MS9835-046	MS9828-046
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	1.750	MS9835-056	MS9828-056
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	1.875	MS9835-066	MS9828-066
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	2.000	MS9835-076	MS9828-076
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	2.125	MS9835-086	MS9828-086
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	2.250	MS9835-096	MS9828-096
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	2.375	MS9835-106	MS9828-106
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	2.500	MS9835-116	MS9828-116
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	2.625	MS9835-126	MS9828-126
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	2.750	MS9835-136	MS9828-136
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	2.875	MS9835-146	MS9828-146
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	3.000	MS9835-156	MS9828-156
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	3.250	MS9835-166	MS9828-166
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	3.375	MS9835-171	—
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	3.500	MS9835-176	MS9828-176
.250-28UNJF-3A	.562	.3125-18UNJS	.227	.625	3.625	MS9835-181	—
.3125-24UNJF-3A	.500	.375-16UNJS	.285	.750	1.375	MS9836-011	MS9829-011
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	1.500	MS9836-021	MS9829-021
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	1.625	MS9836-031	MS9829-031

TABLE I PART NUMBERS (CONTINUED)

A NUT END THREAD SIZE	B	C STUD END 2/ THREAD SIZE	D (NOM)	E	LENGTH (NOM)	1/ PART NUMBER	
						DRILLED	UNDRILLED
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	1.750	MS9836-041	MS9829-046
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	1.875	MS9836-051	MS9829-056
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	2.000	MS9836-061	MS9829-066
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	2.125	MS9836-071	MS9829-076
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	2.250	MS9836-081	MS9829-086
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	2.375	MS9836-091	MS9829-096
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	2.500	MS9836-101	MS9829-106
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	2.750	MS9836-111	MS9829-116
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	3.000	MS9836-121	MS9829-126
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	3.250	MS9836-131	MS9829-136
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	3.500	MS9836-141	MS9829-146
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	3.750	MS9836-151	MS9829-156
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	4.000	MS9836-161	MS9829-166
.3125-24UNJF-3A	.625	.375-16UNJS	.285	.750	4.250	MS9836-171	MS9829-176
.375-24UNJF-3A	.625	.4375-14UNJS	.348	.875	1.625	MS9837-016	MS9830-016
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	1.750	MS9837-026	MS9830-026
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	1.875	MS9837-036	MS9830-036
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	2.000	MS9837-046	MS9830-051
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	2.125	MS9837-056	MS9830-061
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	2.250	MS9837-066	MS9830-071
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	2.375	MS9837-076	MS9830-081
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	2.500	MS9837-086	MS9830-091
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	2.750	MS9837-101	MS9830-106
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	3.000	MS9837-111	MS9830-116
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	3.250	MS9837-121	MS9830-126
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	3.500	MS9837-131	MS9830-136
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	3.750	MS9837-141	MS9830-146
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	4.000	MS9837-151	MS9830-156
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	4.250	MS9837-161	MS9830-166
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	4.500	MS9837-171	MS9830-176
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	4.750	MS9837-181	MS9830-186
.375-24UNJF-3A	.688	.4375-14UNJS	.348	.875	5.000	MS9837-191	MS9830-196
.4375-20UNJF-3A	.625	.500-13UNJS	.405	1.000	1.750	MS9838-011	MS9831-011
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	1.875	MS9838-021	MS9831-021
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	2.000	MS9838-031	MS9831-031
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	2.125	MS9838-041	MS9831-041
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	2.250	MS9838-051	MS9831-051
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	2.375	MS9838-061	MS9831-061
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	2.500	MS9838-071	MS9831-071
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	2.625	MS9838-081	MS9831-081
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	2.750	MS9838-091	MS9831-091
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	3.000	MS9838-101	MS9831-101
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	3.250	MS9838-111	MS9831-111
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	3.500	MS9838-121	MS9831-121
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	3.750	MS9838-131	MS9831-131
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	4.000	MS9838-141	MS9831-141
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	4.250	MS9838-151	MS9831-151
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	4.500	MS9838-161	MS9831-161
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	4.750	MS9838-171	MS9831-171
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	5.000	MS9838-181	MS9831-181
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	5.250	MS9838-191	MS9831-191
.4375-20UNJF-3A	.750	.500-13UNJS	.405	1.000	5.500	MS9838-201	MS9831-201

