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MILITARY SPECIFICATION

TERMINALS; TIE ROD, THREADED CLEVIS TYPE, AIRCRAFT

This specification was approved by the Departments of the Army, the Navy, and the Air Force for use of procurement services of the respective Departments.

1. SCOPE

1.1 This specification establishes the requirements for one type of tie rod terminals for aircraft applications.

2. APPLICABLE SPECIFICATIONS, OTHER PUBLICATIONS, AND DRAWINGS

2.1 The following publications, of the issue in effect on date of invitation for bids, shall form a part of this specification to the extent specified herein.

2.1.1 Specifications.-

Federal

QQ-M-151	Metals; General Specification for Inspection of
QQ-P-416	Plating; Cadmium (Electrodeposited)

Military

MIL-S-6050	Steel: Chrome-Nickel-Molybdenum (8630) Bars, Rods, and Forging Stock (For Aircraft Applications)
JAN-B-121	Barrier-Materials, Greaseproof
JAN-P-105	Packaging and Packing for Overseas Shipment - Boxes; Wood, Cleated, Plywood
JAN-P-106	Packaging and Packing for Overseas Shipment - Boxes; Wood, Nailed
JAN-P-107	Packaging and Packing for Overseas Shipment - Boxes; Wood, Wirebound
JAN-P-108	Packaging and Packing for Overseas Shipment - Boxes; Fiberboard (V-Board and W-Board), Exterior and Interior
JAN-P-117	Packaging and Packing for Overseas Shipment - Bags; Interior Packaging
JAN-P-120	Packaging and Packing for Overseas Shipment - Cartons; Folding, Paperboard
JAN-P-125	Packaging and Packing for Overseas Shipment - Barrier-Materials; Waterproof, Flexible
JAN-P-133	Packaging and Packing for Overseas Shipment - Boxes; Set-up, Paperboard
JAN-P-139	Packaging and Packing for Overseas Shipment - Plywood; Container, Grade
JAN-P-140	Packaging and Packing for Overseas Shipment - Adhesive; Water-Resistant, Caseliner

Air Force-Navy Aeronautical

AN-P-32	Plating; Zinc
AN-S-9	Steel; Molybdenum (4037) Bar and Rod
AN-S-126	Screw-Threads; Standard, Aircraft
AN-S-684	Steel; Chrome-Molybdenum (4130) Bar and Rod
AN-QQ-S-687	Steel; Chrome-Vanadium (6150) Bar and Billet
AN-QQ-S-689	Steel; Nickel (2330), Bar and Rod
AN-QQ-S-690	Steel; Nickel-Chromium (3140), Bar and Rod

U. S. Army

94-40645	Marking; Exterior, Domestic and Export Shipment, by Contractors

2.1.2 Other Publications.-

Bureau of Supplies and Accounts

Navy Shipment Marking Handbook

2.1.3 Drawings.-

Air Force-Navy Aeronautical Standard Drawing

AN665	Terminal - Threaded Clevis Type Tie Rod

(Copies of this specification and copies of other publications referenced herein or required for Government procurement, and the Index of Military Aeronautical (AN or MIL) Standards, may be obtained upon application to the Commanding General, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio; or the Commanding Officer, U. S. Naval Air Station, Johnsville, Pennsylvania.)

3. REQUIREMENTS

3.1 Material.- Materials shall conform to applicable specifications as specified herein.

3.2 Design.-

3.2.1 Form and Dimensions.- Shall be specified on the applicable drawing.

3.2.2 Tolerances.- The tapped hole, counter drilled hole and slot shall be central and parallel within the tolerances specified in the applicable Air Force-Navy Aeronautical Standard Drawing.

3.3 Protective Coating of Terminals.- Shall be cadmium plated in accordance with Specification QQ-P-416 or zinc plated in accordance with Specification AN-P-32.

3.4 Tensile Strength.- The tensile strength shall be no less than 115 percent of the rated strength listed on the applicable Air Force-Navy Standard Drawing under the heading "Rated Tie Rod Strength Min (lb)."

3.5 Hardness.- The hardness limits shall be within the range C26 and C31 Rockwell.

3.6 Resistance to Bend.- Each prong of the fork of the terminal shall withstand a bend through the following range without cracking or indication of failure:

Terminal Size	Angle of Bend Degrees
6-4- to 1/2-20 inclusive	20
9/16 - 18 and 5/8 - 18	15

3.7 Workmanship.- Shall be in accordance with high grade aircraft manufacturing practice for this type of work.

4. SAMPLING, INSPECTION, AND TEST PROCEDURES

4.1 General.- All the tests required for the testing of terminals are classified as Inspection tests, for which necessary sampling techniques and methods of testing are specified in this section. The contractor shall furnish all samples and shall be responsible for accomplishing the required tests. When inspection is conducted at the contractor's plant, all inspection and testing shall be under the supervision of the Government Inspector. Contractors not having laboratory testing facilities satisfactory to the Government shall engage the services of a commercial testing laboratory acceptable to the Procuring Service. The contractor shall furnish test reports, in duplicate, showing quantitative results for all tests required by this specification, and signed by an authorized representative of the contractor or laboratory, as applicable. Acceptance or approval of material during course of manufacture shall in no case be construed as a guaranty of the acceptance of the finished product.

