INCH-POUND

MIL-T-6117D
1 DECEMBER 1994
SUPERSEDING
MIL-T-6117C
28 October 1981

MILITARY SPECIFICATION

TERMINAL-CABLE ASSEMBLIES 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 cables to make up terminal cable assemblies.

2. APPLICABLE DOCUMENTS.

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

TT-P-1757	Primer Coating, Zinc Chromate, Low Moisture Sensitivity

MILITARY

MIL-T-781	Terminal: Wire Rope, Swaging
MIL-C-5688	Cable Assemblies, Aircraft, Proof Testing and Prestretching of
MIL-C-11796	Corrosion Preventive Compound, Petrolatum, Hot Application
MIL-W-83420	Wire Rope, Flexible, for Aircraft Control

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to the: Resources and Logistics Services Division, SA-ALC/TILDD, 485 Quentin Roosevelt Rd., Bldg 171, Post C-12, Kelly AFB, TX 78241-6425 by using the self-addressed Standardization Document Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 4030

STANDARDS

FEDERAL

FED-STD-313	Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities

MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-961	Military Specifications and Associated Documents, Preparation of
MS 20658	Terminal, Wire Rope - Swaging, Fork End
AND10081	Terminal Shank - Swaging, Dimensions for

(Unless otherwise indicated, copies of the federal and military specifications and standards are available from the Defense Printing Service, Standardization Document Order Desk, 700 Robbins Avenue, Bldg 4D, Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 380 -	Standard Practice for Cleaning and Descaling Stainless Steel Parts, Equipment and Systems

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1137.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 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. Cable shall conform to MIL-W-83420. Terminals shall conform to MIL-T-781, Drawing AND10081, and to the applicable standard, listed in Section 2. Special terminals not dimensionally conforming to Military Standards shall conform to Drawing AND10081 and applicable detail drawings.

3.1.1 Reclaimed materials. The use of reclaimed materials shall be encouraged to the maximum extent possible.

3.2 Swaging. Terminal-cable assemblies shall be swaged in accordance with the appropriate standards and Drawing AND10081, as applicable. Before swaging, the fitting shall be anchored to the cable with the cable end inserted to the full

depth of the bore. Swaging shall be accomplished by uniformly cold working the terminal shank until its dimensions conform to appropriate dimensions listed in the applicable standard or, in the case of special terminals, to appropriate dimensions listed in Drawing AND10081.

3.3 Primer. After swaging, cadmium and zinc plated parts shall be thoroughly coated with a corrosion-preventive compound conforming to MIL-C-11796. Phosphate treated parts shall be given two coats of zinc-chromate primer conforming to TT-P-1757 (see Note 1).

3.3.1 Material safety data sheets. Material Safety Data Sheets shall be prepared in accordance with FED-STD-313 and MIL-STD-961.

3.4 Distortion resistance (MS 20658 only). The distortion of any measured terminal dimension resulting from the application for 5 seconds of a proof load of 60 percent of the minimum breaking strength (MBS) of the cable, as required by the applicable specification, shall not exceed 0.001 inch per inch in the direction of application of load.

3.5 Tensile strength. The breaking strength of the terminal-cable assemblies shall not be less than the allowable MBS for the type and size cable to which the terminal is attached.

3.6 Cable lengths. Method to calculate cable lengths for swaging is shown in Figure 1. Final length after swaging and proof-testing shall be measured under a tensile load of 1 percent MBS of the wire rope used in the assembly.

3.7 Workmanship. Workmanship shall be such that, after swaging, terminals shall not contain splits, cracks, or become embrittled. Swaging shall not cause injurious defects in the terminal or wire rope.

3.8 Proof test. Proof test per MIL-C-5688.

4. QUALITY ASSURANCE PROVISIONS.

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of the manufacturing operations, is an

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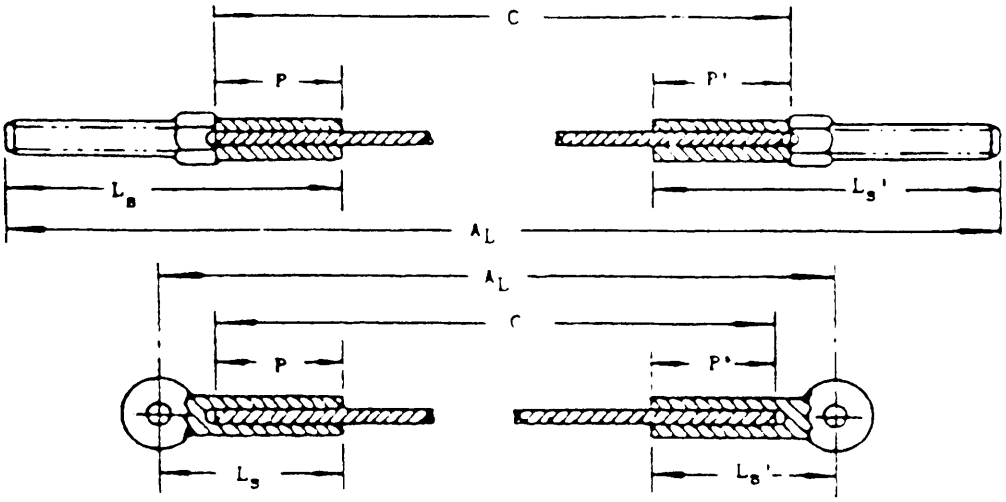
NOTE 1: Caution should be taken during any painting, plating, cleaning, descaling, passivation or similar process. The contractor shall be responsible for the safe reutilization and disposal of all material generated by these processes in accordance with American Society of Testing and Materials, ASTM A 380, Sections 8.3 and 8.7 (see paragraph 3.3).