TABLE I PART NUMBERS (CONTINUED)

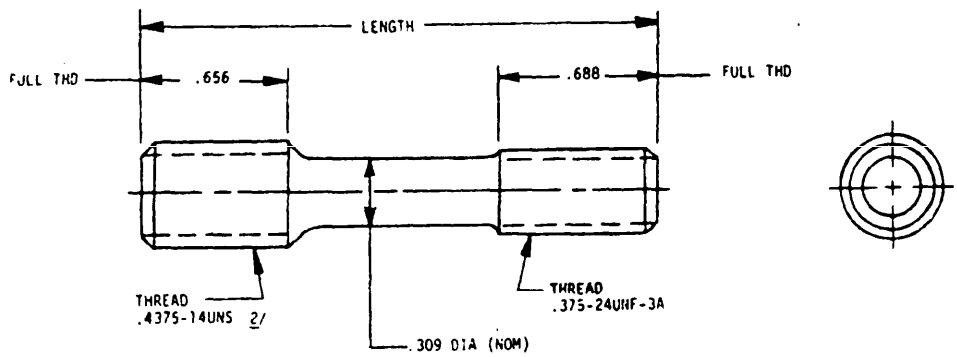
A NUT END THREAD SIZE	B	C 2/ STUD END THREAD SIZE	D (NOM)	E	LENGTH (NOM)	1/ PART NUMBER	
						DRILLED	UNDRILLED
.500-20UNJF-3A	.750	.5625-12UNJS	.467	1.125	2.000	MS9839-011	MS9832-011
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	2.125	MS9839-021	MS9832-021
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	2.250	MS9839-031	MS9832-031
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	2.375	MS9839-041	MS9832-041
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	2.500	MS9839-051	MS9832-051
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	2.625	MS9839-061	MS9832-061
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	2.750	MS9839-071	MS9832-071
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	2.875	—	MS9832-081
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	3.000	MS9839-086	MS9832-086
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	3.250	MS9839-096	MS9832-096
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	3.500	MS9839-106	MS9832-106
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	3.750	MS9839-116	MS9832-116
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	4.000	MS9839-126	MS9832-126
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	4.250	MS9839-136	MS9832-136
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	4.500	MS9839-146	MS9832-146
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	4.750	MS9839-156	MS9832-156
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	5.000	MS9839-166	MS9832-166
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	5.250	MS9839-176	MS9832-176
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	5.500	MS9839-186	MS9832-186
.500-20UNJF-3A	.875	.5625-12UNJS	.467	1.125	5.750	MS9839-196	MS9832-196
.5625-18UNJF-3A	.875	.625-11UNJS	.526	1.250	2.250	MS9840-016	MS9833-016
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	2.375	MS9840-026	MS9833-026
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	2.500	MS9840-036	MS9833-036
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	2.625	MS9840-046	MS9833-046
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	2.750	MS9840-056	MS9833-056
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	2.875	MS9840-066	MS9833-066
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	3.000	MS9840-076	MS9833-076
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	3.250	MS9840-086	MS9833-086
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	3.500	MS9840-096	MS9833-096
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	3.750	MS9840-106	MS9833-106
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	4.000	MS9840-116	MS9833-116
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	4.250	MS9840-126	MS9833-126
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	4.500	MS9840-136	MS9833-136
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	4.750	MS9840-146	MS9833-146
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	5.000	MS9840-156	MS9833-156
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	5.250	MS9840-166	MS9833-166
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	5.500	MS9840-176	MS9833-176
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	5.750	MS9840-186	MS9833-186
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	6.000	MS9840-196	MS9833-196
.5625-18UNJF-3A	1.000	.625-11UNJS	.526	1.250	6.250	MS9840-206	MS9833-206

1/ REFER TO STANDARD SIZE COLUMN ON APPLICABLE DOCUMENT FOR PITCH DIAMETER OF PREFERRED PARTS LISTED.

