INCH-POUND

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SUPERSEDING
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DETAIL SPECIFICATION
CABLE, POWER, ELECTRICAL: IGNITION, HIGH-TENSION

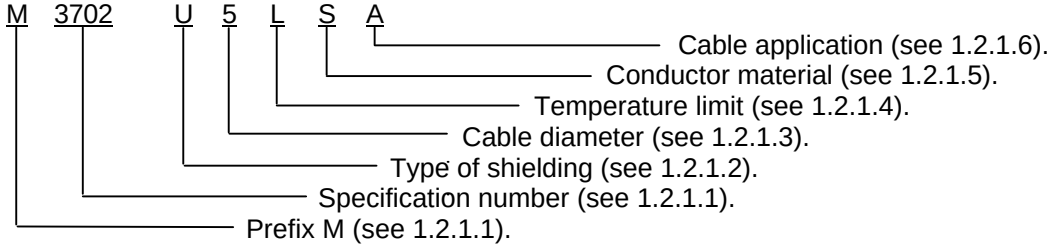
This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers shielded and unshielded electrical power cable for use on high-tension ignition systems (see 6.1).

1.2 Classification. Cable is classified as to type of shielding, cable diameter, temperature limit, conductor material, and cable application.

1.2.1 Type designation. The type designation should include specification number-based cable configuration identifying system (see 1.3 and 6.2). Example of type designation:



1.2.1.1 Specification number. The type designation will consist of the military specification number with the prefix M.

1.2.1.2 Type of shielding. The type of shielding is identified by the letter U or S as follows:

U - Unshielded
S - Shielded

1.2.1.3 Cable diameter. The cable diameter will be designated as follows:

5 - 5 millimeter (mm) nominal diameter
7 - 7 millimeter (mm) nominal diameter

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this document should be addressed to: Defense Logistics Agency, Defense Supply Center, Columbus (DSCC-VAI), P.O. Box 3990, Columbus, OH 43216-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 6145

1.2.1.4 Upper temperature limit. The upper temperature limit will be designated in degrees Fahrenheit (ºF) as follows:

L - Plus 250ºF to minus 65 ºF
M - Plus 450ºF to minus 65 ºF
H - Plus 600ºF to minus 65 ºF

1.2.1.5 Conductor material. The conductor material will be designated as follows:

C - Copper - 19 strands for low and medium temperature
- 37 strands for high temperature
S - Steel - 7 strands, corrosion resistant

1.2.1.6 Cable applications. Cable applications will be designated as follows:

A - Air Force aircraft
B - Other than Air Force aircraft

1.3 Limitation of configurations. To simplify logistics, and unless otherwise specified (see 6.2), qualification and procurement of cable will be limited to the following configurations to which type designations have been assigned. Low temperature cable will not be procured for aircraft ignition systems.

TYPE DESIGNATIONS

M3702-U5LSA or B	M3702-S5MSA or B
M3702-U5LCA or B	M3702-S5MCA or B
M3702-U5MSA or B	M3702-S7LCA or B
M3702-U5MCA or B	M3702-S7MCA or B
M3702-U7LCA or B	M3702-S7MSA or B
M3702-U7MCA or B	M3702-S7HCA or B
M3702-U7HCA or B	

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 documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications and standards. 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

A-A-870	-	Antifreeze/Coolant, Engine: Ethylene Glycol Inhibited, Concentrated
QQ-W-343	-	Wire, Electrical, Copper (Uninsulated)
TT-I-735	-	Isopropyl Alcohol

MILITARY

MIL-H-5606		Hydraulic Fluid, Petroleum Base Aircraft, Missile, and Ordnance
MIL-DTL-5624	-	Turbine Fuel, Aviation, Grades JP-4, and JP-5/JP-8
MIL-PRF-7808	-	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code number 0-148
MIL-A-8243	-	Anti-Icing and Deicing – Defrosting Fluids
MIL-PRF-11090	-	Cleaning compound, degreasing and depreserving solvent
MIL-PRF-23699	-	Lubricating Oil, Aircraft Turbine Engines, Synthetic Base, NATO Code number 0-156
MIL-C-43616	-	Cleaning Compound, Aircraft Surface.
MIL-E-51454	-	Ethyl Alcohol (Ethanol)
MIL-PRF-87937	-	Cleaning Compounds, Aerospace Equipment

STANDARDS

MILITARY

MIL-STD-129	-	Standard Practice for Military Marking
MIL-STD-130	-	Identification Marking for US Military Property.

(Unless otherwise indicated, copies of the above specification and standard are available from the Document Automated Printing Service, 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 (see 6.2), the applicable issues of the documents which have been adopted by the DoD are those listed in the specific issue of the DoDISS cited in the solicitation. Unless otherwise specified (see 6.2), the documents not listed in the DoDISS are the issues of the documents cited in the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A580	-	Standard Specification for Stainless and Heat-Resisting Steel Wire (DoD-adopted).
ASTM B33	-	Standard Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes (DoD-adopted).
ASTM B355	-	Standard Specification for Nickel-Coated Soft or Annealed Copper Wire (DoD-adopted).
ASTM D1153	-	Standard Specification for Methyl Isobutyl Ketone. (DoD-adopted).
ASTM D471	-	Standard Test Method for Rubber Property - Effect of Liquids (DoD adopted)
ASTM D4814	-	Standard Specification for Automotive Spark-Ignition Engine Fuel (DoD adopted)
ASTM G21	-	Standard Practice for Determining Resistance to Synthetic Polymeric Materials to Fungi (DoD-adopted).

(Application for copies should be addressed to American Society for Testing and Materials, 100 Barr Harbor Drive, Conshohocken, PA 19428-2959.)

Society of Automotive Engineers, International (SAE)

AS 1241	Fire Resistant Phosphate Ester Hydraulic Fluid for Aircraft (DoD-adopted).
SAE J 1966	Lubricating Oil; Piston Engine (Nondispersant Mineral oil) (DoD-adopted)

(Application for copies should be addressed to the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

AMERICAN NATIONAL STANDARDS INSTITUTE

ANSI/NCSL Z540-1 - General Requirements for Calibration Laboratories and Measuring and Test Equipment (DoD-adopted).

(Application for copies should be addressed to American National Standards Institute, 11 West 42nd street, 13th Floor, New York, N.Y., 10036

2.4 Order of precedence. In event of a conflict between the text of this document and the references cited herein (except for associated specification sheets), 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 Qualification. The cables furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable qualified products list (QPL) at the time set for opening of bids (see 6.3).

3.2 Materials. Materials shall be as specified herein and in referenced specifications and standards. Materials shall be free of defects which adversely affect performance of the finished product. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.2.1 Conductor. The conductor shall consist of either copper or steel stranded wire.

3.2.1.1 Copper strands.

3.2.1.1.1 Low, medium, and high temperature cable. The copper wire strands used in the conductors shall be soft or drawn-annealed copper conforming to QQ-W-343.

3.2.1.1.2 Tin coating. The low temperature (L-designated) copper wire strands shall be coated with commercially pure tin in accordance with ASTM B33.

3.2.1.1.3 Nickel coating. The medium and high temperature (M and H-designated) copper wire strands shall be coated with nickel in accordance with ASTM B355. The thickness of the coating shall be not less than 50 microinches (µin.).

3.2.1.2 Steel strands. The steel wire strands used in a steel conductor shall be annealed, corrosion resistant steel wire conforming to ASTM A580, type 302 or 304.

3.2.2 Insulation. The insulation shall be non-hygroscopic, elastomeric or semi-rigid, virgin material.

3.2.3 Braid. The braid shall be glass or other non-hygroscopic, fungus-resistant material.

3.2.4. Sheath. The sheath (outer covering) shall be of non-hygroscopic, flexible, seamless, non-cracking, waterproof, slow-burning or non-flammable, oil and fungus resistant material.

3.2.5 Shielding. Unless otherwise specified (see 6.2), shielding for low temperature cable shall be tin plated copper, and for medium temperature cable shall be silver or nickel-plated copper wire having a plate thickness of not less than 100 μin. Unless otherwise specified, high temperature cable shielding shall be nickel or nickel-clad copper having a plate thickness of not less than 100 μin.

3.3 Design and construction.

3.3.1 Unshielded cable. The construction of unshielded cable shall be copper or steel conductor with insulation, a layer of braid, and a sheath.

3.3.2 Shielded cable. The construction of shielded cable shall add a shielding to unshielded cable as described in 3.3.1.

