MIL-C-63550E (AR)
30 September 1985
SUPERSEDING
MIL-C-63550D (AR)
8 July 1983

MILITARY SPECIFICATION

CABLE ASSEMBLIES, ELECTRICAL, FABRICATION SPECIFICATION FOR

This specification is approved for use by the U.S. Army Armament, Munitions and Chemical Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification establishes the requirements for manufacture and acceptance of electrical cable assemblies.

2. APPLICABLE 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 specification to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-P-116	- Preservation, Methods of
MIL-P-14232	- Parts, Equipment and Tools for Army Materiel, Packaging and Packing of
MIL-C-22520	- Crimping Tools, Terminal, Hand, Wire Termination, General Specification for
MIL-I-23053/5	- Insulation Sleeving, Electrical, Heat Shrinkable, Polyolefin, Flexible, Crosslinked

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document, should be addressed to: Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMC-TDA-S(D), Dover, New Jersey 07801-5001 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 1010

MIL-I-23053/8	- Insulation Sleeving, Electrical, Heat Shrinkable, Polvinylidene Fluoride, Semi-Rigid, Crosslinked
MIL-C-45662	- Calibration System Requirements

STANDARDS

MILITARY

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	- Marking for Shipment and Storage
MIL-STD-130	- Identification Marking of U.S. Military Property
MIL-STD-202	- Test Methods for Electronic and Electrical Component Parts
MIL-STD-454	- Standard General Requirements for Electronic Equipment
MIL-STD-794	- Parts and Equipment, Procedures for Packaging and Packing of
MIL-STD-810	- Environmental Test Methods

(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 specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3951	- Standard Practice for Commercial Packaging

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

NATIONAL AEROSPACE STANDARDS

NAS 1747 - Splice, Conductor, Heat Shrinkable, Insulated, Specification for

(Application for copies should be addressed to the National Standards Association, Inc., 5161 River Roads Washington, D.C. 20016.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Item definition. The electrical cable assemblies specified herein shall provide electrical interconnection between operating components of the M247 gun system.

3.2 Characteristics.

3.2.1 Performance.

3.2.1.1 Direct-current (dc) resistance. The resistance measured from the connector contact at one end of a wire to the corresponding contact at the other end (as indicated by the assembly wiring diagram) shall be not greater than 5 ohms when tested on a DIT-MCO Model 9100 automatic cable test system in a two-wire measurement mode.

3.2.1.2 Insulation resistance. Unless otherwise specified on applicable drawings, insulation between connector pins and the assembly connector and between isolated circuits shall have a minimum resistance of 100 megohms with 500±50 volts direct current (Vdc) applied.

3.2.2 Physical characteristics.

3.2.2.1 Weight. The weight of an assembly shall be not greater than the weight specified on the applicable assembly drawing.

3.2.2.2 Length. The length of an assembly shall be as shown on the applicable assembly drawing. Length measurements shall be made as indicated in figure 1 (dimensions U, V, W, X, Y, and Z).

3.2.3 Environmental conditions.

3.2.3.1 Humidity. Each assembly shall withstand humidity conditions as found in humid environment with up to 100 percent relative humidity.

3.2.3.2 Operating temperature. Each assembly shall meet the performance requirements of 3.2.1 during and after exposure to temperatures within the range of -45° and +52° Celsius (C).

3.2.3.3 Storage temperature. Each assembly shall meet the performance requirements of 3.2.1 after exposure to ambient air temperature within the range of -50° and +71°C.

3.3 Design and construction.

3.3.1 Production drawings. Each assembly shall be fabricated and assembled in accordance with the applicable assembly drawing. The typical installation details of figures 1 through 12 and the requirements of this specification shall guide fabrication where it is not detailed by the assembly drawing.

3.3.2 Standards of manufacture.

3.3.2.1 Dimensional and angular tolerances. Unless otherwise specified on the cable assembly drawing, tolerances on length dimensions shall be as follows:

Length (inches)	Tolerance (inches)
0 to 11.99	-0, +1.00
12.00 to 71.99	-0, +2.00
72.00 and up	-0, +3.00

Unless otherwise specified, tolerances on connector clocking to connector backshell or boot angles shall be ±15°.

3.3.2.2 Solder requirements. Solder requirements shall be as specified on the cable assembly drawing.

3.3.2.3 Crimping requirements. Crimp type connector contacts shall be crimped using crimping procedures defined in MIL-C-22520.

3.3.2.4 Shielded wire terminations. Heat shrinkable solder sleeves shall be used to connect wire shields to the pigtail wires for termination. These terminations shall be wired in accordance with the wiring diagram. The sleeves shall be applied using an Infrared heat gun and shall meet the requirements of NAS 1747. Unterminated shield ends shall be covered with the heat shrinkable tubing shown on drawings and shall extend a minimum of 1/4 inch on each side of the shield end. Sleeves shall be placed not further than 3 inches from the rear of the connector grommet on connectors with straight backshells and 4 inches from the rear of the connector grommet on connectors with 45° or 90° backshells. The sleeves shall be staggered so that the wire bundle remains at a minimum. Each shield shall be trimmed and sealed to eliminate any frayed ends prior to installing sleeves on tubing.

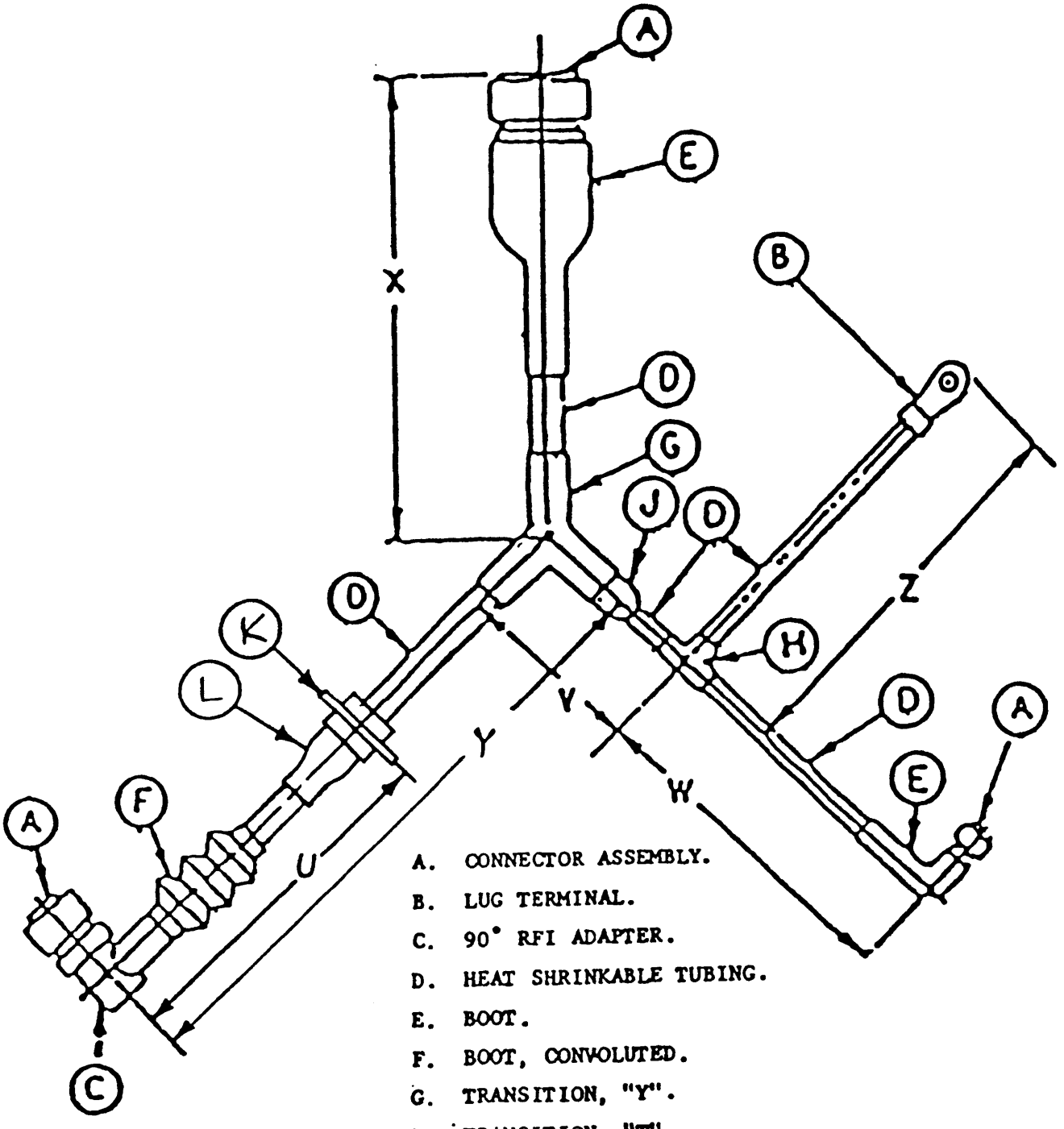
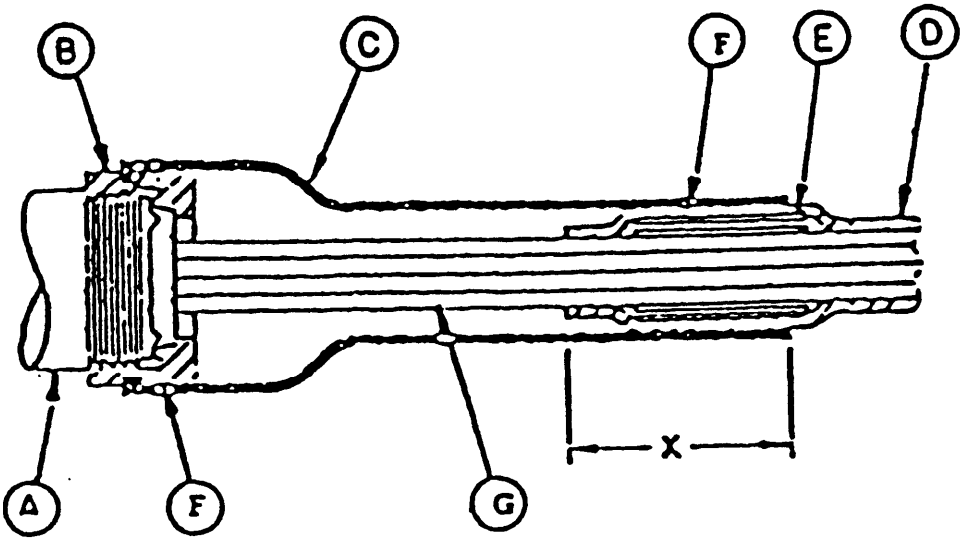