2/ IT IS PERMISSIBLE TO USE OVERSIZE THREAD PITCH DIAMETERS SPECIFIED ON THE APPLICABLE DOCUMENTS IN PLACE OF STANDARD PITCH DIAMETERS IF REQUIRED TO ACHIEVE NECESSARY TORQUE VALUES DURING INITIAL INSTALLATION. HOWEVER, THIS PRACTICE IS NOT RECOMMENDED.

SECTION 603

STUD, STEPPED, NECKED, 1.5 DIA ENGAGEMENT .4375-14UNS X .375-24UNF-3A
APPLICABLE DOCUMENT: AN158901 THRU AN159200



MATERIAL	HARDNESS	PROTECTIVE FINISH
STEEL, ALLOY	ROCKWELL C-26-32	CADMIUM PLATE

TABLE I PART NUMBERS

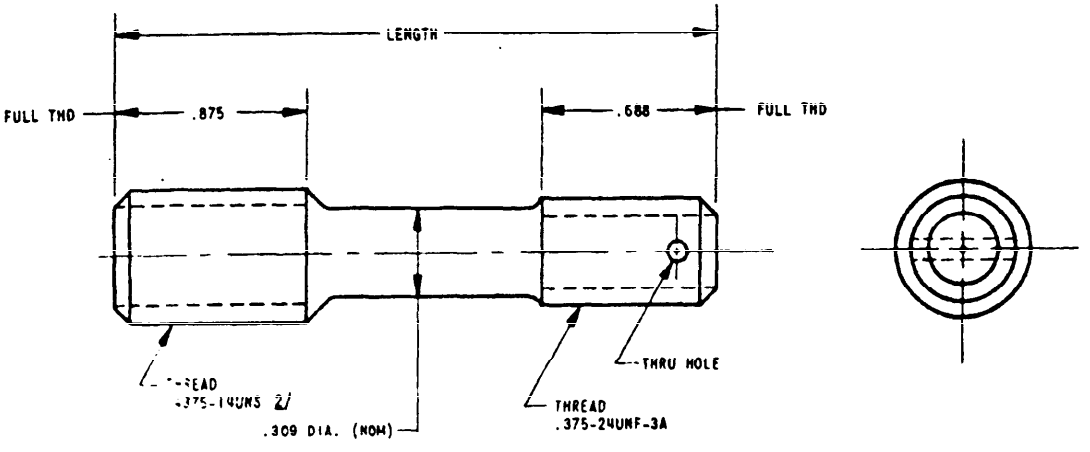
LENGTH	PART NUMBER 1/
1.594	AN158914
1.656	AN158920
1.781	AN158932
1.906	AN158944
2.031	AN158956
2.156	AN158968
2.281	AN158980
2.531	AN158998
2.781	AN159010
3.031	AN159022
3.281	AN159034
3.531	AN159046
3.781	AN159058
4.031	AN159070
4.281	AN159082
4.531	AN159094

1/ REFER TO STANDARD SIZE COLUMN ON APPLICABLE DOCUMENT FOR PITCH DIAMETER OF PREFERRED PARTS LISTED.

2/ IT IS PERMISSIBLE TO USE UNDERSIZE AND OVERSIZE THREAD PITCH DIAMETERS SPECIFIED ON THE APPLICABLE DOCUMENTS IN PLACE OF STANDARD PITCH DIAMETERS IF REQUIRED TO ACHIEVE NECESSARY TORQUE VALUES DURING INITIAL INSTALLATION. HOWEVER, THIS PRACTICE IS NOT RECOMMENDED.

