INCH-POUND

MIL-DTL-83454A
10 March 2011
SUPERSEDING
MIL-T-83454
30 April 1975

DETAIL SPECIFICATION

TERMINALS, STUD, BLIND PLATE, FOR ELECTRICAL BONDING AND GROUNDING (NONINSULATED)

Reactivated after 10 March 2011 and may be used for new and existing designs and acquisitions.

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

1. SCOPE

1.1 Scope. This specification covers noninsulated blind plate stud terminals used for bonding and grounding of electrical and electronic systems in aircraft applications.

1.2 Classification.

1.2.1.1 Stud materials. The stud material and finish will be identified by the following designations, indicating that the stud material conforms to the requirements as described in 3.2.2 (see 1.3).

A - 4140 chrome-molybdenum steel
B - 8740 chrome-nickel-molybdenum steel
C - 4340 chrome-nickel-molybdenum steel

1.2.1.2 Grip. The nominal thickness (grip) of the material to which the stud is to be attached will be indicated by a single digit representing the material thickness in sixteenths (1/16th's) of an inch (see tables I through IV).

1.2.1.3 Stud thread length. The stud thread length will be indicated by two digits representing the length in sixteenths (1/16th's) of an inch (see tables I through IV).

Comments, suggestions, or questions on this document should be addressed to Defense Logistics Agency Aviation VEB, 8000 Jefferson Davis Highway, Richmond, VA 23297-5616, or e-mailed to STDZNMGT@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST database at https://assist.daps.dla.mil/.

TABLE I. M83454/2 stud terminals - dimensions and configuration.

Dash no.	Stud thread size	ØA (ref)	B	C (ref)	ØD ±0.001 (.03)	ØE (max)	F (max)	G [4] ±0.032 (.81)	H (max)	ØJ (max)	K ±0.032 (.81)	R (max)	S	Installation hole diameter	
														Max	Min
AA106	.138-32 UNJC-3A	0.312 (7.92)	0.090 (2.29)	0.050 (1.27)	0.217 (5.51)	0.218 (5.54)	0.185 (4.70)	0.062 (1.57)	0.110 (2.79)	0.270 (6.86)	0.375 (9.52)	0.010 (.25)	0.114 (2.90)	0.2228 (5.659)	0.2188 (5.558)
AA107	.138-32 UNJC-3A	0.312 (7.92)	0.090 (2.29)	0.050 (1.27)	0.217 (5.51)	0.218 (5.54)	0.185 (4.70)	0.062 (1.57)	0.110 (2.79)	0.270 (6.86)	0.438 (11.13)	0.010 (.25)	0.114 (2.90)	0.2228 (5.659)	0.2188 (5.558)
AA108	.138-32 UNJC-3A	0.312 (7.92)	0.090 (2.29)	0.050 (1.27)	0.217 (5.51)	0.218 (5.54)	0.185 (4.70)	0.062 (1.57)	0.110 (2.79)	0.270 (6.86)	0.500 (12.7)	0.010 (.25)	0.114 (2.90)	0.2228 (5.659)	0.2188 (5.558)
AA206	.138-32 UNJC-3A	0.312 (7.92)	0.090 (2.29)	0.070 (1.78)	0.217 (5.51)	0.218 (5.54)	0.185 (4.70)	0.125 (3.18)	0.110 (2.79)	0.270 (6.86)	0.375 (9.52)	0.010 (.25)	0.114 (2.90)	0.2228 (5.659)	0.2188 (5.558)
AA207	.138-32 UNJC-3A	0.312 (7.92)	0.090 (2.29)	0.070 (1.78)	0.217 (5.51)	0.218 (5.54)	0.185 (4.70)	0.125 (3.18)	0.110 (2.79)	0.270 (6.86)	0.438 (11.13)	0.010 (.25)	0.114 (2.90)	0.2228 (5.659)	0.2188 (5.558)
AA208	.138-32 UNJC-3A	0.312 (7.92)	0.090 (2.29)	0.070 (1.78)	0.217 (5.51)	0.218 (5.54)	0.185 (4.70)	0.125 (3.18)	0.110 (2.79)	0.270 (6.86)	0.500 (12.7)	0.010 (.25)	0.114 (2.90)	0.2228 (5.659)	0.2188 (5.558)

[1] Dimensions are in inches.
[2] Metric equivalents in parentheses are given for general information only, based upon 1.00 inch = 25.4 millimeters (mm).
[3] Unless otherwise specified, tolerance is ±0.016 (.41mm).
[4] Terminals with 0.062 (1.57 mm) grip, stud color: Gold. Terminals with 0.125 (3.18 m) grip, stud color: Olive drab.
[5] This specification depicts only general design characteristics and is not intended to limit specific manufacturing processes.

TABLE II. M83454/3 stud terminals - dimensions and configuration.