3.3.3 Conductor. The conductor shall be continuous throughout its length, except that individual wires may be spliced (see 3.3.3.2). The number of individual wires and the diameter of the wire in the conductor shall be in accordance with table I. The conductor shall be free of abrasions, kinks, and flats. Individual wires shall be free of lumps, kinks, splits, abrasions, and scraped or corroded surfaces.

TABLE I. Conductor wire.

Conductor Material	Number of Strands	Wire Diameter (inches)		AWG 1/
		(min)	(max)	
Copper	19	0.0111	0.0116	29
Copper	37	0.0111	0.0116	29
Steel	7	0.0126	0.1134	28

Note: 1/ American Wire Gage (AWG) size

3.3.3.1 Stranding. All stranding for conductors shall be left hand lay. The stranding for copper conductors shall be bunched or concentric. The stranding for steel conductors shall be concentric. When an uninsulated portion of the conductor is cut, the stranding shall not tend to unlay and the completed conductor shall not tend to spread out.

3.3.3.2 Splicing. The splicing of individual wires is acceptable provided the splicing is accomplished in such a manner that the diameter of the conductor and the performance of the cable is not affected. The splices shall conform to the requirements of QQ-W-343.

3.3.3.3 Eccentricity. The eccentricity of the conductor (at any specified cross-section) in relation to the completed cable shall not exceed 6 percent of the cable diameter when calculated by equation (1):

$$\text{Eccentricity, (percent)} = \frac{(X - Y)100}{2D} \qquad (1)$$

where: X = maximum cable wall thickness, inch
Y = minimum cable wall thickness, inch
D = diameter of cable, inch

3.3.4 Insulation. Insulation shall be applied over the entire cable length, concentric with the conductor. The insulation shall form a close fit over the conductor without adherence, and when stripped, it shall leave the conductor clean and in condition for soldering. Elastomeric insulation shall be seamless and free of foreign material. Semi-rigid insulation shall be free of foreign material.

3.3.4.1 Wall thickness ratios. The wall thickness of the insulation (at any specific cross-section) in relation to the conductor, as calculated by equation (2), shall be not greater than 12 percent:

$$\text{Thickness ratio, (percent)} = \frac{(X - Y)100}{X + Y} \qquad (2)$$

where: X = maximum wall thickness, inch
Y = minimum wall thickness, inch

3.3.5 Sheath. A sheath shall be extruded over the braid. The sheath shall have a thickness of not less than 0.018 inch when formed from an elastomeric material, and a thickness of not less than 0.006 inch when formed from a semi-rigid material.

3.3.6 Shielding. Shielding for shielded cable shall consist of a close and uniform woven wire applied directly over the sheath. Each carrier shall have not less than five AWG 34 wires.

3.3.6.1 Splices. Spliced wires shall average not more than one splice per 10 feet of cable.

3.3.6.2 Coverage. The shielding shall provide not less than 85 percent coverage of the underlying sheath. Percent of coverage shall be calculated using equation (3):

$$\text{Coverage (percent)} = (2F - F^2) \times 100 \qquad (3)$$

where:

F = $\frac{ND}{P\ (\text{Cos angle of advance})}$

N = Number of parallel strands between successive turns of selected marker strand, plus the selected strand
D = Diameter of a single strand - .0063 inch
Angle of Advance = Angle whose tangent is P/C
P = Pitch of braid measured along axis of cable
C = 3.14 (Outside diameter of cable minus 2D)

3.3.7 Dimensions.

3.3.7.1 Outside diameter. The outside diameter of unshielded completed cable shall be in accordance with table II. When portions of the cable are slightly flattened or of oval cross-section, the average of two diameters measured 90° apart at any section shall be within the specified dimensions.

TABLE II. Outside diameter.

Cable Diameter Designation	Diameter (inch)		
	Nominal	Actual	
		Minimum	Maximum
5	.197	.196	.206
7	.276	.270	.285

3.3.7.2 Length. The maximum length of any piece of cable longer than 200 feet shall be determined by the size of the reel or spool with relation to convenience in handling, shipping, and storing. The drum of the reel or spool shall be not less than eight inches in diameter. Not more than 30 percent of the cable in each order shall be delivered in lengths of 50 to 200 feet, and the remaining cable shall be in lengths not less than 200 feet (see 6.2).

3.3.8 Finish. Unshielded cable shall have an even, smooth, exterior finish. The finish shall also ensure that adjacent layers of the cable do not adhere when wound on reels or spools for shipment or storage, at temperatures up to 160 ºF.

3.4 Performance.

3.4.1 Tensile load. The cable shall withstand a tensile load of 55 pounds for not less than 1 minute. There shall be no evidence of rupture or separation of cable components during or after being subjected to the tensile load and immersion in an aqueous sodium chloride solution.

3.4.2 Maximum voltage. The cable shall resist, without failure, maximum voltage with the potentials as follows:

Cable diameter 5 - 30 kilovolts, root mean square (rms)
Cable diameter 7 - 34 kilovolts, rms

3.4.3 Insulation flaws. Before shielding is applied, unshielded and shielded cables shall be free of insulation flaws. Certification shall be provided with the completed cables that insulation flaws detected have been removed from the defective sections of the cable.

3.4.4 Capacitance. The dielectric constant of the insulation used on the completed cable shall be such that the capacitance is not more than the values shown in table III.

TABLE III. Capacitance.

Cable Diameter Designation	Capacitance per foot of cable Picofarads (pf)		
	Copper Conductor 19 Strands	Copper Conductor 37 Strands	Steel Conductor 7 Strands
5	46	- -	37
7	40	52	33

3.4.5 Life cycle. The unshielded and shielded cable, before the shield is applied, shall meet the requirements of maximum voltage specified in 3.4.2 after exposure to all environmental conditions expected during its life cycle.

3.4.6 Environmental requirements.

3.4.6.1 Low temperature. The cable, when exposed to a low ambient temperature of minus 65 °F, shall evidence no cracking, breaking, or separation.

3.4.6.2 High temperature and altitude. The cable, when exposed to temperatures up to 600 °F and an altitude of 70,000 feet, shall evidence no sheath or insulation breakdown, or corrosion of the conductor.

3.4.6.3 Hot oil. The cable, after immersion in hot oil at a temperature of 195 °F, shall have a swell of not more than 20 percent (30 percent for medium temperature cable) of the diameter.

3.4.6.4 Flammability. The cable, when exposed to an open flame, shall evidence no burning or charred particles falling from the cable and the flame shall not travel along the cable at a rate of more than one-half inch per minute.

3.4.6.5 Fungus. The cable, after exposure to fungus conditions, shall evidence no cracking, breaking, or separation.

3.4.6.6 Anti-icing fluid. The cable, after immersion in anti-icing fluid, shall evidence no cracking, breaking, or separation.

3.4.6.7 Corona effect. The cable, after exposure to the corona effect, shall evidence no cracking, rupture, or burning over of the ends.

3.5 Marking.

3.5.1 Cable. The cable shall be marked with information listed below in accordance with MIL-STD-130. The type designation, manufacturer's name or trade-mark, manufacturer's designation, and the date of manufacture shall be applied to the exterior surface of the cable at intervals of not more than two feet. The date shall be shown by indicating the calendar year quarter in which the cable was manufactured, followed by the year, for example, 4Q 2000.

3.5.2 Spools or reels. Each spool or reel shall be plainly marked on both ends with the information listed below in accordance with MIL-STD-129. If paper labels are used, they shall be protected by a transparent compound to prevent deterioration of marking. The positioning and length of all pieces shall be indicated on the spool or reel.

National Stock No.

CABLE; IGNITION, HIGH-TENSION.

Type Designation "M3702 _____"

Length (ft) .

Contract or Order No.

Date of manufacture.

Manufacturer's name and CAGE code.

US Government property.

3.6 Age. Unless otherwise specified by the procuring activity (see 6.2), the age of the cable submitted to a bulk cable purchaser for acceptance shall be not more than 1 year old at the time of submission.

3.7 Workmanship. Wire shall be free of kinks, abrasions, and cracked or peeled surfaces.

4. VERIFICATION

4.1 Requirements cross-reference matrix. Table IV provides a cross-reference matrix of the section 3 requirements tested or verified in the paragraphs below.

TABLE IV. Requirements cross-reference matrix.