SECTION 604

STUD, STEPPED, DRILLED, NECKED, 2 DIA ENGAGEMENT .4375-14UNS X .375-24UNF-3A
APPLICABLE DOCUMENT: AN162501 THRU AN162800



MATERIAL	HARDNESS	PROTECTIVE FINISH
STEEL, ALLOY	ROCKWELL C-26-32	CADMIUM PLATE

TABLE I PART NUMBERS

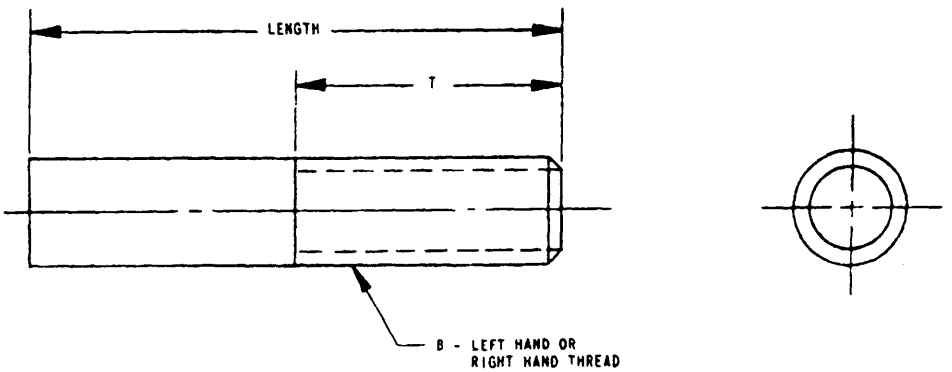
LENGTH	PART NUMBER 1/
1.875	AN162520
2.000	AN162532
2.125	AN162544
2.250	AN162556
2.375	AN162568
2.500	AN162580
2.750	AN162598
3.000	AN162610
3.250	AN162622
3.500	AN162634
3.750	AN162646
4.000	AN162658
4.250	AN162670
4.500	AN162682
4.750	AN162694

1/ REFER TO STANDARD SIZE COLUMN ON APPLICABLE DOCUMENT FOR PITCH DIAMETER OF PREFERRED PARTS LISTED.

2/ IT IS PERMISSIBLE TO USE UNDERSIZE AND OVERSIZE THREAD PITCH DIAMETERS SPECIFIED ON THE APPLICABLE DOCUMENTS IN PLACE OF STANDARD PITCH DIAMETERS IF REQUIRED TO ACHIEVE NECESSARY TORQUE VALUES DURING FINAL INSTALLATION. HOWEVER, THIS PRACTICE IS NOT RECOMMENDED.

SECTION 701

STUB (STUD) WELDING, TURNBUCKLE (GENERAL PURPOSE, MANUAL WELD APPLICATION)
APPLICABLE DOCUMENT: MS27951



MATERIAL	PROTECTIVE FINISH
STEEL (FORGED)	ZINC COAT

TABLE I

B THREAD SIZE UNC-2A	LENGTH REF	T REF	TURNBUCKLE CLEAR OPENING REF	RECOMMENDED WORKING LOAD LBS. 1/	MS27951	
					LEFT HAND	RIGHT HAND
.250-20	4.75	2.50	4.00	500	-1	-2
.3125-18	5.38	2.88	4.50	700	-3	-4
.375-16	6.75	3.75	6.00	1,040	-5	-6
.500-13	7.00 8.50 10.00	4.00 5.50 7.00	6.00 9.00 12.00	1,800	-7 -9 -11	-8 -10 -12
.625-11	7.75 9.25 10.75 13.75	4.25 5.75 7.25 10.25	6.00 9.00 12.00 18.00	2,700	-13 -15 -17 -19	-14 -16 -18 -20
.750-10	8.00 11.00 14.00	4.50 7.50 10.50	6.00 12.00 18.00	4,000	-21 -23 -25	-22 -24 -26
1.000-8	9.00 15.00 18.00	5.00 11.00 14.00	6.00 18.00 24.00	7,600	-31 -33 -35	-32 -34 -36
1 250-7	9.50 15.50 18.50	5.50 11.50 14.50	6.00 18.00 24.00	12,000	-37 -39 -41	-38 -40 -42
1 500-6	19.25	9.75	24.00	17,000	-43	-44
2 000-4-1/2	20.50	15.00	24.00	30,000	-45	-46
2.500-4	22.00	16.00	24.00	48,400	-47	-48

1/ - RECOMMENDED WORKING LOAD (SAFETY FACTOR 5 TO 1) BASED ON BREAKING STRENGTH AT THREAD ROOT.

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5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

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