Dash no.	Stud thread size	ØA (ref)	B	C (ref)	ØD ±0.001 (.03)	ØE (max)	F (max)	G [4] ±0.032 (.81)	H (max)	ØJ (max)	K ±0.032 (.81)	R (max)	S	Installation hole diameter	
														Max	Min
AA106	.164-32 UNJC-3A	0.375 (9.52)	0.090 (2.29)	0.065 (1.65)	0.248 (6.30)	0.249 (6.32)	0.200 (5.08)	0.062 (1.57)	0.120 (3.05)	0.320 (8.13)	0.375 (9.52)	0.010 (.25)	0.114 (2.90)	0.2540 (6.452)	0.2500 (6.350)
AA107	.164-32 UNJC-3A	0.375 (9.52)	0.090 (2.29)	0.065 (1.65)	0.248 (6.30)	0.249 (6.32)	0.200 (5.08)	0.062 (1.57)	0.120 (3.05)	0.320 (8.13)	0.438 (11.13)	0.010 (.25)	0.114 (2.90)	0.2540 (6.452)	0.2500 (6.350)
AA108	.164-32 UNJC-3A	0.375 (9.52)	0.090 (2.29)	0.065 (1.65)	0.248 (6.30)	0.249 (6.32)	0.200 (5.08)	0.062 (1.57)	0.120 (3.05)	0.320 (8.13)	0.500 (12.7)	0.010 (.25)	0.114 (2.90)	0.2540 (6.452)	0.2500 (6.350)
AA206	.164-32 UNJC-3A	0.375 (9.52)	0.090 (2.29)	0.085 (2.16)	0.248 (6.30)	0.249 (6.32)	0.200 (5.08)	0.125 (3.18)	0.120 (3.05)	0.320 (8.13)	0.375 (9.52)	0.010 (.25)	0.114 (2.90)	0.2540 (6.452)	0.2500 (6.350)
AA207	.164-32 UNJC-3A	0.375 (9.52)	0.090 (2.29)	0.085 (2.16)	0.248 (6.30)	0.249 (6.32)	0.200 (5.08)	0.125 (3.18)	0.120 (3.05)	0.320 (8.13)	0.438 (11.13)	0.010 (.25)	0.114 (2.90)	0.2540 (6.452)	0.2500 (6.350)
AA208	.164-32 UNJC-3A	0.375 (9.52)	0.090 (2.29)	0.085 (2.16)	0.248 (6.30)	0.249 (6.32)	0.200 (5.08)	0.125 (3.18)	0.120 (3.05)	0.320 (8.13)	0.500 (12.7)	0.010 (.25)	0.114 (2.90)	0.2540 (6.452)	0.2500 (6.350)

[1] Dimensions are in inches.
[2] Metric equivalents in parentheses are given for general information only, based upon 1.00 inch = 25.4 millimeters (mm).
[3] Unless otherwise specified, tolerance is ±0.016 (.41mm).
[4] Terminals with 0.062 (1.57 mm) grip, stud color: Gold. Terminals with 0.125 (3.18 m) grip, stud color: Olive drab.
[5] This specification depicts only general design characteristics and is not intended to limit specific manufacturing processes.

TABLE III. M83454/4 stud terminals - dimensions and configuration.

Dash no.	Stud thread size	ØA (ref)	B	C (ref)	ØD ±0.001 (.03)	ØE (max)	F (max)	G [4] ±0.032 (.81)	H (max)	ØJ (max)	K ±0.032 (.81)	R (max)	S	Installation hole diameter	
														Max	Min
AA108	.190-32 UNJF-3A	0.428 (10.87)	0.138 (3.51)	0.065 (1.65)	0.309 (7.85)	0.311 (7.90)	0.238 (6.05)	0.062 (1.57)	0.150 (3.81)	0.390 (9.91)	0.500 (12.70)	0.010 (.25)	0.134 (3.40)	0.3165 (8.039)	0.3125 (7.938)
AA109	.190-32 UNJF-3A	0.428 (10.87)	0.138 (3.51)	0.065 (1.65)	0.309 (7.85)	0.311 (7.90)	0.238 (6.05)	0.062 (1.57)	0.150 (3.81)	0.390 (9.91)	0.563 (14.30)	0.010 (.25)	0.134 (3.40)	0.3165 (8.039)	0.3125 (7.938)
AA110	.190-32 UNJF-3A	0.428 (10.87)	0.138 (3.51)	0.065 (1.65)	0.309 (7.85)	0.311 (7.90)	0.238 (6.05)	0.062 (1.57)	0.150 (3.81)	0.390 (9.91)	0.625 (15.88)	0.010 (.25)	0.134 (3.40)	0.3165 (8.039)	0.3125 (7.938)
AA111	.190-32 UNJF-3A	0.428 (10.87)	0.138 (3.51)	0.065 (1.65)	0.309 (7.85)	0.311 (7.90)	0.238 (6.05)	0.062 (1.57)	0.150 (3.81)	0.390 (9.91)	0.688 (17.48)	0.010 (.25)	0.134 (3.40)	0.3165 (8.039)	0.3125 (7.938)
AA208	.190-32 UNJF-3A	0.428 (10.87)	0.138 (3.51)	0.085 (2.16)	0.309 (7.85)	0.311 (7.90)	0.238 (6.05)	0.125 (3.18)	0.150 (3.81)	0.390 (9.91)	0.500 (12.70)	0.010 (.25)	0.134 (3.40)	0.3165 (8.039)	0.3125 (7.938)
AA209	.190-32 UNJF-3A	0.428 (10.87)	0.138 (3.51)	0.085 (2.16)	0.309 (7.85)	0.311 (7.90)	0.238 (6.05)	0.125 (3.18)	0.150 (3.81)	0.390 (9.91)	0.563 (14.30)	0.010 (.25)	0.134 (3.40)	0.3165 (8.039)	0.3125 (7.938)
AA210	.190-32 UNJF-3A	0.428 (10.87)	0.138 (3.51)	0.085 (2.16)	0.309 (7.85)	0.311 (7.90)	0.238 (6.05)	0.125 (3.18)	0.150 (3.81)	0.390 (9.91)	0.625 (15.88)	0.010 (.25)	0.134 (3.40)	0.3165 (8.039)	0.3125 (7.938)
AA211	.190-32 UNJF-3A	0.428 (10.87)	0.138 (3.51)	0.085 (2.16)	0.309 (7.85)	0.311 (7.90)	0.238 (6.05)	0.125 (3.18)	0.150 (3.81)	0.390 (9.91)	0.688 (17.48)	0.010 (.25)	0.134 (3.40)	0.3165 (8.039)	0.3125 (7.938)