Requirement	Verification	Requirement	Verification
3.1	4.4	3.3.7.2	4.7.2
3.2	4.7.1	3.3.8	4.7.1
3.2.1.1.1	4.7.1.1	3.4.1	4.7.3.1
3.2.1.1.2	4.7.1.1.1	3.4.2	4.7.3.2
3.2.1.1.3	4.7.1.1.2 & 4.7.1.1.2.1	3.4.3	4.7.3.3
3.2.1.2	4.7.1	3.4.4	4.7.3.4
3.2.2	4.7.1	3.4.5	4.7.3.5 thru 4.7.3.5.5.1
3.2.3	4.7.1	3.4.6.1	4.7.3.6.1
3.2.4	4.7.1	3.4.6.2	4.7.3.6.2
3.2.5	4.7.1	3.4.6.3	4.7.3.6.3
3.3.1	4.7.1 & 4.7.2	3.4.6.4	4.7.3.6.4
3.3.2	4.7.1 & 4.7.2	3.4.6.5	4.7.3.6.5
3.3.3	4.7.1 & 4.7.2	3.4.6.6	4.7.3.6.6
3.3.4	4.7.1 & 4.7.2	3.4.6.7	4.7.3.6.7
3.3.5	4.7.1 & 4.7.2	3.5	4.7.1
3.3.6	4.7.1 & 4.7.2	3.6	4.7.1
3.3.7.1	4.7.1 & 4.7.2	3.7	4.7.1

4.1.1 Test equipment and inspection facilities. Unless otherwise specified (see 6.2), test and measuring equipment and inspection facilities of sufficient accuracy, quality, and quantity to permit performance of the required inspection shall be established and maintained by the contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment [i.e., non-Government standard (NGS) or federal or military standard] shall be in accordance with ANSI/NCSL Z540-1 or equivalent.

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

a. Qualification inspection (see 4.4).

b. Quality conformance inspection (see 4.5).

1. Examination (see 4.5.2).
2. Tests (see 4.5.3).

c. Control tests (see 4.6).

4.3 Inspection conditions. Unless otherwise specified (see 6.2), all inspections shall be conducted under the following conditions:

a. Air temperature 77±15 °F
b. Barometric pressure 28.5-0+ 2.0 inches mercury (Hg)
c. Relative humidity 50±30 percent

4.4 Qualification inspection. Qualification inspection shall be performed on a 100-foot length of cable of the type designation to be qualified (see 6.3). The qualification sample shall be inspected as specified in table V, in the order listed in table VI. Samples shall be divided as necessary to provide the specimen size required for each test (see table VI). The cable shall be representative of the cable proposed to be furnished under contract.

TABLE V. Classification of inspections.

Title	Requirement	Inspection	Qualification Samples	Conformance		Con-trol
				Examination	Acceptance	
Materials and construction	3.2 thru 3.3.8 & 3.7	4.7.1	X	X		
Copper strands (coating)	3.2.1.1 thru 3.2.1.1.3.	4.7.1 thru 4.7.1.1.2.1	X		X	
Defects	3.3.1 thru 3.3.6, 3.5 & 3.6	4.7.2	X	X		
Tensile load	3.4.1	4.7.3.1	X		X	
Maximum voltage	3.4.2	4.7.3.2	X		X	
Insulation flaws	3.4.3	4.7.3.3	X			
Capacitance	3.4.4	4.7.3.4	X		X	
Life cycle (see 4.4.1)	3.4.5	4.7.3.5 thru 4.7.3.5.5.1	X			X
Low temperature	3.4.6.1	4.7.3.6.1	X			
High temperature and altitude	3.4.6.2	4.7.3.6.2	X			
Hot oil	3.4.6.3	4.7.3.6.3	X			
Flammability	3.4.6.4	4.7.3.6.4	X		X	
Fungus	3.4.6.5	4.7.3.6.5	X			
Anti-icing fluid	3.4.6.6	4.7.3.6.6	X			
Corona effect	3.4.6.7	4.7.3.6.7	X		X	

TABLE VI. Qualification test sequence.

Specimen Number	Test Sequence Number	Test Description
1	4.7.1.1	Copper strands (coating)
2	4.7.3.1	Tensile load
3	4.7.3.4	Capacitance
4 1/	4.7.3.5 4.7.3.2	Life cycle Maximum voltage
5	4.7.3.6.1 4.7.3.2	Low temperature Maximum voltage
6	4.7.3.6.2 4.7.3.2	High temperature and altitude Maximum voltage
7	4.7.3.6.3 4.7.3.2	Hot oil Maximum voltage
8	4.7.3.6.4	Flammability
9	4.7.3.6.6 4.7.3.2	Anti-icing fluid Maximum voltage
10	4.7.3.6.5 4.7.3.2	Fungus Maximum voltage
11	4.7.3.6.7 4.7.3.2	Corona effect Maximum voltage
12 2/	4.7.3.5.4	Liquid immersion for Air Force aircraft applications

Note: 1/ See 4.4.1.
Note: 2/ See 4.7.3.5.4

4.4.1 Air Force aircraft qualification sample. Air Force aircraft qualification samples (see 1.2.1.6) shall require an additional 120 feet of cable for the liquid immersion tests specified in 4.7.3.5.4.

4.4.2 Failure. Failure of a qualification sample to pass any of the inspections specified herein may be cause for rejection.

4.5 Conformance inspection.

4.5.1 Sampling.

4.5.1.1 Lot formation. An inspection lot shall consist of all coils, spools, or reels of cable of one type and part number, from an identifiable production period, from one manufacturer, submitted at one time for acceptance. For inspection purposes, an inspection lot shall not be greater than 10,000 feet.

4.5.1.1.1 Unit of product. A unit of product shall consist of one coil, spool, or reel of cable.

4.5.1.1.2 Specimen. A specimen shall consist of a 20-foot length of cable.

4.5.1.2 Sampling for examination. The inspection sample shall be product selected at random from the lot without regard to quality and shall be of the size specified in table VII.

Table VII. Inspection sample.

Production Lot Size 1/	Sample Size
2 to 8	2
8 to 15	3
16 to 25	5
26 to 50	8
51 to 90	13
91 to 150	20
151 to 280	32
281 to 500	50
501 to 1200	80
1201 to 3200	125
3201 to 10000	200
10001 to 35000	315

Note: 1/ Lot size will be based on number of reels, spools, or coils of product

4.5.1.3 Sampling for test. Samples for test are from units of product that have been subjected to, and have passed, the examination specified in table VIII. Samples shall be a 20-foot length of cable taken from each 2,000 feet and fraction thereof of cable in the lot.

4.5.2 Examination.

4.5.2.1 Acceptance. Each sample selected in accordance with 4.5.1.2 shall be examined to determine conformance with the requirements of table VIII. If one or more defects are found in the inspection sample, then the production lot shall be inspected for that particular defect and defects removed. A second inspection sample shall be selected from the production lot and all sampling tests performed again. If one or more defective items are found in the second inspection sample, the production lot shall be rejected and shall not be supplied to this specification.

TABLE VIII. Visual and mechanical inspection.

Examination	Method of Examination
Design and construction, nonconformance (see 3.3)	Visual and SIE 1/
Dimensions, out of tolerance (see 3.3)	Visual and SIE 1/
Marking, improper (see 3.5)	Visual
Age, improper (see 3.6)	Visual
Finish, improper (see 3.7)	Visual
Workmanship, faulty (see 3.7)	Visual

Note: 1/ SIE = Standard Inspection Equipment

4.5.3 Test. Samples selected in accordance with 4.5.1.3 shall be subjected to the conformance test specified in table V in the sequence as listed in table IX.

TABLE IX. Test sequence.

Specimen Number	Test Sequence Number	Test Description
1	4.7.3.4 4.7.3.2	Capacitance Maximum voltage
2 and 3	4.7.3.6.7 4.7.3.2	Corona effect Maximum voltage
4	4.7.3.6.4	Flammability
5	4.7.3.1	Tensile load

4.5.3.1 Failure. Failure of any specimen to pass any inspection listed in table IX shall be cause for re-inspection of twice the original number of specimens selected for the test failed. These specimens shall be selected from the unit of product from which the 20-foot length of cable that failed had been originally taken. Failure of any specimen during re-inspection shall be cause for rejection of the lot.

4.6 Control tests. Unless otherwise specified (see 6.2), control tests shall be conducted on 6 feet of cable from each 10,000 feet of cable produced, except that no more than two lengths of 6 feet each shall be selected in any 30-day period. The cable shall be subjected to the control tests specified in table V.

4.6.1 Failure. Failure of a control test sample to pass the specified test shall be cause for the Government to refuse to accept subsequent lots until it has been proved to the satisfaction of the Government that corrective action on the materials or process, or both, as warranted, has been taken and is successful.