Figure 1. Composite cable assembly.



A. CONNECTOR ASSEMBLY.

B. BACKSHELL.

C. HEAT SHRINKABLE BOOT.

D. HEAT SHRINKABLE TUBING/HEAT SEALABLE TAPE.

E. HEAT SHRINKABLE TUBING, IF REQUIRED. TO SHIM UNDER HARNESS JACKETING TO NOMINAL RECOVERED DIAMETER OF BOOT. ALTERNATE METHOD OF ADAPTING GIVEN IN FIGURE 4. METHOD SPECIFIED ON ASSEMBLY DRAWING SHALL BE USED. HEAT SEALABLE TAPE MAY ALSO BE USED.

F. ADHESIVE NOT REQUIRED IF ADHESIVE COATED BOOT IS SPECIFIED ON ASSEMBLY DRAWING OR IF HEAT SEALABLE TAPE IS USED.

G. FOR WIRE BUNDLE, DIMENSION "X", WHICH MUST BE GREATER THAN 1.50 INCHES, IS MINIMUM OVERLAP DIMENSION OF BOOT AND HARNESS JACKETING.

Figure 2. Cable termination (without EMP shielding).

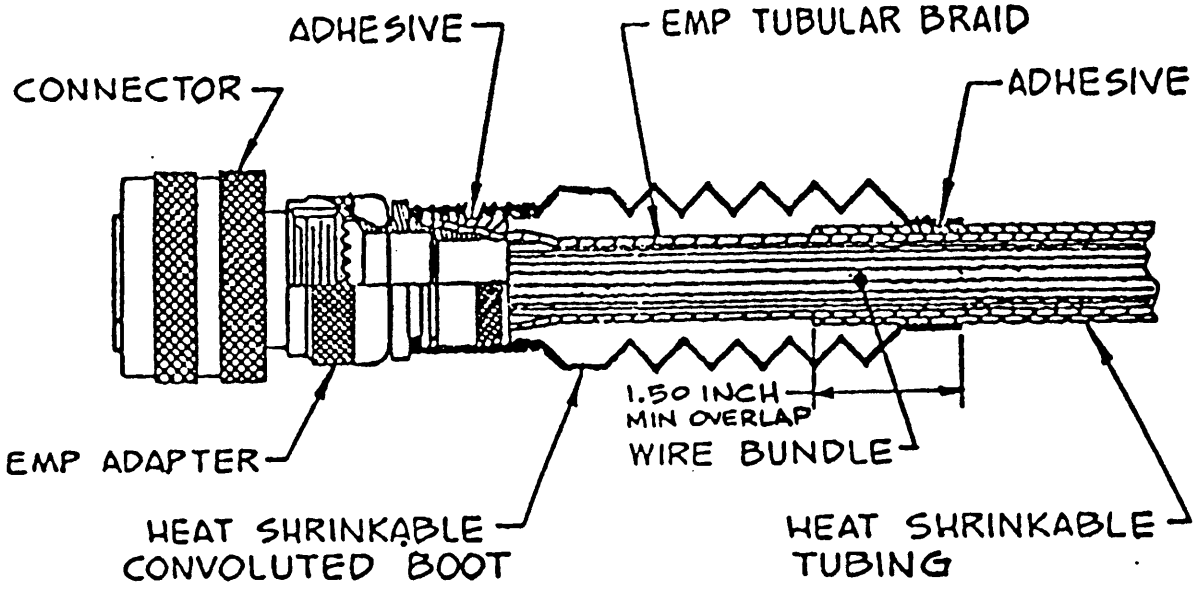
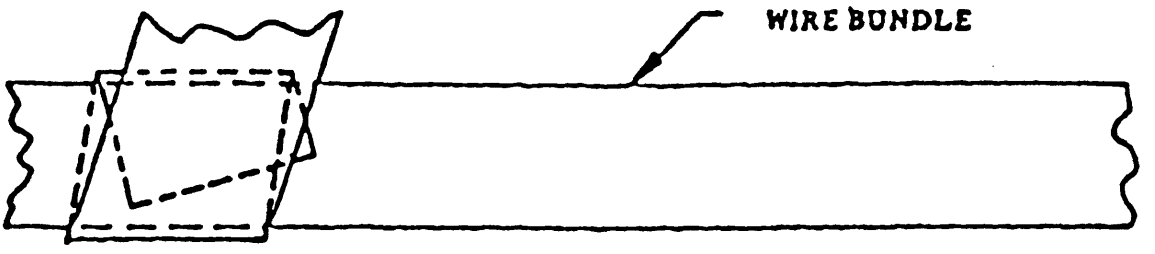
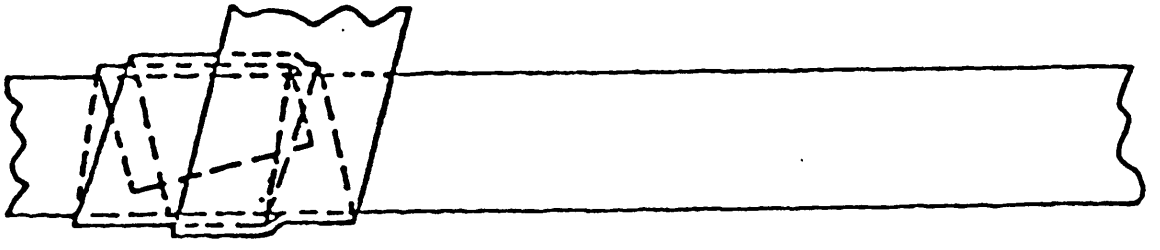


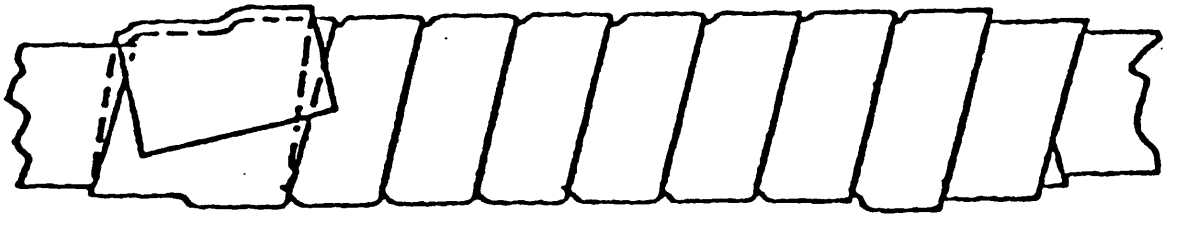
Figure 3. Cable termination (with EMP shielding).



