MIL-T-48849(PA)
9 June 1975
SUPERSEDING
See Section 6

MILITARY SPECIFICATION

TRAINING PLUGS, ELECTRICAL, FOR M109E1

1. SCOPE

1.1 Scope. This specification covers requirements, quality assurance provisions and the preparation for delivery criteria for three types of special purpose training plugs entitled Training Plugs, Electrical, for M109E1 which are used for completing circuits simulating the Nike Hercules warhead section.

1.2 Classification. This specification covers plugs of the following types:

Type I - Training Plug, Electrical, Surface-to-Air
Type II - Training Plug, Electrical, Safe
Type III - Training Plug, Electrical, Arm

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposals, form a part of this specification to the extent specified herein:

STANDARDS

MILITARY

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-1167	- Ammunition Data Card.
MIL-STD-1168	- Lot Numbering of Ammunition.
MIL-STD-1460	- Soldering of Electrical Connections and Printed Wiring Assemblies, Procedure For.

DRAWINGS

ORDNANCE CORPS

8801514	- Connector Plug Electrical.
8801718	- Connector Plug Electrical.
8801725	- Plug, Electrical.
8801728	- Plug, Electrical.
8825019	- Plug, Electrical.
8825052	- Plug, Electrical.

FSC NUOR

8801746 - Packaging for Plug Electrical.
8801747 - Packaging for Plug Electrical.
8801748 - Packaging for Plug Electrical.
8804392 - Container, Packing, Ammunition for Maintenance Spares Set II, Packing and Marking.
EL-8815541 - Equipment List.

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 Materials. The contractor shall furnish objective evidence (see 6.2) that the material complies with the specifications listed on the applicable drawing.

3.2 Assembly. The training electrical plugs shall comply with all requirements specified on the drawing (dwg) 8801725, 8801728, 8825019 and 8825052, with all requirements specified herein, and with the requirements of all applicable specifications to the extent specified on the drawing and herein.

3.3 First article testing. Requirements for the submission of first article samples by the contractor shall be as specified in the contract (see 4.2).

3.4 Continuity and resistance. The training electrical plug shall have a continuous circuit as defined by the applicable wiring drawing. The circuit resistance when mated to its mating socket shall be 0.0030 ohm maximum (max) when tested as specified in 4.4.1.

3.5 Coating and marking. Each training electrical plug shall be painted black with white marking. The letter T shall be marked in red on the plug.

3.6 Soldering. All soldering shall comply with the requirements specified in MIL-STD-1460.

3.7 Workmanship.

3.7.1 Plastic and metal characteristics. All components shall be free from cracks, splits, cold flow, shrinkage, cold shuts, inclusions, porosity, or any similar characteristic.

3.7.2 Threads. Threads shall be full and undamaged for the entire minimum length or depth as required on the applicable drawing.

3.7.3 Burrs. Parts shall be free from burrs.

3.7.4 Foreign matter. Parts shall be free from chips, dirt, grease, rust, corrosion, or any embedded foreign material.

3.7.5 Cleaning. The cleaning method shall not be injurious to any of the parts, nor shall the parts be contaminated by the cleaning agent.

3.7.6 Electrical. Cable assemblies and wires shall be dressed in such a manner as to prevent pinching or chafing of the wire insulation. Ends of wires shall be free from burrs, sharp edges, or points. All parts shall be free from flux, chips, dirt, grease, rust or foreign material.

3.7.7 Stitching. Stitching shall not be missing where required. Stitching shall be free from any breaks or skipped areas. Tight stitching which breaks when the material is pulled to a flat surface or specified contour, shall be rejected.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 First article inspection.

4.2.1 Quantity to be submitted. When the contract requires first article inspection, the contractor shall submit 3 complete assemblies of each type (see dwg 8801725, 8801728, 8825019 and 8825052) for first article testing to the testing facility designated in the invitation for bids or request for proposal.

4.2.2 Inspection and testing to be performed. The first article inspection sample shall be subjected to the inspections and tests specified in Table I. Tests shall be conducted in order specified in Table I.

Table I

First article inspection and tests

Inspection or Test	Dest	Non-Dest
1. Classification of characteristics (see 4.3.2.1)		X
2. Continuity and resistance (see 3.4)		X
3. Coating and marking (see 3.5)		X

4.2.3 Inspection equipment. The inspection and testing specified in 4.2.2 shall be accomplished by using the gages and test equipment specified in 4.3.4.1.

4.2.4 Rejection. If any item fails to comply with any of the applicable requirements, the first article sample shall be rejected.

4.3 Quality conformance inspection.

4.3.1 Lot formation.

4.3.1.1 Production lot. A lot shall consist of parts and assemblies produced by one manufacturer in one unchanged process, in accordance with the same drawing, same drawing revision, same specification and same specification revision. Drawing, specification and process changes not affecting safety, performance, storage, or interchangeability, as determined by the Government, shall not necessitate changing the lot interfix number. The criteria and procedures for the assignment of lot numbers shall be in accordance with MIL-STD-1168.