4.7 Methods of inspection.

4.7.1 Materials and construction. Conformance to materials, design, and construction shall be determined by inspection of contractor records providing proof or certification that design, construction, processing, and materials conform to requirements. Applicable records include drawings, specifications, design data, receiving inspection records, processing and quality control standards, vendor catalogs and certifications, industry standards, test reports, and rating data.

4.7.1.1 Copper strands. The sample shall be tested as specified in QQ-W-343.

4.7.1.1.1 Tin coating. The sample shall be tested as specified in ASTM B33.

4.7.1.1.2 Nickel coating. The sample shall be as specified in ASTM B355.

4.7.1.1.2.1 Adhesion of nickel coating. Two 6-inch specimens shall be cut from the sample of nickel coating strand. One specimen shall be wrapped over its own diameter for eight close turns. The second specimen shall remain in its straight form. Both specimens shall then be subjected to 10 continuous cycles of temperature change consisting of 4 hours at 482±5.4 °F followed by 4 hours at room temperature. Upon completion of the thermal cycling, the straight specimen shall be wrapped over its own diameter for eight close turns in a manner identical to that of the first specimen. Both wrapped specimens shall then be tested for continuity of coating in accordance with the procedure as specified in ASTM B355.

4.7.2 Examination. The sample shall be examined for the conditions listed in table VIII.

4.7.3 Performance.

4.7.3.1 Tensile load. A test specimen consisting of a 3-foot length of unshielded or shielded cable from which the shielding has been removed shall be clamped in a test setup similar to that shown in figure 1. A dead weight load equivalent to 55 pounds shall be applied to that portion of the cable being tested for a period of one minute. At the conclusion of one minute, the specimen shall be inspected for evidence of

mechanical rupture or of separation of components. Each end of the test specimen shall be stripped of insulation for 1 inch. The bare ends of the conductor shall be twisted together causing the specimen to assume the shape of a loop. That portion of the test specimen that was subjected to the tensile load shall be immersed, bare conductor ends up, in a grounded, 5 percent (by weight) aqueous sodium chloride solution (common salt in water), at room temperature, for 30 minutes. The ends of the specimen shall protrude 3.25±.25 inches above the surface of the solution as shown in figure 2. After soaking, and while still immersed in the salt solution, voltage at 60 Hertz (Hz), shall be applied between the conductor and the solution beginning at zero voltage and increased at 1 kilovolt rms per each 5 seconds to not more than 15 kilovolts rms. The applied voltage shall be held for 5 minutes. At the conclusion of the voltage application, the specimen shall be removed from the solution and inspected for insulation failure.

4.7.3.2 Maximum voltage. The test cable shall be prepared in accordance with figure 3 and subjected to the potential as specified, at 60 Hz, at room temperature, applied between the cable conductor and the mandrel and metal test sleeves. The potential shall be increased 1 kilovolt rms per second from zero until the specified potential is reached.

4.7.3.3 Insulation flaws. During the process of manufacture, each length of cable shall be subjected to the insulation flaws test. The entire length of cable shall be passed through a suitable beadchain or fine, link-mesh, electrode-spark device applied to 100 percent of the surface of the cable, that shall provide not less than 30 kilovolts rms at 60 Hz. Every point on the surface of the cable shall be in contact with an electrode for a period of not less than .6 second. An examination shall be made for evidence of flaws such as cracking, wear, and similar signs of loss of insulation integrity.

4.7.3.4 Capacitance. A test specimen consisting of 1 piece of completed cable, not less than 36 inches in length, shall be dried in an oven at a temperature of 176±4°F for 18 hours. After removal from the oven and cooled to room temperature, the specimen shall be immersed in mercury with each end of the specimen protruding 2 inches. The capacitance shall be measured between the conductor of the specimen and the mercury by means of a capacitance bridge, at a frequency of 1,000 Hz.

4.7.3.5 Life cycle. The life cycle test specimen shall consist of a 6-foot length of completed cable for test applications other than Air Force aircraft. (For Air Force aircraft test application see 4.4.1 and 4.7.3.5.4). The life cycle tests shall be performed in the order and sequence as follows.

4.7.3.5.1 Flexing. The test specimen shall have a 10-pound weight firmly attached to one end of the conductor. The free end of the specimen shall then be firmly attached to a smooth, cylindrical mandrel in such a manner that the specimen with attached weight is permitted to hang freely. The mandrel shall be rotated at a rate of 20 turns per minute against the gravitational pull exerted by the suspended weight, winding the cable around the mandrel with the coils touching. The specimen shall then be unwound, and rewound in the opposite direction, with the opposite side of the specimen in contact with mandrel. During winding, the specimen shall not be constrained against normal twisting. The above procedure shall be repeated once. The diameter of the mandrel shall be .375 inch for cable diameter 5 and .50 inch for cable diameter 7.

4.7.3.5.2 Insertion in metal test sleeve. Upon completion of flexing, the specimen shall be wound on a 1-inch diameter metal mandrel in such a manner that there shall be nine turns .75 inch apart, and not less than 1 foot of cable shall extend at each end beyond the points of attachment to the mandrel. A 5-pound weight shall be used during this preparation. The wound specimen shall then be placed in a snug-fitting, belled-ends, metal sleeve in such a manner that the ends of the specimen protrude from the belled ends of the sleeve. The metal sleeve shall be electrically connected to the mandrel as shown in figure 3.

4.7.3.5.3 Liquid immersion for other than Air Force aircraft applications. While still wound on the mandrel and confined by the metal sleeve, the cable specimen shall be subjected successively to an uninterrupted sequence of tests as follows (for Air Force aircraft see 4.7.3.5.4).

4.7.3.5.3.1 Salt-water solution. The specimen shall be heated for 5 hours in an oven at a temperature of 600±8 °F for high temperature cable, 450±4 °F for medium temperature cable, and 250±4 °F for low

temperature cable. At the end of the 5-hour period, the specimen with mandrel and metal sleeve in position, shall be removed from the oven and immediately immersed for 18 hours in a 5 percent (by weight) aqueous sodium chloride solution (common salt in water). The test liquid shall be maintained at a temperature of 120±2 °F, throughout the period of immersion. At the conclusion of the 18-hour period of immersion, the specimen shall be removed from the saltwater solution and drained for 30 minutes.

4.7.3.5.3.1.1 Voltage application. A potential of 15 kilovolts rms at a frequency of 60 Hz shall be applied between the cable conductor and the mandrel and metal test sleeve for 30 minutes. The specimen, while still wound on the mandrel but with the metal sleeve removed, shall be inspected visually for evidence of burning over the ends, rupture of insulation, material deterioration, or other damage.

4.7.3.5.3.2 Engine oil. At the conclusion of the saltwater solution test specified in 4.7.3.5.3.1, the same specimen, with mandrel and metal test sleeve in position, shall be reheated for 5 hours at the temperatures specified in 4.7.3.5.3.1. At the end of the heating period, the specimen, with mandrel and test sleeve in position, shall be immersed for 18 hours in oil conforming to Military Grade 1100 of SAE J 1966. The oil shall be maintained at a temperature of 195±5 °F throughout the period of immersion. At the conclusion of the 18-hour period of immersion in oil, the specimen shall be removed from the oil, drained for 30 minutes, and subjected to the voltage application test specified in 4.7.3.5.3.1.1.

4.7.3.5.3.3 Turbine fuel, aviation. At the conclusion of the engine oil test specified in 4.7.3.5.3.2, the same specimen, with mandrel and metal test sleeve in position, shall be reheated for 5 hours at the temperatures specified in 4.7.3.5.3.1. At the end of the heating period, the specimen, with mandrel and metal sleeve in position, shall be cooled to room temperature for a minimum of 1 hour and immersed for 18 hours in aviation turbine fuel conforming to grade JP-5 of MIL-DTL-5624. The test liquid shall be maintained at room temperature throughout the period of immersion. At the conclusion of the 18-hour period of immersion, the specimen shall be removed from the test liquid, drained for 1 hour, and subjected to the voltage application test specified in 4.7.3.5.3.1.1.

4.7.3.5.3.4 Antifreeze compound. At the conclusion of the aviation turbine fuel test specified in 4.7.3.5.3.3, the specimen, with mandrel and sleeve in position, shall be immersed for 2 hours in antifreeze compound conforming to A-A-870, maintained at 185±5 °F. After immersion, specimen shall be drained for 30 minutes and immediately subjected to the voltage application test specified in 4.7.3.5.3.1.1.