4.2 Sampling.- Test specimens shall be selected from the general run of production. Sufficient terminals to insure uniformity and conformance to the specified requirements shall be selected at random from each lot for test.

4.2.1 Lot.- A lot shall consist of all terminals of the same type and size produced from the same lot of steel and submitted for inspection at the same time.

4.3 Tests.-

4.3.1 Examination of Product.- Terminals shall be carefully inspected for conformance with the requirements of this specification with respect to workmanship, form, dimensions, threads, and marking.

4.3.2 Corrosion Resistance.- The terminals selected for inspection shall be tested for corrosion resistance in accordance with the Salt Spray tests specified in Specification QQ-M-151.

4.3.3 Tensile Strength.- Tensile load shall be applied through a stay bolt screwed into the threaded end of the sample terminal, and an eyebolt or plate held by a clevis pin in the fork end of the terminal.

4.3.4 Resistance to Bending.- Terminals shall be gripped by the cylindrical shank and the prongs of the fork bent through the specified angle by means of a gradually applied pressure.

4.4 Rejection and Retest.-

4.4.1 Failure Under Tensile Strength or Resistance to Bend Test.- If a test specimen fails to meet either of the tests, one more terminal shall be selected from the same lot. If this terminal fails to meet either or both of the required tests, the entire lot

which it represents shall be rejected. The manufacturer may be allowed to reheat treat the whole lot of terminals before final tests are made. However, where failure is definitely ascribed to faulty material, no retest shall be permited.

4.4.2 Failure Under Corrosion Resistance Tests.- If any sample terminal fails to conform to the corrosion resistance requirements, the Inspector shall select from the lot, additional samples, three times as many as the number which failed. The failure of any of these additional samples shall be cause for rejection of the entire lot represented. The Inspector may, at his discretion, permit the manufacturer to strip and replate lots of tie rod terminals rejected due to failure to conform to corrosion-resistance requirements. In this case, however, the Inspector shall select samples, and witness corrosion-resistance tests of twice as many terminals from the replated lot as were originally selected as samples from the lot.

5. PREPARATION FOR DELIVERY

5.1 Application.- The packaging, packing, and marking requirements specified herein apply only to direct purchases by or direct shipments to the Government.

5.2 Packaging.-

5.2.1 Unit Packaging.- Unless otherwise specified, each terminal shall be wrapped in grade A material conforming to Specification JAN-B-121.

5.2.2 Intermediate Packaging.- Lots in multiples of ten terminals on terminal assemblies shall be packaged within an interior container in accordance with Specification JAN-P-120, JAN-P-133, or JAN-P-108.

5.3 Packing.- Unless otherwise specified, all items shall receive domestic packing. Shipping containers shall contain the same number of like items, shall be uniform in size and snugly packed. The gross weight of the fully packed exterior container shall not exceed 200 pounds.

5.3.1 Domestic Packing.- Unless otherwise specified, the interior package shall be overpacked in substantial commercial exterior containers constructed to insure acceptance by common or other carrier for safe transportation at the lowest rate to the point of delivery. Except as specified herein, the container shall conform to the requirements of Consolidated Freight Classification Rules in effect at the time of shipment, except that fiberboard, when used shall have a minimum Mullen test of 275 pounds. Containers shall be able to withstand storage, rehandling, and rehipment without the necessity of repacking.

5.3.2 Overseas Packing.- Unless otherwise specified, the interior packages shall be packed in cleated plywood, nailed wood, or wirebound wood boxes conforming to Specification JAN-P-105, JAN-P-106, or JAN-P-107 respectively. Plywood, when used, shall be type A or B, condition I, Specification JAN-P-139. Shipping boxes shall be furnished with a sealed caseliner fabricated from waterproof barrier material, Specification JAN-P-125, sealed with adhesive in accordance with Specification JAN-P-140.

5.4 Marking and Labeling.-

5.4.1 Unit Packages.- Each unit package shall be durably and legibly marked as follows:

TERMINALS; TIE ROD, THREADED CLEVIS TYPE, AIRCRAFT
Specification MIL-T-5683A
Quantity contained
Manufacturer's part No.
Name of manufacturer (if different from contractor)
Name of contractor
Order or contract No.

5.4.2 Shipping Containers.- Each shipping container shall be marked in accordance with the requirements applicable to the individual Services as specified in Specification 94-40645 for the Air Force, and the Navy Shipment Marking Handbook for the Navy.

6. NOTES

6.1 Intended Use.- The terminals covered by this specification are intended for use in the construction of aircraft and aircraft accessories.

6.2 Ordering Data.- Requisitions, contracts, and orders should state the AN part number of the terminals desired and whether overseas packing is desired.

NOTICE: When Government drawings, specifications, or other date are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no resconsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

Custodian:
Navy - BuAer

Other interest:
Air Force

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