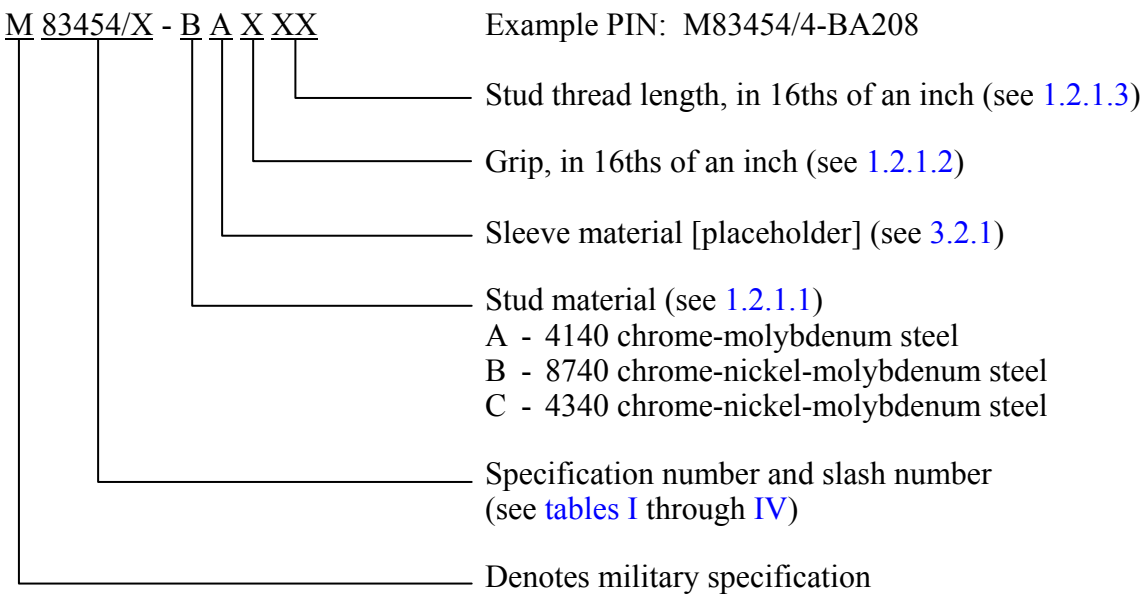
[1] Dimensions are in inches.
[2] Metric equivalents in parentheses are given for general information only, based upon 1.00 inch = 25.4 millimeters (mm).
[3] Unless otherwise specified, tolerance is ±0.016 (.41mm).
[4] Terminals with 0.062 (1.57 mm) grip, stud color: Gold. Terminals with 0.125 (3.18 m) grip, stud color: Olive drab.
[5] This specification depicts only general design characteristics and is not intended to limit specific manufacturing processes.

TABLE IV. M83454/5 stud terminals - dimensions and configuration.