4.7.3.5.4 Liquid immersion for Air Force aircraft applications. Liquid immersion for the Air Force aircraft specimens of cable shall be immersed in each of the fluids listed in table X, using a separate specimen for each fluid. Each test specimen shall consist of a 6-foot length of completed cable and shall be subjected sequentially to tests 4.7.3.5.1 and 4.7.3.5.2, and then immersed in the test fluids listed in table X for the specified times and temperature. Specimens shall subsequently be removed from the test fluid, drained for 30 minutes, and then subjected to the voltage application test specified in 4.7.3.5.3.1.1.

TABLE X. Immersion test fluids.

Cable Specimen No.	Test Fluid	Test Temperature	Immersion Period
1	MIL-PRF-23699, Lubricating oil, aircraft turbine engine, synthetic base, NATO code O-156	118-122 ºF	20 hrs
2	MIL-H-5606, Hydraulic fluid, petroleum base	118-122 ºF	20 hrs
3	TT-I-735, Isopropyl alcohol	68-77 ºF	168 hrs
4	MIL-DTL-5624, Turbine fuel, aviation, grades JP-4, JP-5, and JP-5/JP-8 ST	68-77 ºF	168 hrs

5	MIL-A-8243, Anti-icing & deicing-defrosting fluid, undiluted	118-122 ºF	20 hrs

TABLE X. Immersion test fluids - Continued

Cable Specimen No.	Test Fluid	Test Temperature	Immersion Period
6	MIL-A-8243, Anti-icing & deicing-defrosting fluid, diluted 60/40 (fluid/water) ratio	118-122 ºF	20 hrs
7	MIL-C-43616, Cleaning compound, aircraft surface, undiluted	118-122 ºF	20 hrs
8	ASTM D1153, Methyl Isobutyl Ketone	68-77 ºF	168 hrs
9	AS 1241A, Fire resistant phosphate ester hydraulic fluid for aircraft	118-122 ºF	20 hrs
10	MIL-PRF-7808, Lubricating oil, aircraft turbine engine, synthetic base	244-250 ºF	5 min
11	MIL-PRF-87937 Cleaning compound, aerospace equipment, Type IV undiluted	145-154 ºF	20 hrs
12	MIL-PRF- 87937 Cleaning compound, aerospace equipment, Type IV diluted 25/75 (fluid water ratio)	145-154 ºF	20 hrs
13	ASTM D471 Standard Test Method for Rubber Property - Effect of Liquids	68-77 ºF	168 hrs
14	ASTM D471 Standard Test Method for Rubber Property - Effect of Liquids	68-77 ºF	168 hrs
15	ASTM D471 Standard Test Method for Rubber Property - Effect of Liquids	68-77 ºF	168 hrs
16	ASTM D471 Standard Test Method for Rubber Property - Effect of Liquids	68-77 ºF	168 hrs
17	Dielectric-coolant fluid, synthetic silicate ester base, Monsanto coolanol 25 or equivalent	68-77 ºF	168 hrs
18	MIL-PRF-11090 Cleaning compound, degreasing and depreserving solvent	68-77 ºF	168 hrs

TABLE X. Immersion test fluids - Continued

Cable Specimen No.	Test Fluid	Test Temperature	Immersion Period
19	Freon R 134A	68-77 ºF	168 hrs
20	ASTM D4814 Standard Specification for Automotive Spark-Ignition Engine Fuel	68-77 ºF	168 hrs

4.7.3.5.5 Altitude. At the conclusion of the antifreeze test specified in 4.7.3.5.3.4, or the tests specified in table X, the same medium and high temperature cable specimens, with mandrel and test sleeve in position, shall be placed in an altitude chamber and the pressure therein shall be reduced to the equivalent of 70,000 feet plus 5,000 minus 0 feet altitude, and maintained within these limits during the voltage application test specified in 4.7.3.5.5.1.

4.7.3.5.5.1 Voltage application. A potential of 12 kilovolts rms at 60 Hz shall be applied between the cable conductor and the mandrel and test sleeve, as shown on figure 3, for 2 hours. The specimen shall then be inspected and shall evidence no insulation rupture, cracking, or other damage. After inspection, the specimen with mandrel and metal test sleeve, shall then be subjected to the test specified in 4.7.3.2.

4.7.3.6 Environmental.

4.7.3.6.1 Low temperature. The low temperature test specimen, a 4-foot length of unshielded or shielded cable with the shielding removed, shall be prepared and tested as follows.

4.7.3.6.1.1 Preparation. A 5-pound weight shall be attached to one end of the specimen. The other end shall be attached to a 1-inch diameter, smooth, cylindrical mandrel. The specimen, not wound on the mandrel, shall be placed in a cold chamber and subjected to minus 65±5 °F for 24 hours.

4.7.3.6.1.2. Flexing. Following the refrigeration period, while still in the cold chamber, the specimen shall be wound around the attached mandrel against the pull exerted by the weight at the rate of 20 turns per minute, for not less than 5 complete wraps or turns. Examination shall then be made for evidence of cracking, breaking, or separation.

4.7.3.6.1.3 Voltage application. The specimen shall be immediately subjected to the maximum voltage test specified in 4.7.3.2. The specimen may be removed from the cold chamber for this test.

4.7.3.6.2 High temperature and altitude. The high temperature and altitude test specimen shall consist of a 4.5-foot length of cable prepared in accordance with figure 4. The test assembly mounted on the mandrel shall be placed in a circulating air oven capable of reaching 600±8 °F for high temperature cable, 450±4 °F for medium temperature cable, and 250±4 °F for low temperature cable within a period of not less than 1 hour, nor more than 3 hours. The specimen shall be subjected to this temperature for a period of 125 hours, except that, for high temperature cable, the test shall be conducted at 450 °F during the first 50 hours and the last 25 hours. The high temperature and altitude tests shall be conducted as follows.

4.7.3.6.2.1 Voltage application. A potential of 12 kilovolts rms at 60 Hz shall be applied for the first and last 5 hours of the 125-hour test specified in 4.7.3.6.2. The initial voltage application shall be made at room temperature simultaneously with the start of the oven heating units. At the conclusion of this test and after allowing the specimen to cool to room temperature, the insulation braid and sheath shall be examined for damage that might affect subsequent performance.

4.7.3.6.2.2 Altitude. At the conclusion of the voltage application test specified in 4.7.3.6.2.1, and after cooling to room temperature, the test medium and high temperature cable specimens, as set up in figure 4, shall be placed in an altitude chamber and the pressure reduced to the equivalent of 70,000 feet plus 5,000

minus 0 feet altitude, and maintained within these limits during the voltage application test specified in 4.7.3.6.2.2.1.

4.7.3.6.2.2.1 Voltage application. A potential of 12 kilovolts rms at 60 Hz shall be applied between the cable conductor and the conduit assembly as shown on figure 4 for a period of 2 hours. The specimen shall then be inspected for evidence of insulation rupture, cracking, or other damage.

4.7.3.6.3 Hot oil. The hot oil test specimen shall consist of two 4-foot lengths of unshielded or shielded cable with the shielding removed, and shall be prepared and tested as follows.

4.7.3.6.3.1 Procedure. The specimens shall each be wound on a mandrel in the manner described in 4.7.3.6.7.1. The average diameter of the cable shall be determined for that portion of the free ends of the cable specimen which are submerged during the immersion period specified in 4.7.3.6.3.2. To obtain the average diameter, measurements shall be taken 90 degrees apart at the locations selected.

4.7.3.6.3.2 Oil immersion. Each test specimen, as thus wound on the mandrel, shall be immersed for 40 hours in oil with not less than 3 inches of each end protruding above the surface. The oil shall be maintained at 195±5 °F during the immersion. Each test specimen shall be tested in oil conforming to Military Grade 1100 of SAE J 1966 or in oil conforming to MIL-PRF-7808. Medium and high temperature cable shall be subjected to the test using oil conforming to MIL-PRF-7808. At the conclusion of the 40-hour immersion period, the wound specimen shall be removed from the oil and allowed to cool. Measurements of the cable diameter shall then be repeated at the same locations as determined in 4.7.3.6.3.1. The diameters shall be averaged and the percentage of swell calculated using equation (4):

$$\text{Percentage of swell} = \frac{(Y - X)100}{X} \qquad (4)$$

where: Y = diameter average after oil immersion,
X = diameter average prior to oil immersion.

4.7.3.6.4 Flammability. The flammability test specimen shall consist of a 20-inch length of cable prepared and tested as follows.

4.7.3.6.4.1 Apparatus. The testing apparatus shall consist of a Bunsen burner having a .25-inch inlet, a nominal bore of .375 inch, a length of 4 inches above the primary inlets, and equipped with a wingtop flame spreader having a .0625 x 2-inch opening fitted to the top of the burner.