START OF TAPE WRAP



WRAPPING USING 50% OVERLAP MIN.



COMPLETION OF TAPE WRAP

Figure 4. Method of starting and finishing wrap on harness branches of transition where heat sealable tape is specified.

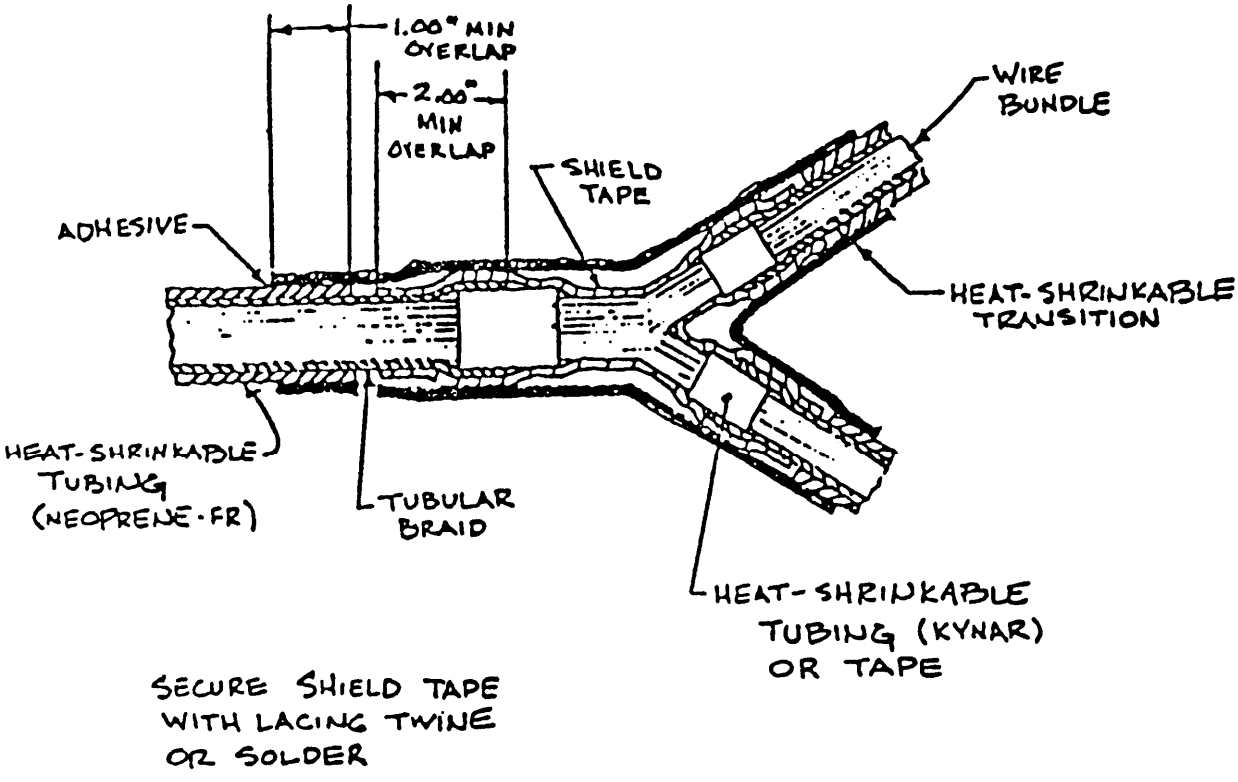
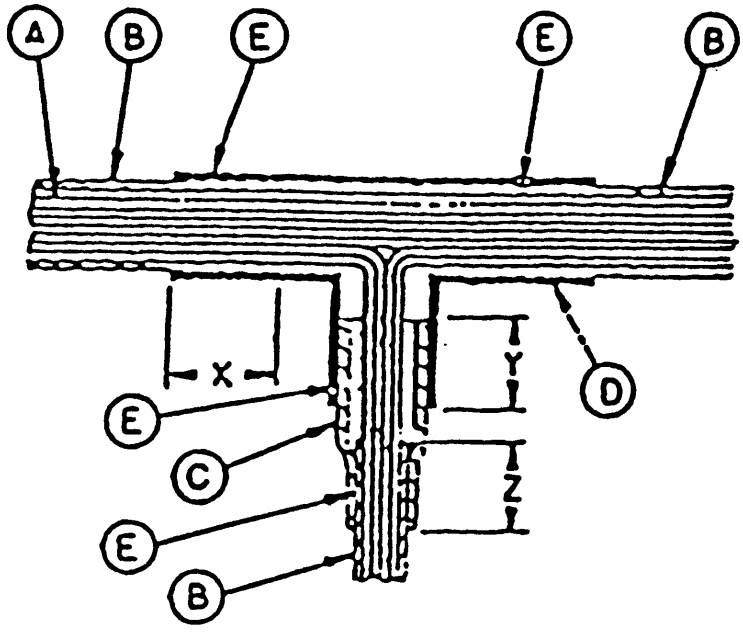


Figure 6. Cable transition (with EMP shielding).



A. WIRE BUNDLE.

B. HEAT SHRINKABLE TUBING/HEAT SEALABLE TAPE.

C. HEAT SHRINKABLE ADAPTER BOOT. METHOD OF ADAPTING GIVEN IN FIGURE 2 SHALL BE USED IF NO BOOT IS SPECIFIED.

D. HEAT SHRINKABLE TUBING TRANSITION/HEAT SEALABLE TAPE TRANSITION.

E. ADHESIVE NOT REQUIRED IF ADHESIVE COATED COMPONENTS ARE SPECIFIED ON ASSEMBLY DRAWING OR IF HEAT SEALABLE TAPE IS USED.

DIMENSION "X", WHICH MUST BE GREATER THAN 1.00 INCH, IS MINIMUM OVERLAP DIMENSION.

DIMENSION "Y" IS MINIMUM OVERLAP DIMENSION OF TRANSITION AND BOOT.

DIMENSION "Z" IS MINIMUM OVERLAP DIMENSION OF BOOT AND HARNESS JACKETING.

THESE DIMENSIONS MUST BE MAXIMUM LENGTH ATTAINABLE, LIMITED BY BOOT CONFIGURATION.

Figure 5. Cable transition (without EMP shielding).

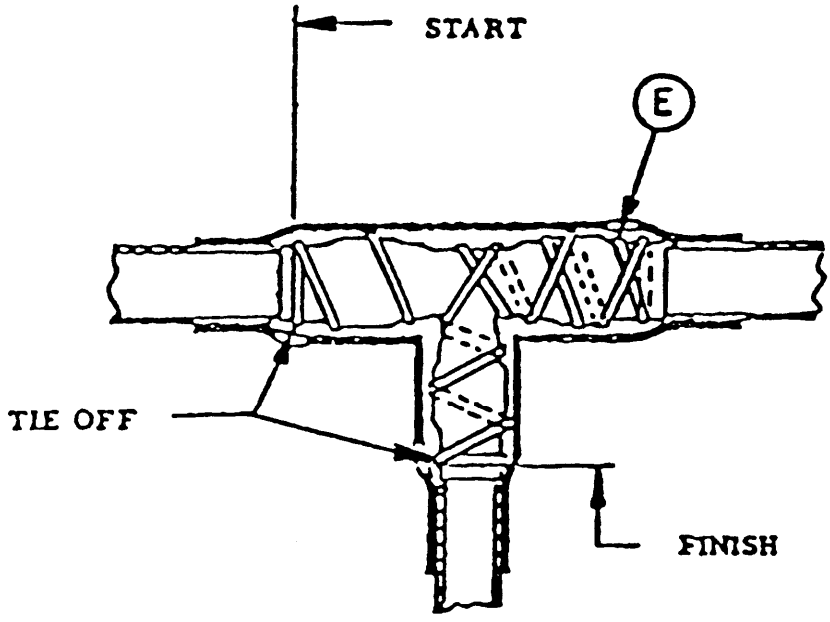


Figure 7. Optional lacing of cable transition with RFI shielding.