Dash no.	Stud thread size	ØA (ref)	B	C (ref)	ØD ±0.001 (.03)	ØE (max)	F (max)	G [4] ±0.032 (.81)	H (max)	ØJ (max)	K ±0.032 (.81)	R (max)	S	Installation hole diameter	
														Max	Min
AA108	.250-28 UNJF-3A	0.500 (12.7)	0.140 (3.56)	0.085 (2.16)	0.373 (9.47)	0.374 (9.50)	0.350 (8.89)	0.062 (1.57)	0.200 (5.08)	0.475 (12.06)	0.500 (12.70)	0.016 (.41)	0.183 (4.65)	0.3790 (9.627)	0.3750 (9.525)
AA109	.250-28 UNJF-3A	0.500 (12.7)	0.140 (3.56)	0.085 (2.16)	0.373 (9.47)	0.374 (9.50)	0.350 (8.89)	0.062 (1.57)	0.200 (5.08)	0.475 (12.06)	0.563 (14.30)	0.016 (.41)	0.183 (4.65)	0.3790 (9.627)	0.3750 (9.525)
AA110	.250-28 UNJF-3A	0.500 (12.7)	0.140 (3.56)	0.085 (2.16)	0.373 (9.47)	0.374 (9.50)	0.350 (8.89)	0.062 (1.57)	0.200 (5.08)	0.475 (12.06)	0.625 (15.88)	0.016 (.41)	0.183 (4.65)	0.3790 (9.627)	0.3750 (9.525)
AA111	.250-28 UNJF-3A	0.500 (12.7)	0.140 (3.56)	0.085 (2.16)	0.373 (9.47)	0.374 (9.50)	0.350 (8.89)	0.062 (1.57)	0.200 (5.08)	0.475 (12.06)	0.688 (17.48)	0.016 (.41)	0.183 (4.65)	0.3790 (9.627)	0.3750 (9.525)
AA112	.250-28 UNJF-3A	0.500 (12.7)	0.140 (3.56)	0.085 (2.16)	0.373 (9.47)	0.374 (9.50)	0.350 (8.89)	0.062 (1.57)	0.200 (5.08)	0.475 (12.06)	0.750 (19.05)	0.016 (.41)	0.183 (4.65)	0.3790 (9.627)	0.3750 (9.525)
AA208	.250-28 UNJF-3A	0.500 (12.7)	0.140 (3.56)	0.105 (2.67)	0.373 (9.47)	0.374 (9.50)	0.350 (8.89)	0.125 (3.18)	0.200 (5.08)	0.475 (12.06)	0.500 (12.70)	0.016 (.41)	0.183 (4.65)	0.3790 (9.627)	0.3750 (9.525)
AA209	.250-28 UNJF-3A	0.500 (12.7)	0.140 (3.56)	0.105 (2.67)	0.373 (9.47)	0.374 (9.50)	0.350 (8.89)	0.125 (3.18)	0.200 (5.08)	0.475 (12.06)	0.563 (14.30)	0.016 (.41)	0.183 (4.65)	0.3790 (9.627)	0.3750 (9.525)
AA210	.250-28 UNJF-3A	0.500 (12.7)	0.140 (3.56)	0.105 (2.67)	0.373 (9.47)	0.374 (9.50)	0.350 (8.89)	0.125 (3.18)	0.200 (5.08)	0.475 (12.06)	0.625 (15.88)	0.016 (.41)	0.183 (4.65)	0.3790 (9.627)	0.3750 (9.525)
AA211	.250-28 UNJF-3A	0.500 (12.7)	0.140 (3.56)	0.105 (2.67)	0.373 (9.47)	0.374 (9.50)	0.350 (8.89)	0.125 (3.18)	0.200 (5.08)	0.475 (12.06)	0.688 (17.48)	0.016 (.41)	0.183 (4.65)	0.3790 (9.627)	0.3750 (9.525)
AA212	.250-28 UNJF-3A	0.500 (12.7)	0.140 (3.56)	0.105 (2.67)	0.373 (9.47)	0.374 (9.50)	0.350 (8.89)	0.125 (3.18)	0.200 (5.08)	0.475 (12.06)	0.750 (19.05)	0.016 (.41)	0.183 (4.65)	0.3790 (9.627)	0.3750 (9.525)

[1] Dimensions are in inches.
[2] Metric equivalents in parentheses are given for general information only, based upon 1.00 inch = 25.4 millimeters (mm).
[3] Unless otherwise specified, tolerance is ±0.016 (.41mm).
[4] Terminals with 0.062 (1.57 mm) grip, stud color: Gold. Terminals with 0.125 (3.18 m) grip, stud color: Olive drab.
[5] This specification depicts only general design characteristics and is not intended to limit specific manufacturing processes.

1.3 Part or identification number (PIN). The PIN to be used for stud terminals acquired to this specification is created as follows (see 6.2 and tables I through IV):



2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of the documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specification, standards, and handbook. The following specification, standards, and handbook form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL STANDARD

FED-STD-H28/4	- Screw-Thread Standards for Federal Services, Section 4, Controlled Radius Root Screw Threads, UNJ Symbol

DEPARTMENT OF DEFENSE SPECIFICATION

MIL-DTL-5541	- Chemical Conversion Coatings on Aluminum and Aluminum Alloys

DEPARTMENT OF DEFENSE STANDARD

MIL-STD-202	- Test Method Standard Electronic and Electrical Component Parts

DEPARTMENT OF DEFENSE HANDBOOK

MIL-HDBK-454	- General Guidelines for Electronic Equipment

(Copies of these documents are available online at https://assist.daps.dla.mil/ or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

AEROSPACE INDUSTRIES ASSOCIATION

NAS1149	- Washer, Flat
NASM35338	- Washer, Lock-Spring, Helical, Regular (Medium) Series

(Copies of these documents are available online at www.aia-aerospace.org/ or from the Aerospace Industries Association, 1000 Wilson Boulevard, Suite 1700, Arlington, VA 22209-3928.)

AMERICAN SOCIETY FOR QUALITY

ASQ Z1.4	- Sampling Procedures and Tables for Inspection by Attributes

(Copies of this document are available online at http://www.asq.org/ or from American Society for Quality, 600 North Plankinton Avenue, Milwaukee, WI 53203.)

SAE INTERNATIONAL

SAE AMS-QQ-A-225/8	- Aluminum Alloy 6061, Bar, Rod, Wire, and Special Shapes; Rolled, Drawn, or Cold Finished
SAE AMS-QQ-A-250/4	- Aluminum Alloy 2024, Plate and Sheet
SAE AMS-QQ-P-416	- Plating, Cadmium (Electrodeposited)
SAE AMS 6322	- Steel Bars, Forgings, and Rings 0.50Cr - 0.55Ni - 0.25Mo (0.38 - 0.43C) (SAE 8740)
SAE AMS 6349	- Steel Bars 0.95Cr - 0.20Mo (0.38 to 0.43C) (SAE 4140) Normalized

SAE INTERNATIONAL - Continued

SAE AMS 6484	- Steel, Bars, Forgings, and Tubing 0.80Cr - 1.8Ni - 0.25Mo (0.38 - 0.43C) (SAE 4340) Normalized and Tempered
SAE AS8879	- Screw Threads - UNJ Profile, Inch Controlled Radius Root with Increased Minor Diameter

(Copies of these documents are available online at http://www.sae.org or from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), samples shall be subjected to first article inspection in accordance with 4.3.