DIMENSIONS A_L DEPEND ON THE CLASS OF SWAGED FITTING USED.

UNDER 60 PERCENT PROOF LOAD, THE CABLE WILL TAKE A SET DEPENDENT ON SIZE OF CABLE, LENGTH OF CABLE, AND TIGHTNESS OF CONSTRUCTION WHICH MAY VARY FROM REEL TO REEL.

TO DETERMINE LENGTH OF CABLE:

DETERMINE LENGTH OF FINISHED ASSEMBLY (A_L) BY MEASUREMENT FROM THE DRAWING.

DETERMINE LENGTH OF FITTING AFTER SWAGING (L_s) AND (L_s') FROM SPECIFICATION MIL-T-781 OR DETAIL DRAWING OF FITTING.

DETERMINE LENGTH OF FITTING BEFORE SWAGING (P) and (P') BY MEASUREMENT.

CALCULATE THE AMOUNT OF SET IN THE CABLE (S_c) RESULTING FROM THE PROOF LOAD.

LENGTH OF WHICH CABLE MUST BE CUT (C) =

$$A_L - S_c - (L_s + L_s') + (P + P')$$

FIGURE 1. Method of calculating length of cable "C."

acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Inspection lot. An inspection lot of terminal-cable assemblies shall consist of the number of assemblies of the same materials and cable 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 purchase order.

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

4.3.1 For examination of product. Assemblies to be inspected shall be chosen from the inspection lot by random sampling. MIL-STD-105 single sampling plans Inspection Level I shall be used.

4.3.2 For mechanical tests. Assemblies to be inspected shall be chosen from the inspection lot by random sampling. MIL-STD-105 single sampling plans Special Inspection Level S-3 (acceptance number of zero) shall be used. The same sample may be used for both the Distortion and the tensile strength tests.

4.3.3 Proof test. All cable assemblies shall be proof tested in accordance with MIL-C-5688.

4.4 Tests.

4.4.1 Examination of products. Samples shall be examined to determine conformance to the applicable drawing and requirements not covered by the following tests.

4.4.2 Mechanical tests.

4.4.2.1 Distortion (MS20658 only). A proof load of 60 percent of the MBS of the cable (specified in the applicable specification) shall be applied to the terminal-cable assembly for 5 seconds. The load shall then be released, and the terminal shall be checked for distortion. Distortion shall not exceed 0.001 inch per inch in the direction of the application of the load.

4.4.2.2 Tensile strength. The terminal-cable assembly shall be subjected to a load not less than the allowable MBS for the type and size of the cable to which the terminals are attached. This information is contained in applicable specifications. 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 cable shall be marked at the point where it enters the swaging end of the terminal. Breaking of the cable before reaching the specified load, any slippage of the cable in the fitting, or any signs of failure in the terminal shall constitute failure.

4.5 Rejection and retest. "Resubmitted Lots or Batches" of MIL-STD-105 shall apply. The resubmitted lot shall be inspected by the contractor under the supervision of the procuring activity inspector, using tightened inspection. Where the original acceptance number was zero, a sample size represented by the next higher sample size code letter shall be chosen.

5. PACKAGING

5.1 Application. The requirements of section 5 apply only to direct purchase or by direct shipments to the Government.

5.2 Preservation, packaging, packing, and marking. Preservation, packaging, packing, and marking for shipment shall be specified by the procuring 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 swaged terminal-cable assemblies covered by this specification are intended for general aircraft use.

6.2 Acquisition documents. Acquisition documents should specify the following:

a. Title, number, and date of this specification.

b. MS part number of terminals, size and type of cable desired and length of the assembly, or the applicable detail drawing number (see 3.1).

c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1).

d. Instructions for preparation for delivery (see 5.2).

6.3 Subject term (key word) listing.

Permanent
Testing procedures
Wire rope assemblies

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 extensiveness of the changes.

Custodians:
Air Force - 99
Navy - AS
DLA - IS

Review Activity:
Army - MI

Preparing Activity:
Air Force - 82

(Project No. 4030-0024)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE (YYMMDD)
	MIL-T-6117D	94/12/01

3. DOCUMENT TITLE
TERMINAL-CABLE ASSEMBLIES SWAGED TYPE

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE (Include Area Code)	
SYLVIA A. REYES	(1) Commercial (512)925-6314	(2) AUTOVON 945-6314
c. ADDRESS (Include Zip Code) 485 QUENTIN ROOSEVELT ROAD BLDG 171, POST C-12 KELLEY AFB TX 78241-6425	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	

DD Form 1426, OCT 89 *Previous editions are obsolete* 198-290