

**INCH-POUND**

MIL-DTL-6117K  
22 December 2005  
SUPERSEDING  
MIL-DTL-6117J  
5 November 2001

## DETAIL SPECIFICATION

### WIRE ROPE ASSEMBLIES, AVIATION, SWAGED TYPE

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

#### 1. SCOPE

1.1 Scope. This specification covers swaging terminals to wire rope to fabricate wire rope assemblies.

#### 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 Specifications. The following specifications 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.

Comments, suggestions, or questions on this document should be addressed to Defense Supply Center Richmond, ATTN: DSCR-VEB, 8000 Jefferson Davis Highway, Richmond, VA 23297-5616 or emailed to [STDZNMGT@dla.mil](mailto:STDZNMGT@dla.mil). Since contact information can change, you may want to verify the currency of this address information using the ASSIST database at <http://assist.daps.dla.mil/>.

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## DEPARTMENT OF DEFENSE SPECIFICATIONS

- MIL-DTL-781 - Terminal, Wire Rope Swaging, General Specification for.
- MIL-DTL-5688 - Wire Rope Assemblies; Aircraft, Proof Testing and Prestretching of.
- MIL-DTL-18375 - Wire Rope, Flexible, Corrosion-Resisting, Nonmagnetic, for Aircraft Control.
- MIL-DTL-83420 - Wire Rope, Flexible, for Aircraft Control, General Specification for.
- MIL-DTL-87161 - Wire Strand, Nonflexible, for Aircraft Application.

(Copies of these documents are available online at <http://assist.daps.dla.mil/> or from the Standardization Documents 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

- NAS494 - Terminal - Ball Type Cable.

(Copies of this document are available online at <http://www.aia-aerospace.org/> or from Aerospace Industries Association, 1000 Wilson Boulevard, Suite 1700, Arlington, VA 22209-3901.)

## SAE INTERNATIONAL

- SAE AS10081 - Terminal Shank-Swaging, Dimensions for.

(Copies of this document are available from <http://www.sae.org/> or from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 Order of precedence. 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 Materials. Wire rope shall conform to MIL-DTL-83420, MIL-DTL-18375 or MIL-DTL-87161 (see 6.2). Terminals shall conform to MIL-DTL-781, SAE AS10081, and the applicable MS sheet (see 6.2). Special terminals not dimensionally conforming to detail specifications shall conform to SAE AS10081 and/or the applicable detail drawings (see 6.2).

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3.2 Components. All wire rope assembly components having qualification requirements must be acquired from sources having their products listed in the applicable terminal and wire rope Qualified Products List (QPL).

3.3 Swaging. Wire rope assemblies shall be swaged in accordance with the appropriate specifications, SAE AS10081 and/or detail drawings, as applicable. Before swaging, the wire rope end shall be inserted to the full depth of the fitting bore and held in a manner that will prevent slippage. Swaging shall be accomplished by uniformly cold-working the terminal until its dimensions conform to the appropriate dimensions listed in the applicable specification or, in the case of special terminals, to the appropriate dimensions listed in SAE AS10081 and/or applicable drawings.

3.4 Breaking strength. The breaking strength of the wire rope assemblies shall not be less than the allowable minimum breaking strength (MBS) for the type and size wire rope to which the terminal is attached except as noted in 3.4.1 and 3.4.2.

3.4.1 Lower terminal breaking strength. The breaking strength of wire rope assemblies employing terminals with breaking strengths lower than the wire rope shall not be less than the allowable MBS of the terminal.

3.4.2 Wire strand breaking strength. The breaking strength of wire rope assemblies employing MIL-DTL-87161 wire strand shall not be less than 80 percent of the allowable wire strand breaking strength.

3.5 Workmanship. Workmanship shall be such that, after swaging, terminals shall not contain splits or cracks.

3.6 Proof load test. All wire rope assemblies shall be subjected to a proof load test in accordance with MIL-DTL-5688. Unless otherwise specified, the breaking strength for applications using NAS494 terminals and/or wire rope other than MIL-DTL-83420, shall be 60 percent of the terminal MBS, or 60 percent of the wire rope MBS, or 60 percent of the wire rope assembly MBS, whichever is lower.

3.6.1 Marking. The junction of the swaged fitting and wire rope will be marked with a durable, permanent paint or similar media to assist in determining evidence of slippage. The color of the marking shall be as specified in the contract, order, or drawing. If no color is specified, a color that is clearly visible and contrasting with surrounding elements shall be used.

#### 4. VERIFICATION

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

- a. Conformance inspection (see 4.2).

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4.2 Conformance inspection. The conformance inspection shall consist of:

- a. Examination of product (see [4.4.1](#)).
- b. Breaking strength (see [4.5.1.1](#)).

4.2.1 Inspection lot. An inspection lot of wire rope assemblies shall consist of the number of assemblies of the same materials and wire rope diameter produced consecutively by the same swaging machine, or series of progressive swaging machines, and submitted for inspection at the same time under one contract or order.

4.2.2 Sampling. Identical sample assemblies may be used for the examination of product and mechanical tests.

4.2.2.1 Mechanical tests. Assemblies to be inspected shall be chosen from the inspection lot by random sampling. One sample from each lot will be selected for mechanical test. For longer assemblies or lots of 5 assemblies or less, a representative sample of the same terminal and cable size approximately 2.0 feet long shall be made during the production run.

4.2.2.2 Proof load test. All wire rope assemblies shall be proof load tested in accordance with paragraph [3.6](#).

4.3 Certification. When specified in the contract or order, a certificate of conformance for compliant wire rope assemblies shall be forwarded to the Contracting Officer. Unless otherwise specified, the certificate of conformance will contain the following information:

- a. Manufacturer's name and address
- b. Customer's name and address.
- c. Manufacturer's CAGE code.
- d. A list of components used in the fabrication of the wire rope assembly and the names and addresses of the companies supplying these components.
- e. Lot number and date of manufacture.
- f. Product (wire rope assembly) description.
- g. A statement certifying wire rope assembly conformance to this specification.
- h. The name and title of the company official approving the certificate of conformance.
- i. A clear written depiction of any exceptions to the specification requirements and basis for these exceptions.

4.4 Examinations.

4.4.1 Examination of products. Samples shall be examined to determine conformance to the applicable drawing and requirements not covered by the tests in [4.5](#).

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4.5 Tests.4.5.1 Mechanical tests.

4.5.1.1 Breaking strength. The wire rope assembly test sample shall be subjected to a load not less than that specified in paragraph 3.4. The manner in which the load shall be applied to the fitting end of the terminal shall be governed by the design of the fitting. Prior to application of the load, the assembly shall be marked in accordance with 3.6.1. Breaking of the wire rope before reaching the specified load, any slippage of the wire rope in the fitting, and/or any signs of failure in the terminal shall be cause for rejection of the assembly.

## 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 material 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. Although the swaged wire rope assemblies covered by this specification are typically intended for general aircraft use, they may also be used for other non-aerospace applications.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. MS or NAS part number of terminals, size and type of wire rope desired and length of the assembly, or the applicable detail drawing number (see 3.1).
- c. Packaging requirements (see 5.1).

6.3 Subject term (key word) listing.

Proof load  
Swaging

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.

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Custodians:

Army - CR

Navy - AS

Air Force - 99

Preparing Activity:

DLA - GS5

(Project 1640-0006)

Review Activities:

Army - MI

Air Force - 71

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 <http://assist.daps.dla.mil/>.