3.2 Materials. Materials shall be as specified herein. However, when a definite material is not specified, a material shall be used that will enable the terminals to meet the performance requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product. Materials used in the construction of stud terminals will be fungus inert as described in guideline 4 of MIL-HDBK-454.

3.2.1 Sleeve material and finish. The sleeve material shall consist of aluminum alloy 6061, temper T6, in accordance with SAE AMS-QQ-A-225/8. The sleeve finish shall conform to type II, class 3 chromate conversion coating in accordance with MIL-DTL-5541.

3.2.2 Stud material and finish. The stud material shall consist of one of the following steel alloys as designated (see 1.2.1.1):

A 4140 chrome-molybdenum steel in accordance with SAE AMS 6349
B 8740 chrome-nickel-molybdenum steel in accordance with SAE AMS 6322
C 4340 chrome-nickel-molybdenum steel in accordance with SAE AMS 6484

3.2.2.1 Heat treatment. Steel used in the production of the stud terminals shall be heat treated to a tensile strength of 160-180 kilo-pounds-force per square inch (ksi) (Rockwell "C" 36 to 40).

3.2.2.2 Stud finish. Studs shall be cadmium plated in accordance with SAE AMS-QQ-P-416, type II, class 2.

3.3 Design and construction. Stud terminals shall be of the design, construction, finish, and physical dimensions as specified herein (see 3.2, figure 1, and tables I through IV).

3.3.1 Nuts, lock washers, and flat washers. Nuts, lock washers, and flat washers shall be plated with the same finish used for the stud terminals, or shall be manufactured from a metal that is electrolytically compatible with the stud terminals' materials. Lock washers shall conform to NASM35338. Flat washers shall conform to NAS1149 (see figure 2). When specified, nuts, lock washers, and flat washers shall be supplied (see 6.2).

3.3.2 Threaded parts. Threaded parts shall be in accordance with FED-STD-H28/4 and SAE AS8879 and shall be as specified (see figure 1 and tables I through IV).

3.4 Installation tool. Stud terminals shall be installed using high-performance blind riveters, such as the Alcoa Model 2014, the Allfast Model RV30GE, the Gage Bilt Model GBP704F, or equivalent.

3.5 Voltage drop. When stud terminals are tested for voltage drop, the voltage drop measured between the intersection of the stud and sleeve shoulder and the aluminum surface where the terminal is installed shall not exceed the required value (see 4.5.3).

3.6 Current cycling. When stud terminals are tested by cycling current, the voltage drop shall not exceed the value specified in 4.5.3 (see 4.5.4).

3.7 Thermal shock. When stud terminals are tested for thermal shock, there shall be no evidence of cracking, loosening of parts, or other physical damage (see 4.5.5).

3.8 Vibration, high frequency. When stud terminals are tested for high frequency vibration, there shall be no evidence of cracking, breaking, or loosening of parts (see 4.5.6).

3.9 Torque. When stud terminals are tested for torque, the studs shall not turn within the sleeves, the terminals shall not turn within the mounting, and there shall be no mechanical damage (see 4.5.7).

3.10 Salt spray (corrosion). When stud terminals are tested for corrosive effects of salt spray, there shall be no exposure of base metal or blistering of plated surfaces (see 4.5.8).

3.11 Humidity. When stud terminals are tested for the effects of humidity, there shall be no evidence of deterioration or other physical damage between electrical ground, the stud sleeve, the mounting surface, or the terminal lug. The voltage drop shall not exceed the value specified in 4.5.3 (see 4.5.9).

3.12 Bending. When stud terminals are tested by bending, there shall be no evidence of loosening and the voltage drop shall not exceed the value specified in 4.5.3 (see 4.5.10).

3.13 Workmanship. The stud terminals shall be processed in such a manner as to be uniform in quality and shall be free from any defects that will affect life, serviceability, or appearance.

3.14 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.3).

b. Conformance inspection (see 4.4).

4.2 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the general requirements of MIL-STD-202.

4.3 First article inspection. When first article is required (see 6.2), the stud terminals shall be subjected to the inspections shown in 4.3.1, 4.3.2, and tables V and VI. The presence of any defect shall be cause for rejection of the first article.

4.3.1 Materials. Inspection of materials shall consist of review and approval of manufacturer materials certification, supported by verifying data, that the materials listed in table V used for fabricating the terminal studs are in accordance with the applicable referenced specifications, prior to such fabrication.

TABLE V. Materials inspection.

Material	Requirement paragraph	Applicable specification
Aluminum	3.2.1	SAE AMS-QQ-A-225/8
Chromate conversion coating	3.2.1	MIL-DTL-5541
Steel	3.2.2	SAE AMS 6349 SAE AMS 6322 SAE AMS 6484
Cadmium plate	3.2.2.2	SAE AMS-QQ-P-416

4.3.2 Inspections. The first article inspections shown in table VI shall be performed in the order specified.

TABLE VI. First article inspection.