4.7.3.6.4.2 Preparation. The specimen shall be suspended taut in a horizontal position within a partial enclosure which shall allow a flow of air sufficient for complete combustion, but which shall be free of drafts.

4.7.3.6.4.3 Procedure. The tip of a 2-inch gas flame, with an inner-cone of .75-inch, shall be applied to the center of the length of cable as shown in figure 5. The flame shall be applied for 15 seconds, after which time the cable shall be observed for evidence of separation or burning particles, and the rate of travel of the flame along the cable shall be recorded.

4.7.3.6.5 Fungus. The fungus test specimens shall consist of five lengths of cable, each 4 feet long. Tests shall be conducted in accordance with ASTM G 21, except that no performance test shall be conducted during exposure. At the end of the 90-day test, each specimen shall be subjected to the test specified in 4.7.3.2.

4.7.3.6.6 Anti-icing fluid. The anti-icing test specimen shall consist of a 4-foot length of completed cable prepared and tested as follows.

4.7.3.6.6.1 Preparation. The specimen shall be wound on a mandrel in the manner specified for the corona effects test (see 4.7.3.6.7.1).

4.7.3.6.6.2 Immersion. The specimen, as thus wound on the mandrel with metal test sleeve in position, shall be immersed for 16 hours in anti-icing fluid (50 percent alcohol, 50 percent water) at room temperature, with not less than 3 inches of each end protruding above the surface. Anti-icing fluid used for testing shall conform to MIL-E-51454. After immersion, the specimen shall be removed and drained for 30 minutes and subsequently tested in accordance with 4.7.3.2.

4.7.3.6.7 Corona effect. The corona effect test specimens shall consist of two lengths, each 4 feet long, of unshielded or shielded cable with the shielding removed, prepared and tested as follows.

4.7.3.6.7.1 Preparation. A 5-pound weight shall be firmly attached to the conductor of one end of the specimen. The other end of the specimen shall be attached to a 1-inch diameter, smooth, cylindrical mandrel in such a manner that the weight shall be freely suspended by the specimen. The mandrel shall be rotated to wind the specimen against the gravitational pull exerted by the attached weight for five full wraps or turns spaced .75 inch apart as shown in figure 3. During winding, the specimen shall not be constrained against normal twisting.

4.7.3.6.7.2 Aging. One of the specimens on the mandrel shall be heated for 1 hour in an oven at 600±8 °F for high temperature cable, 450±4 °F for medium temperature cable, and 250±4 °F for low temperature cable, and thereafter cooled for 30 minutes in air at room temperature.

4.7.3.6.7.3 Insertion in metal test sleeve. The specimen previously heated shall be fitted snugly inside a metal sleeve having belled ends, in such manner that the ends of the specimen protrude from the belled ends of the sleeve (see figure 3). The specimen wound at room temperature, and not aged, shall also be fitted in the same manner.

4.7.3.6.7.4 Voltage application. With mandrel and metal test sleeve in position, immediately after insertion in sleeve, each specimen shall be subjected to a potential of 15 kilovolts rms applied between the cable conductor and the mandrel and sleeve at 60 Hz. Specimens shall be subjected to the voltage application for 6 hours, after which examination shall be made for burning over the ends, insulation rupture, deterioration, or other resulting damage. The specimens shall then be subjected to the test specified in 4.7.3.2.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of material is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Points packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. 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

6.1 Intended use. The cable covered by this specification is intended for use on ignition systems of internal combustion engines for aircraft, automotive vehicles, marine vehicles and applications, and portable power service equipment. Retention of this specification as a detail specification is required due to the use of a Qualified Products List (QPL) for acquiring and procuring these cables.

6.1.1 Unshielded. Unshielded cable is intended for use in high-tension ignition systems and requires the use of shielding or other methods for radio-interference suppression.

6.1.2 Shielded. Shielded cable is intended for use where shielding of individual cables for radio interference is required.

6.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Issue of DoDISS (and supplement thereto), and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).
c. Type designation (see 1.2.1 and 1.3).
d. Shielding, if other than specified (see 3.2.5).
e. Cable length, if other than as specified (see 3.3.7.2).
f. If responsibility for inspection, inspection equipment, or inspection facilities are other than as specified (see 4.1).
g. If inspection conditions will be other than as specified (see 4.3).
h If control test sampling will be other than as specified (see 4.6).
i. Selection of applicable levels of preservation, packaging, packing, and marking (see 5.1).
j If age of the cable from a bulk purchaser will be other than specified (see 3.6).
k. Qualification and retention of qualification data (see 6.3 & 6.4).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL-3702-12 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from Commander, Defense Supply Center Columbus, Code DSCC-VQP, P.O. Box 3990, Columbus, OH 43216-5000.

6.4 Extension of qualification. Qualification of cable of a given type designation (see 1.2.1) submitted by a manufacturer will serve to qualify other cable of similar construction by the same manufacturer. Extension of qualification will apply as listed in table XI.

TABLE XI. Qualification extensions.

	Qualified Sample	Qualified by Extension
Type of shielding (see 1.2.1.2).	S	U
Temperature limit (see 1.2.1.4).	L	L
	M	M
	H	H
Conductor material (see 1.2.1.5).	C (19 strands)	C (19 strands) & S (7 strands)
	C (37 strands)	C (19 strands), C (37 strands), & S (7 strands)
	S (7 strands)	S (7 strands only)
Cable diameter (see 1.2.1.3).	5	5 & 7
	7	7 only

6.5 Subject term (key word) listing.

Wire
Internal combustion engines
Spark plug
Spark ignitor

6.6 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.

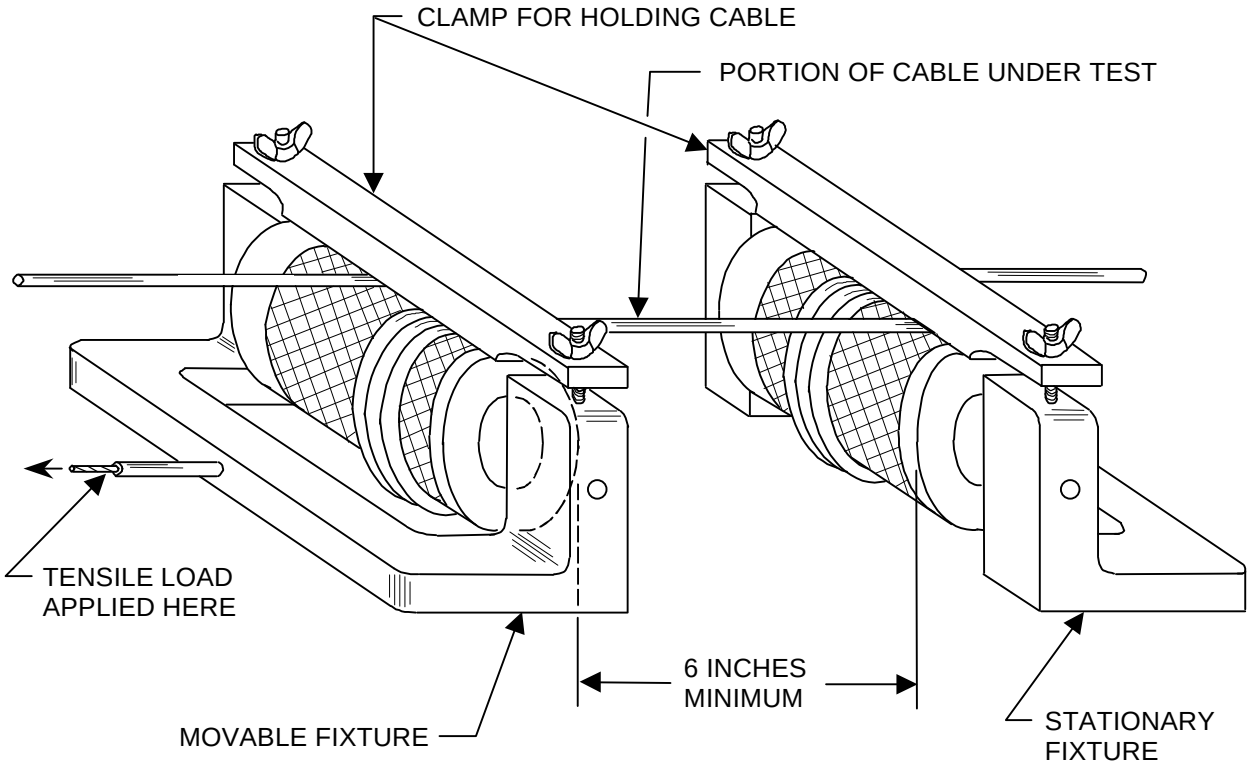


FIGURE 1. Test setup for tensile load test.