4.3.1.2 Inspection lot. A lot or batch and its formation, size, and presentation is described in MIL-STD-105, Section 5. Accordingly, a lot shall mean an inspection lot and a batch shall mean an inspection batch for the purpose of this specification. The manner in which each inspection lot or batch is to be presented and identified by the contractor, shall be designated or approved by the Government representative.

4.3.2 Product inspection examination. A sample shall be selected at random from each inspection lot in accordance with the applicable major or minor characteristic table (see Table II and Table III), and inspected for all characteristics in the applicable classification. Any characteristics in the sample found to be defective shall reject the inspection lot. Sequence for the inspection of characteristics in each classification need not be followed as long as all characteristic inspections are performed.

Table II
Major Characteristics

Lot Size	Sample Size	Lot Size	Sample Size	Lot Size	Sample Size	Lot Size	Sample Size
1-16	all	28-29	23	52-56	31	132-156	39
17	16	30-31	24	57-62	32	157-191	40
18	17	32-34	25	63-69	33	192-244	41
19-20	18	35-36	26	70-76	34	245-334	42
21	19	37-40	27	77-86	35	335-519	43
22-23	20	41-43	28	87-97	36	520-1120	44
24-25	21	44-47	29	98-112	37	over 1120	45
26-27	22	48-51	30	113-131	38		

Table III
Minor Characteristics

Lot Size	Sample Size	Lot Size	Sample Size	Lot Size	Sample Size	Lot Size	Sample Size
1-9	all	14-16	12	28-33	16	77-121	20
10	9	17-18	13	34-41	17	122-273	21
11	10	19-22	14	42-54	18	over 273	22
12-13	11	23-27	15	55-76	19		

4.3.2.1 Classification of characteristics (see 3.2). Critical, major and minor characteristics are defined in MIL-STD-105. Inspection shall be conducted as follows:

4.3.2.1.1 Connector, prior to assembling cap (see dwgs 8801514 and 8801718).

Categories	Characteristics	Method of Inspection
Critical:	None defined.	
Major:		
	101. Outside diameter	Gage
	102. Contact damaged	Visual
	103. Crack in insulation material	Visual
	104. Objective evidence relating to material missing or improper (see 3.1)	Visual
Minor:		
	201. Evidence of poor workmanship (see 3.7)	Visual

4.3.2.1.2 Plugs electrical part no's 8825004, 8825200 and 8825052 covered by dwgs 8801725, 8801728 and 8825019).

Categories	Characteristics	Method of Inspection
Critical:	None defined.	
Major:		
	101. Coupler thread damaged (as applicable)	Gage/Visual
	102. Plug damaged	Visual
	103. Streamer, color and length incorrect (as applicable)	Visual

104. Lacquer missing.....Visual
105. Marking incorrect, mislocated, or unidentifiable.....Visual
106. Cap loose.....Manual
107. Solder loose, inadequate, or cold solder joint (see 3.7).....Visual
108. Objective evidence relating to material missing or improper (see 3.1).....Visual

Minor:
201. Total length, max.....Gage
202. Evidence of poor workmanship (see 3.7).....Visual

4.3.2.1.3 Bag, prior to sealing (see dwgs 8801746, 8801747 and 8801748).

Categories	Characteristics	Method of Inspection
Critical:	None defined.	
Major:		
	101. Any packing component missing.....	Visual
Minor:		
	201. Evidence of poor workmanship (see 3.7).....	Visual

4.3.2.1.4 Bag, sealed (see dwgs 8801746, 8801747 and 8801748).

Categories	Characteristics	Method of Inspection
Critical:	None defined.	
Major:		
	101. Bag torn or perforated.....	Visual
	102. Bag not securely sealed.....	Visual
	103. Seal mislocated.....	Visual
	104. Marking incorrect, mislocated, or unidentifiable.....	Visual
Minor:		
	201. Evidence of poor workmanship (see 3.7).....	Visual

4.3.2.1.5 Carton, sealed - When applicable (see dwg 8804392).

Categories	Characteristics	Method of Inspection
Critical:	None defined.	
Major:		
	101. Marking misleading or unidentifiable...	Visual
	102. Carton damaged.....	Visual
	103. Carton improperly sealed.....	Visual
	104. Contents loose.....	Manual
Minor:		
	201. Evidence of poor workmanship (see 3.7).....	Visual

4.3.2.1.6 Wooden packing box sealed - When applicable (see dwg 8804392).

Categories	Characteristics	Method of Inspection
Critical:	None defined.	
Major:		
	101. Marking misleading or unidentifiable...	Visual
	102. Box split or broken.....	Visual
	103. Hardward broken, loose, or improperly positioned.....	Manual/Visual
	104. Contents loose.....	Manual
Minor:		
	201. Evidence of poor workmanship (see 3.7).....	Visual