Test	Requirement paragraph	Method paragraph
Materials	3.2	4.4.1
Design and construction	3.3	4.5.1
Mounting examination	3.4, 4.5.2	4.5.2.1
Voltage drop	3.5	4.5.3
Current cycling	3.6	4.5.4
Thermal shock	3.7	4.5.5
Vibration, high frequency	3.8	4.5.6
Torque	3.9	4.5.7
Salt spray (corrosion)	3.10	4.5.8
Humidity	3.11	4.5.9
Bending	3.12	4.5.10
Workmanship	3.13	4.5.1

4.3.3 Sampling plan. Ten sample units of each part number shall be provided by the manufacturer, and thereafter, as required by the procuring activity (see 6.2).

4.3.4 Failures. If one or more sample units fail to pass first article inspection, the first article shall be rejected.

4.3.5 Disposition of sample units. Sample units that have been subjected to first article inspection shall not be delivered on the contract or purchase order.

4.4 Conformance inspection. Conformance inspection shall consist of the examinations and tests specified in table VII, in the order shown, and a review of the manufacturer's materials certification as specified in 4.3.1.

TABLE VII. Conformance inspection.

Examination	Requirement paragraph	Method paragraph
Materials	3.2	4.4.1
Design and construction	3.3	4.5.1
Workmanship	3.13	4.5.1
Mounting examination	3.4, 4.5.2	4.5.2.1
Voltage drop	3.5	4.5.3
Torque	3.8	4.5.7

4.4.1 Inspection of product for delivery. Inspection of product for delivery shall consist of conformance inspection.

4.4.2 Inspection lot. An inspection lot shall consist of all terminals of the same part number, produced under essentially the same conditions, and offered for inspection at one time.

4.4.2.1 Sampling plan. Statistical sampling and inspection shall be in accordance with ASQ Z1.4, level II. The acceptance quality limit (AQL) shall be as specified in the procurement contract (see 6.2).

4.4.2.2 Rejected lots. If an inspection lot is rejected, the supplier may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspection lots.

4.4.3 Periodic inspection. Periodic inspection, if required by the procuring activity, shall consist of those inspections listed under conformance inspections in table VII (see 6.2).

4.5 Methods of examination and test. The following methods of examination and testing shall be used for determining suitability for use of the terminal studs. Sample parts that do not meet the requirements stated herein shall result in the rejection of the first article (see 4.3.4) or the lot (see 4.4.2.2).

4.5.1 Visual and mechanical examination. Stud terminals shall be examined to verify that the design, construction, physical dimensions, and workmanship are in accordance with the applicable requirements (see 3.2 to 3.3.2, inclusive, and 3.13). Terminal studs failing to exhibit adherence to the design, construction, dimensional, and workmanship requirements specified herein shall result in the rejection of the first article (see 4.3.4) or the lot (see 4.4.2.2).

4.5.2 Specified mounting. When required, stud terminals shall be mounted in a 2024, temper T3, aluminum mounting panel per SAE AMS-QQ-A-250/4 of specified grip and drilled to the specified installation hole diameter (see tables I through IV). The installation tool shall meet the requirements of 3.4.

4.5.2.1 Mounting examination. After mounting, stud terminals shall be visually examined to verify that they have been installed properly and meet the specified dimensional requirements for an installed terminal (see figure 1 and tables I through IV). Terminal studs that fail to meet mounting criteria shall result in the rejection of the first article (see 4.3.4) or the lot (see 4.4.2.2).

4.5.3 Voltage drop. The voltage drop of the stud terminal, when mounted as specified in 4.5.2, shall not exceed 7.5 millivolts maximum for the specified current rating as shown in table VIII (see 3.5). The voltage drop shall be measured from a point at which the stud intersects the sleeve shoulder to a point located on the mounting surface. Perform the measurement by placing the first probe tip at the stud/sleeve shoulder intersection on the stud terminal; place the second probe tip on the mounting surface. Ensure that the distance between probe tips is the same distance as that from the first probe tip to the axis, or center line, of the stud (see figure 1). Terminal studs failing the voltage drop test shall result in the rejection of the first article (see 4.3.4) or the lot (see 4.4.2.2).

TABLE VIII. Stud terminal current ratings.

Nominal stud size	Current rating (amperes) (max)
.138-32 UNJC-3A	25
.164-32 UNJC-3A	30
.190-32 UNJF-3A	35
.250-28 UNJF-3A	43

4.5.4 Current cycling. When mounted as specified in 4.5.2, stud terminals shall be placed in a gravity convection chamber with an internal temperature of 130 ±2 °F (55 ±1 °C) (see 3.10). Following temperature stabilization, the specimens shall then be subjected to 50 current cycles. Each cycle shall consist of 30 minutes at 140 percent of the test current specified in 4.5.3, followed by 15 minutes at no load. Following the current cycling test, the test samples shall he allowed to cool to room temperature and the voltage drop test shall be performed in accordance with 4.5.3. Terminal studs showing evidence of electrical or physical damage, or that fail to pass the follow-on voltage drop test, shall result in the rejection of the first article (see 4.3.4).

4.5.5 Thermal shock. Terminals shall be tested in accordance with method 107 of MIL-STD-202 (see 3.6). The following details shall apply:

(a) Mounting of specimens - As specified in 4.5.2.
(b) Measurements before cycling - Not applicable.
(c) Test condition F-1, unless otherwise specified (see 6.2).
(d) Type of test - Liquid or air (see 6.2).
(e) Examinations after cycling - Stud terminals shall be visually examined for evidence of cracking, loosening, or other physical damage. Terminal studs exhibiting such mechanical

damage after the application of thermal shock testing shall result in the rejection of the first article (see 4.3.4).