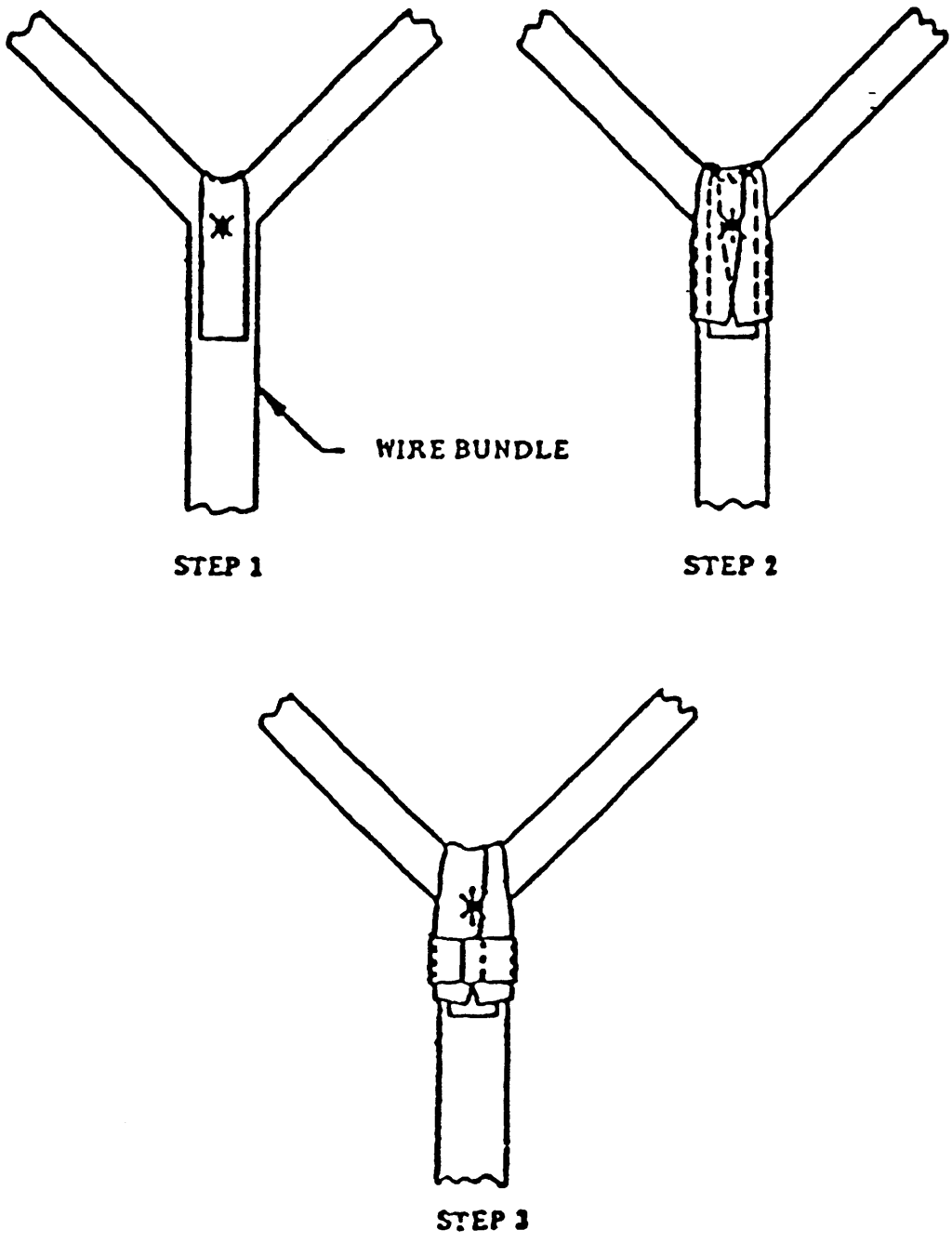
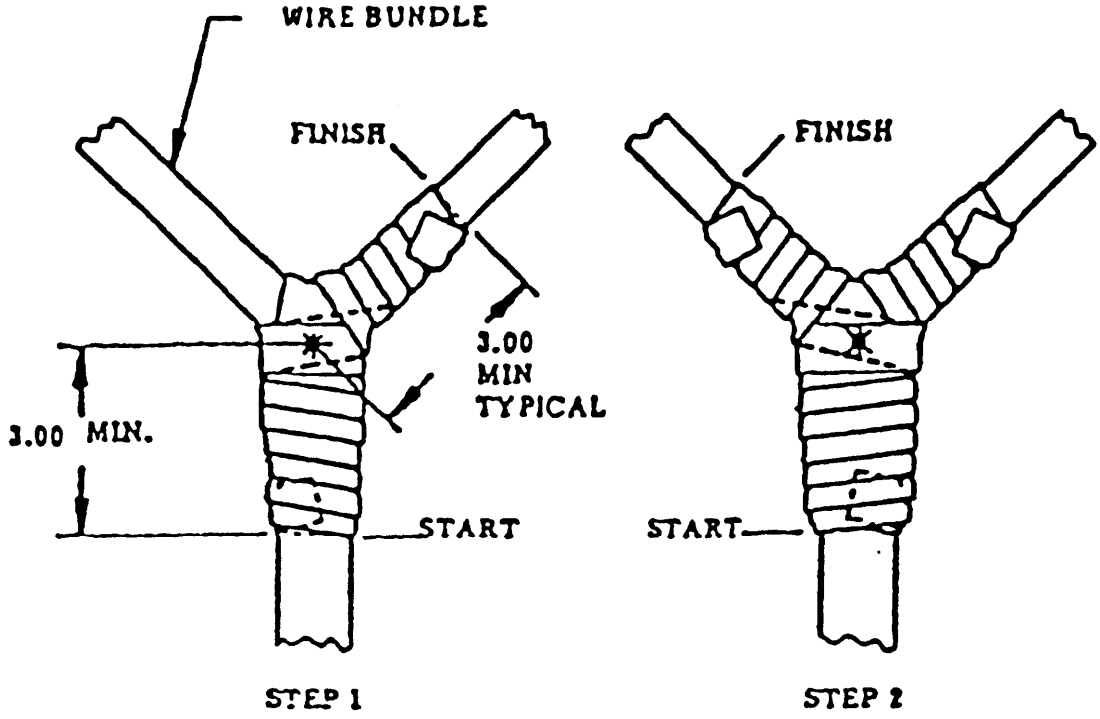


Figure 8. Steps for sealing transition crotch, using heat sealable tape (25 mil).



STEPS IN MAKING A TRANSITION USING HEAT SEALABLE TAPE (25 MIL).

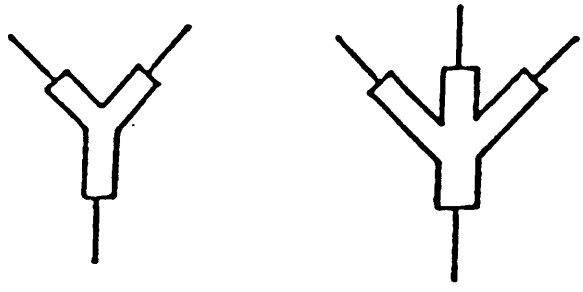


Figure 9. Typical transition indicated on assembly drawings.