4.3.2.1.7 Container, sealed - When applicable (see dwg 8804392).

Categories	Characteristics	Method of Inspection
Critical:	None defined.	
Major:		
	101. Marking misleading or unidentifiable...	Visual
	102. Container damaged.....	Visual
	103. Container improperly sealed.....	Visual
	104. Contents loose.....	Visual
Minor:		
	201. Evidence of poor workmanship (see 3.7).....	Visual

4.3.3 Testing. All tests shall be performed. Tests shall be performed in the order specified below:

Test	Test Classification
a. Continuity and resistance	Major

None of these tests are considered destructive and samples so tested may be returned to the lot.

4.3.3.1 Continuity and resistance. Each training electrical plug in the lot shall be tested in accordance with 4.4.1. If any item fails to comply with 3.4, the item shall be rejected and removed from the lot.

4.3.4 Acceptance inspection equipment.

4.3.4.1 Major characteristics and tests. Inspection and testing shall be performed with the acceptance inspection equipment, operating instructions, and calibration instructions specified on the Equipment Lists (EL) (see EL-8815541). When either of the conditions listed below exist, the contractor shall design required equipment or specify suitable commercial equipment and obtain approval prior to use on the contract.

a. Any deviation from equipment or procedures specified on the EL is desired (see 6.3).
b. The code "CD" is listed in the "Part or Identifying Number" column on the EL (see 6.1.2).

4.3.4.2 Minor characteristics and tests. Acceptance inspection equipment for minor characteristics is not specified on ELs. The acceptance inspection equipment, operating instructions and calibration instructions used by the contractor for minor classification inspection shall be approved by the Government representative authorized by the procuring agency.

4.4 Test methods. The tolerances specified herein are absolute with no allowance for test equipment inaccuracy. The tolerances used by the manufacturer shall be equal to the absolute tolerances less the accuracy tolerances of the test equipment used.

4.4.1 Continuity and resistance. The continuity and circuit resistance of each pin connection shall be measured by the volt-ampere method with the plug mated to its mating socket. Current flow shall be 10 ± 0.2 amperes. The voltage flow shall be 0.030 volt maximum indicating a resistance of 0.0030 ohm through socket and plug. Continuity tests shall be between the pins specified in the following subparagraph.

4.4.1.1 Type I - (see Ord part No 8825052 covered by dwg 8825019).

Pin A to pins F,E,K,L, and S.
Pin c to pins W,X,Y,Z, and T.
Pin U to pins N,I,M, and f.
Pin P to pin J.
Pin V to pin O.
Pin G to pins H and C.
Pin D to j.
Pin g to k.

4.4.1.2 Type II - (see Ord part No 8825052 covered by dwg 8801725).

Pin A to pin M.
Pin E to pins F and N.
Pin O to pin G.
Pin I to pins K and J.

4.4.1.3 Type III - (see Ord part No 8825204 covered by dwg 8801728).

Pin B to pins C and D.
Pin H to pin I.
Pin K to pin L.
Pin M to pins N,O, and P.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or C as specified (see 6.1).

5.1.1 Level A. The training electrical plug shall be packaged in accordance with dwg 8801746, 8801747, 8801748 and 8804392 using the specified moisture barrier.

5.1.2 Level C. The training electrical plug shall be packaged in accordance with dwg 8801746, 8801747, 8801748 and 8804392 except that the moisture barrier may be omitted.

5.2 Packing.

5.2.1 Level A and C. The training electrical plug shall be packed in accordance with dwg 8801746, 8801747, 8801748 and 8804392.

5.3 Marking. Marking shall be as specified in accordance with dwg 8801746, 8801747, 8801748 and 8804392.

5.4 Data cards. Data cards shall be prepared in accordance with MIL-STD-1167.

6. NOTES

6.1 Ordering data. Procurement documents should specify the following:

6.1.1 Procurement requirements.

a. Title, number, and date of this specification.
b. Type required (see 1.2).
c. Selection of applicable level of packaging and packing required (see 5.1 and 5.2).

6.1.2 Contract data requirements (see 5.4 and 4.3.4.1). Data specified in 5.4 and 4.3.4.1 will be delivered as identified on a numbered DD Form 1664 when specified on a DD Form 1423 incorporated in the contract.

6.2 Objective evidence. Records of contractor quality control and inspections which can be verified.

6.3 Acceptance inspection equipment (see 4.3.4.1). The contractor shall obtain approval from the Commander, Picatinny Arsenal, Dover, New Jersey 07801, ATTN: SARPA-QA-T.

6.4 Supersession data. This specification supersedes the requirements of Purchase Description PA-PD-1772 dated 9 October 1959.

Custodian:
Army - PA

Preparing activity:
Army - PA

Project No. NUOR-A049

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

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1. HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

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