4.5.6 Vibration, high frequency. Stud terminals shall be tested in accordance with method 204 of MIL-STD-202 (see 3.7). The following details and exceptions shall apply:

(a) Mounting of specimens - As specified in 4.5.2.
(b) Test condition D.
(c) Electrical load conditions, if required (see 6.2).
(d) Motion - In each of two mutually perpendicular directions, one perpendicular to, and the other parallel to the longitudinal axis of the terminal.
(e) Examination and measurements - Terminals shall be visually examined for evidence of cracking, breaking, and loosening of parts. Terminal studs exhibiting such mechanical damage after the application of high frequency vibration shall result in the rejection of the first article (see 4.3.4).

4.5.7 Torque. When stud terminals are mounted as specified in 4.5.2, the torque specified in table IX shall be applied between the studs and the mounting (see 3.8). The studs shall then be examined for turning within the sleeves, and the terminals shall be examined for turning within the mounting. Both the sleeves and terminal studs shall be examined for mechanical damage such as cracking, bending, shearing, breaking, or loosening of parts. Terminal studs exhibiting such mechanical damage after the application of rated torque shall result in the rejection of the first article (see 4.3.4) or the lot (see 4.4.2.2).

TABLE IX. Torque.

Stud thread size	Torque (inch-pounds) (min)
0.138	30
0.164	45
0.190	60
0.250	100

4.5.8 Salt spray (corrosion). Stud terminals shall be tested in accordance with method 101 of MIL-STD-202 (see 3.9). The following details shall apply:

(a) Mounting of specimens - As specified in 4.5.2.
(b) Applicable salt solution - 5 percent.
(c) Test condition B.
(d) Examinations after exposure - Stud terminals shall be visually examined for exposure of base metal and blistering of plated surfaces. Terminal studs exhibiting corrosion to the point that the base metal is exposed or the plated surfaces exhibit blistering after the application of salt spray shall result in the rejection of the first article (see 4.3.4).

4.5.9 Humidity. Stud terminals shall be tested in accordance with method 103 of MIL-STD-202 (see 3.11). The following details and exceptions shall apply:

(a) Mounting - As specified in 4.5.2.
(b) Measurements after conditioning - Not applicable.
(c) Test condition A.
(d) Whether a direct current potential shall be applied during testing - Including test voltage, duration of application of voltage, and points of application to the test sample (see 6.2).
(e) Examinations after exposure - Stud terminals shall be visually examined for evidence of deterioration, corrosion, or other physical damage. Terminal studs exhibiting deterioration, damage due to corrosion, or mechanical damage after the application of the humidity test, or that fail to pass the follow-on voltage drop test specified in 4.5.3, shall result in the rejection of the first article (see 4.3.4).

4.5.10 Bending force. Bending force shall be applied at right angles to the stud terminals as close to the end as is practicable (see 3.12). The following conditions shall apply:

(a) Mounting - As specified in 4.5.2.
(b) Bending force - As specified (see table X).
(c) Examinations after test - Stud terminals shall be visually examined for evidence of physical damage, including bending, breaking, cracking or sleeve/stud rotation. Terminal studs exhibiting physical damage after the application of rated bending force shall result in the rejection of the first article (see 4.3.4).

TABLE X. Bending force.

Stud size	Bending force (pounds) (min)
0.138	140
0.164	200
0.190	300
0.250	500

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The blind plate stud terminals covered by this specification are intended for use in aircraft applications requiring high mechanical and electrical reliability and high resistance to physical extremes of temperature, vibration, and shock.