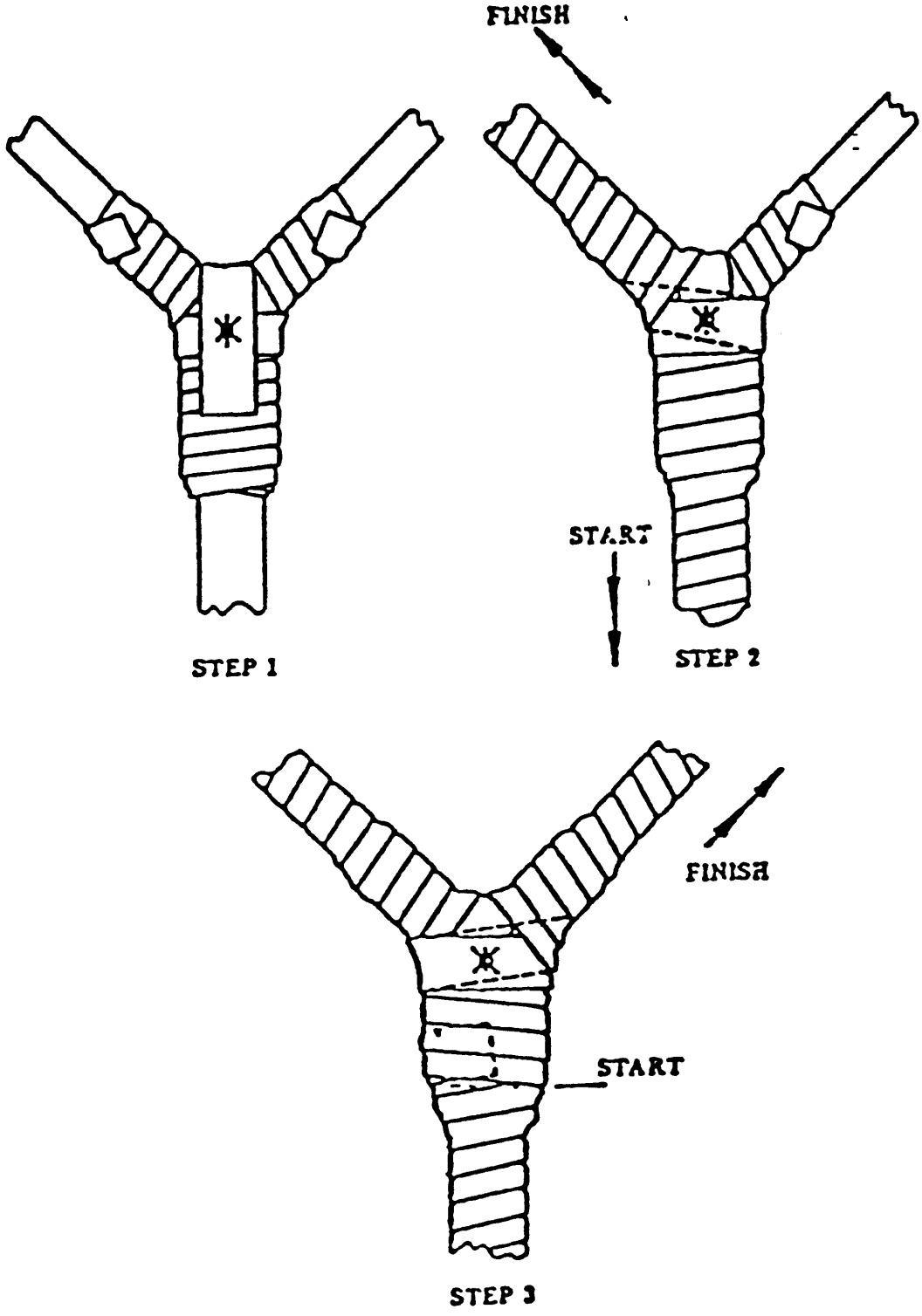


Figure 10. Steps for wrapping final outer jacketing.

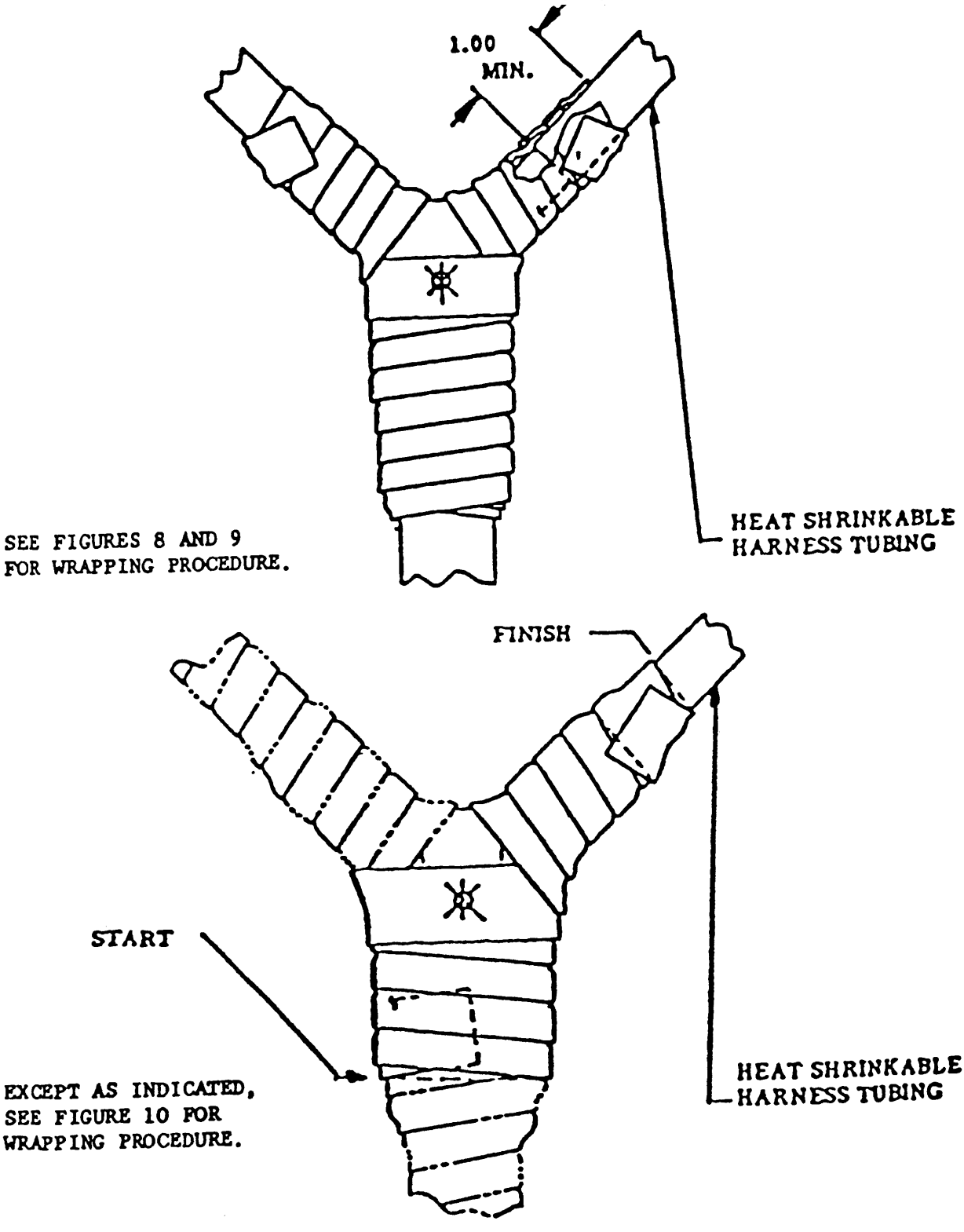
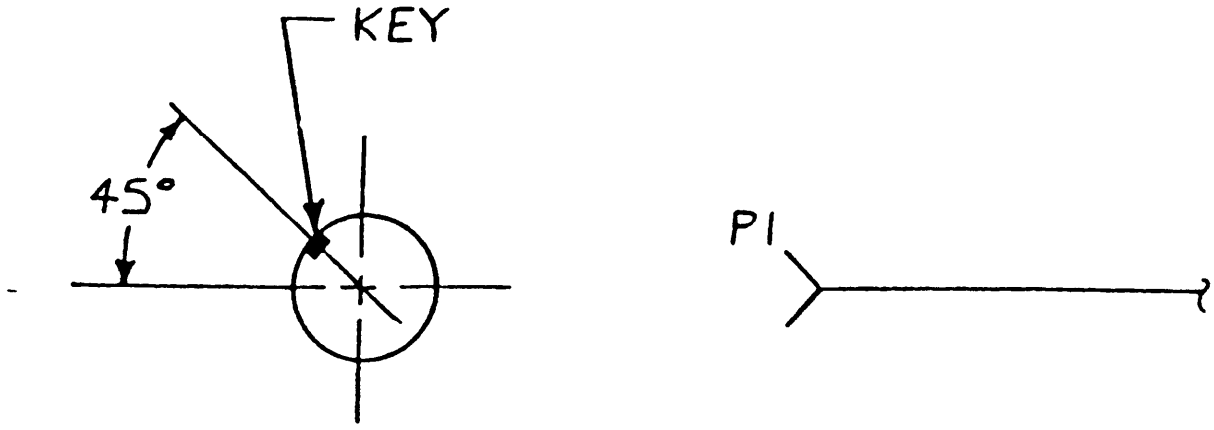


Figure 11. Method for using heat shrinkable harness tubing in conjunction with heat sealable tape.



