

[INCH-POUND]  
A-A-52499  
August 1, 1994  
SUPERSEDING  
MS35915B  
30 December 1977

## COMMERCIAL ITEM DESCRIPTION

### LEAD, ELECTRICAL (STORAGE BATTERY)

The General Services Administration has authorized the use of this commercial item description (CID) for all federal agencies.

1. SCOPE. This CID covers electrical leads for storage batteries. Each lead consists of a round, insulated, single conductor cable and two crimp type solderless terminals. The terminals are type II (watersealed) as specified in CID A-A-52416.

#### 2. SALIENT CHARACTERISTICS

2.1 Materials. The materials shall be as specified herein and in referenced documents. The use of recovered material made in compliance with regulatory requirements is acceptable providing all the requirements of the CID are met (see 5.5).

2.1.1 Cables. The cable shall be of the unshielded insulated single conductor type consisting of the following:

2.1.1.1 Strands. The individual conductor strands shall be made of soft drawn and annealed tin coated solid copper wire.

2.1.1.2 Insulation. The insulation material shall be such as to meet the construction and performance requirements specified herein.

2.1.1.3 Sheath. The sheath shall be made of a material which meets the performance requirements of this CID. A polychloroprene based material is preferred.

2.1.1.4 Braid. The braid shall be made of cloth/glass. It shall be free from any substance that may have a deteriorating effect on the insulation or on the sheath. Further, the braid shall not be adversely affected by the compounding ingredients of the insulation or sheath.

Beneficial comments, recommendations, additions, deletions clarifications, etc. and any other data which may improve this document should be sent by letter to: U.S. Army Tank-Automotive Command, ATTN: AMSTA-GLC, Warren, MI 48397-5000.

FSC 6140

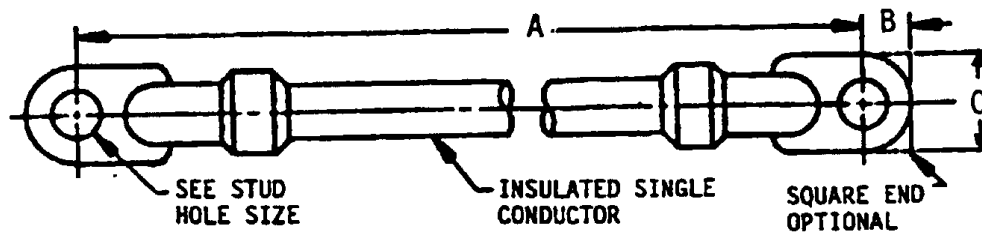
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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2.1.1.5 Separator. The separator shall be made of a fungus resistant material which shall be free from any substance that would have a deteriorating effect on the insulation or conductor. Further, the separator itself shall not be adversely affected by compounding ingredients used in the cable construction or process.

2.1.2 Terminals. Terminals shall be made of materials as specified in drawing 7056700.

2.2 Design and construction. Leads shall be designed and constructed as specified herein and in applicable referenced documents (see figure 1). The cable shall consist of a sheath, insulation, open braid, separator and conductor. As an optional construction, the sheath and insulation may be combined (see figure 2).



PIN Number	A Length ±0.25	Stud Hole Size ±0.010	Conductor Size (AWG)	Cable Diameter ±0.010	B	C	Reference Terminal Number Part (see note 2)
A52499-1	14.00	.210	8	0.360	0.22	0.38	7056712
A52499-2	6.00	.395	2	0.610	0.44	0.81	7056730
A52499-3	9.50						
A52499-4	12.50						
A52499-5	8.25						
A52499-6	9.25	.395	1/0	0.672	0.44	0.81	7056732
A52499-7	10.50						
A52499-8	17.25						
A52499-9	18.25						
A52499-10	24.75						
A52499-11	27.75						
A52499-12	29.75						
A52499-13	40.00						
A52499-14	42.00						
A52499-15	12.75						
A52499-16	14.25						

FIGURE 1. Electrical lead design, construction and part numbers.

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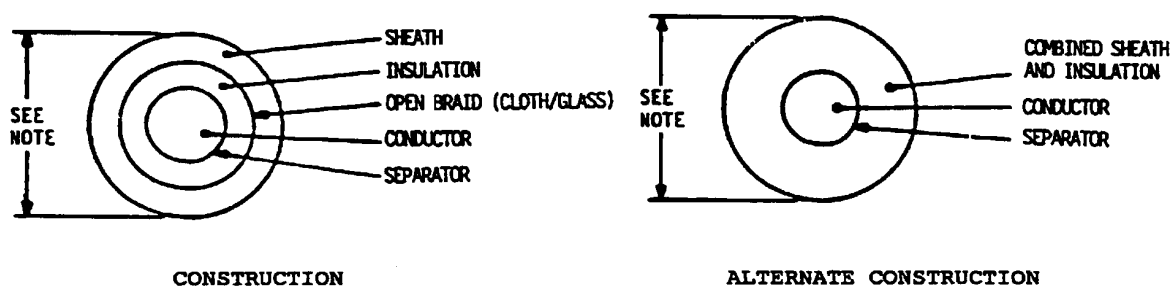
PIN Number	A Length $\pm 0.25$	Stud Hole Size $\pm 0.010$	Conductor Size (AWG)	Cable Diameter $\pm 0.010$	B	C	Reference Terminal Part Number (see note 2)
A52499-17	15.25						
A52499-18	22.75	.395	2/0	0.730	0.44	0.81	70567-1
A52499-19	8.00						
A52499-20	17.00						
A52499-21	24.00						
A52499-22	34.00						

## NOTES:

1. Dimensions are in inches. Unless otherwise specified, tolerances are  $\pm 0.03$ .
2. Referenced terminal part numbers are as shown in drawing 7056700.