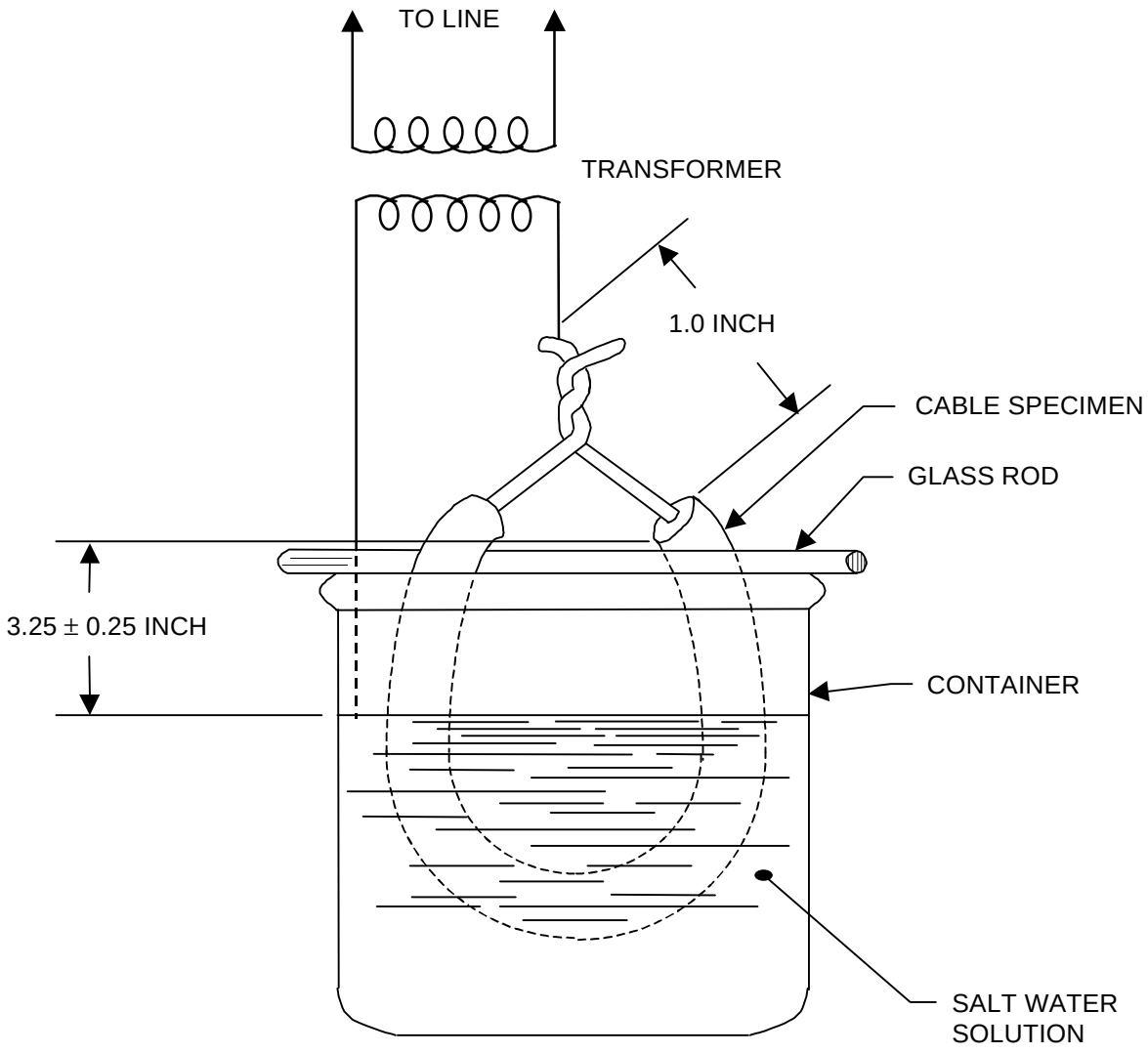


FIGURE 2. Voltage application test for tensile load.

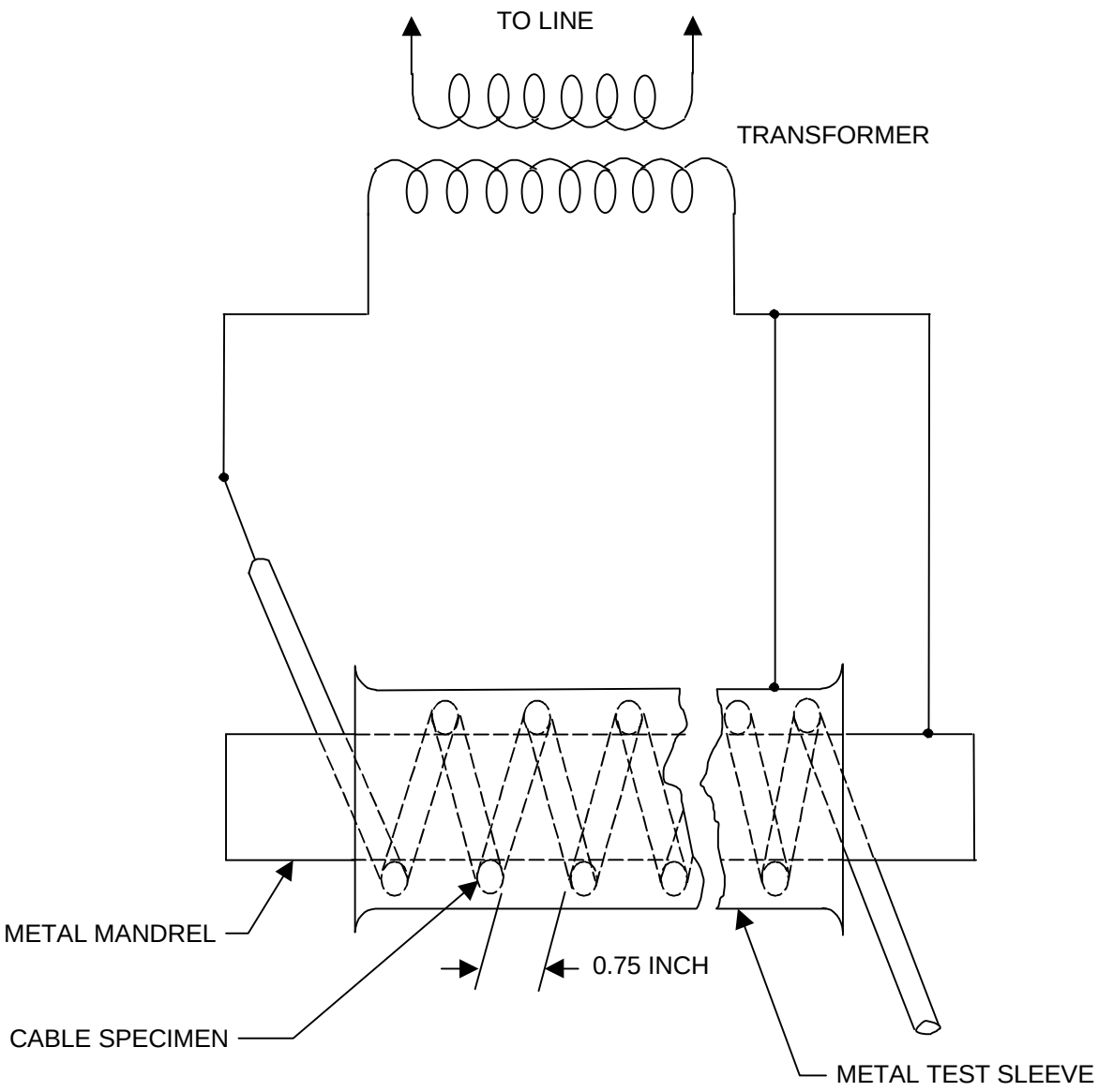


FIGURE 3. Wiring diagram for maximum voltage test, life cycle test, low temperature test, hot oil test, anti-icing fluid test, and corona-effects test.