TYPICAL CONNECTOR KEY OR KEYWAY LOCATION INDICATED ON ASSEMBLY DRAWINGS

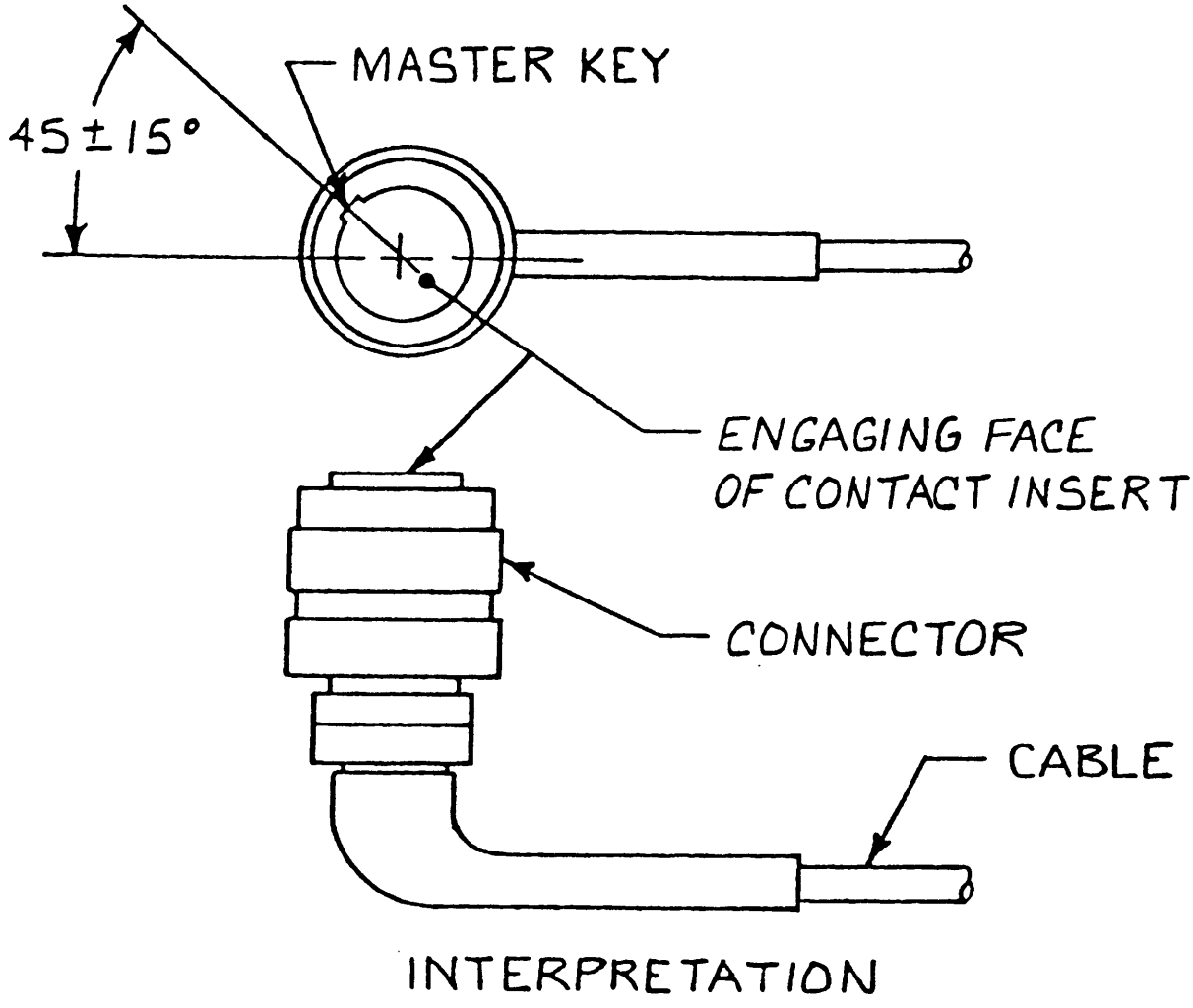


Figure 12. Interpretation of connector key or keyway location.

3.3.2.5 Cable jacketing. (See 6.3.1.) All cables shall be covered with the jacketing specified on the assembly drawing. Heat-sealable tape shall be wrapped with a minimum of 50 percent overlap, forming a water-resistant covering. Heat-sealable tape shall be tightly wrapped to keep cable diameters to a minimum (see figure 4). Jacketing shall extend into the boot or transition at least to the dimensions shown in figures 2, 3, 5, 6, 7, 9, and 11. Multiple sections of heat-shrinkable tubing may be used in long harness branches, provided each individual length is at least 36 inches long. In each case, a minimum of 2 inches of overlapping tubing shall be required. Bonding of jacket joints to their mating parts shall be required. This bond shall provide a water-resistant join. Excess adhesive on the outside of the harness jacketing shall be removed. Heat-shrinkable tubing shall be uniformly shrunk to minimum diameters determined by the bundle size and shall be water-resistant, with no cracks, splits, or abrasions. Heat-sealable tape shall be cured in a hot air oven until it reaches its melting point of ±145° ±10°C; cure time required to achieve melting is typically 90 minutes.

3.3.2.6 EMP shielding. When specified on the cable assembly drawing, tubular EMP shielding shall be installed over the wire bundle and under the cable jacketing. At each point where a piece of shielding ends, the shield shall be trimmed and sealed to eliminate frayed ends. A layer of cable jacketing extending 1 inch on each end of the shield shall be applied between the wire bundle and the shield. Each cable branch shall contain one continuous piece of shield. Shields shall not be spliced. Shielding tape wrap shall be used at transition points and shall overlap the EMP tubular shielding to the “Y” dimension given in figure 6. Shielding tape wrap shall be held in place using either of the methods shown in figures 6 and 7.

3.3.2.7 Cable terminations. Cable terminations shall be as shown in figure 2 or 3. Other methods shall be as detailed on the cable assembly drawing. Boots, jacketing, and feed-through seals shall be bonded to mating parts with adhesive unless parts are supplied with adhesive coating. Boots, jacketing, and feed-through seals shall be fully recovered and water-resistant, with no cracks, splits, or abrasions. Backshells shall be torqued as specified in table 1. Unless otherwise specified, all unused contact locations shall be filled with contacts and all unused grommet feed-through holes shall be plugged with the plugs supplied with the connector.

3.3.2.8 Cable transitions. Cable transitions shall be as shown in figures 5, 6, 7, 9, and 11. On cables using heat sealable tape transitions, the transition shall be wrapped before the harness branches are wrapped. Where tape transitions are used with heat shrinkable tubing, the tubing shall be installed first.

3.3.2.9 Adhesives. Adhesive application processes shall conform to adhesive manufacturer’s specifications.

TABLE I. Adapter nut torque.

Shell size	Torque required (in/lb)
08	35/40
10	40/45
12	50/55
14	65/75
16	65/75
18	80/85
20	90/95
22	100/110
24	120/130
28	130/140
32	150/160
36	175/185
40	190/200

3.3.3 Cable markings. Markings identified in 3.3.3.2 shall be applied on sleeving conforming to MIL-I-23053/5 or equivalent by typing with black character. The marking shall be arranged and located in accordance with the cable assembly drawing.