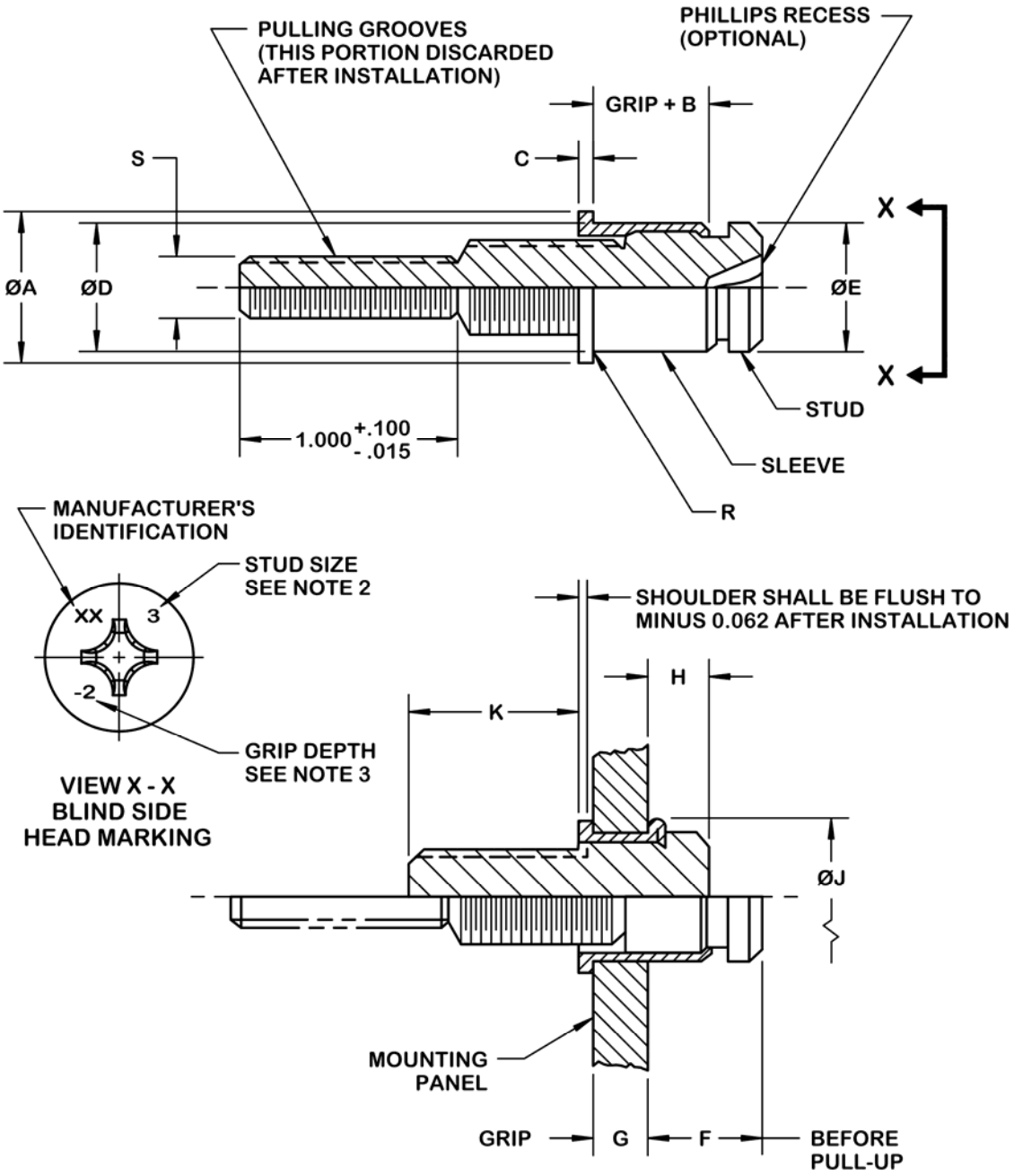
6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Complete PIN (see 1.3).
d. First article inspection, if required (see 3.1 and 4.3).
d. Nuts, lock washers, and flat washers, if required (see 3.3.1).
e. Sampling plan, if required (see 4.3.3).
f. AQL (see 4.4.2.1).
g. Inspection periodicity, if required (see 4.4.3).
h. Test condition, if different (see 4.5.5).
i. Type of thermal shock test, liquid or air (see 4.5.5).
j. Electrical load conditions for high frequency vibration test, if required (see 4.5.6).
k. Electrical conditions for humidity testing, if required (see 4.5.9).
l. Packaging requirements (see 5.1).

6.3 Subject term (key word) listing.

Aircraft
Cadmium
Electromagnetic
Electronic
EMI
Hazard
IMI
Interference
Intermodulation
Lug
Radiation
Radio frequency
Rivet
RFI
Shielding
Vibration

6.4 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.



NOTES:

1. Refer to tables I through IV for dimensions and tolerances.
2. Stud size markings shall be as follows:
   1 = .138-32 UNJC-3A
   2 = .164-32 UNJC-3A
   3 = .190-32 UNJF-3A
   4 = .250-28 UNJF-3A
3. Grip depth markings shall be as follows:
   -1 = 0.062 nominal grip
   -2 = 0.125 nominal grip

FIGURE 1. Stud terminal dimensions and markings.

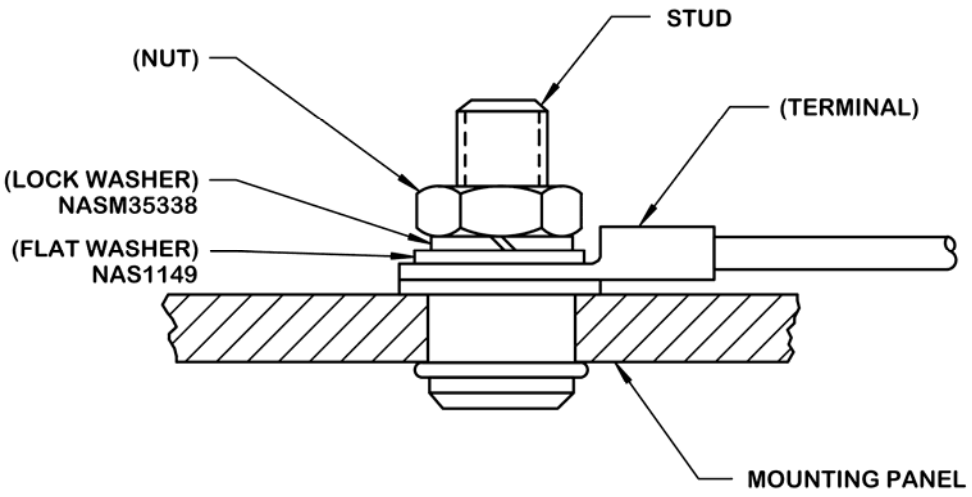


FIGURE 2. Stud terminal, typical installation.

Custodians:
Air Force - 85
DLA - GS

Preparing Activity:
DLA - GS4

(Project 5940-2011-014)

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 database at https://assist.daps.dla.mil/.