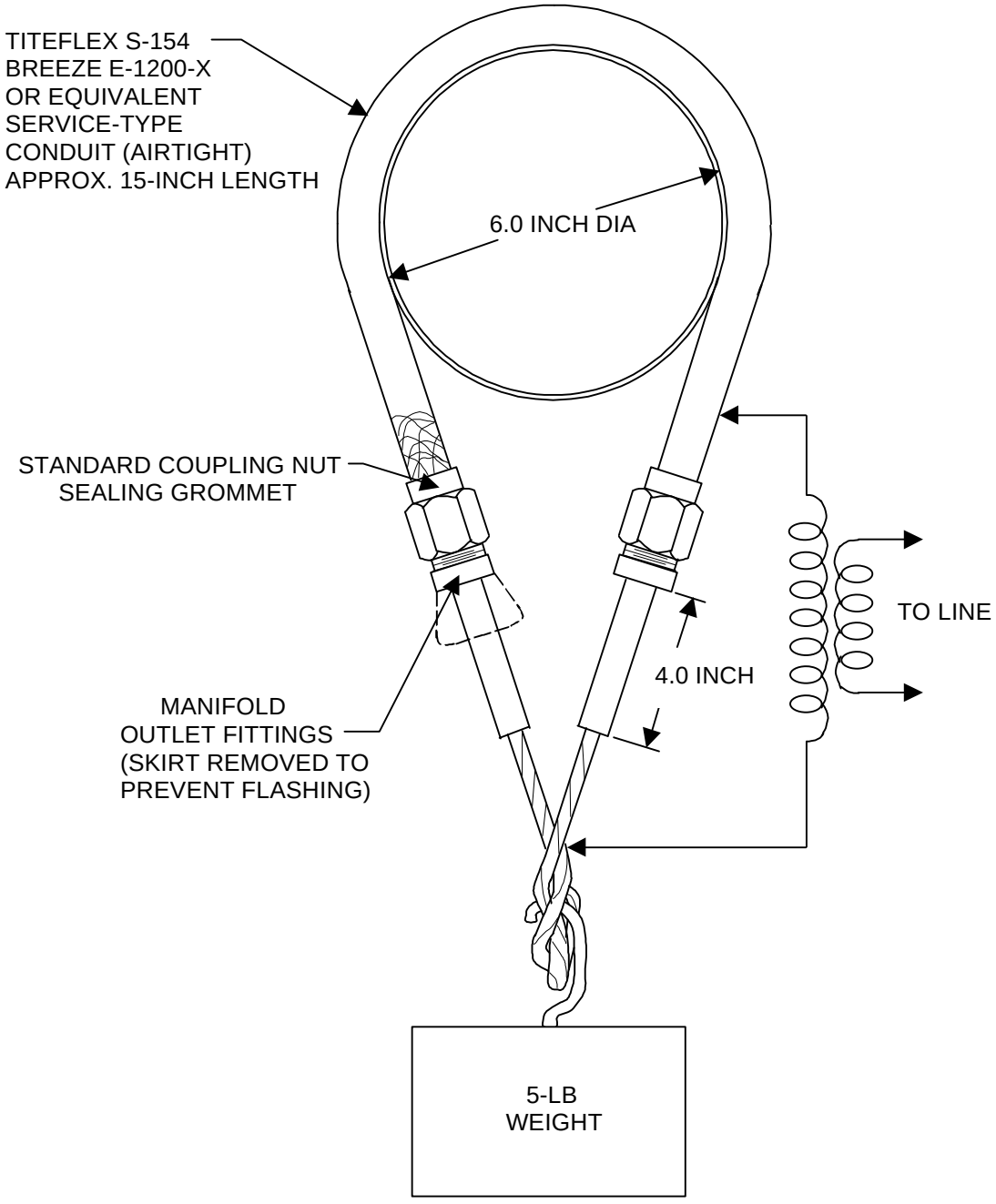


FIGURE 4. High temperature and altitude test setup.

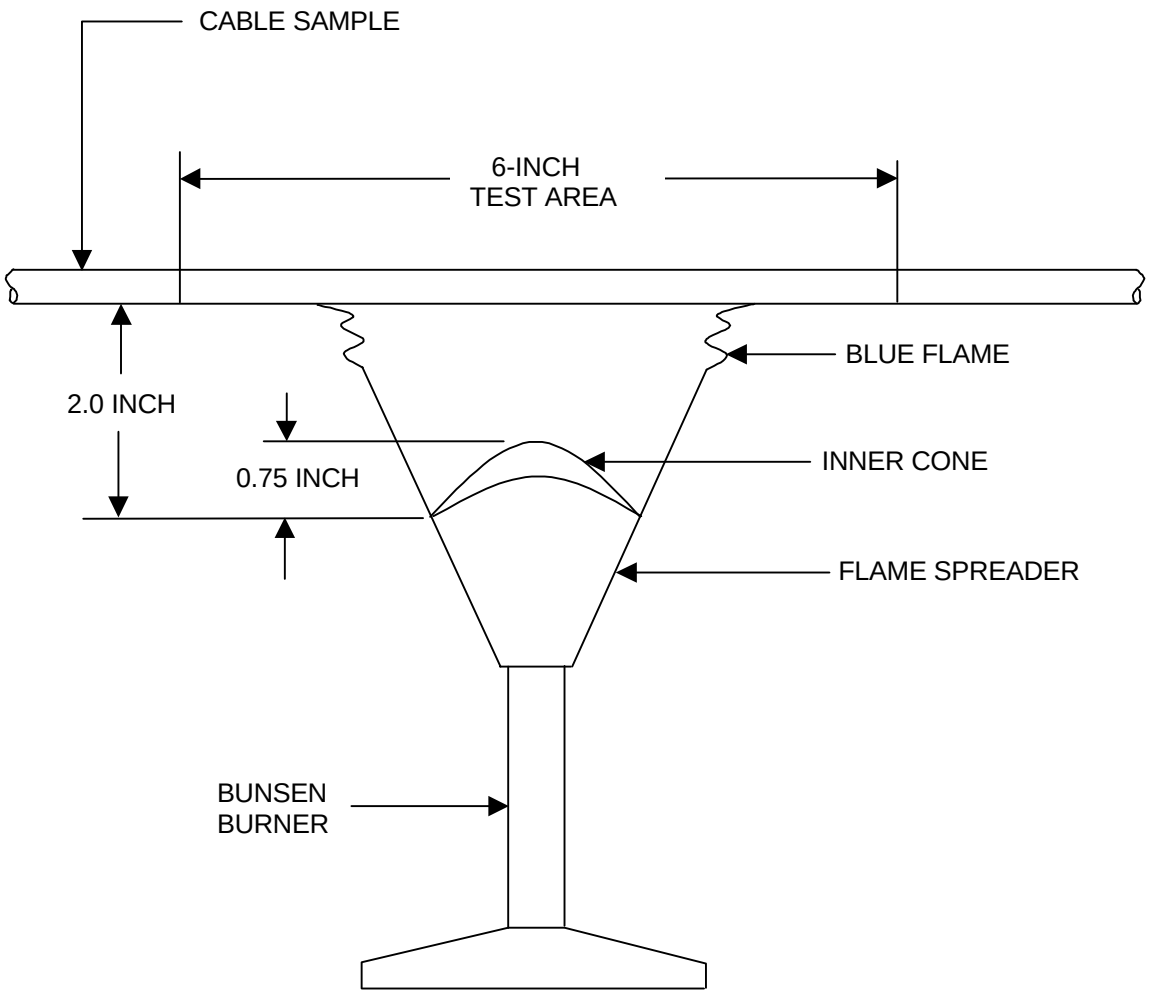


FIGURE 5. Test setup for flammability test.

CONCLUDING MATERIAL

Custodians:
Army - AT
Navy - AS
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 6145-2231)

Review activities:
Army - AV, CR, EA
Navy - MC

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, and send to preparing activity.
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** **MIL-DTL-3702C**	**2. DOCUMENT DATE** *(YYYYMMDD)* ***TBD***

3. DOCUMENT TITLE

Cable, Power, Electrical: Ignition, High-Tension

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) DSN *(if applicable)*	7. DATE SUBMITTED *(YYYYMMDD)*

8. PREPARING ACTIVITY

a. NAME Defense Logistics Agency Defense Supply Center, Columbus	b. TELEPHONE *(Include Area Code)* (1) Commercial 614-692-0538 (2) DSN 850-0538
c. ADDRESS *(Include Zip Code)* DSCC-VAI P.O. Box 3990 Columbus, Ohio 43216-5000	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** **Defense Standardization Program Office (DLSC-LM)** **8725 John J. Kingman Road, Suite 2533** **Fort Belvoir, Virginia 22060-6621** **Telephone 703 767-6888 DSN 427-6888**

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