3.3.3.1 Marking protection. All marking shall be covered with clear sleeving conforming to MIL-I-23053/8, or equivalent.

3.3.3.2 Cable identification. Each cable shall be identified in accordance with MIL-STD-130. The marking shall include the design activity FSCM, the abbreviation ASSY, the part number, the manufacturer's FSCM and the cable reference designation.

3.3,3.3 Termination Identification. Each termination, connector, lug, etc., shall be identified with the applicable reference designation.

3.3.4 Age control. The assembly and earliest cure dates (in quarter and year) of any synthetic age-sensitive elastomer installed within the cable assembly shall be indelibly affixed to the cable assembly. All age-sensitive elastomers shall be installed in the cable assembly within 8 quarters after the cure date.

3.3.5 Workmanship. The assembly shall be in accordance with the workmanship requirements of MIL-STD-454, requirement 9.

3.3.5.1 Insulation stripping. Removal of insulation from electrical wire conductors, 12 AWG and smaller, and from outer jackets of shielded cables shall be performed so that there is no evidence of physical damage to the individual wire or braided strands.

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 the quality assurance provisions specified in section 4 to determine conformance to the requirements of sections 3 and 5. Except as otherwise specified, the contractor may utilize his own facilities or any commercial laboratory-acceptable to the procuring activity (see 6.2). The procuring activity reserves the right to perform or witness any of the inspections set forth in this document where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements. The contractor will not be restricted to the inspections or the methods of inspection defined herein, provided that an equivalent control, approved by the procuring activity, is utilized.

4.1.1 Inspection equipment. Unless otherwise specified in the contract. the contractor is responsible for the provisions and maintenance of all inspection and test equipment necessary to assure that supplies and services conform to contract requirements. Commercial, modified commercial, or contractor-designed inspection equipment or measuring setups must be capable of repetitive measurements to an accuracy of 10 percent of the component tolerance. Calibration of inspection and test equipment shall be in accordance with MIL-C-45662. Where compliance with MIL-C-45662 is not possible, special calibration requirements shall be prepared for approval by the procuring activity.

4.1.2 Special tests and examinations. Special tests and examinations (see 6.3), when required, shall be performed in accordance with tables II and III. The inspection sequence shall be in accordance with table II.

Note: Assemblies subjected to special tests and examinations shall not be used for any other purposes and shall be indelibly marked, DO NOT USE.

4.1.2.1 Preproduction. If required by the procuring activity (see 6.2), two assemblies shall be inspected by the contractor at a location approved by the procuring activity.

4.1.2.1.1 Preproduction failure. Failure of a preproduction assembly to meet the requirements specified herein shall be cause for cessation of inspection. When corrective measures satisfactory to the procuring activity have been taken, inspection may be continued.

TABLE II. Sequence of special tests and examinations.

Test sequence	Paragraph number	Prepr-duction sample		Initial production sample	
		1	2	1	2
Design and construction	4.3	x	x	x	x
Physical characteristics	4.2.2	x	x	x	x
Performance	4.2.1	x	x	x	x
Humidity	4.2.3.1	x	x	x	x
Low temperature	4.2.3.2.1	x	x	x	x
High temperature	4.2.3.2.2	x	x	x	x
Storage temperature	4.2.3.3	x	x	x	x
Packaging	4.4.	x	x	x	x

4.1.2.2 Initial production. Unless otherwise specified, the procuring activity shall select two assemblies from the first 10 assemblies produced under a production contract (see 6.2). Once verification and validation of compliance with the requirement has been accomplished, quality conformance inspection of the remainder of the production contract shall be as specified (see 4.2).

4.1.2.2.1 Initial production failure. Failure of an initial production assembly during or as a result of initial production inspection shall be cause for rejection of the assembly. The procuring activity shall refuse acceptance of production assemblies until evidence of corrective action is provided.

TABLE III. Preproduction, initial production, and quality conformance inspections.

Description	Requirement	Method	Special tests and examinations		Quality conformance inspection		
					Classification of characteristics		
			Pre-prod	Initial prod	Critical	Major	Minor
Performance	3.2.1	4.2.1					
DC resistance	3.2.1.1	4.2.1.1	x	x		100%	
Insulation resistance	3.2.1.2	4.2.1.2	x	x		100%	
Physical characteristics	3.2.2	.4.2.2					
Weight	3.2.2.1	4.2.2.1	x	x			
Length	3.2.2.2	4.2.2.2	x	x		100% (See note.)	
Environmental conditions	3.2.3	4.2.3					
Humidity	3.2.3.1	4.2.3.1	x	x			
Operating temperature	3.2.3.2	4.2.3.2					
Low temperature		4.2.3.2.1	x	x			
High temperature		4.2.3.2.2	x	x			
Storage temperature	3.2.3.3	4.2.3.3	x	x			
Design and construction	3.3	4.3					
Production drawings	3.3.1	4.3.1	x	x			2.5
Standards of manufacture	3.3.2	4.3.2	x	x			4.0
Cable markings	3.3.3	4.3.3	x	x			4.0
Age Control	3.3.4	4.3.4	x	x			6.5

TABLE III. Preproduction, initial production, and quality conformance inspections. - Continued

Description	Requirement	Method	Special tests and examinations		Quality conformance inspection		
					Classification of characteristics		
			Pre-prod	Initial prod	Critical	Major	Minor
Workmanship	3.3.5	4.3.5	x	x			4.0
Packaging	5.	4.4		x			4.0

Note: Assemblies manufactured using harness wiring boards or equivalent equipment may be sample inspected once the wiring board has been certified acceptable to produce assemblies of the required dimensional and angular configuration.

The rejection of one assembly of a sample shall be cause for 100 percent inspection of the remaining assemblies of the lot, and sampling of subsequent lots shall not be permitted until the wiring board has been corrected and rectified.

4.1.3 Quality conformance conditions and controls. Quality conformance inspection shall consist of the examinations and tests specified in table III as indicated by the existence of an acceptable quality level (AQL) or frequency of inspection number in one of the classification of characteristics columns. Examples of the number to be used are: 100% and 1.5. Quality formance inspection shall be performed in accordance with the methods specified in 4.2.

Note: 100% means each unit produced shall be inspected for the indicated characteristics (see 4.1.3.1.2). 1.5 signifies an AQL number and indicates the characteristic may be sample-inspected (see 4.1.3.1.1).

4.1.3.1 Lot-by-lot inspection. Lot-by-lot inspection shall consist of sampling and acceptance (100 percent) inspection as specified in table III. An inspection lot shall consist of all assemblies of one type, submitted at one time for quality conformance inspection.

4.1.3.1.1 Sampling. Sampling and inspection shall be conducted in accordance with MIL-STD-105 on the basis of percent defective for those characteristics of table III assigned an AQL. Except as specifically designated in table III, characteristics having the same AQL shall be treated as a group.

4.1.3.1.1.1 AQL validation. Before sampling can commence for any production contract, a minimum of 20 assemblies shall be subjected to 100 percent inspection to-verify conformance to requirements listed in table III. Process average for each requirement shall be computed as specified below. If the computed process average for the requirements exceeds the specified AQL, 100 percent inspection shall be continued until the process average for 20 consecutive assemblies is less than the specified AQL.

$$\text{Process average} = \frac{\text{Number of defectives}}{\text{Number of assemblies inspected}} \times 100$$

4.1.3.1.1.2 Sampling failures. Rejected assemblies or lots shall be processed in accordance with the acceptance and rejection criteria of MIL-STD-105.

4.1.3.1.2 Acceptance (100 percent) inspection. For the requirements specified for acceptance (100 percent) inspection in table III, each assembly of the inspection lot shall be subjected to the tests specified therein. Inspection shall be performed by the contractor at the place of manufacture, except as specified in 4.1.

4.1.3.1.2.1 Acceptance (100 percent) inspection failures. Any assembly that fails to conform to any acceptance (100 percent) inspection shall be rejected. The rejected assembly may be repaired or corrected and resubmitted for inspection.

4.1.4 Test methods.

4,1.4.1 Test conditions. Unless otherwise specified, all tests shall be conducted under the following conditions:

Air temperature: +23° ±10°C.

Barometric pressure: 28.5 +2.0,-4.5 inches of mercury.

Relative humidity: 50 ±30 percent.

4.1.4.2 Test equipment. The test equipment used in the performance of the examinations and tests specified herein shall be in accordance with 4.1.1.

4.2 Quality conformance inspection.

4.2.1 Performance.

4.2.1.1 DC resistance. The assembly shall be tested in accordance with MIL-STD-202, method 303, to verify conformance to 3.2.1.1.

4.2.1.2 Insulation resistance. The assembly shall be tested in accordance with MIL-STD-202, method 302, test condition B, to verify conformance to 3.2.1.2. Measurements may be taken prior to the 2-minute electrification time if the insulation resistance meets the specified limit and is steady or increasing.

4.2.2 Physical characteristics.

4.2.2.1 Weight. The assembly shall be weighed to verify conformance to 3.2.2.1, using commercially available scales accurate to the limits of 4.1.1.

4.2.2.2 Length. The assembly shall be inspected dimensionally to verify conformance to 3.2.2.2.

4.2.3 Environmental verifications methods. Environmental verification testing shall be conducted in accordance with detailed test procedures prepared by the contractor and approved by the procuring activity. Testing methods incorporated in these test procedures shall be in accordance with the test methods delineated herein.

a. The assemblies undergoing the special tests and examinations of table III shall be subjected to performance tests before, during (where required in the test method), and after each environmental test performed.

b. Assemblies undergoing the quality conformance inspections of table III shall have passed the acceptance tests indicated therein. After all environmental tests have been completed, the assemblies shall be tested only once for the postenvironmental performance tests specified.

4.2.3.1 Humidity. The assembly shall be subjected to humidity in accordance with MIL-STD-810, method 507.1, procedure IV, to verify conformance to 3.2.3.1. During humidity exposure, the assembly shall be subjected to the performance tests of 4.2.1.

4.2.3.2 Operating temperature.

4.2.3.2.1 Low temperature. The assembly shall be subjected to low temperature in accordance with MIL-STD-810, method 502.1, procedure I, to verify conformance to 3.2.3.2. The temperature shall be maintained at -45°C for 24 hours.

At the conclusion of this time, the assembly shall be stabilized at -32°C and be subjected to the performance tests of 4.2.1. Then the assembly shall be returned to +23° ±10°C and again subjected to the performance tests of 4.2.1.

4.2.3.2.2 High temperature. The assembly shall be subjected to high temperature in accordance with MIL-STD-810, method 501.1, procedure I, to verify conformance to 3.2.3.2. The temperature shall be maintained at +71°C for 48 hours. At the conclusion of this time, the assembly shall be stabilized at +52°C and subjected to the performance tests of 4.2.1. Then the assembly shall be returned to +23° ±10°C and again subjected to the performance tests of 4.2.1.

4.2.3.3 Storage temperature. The assembly shall be tested in conjunction with the tests of 4.2.3.2.1 and 4.2.3.2.2 to verify conformance to 3.2.3.3.

4.3 Design and construction.

4.3.1 Production drawings. Visual examination shall be performed during fabrication and assembly to verify conformance to the drawing set and 3.3.1.

4.3.2 Standards of manufacture. A visual examination shall be performed at all phases of manufacture to verify continued conformance to the standards of manufacture specified in 3.3.2.

4.3.3 Cable markings. Each cable assembly shall be inspected to verify compliance to 3.3.3.

4.3.4 Verification of age control. Visual examination shall be conducted to verify conformance to 3.3.4. The contractor shall provide certification of traceability attesting to the designated cure dates.

4.3.5 Workmanship. Workmanship examination shall be performed at all phases of fabrication, assembly, and test and shall be in accordance with MIL-STD-454, requirement 9, to verify conformance to 3.3.5.

4.4 Preparation for delivery. The assembly shall be inspected by the contractor prior to shipment to ensure conformance to the preservation, packaging, packing, and marking requirements in section 5. Sampling inspections shall be limited to those characteristics that can be determined by visual examination.

5. PACKAGING

5.1 Preservation and packing. Packaging levels and methods shall be such as to ensure protection of the assembly against natural and induced environments. Packaging levels (A, B, and C) are defined in MIL-STD-794 and packaging methods are defined in MIL-P-116.

5.1.1 Level A. For level A (long-term storage), the assembly shall be preserved and packed in accordance with MIL-P-116, methods II, IA, or IC, and with the applicable packaging data sheet (AMC Form 1029) provided by the procuring activity. Container shall be in compliance with MIL-STD-794 and shall provide adequate protection against corrosion, deterioration, and damage during handling, shipment, and storage.

5.1.2 Level B. For level B (intermediate-term storage), the assembly shall be preserved and packed as for level A, except that methods and materials shall be as specified in MIL-P-14232.

5.1.3 Level C. For level C (immediate use upon delivery), the asssembly shall be preserved and packed in accordance with industrial packaging practices and ASTM D 3951. Packages which require overpacking for acceptance by common carrier shall be overpacked in uniform quantities in a manner to ensure carrier acceptance at the lowest freight rates and to ensure safe delivery from the supply source to the first receiving activity.

5.1.4 Data requirements. The contractor shall prepare packaging data for level A only, as follows:

a. Additional packaging information not presented on the cable assembly drawing but essential to completeness of packaging data.

b. Packaging procedures as required by MIL-STD-794. These procedures shall provide for adequate protection against corrosion, deterioration, and damage during shipment.

5.2 Marking. Each inner and outer container shall be marked in accordance with MIL-STD-129 and the following:

a. Part number.

b. Nomenclature.

c. Quantity.

d. Purchase order/contract number.

e. Serial number.

f. Date of manufacture.

6. NOTES

6.1 Intended use. The cable assemblies are intended to provide electrical interconnection between operating components of the M247 gun system. Each cable assembly will provide environmental, mechanical, and EMP protection for individual electrical wiring. The connectors on each assembly are keyed to minimize the possibility of improperly mating cables to equipment.

6.2 Ordering data. Procurement documents should specify the following:

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

b. Special tests and examinations:

(1) Preproduction. (See 6.3a.) If required for procurement, specific request should be included in the purchase order or contract (see 4.1.2.1).

(2) Initial production. (See 6.3b.) If not required for procurement, specific direction to eliminate these inspections should be included in the purchase order or contract (see 4.1.2.2).

(3) Activity and facility responsible for special tests and examinations. (See 4.1.) The purchase order or contract should specify the name of the activity and the facility responsible for special tests and examinations.

c. Applicable levels of packaging and packing and marking instructions (see 5.1 and 5.2).

6.3 Definitions. The following definitions explain the tests specified herein and when the tests are to be run:

a. Preproduction. These inspections verify a contractor's capability to produce a component to a specification and/or drawing set. The component may be built on a prototype basis without the use of production tooling. Preproduction tests will normally be conducted whenever a new contractor is selected.

b. Initial production. These inspections verify the production tooling, methods, and processes used to manufacture a component. They are required on selected first articles produced in a production run and should be repeated once every 3 years on continuing contracts.

c. Quality conformance inspection.

(1) Sampling. These inspections verify that physical and configuration characteristics are maintained during the production run.

(2) Acceptance. These inspections are performed on each manufactured assembly to verify its functional performance against specification requirements.

6.3.1 Cable jacketing. Cable jacketing is defined as the exterior elastomeric cable cover which accounts for the assembly's fluid resistance capability. This elastomeric jacketing includes, but is not limited to, heat shrinkable tubing, heat sealable tape, boots, transitions, etc.

6.3.2 Previous Issues. MIL-C-63550 (AR) and associated amendments were for US Army Armament Research and Development Center for internal use only and were not forwarded to the Naval Publications and Forms Center for publication.

Custodian:
Army-AR

Preparing Activity:
Army-AR

Project No. 1010-A131

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1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-C-63550E (AR)	CABLE ASSEMBLIES, ELECTRICAL, FABRICATION SPECIFICATION FOR

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
	☐ USER
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ MANUFACTURER
	☐ OTHER *(Specify)*: _____

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*