FIGURE 1. Electrical lead design, construction, and part numbers - Continued.

2.2.1 Cables. Cables shall be designed and constructed as shown in figure 2.



NOTE: Outside diameters of cables are listed in figure 1.

FIGURE 2. Cable design and construction.

2.2.1.1 Conductor construction. The conductors shall consist of individual strands. The conductors shall be continuous throughout their length except joints in individual strands shall be made by butt brazing or twisting strands together. Individual joints shall occur no closer together than 1 foot. In no case shall the whole conductor be spliced at one point. Stranding of the conductor shall be left or right hand lay and, at the option of the contractor, may be bunched concentric, or rope lay. The cross-section of conductors shall conform to table I.

2.2.1.2 Separator. A mechanical or chemical separator shall be applied between the conductor and the insulation to prevent deterioration of the insulating compound and to provide for its easy removal using commercial stripping procedures.

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TABLE I. Constructional requirements for conductors.

Conductor size (AWG)	Minimum area (Circular mils)	Minimum number of strands	Maximum diameter of stranded conductors (mils)
8	16,180	133	176.0
2	65,495	663	345.0
1/0	101,235	1,033	432.0
2/0	130,990	1,327	490.0

2.2.1.3 Insulation. The insulating compound shall form a close fit over the separator without adherence. As applied, the compound shall be seamless and shall be free of any visible foreign material.

2.2.2 Terminals. Terminals shall be designed and constructed as shown in CID A-A-52416 and in accordance with the applicable referenced item part number specified in Drawing 7056700 (see figure 1).

### 2.3 Cable performance.

2.3.1 Insulation flaws. Insulated conductors and finished cables shall be furnished free of insulation flaws. Flaws which are revealed after exposure to the voltage in table II shall be removed.

TABLE II. Voltage for detecting insulation flaws.

Conductor size (AWG)	Voltage (V rms) <u>1/</u>
8	2000
2, 1/0, 2/0	3000

1/ The frequency shall be 60 hertz (Hz).

2.3.2 High voltage to ground. The cable shall pass the dielectric test requirements of SAE J1127, except that the voltage shall be 10,000 V rms instead of 1,000 V rms as specified in the SAE requirement.

2.3.3 Fungus resistant. The cable shall be constructed of materials which will not support fungus growth.

2.3.4 High and low temperature resistance. When exposed to temperatures ranging from -65 degrees Fahrenheit (°F) to +250 °F, the cables shall not experience cracking, breaking, separation, breakdown of insulation, pitting or corrosion of conductors, or any other damage.

2.3.5 Oil absorption. Cable components shall show no evidence of cracking, rupture, or other damage after immersion in oil as specified in SAE J1127, except that the oil temperature shall be 158 °F and the cable shall not swell more than 20 percent (%) in excess of the original cable diameter.

2.3.6 Liquid immersion. The cable shall show no evidence to cracking, rupture or other damage after immersion in distilled water, a 5% (by weight) salt water solution, or ethylene glycol.

2.3.7 Flammability. When the cable is subjected to the flame test specified in SAE J1127, the flame shall not travel more than 1 inch per minute. The cable surface shall not flame for more than 1 minute after the gas flame is withdrawn. Burning particles shall not fall from the cable.

2.3.8 Ozone resistance. The cable shall evidence no cracking, rupture, or other deterioration when examined under 7-power magnification and shall meet requirements of 2.3.2 after 300 hours exposure to an ozone atmosphere in which the concentration of ozone is  $50 \pm 5$  parts of ozone per 100 million parts of air by volume and the temperature is  $100 \pm 5$  °F.

2.4 Assembled lead performance.

2.4.1 Mechanical strength. After assembly, leads shall show no signs of breakage or distortion when subjected to a pull of 300 pounds.

2.5 Cable sheath color. The cable sheath color shall be black.

2.6 Identification and markings. Identification and markings shall be permanent and legible and shall include, as a minimum, the manufacturer's identification code (CAGE) and the part identification number (PIN) (see 5.2 and 5.3).

### 3. QUALITY ASSURANCE PROVISIONS

3.1 Responsibility for inspection. The contractor is responsible for all inspections, including examinations and tests.

3.2 Contractor certification. The contractor shall certify and maintain substantiating evidence that the product offered meets the salient characteristics of this Commercial Item Description and that the product conforms to the producer's own drawings, specifications, workmanship standards, and quality assurance practices. Items with known defects shall not be submitted for Government acceptance. The Government reserves the right to require proof of such conformance prior to the first delivery and thereafter as may be otherwise provided for under the provisions of the contract or order.

### 4. PRESERVATION, PACKAGING, PACKING, LABELING, AND MARKING.

Preservation, packaging, packing, labeling, and marking for the desired level shall be as specified in the contract (see 5.2).

5. NOTES. (This section contains information of a general or explanatory nature that may be helpful but is not mandatory.)

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5.1 Referenced documents. Copies of referenced documents are available from the following:

5.1.1 Government documents. Copies of CID A-A-52416 “Terminals, Lug; and Splices, Conductor (Electrical, Solderless, for AutomotiveUse)” are available from the Navy Publishing and Printing Service Office, Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

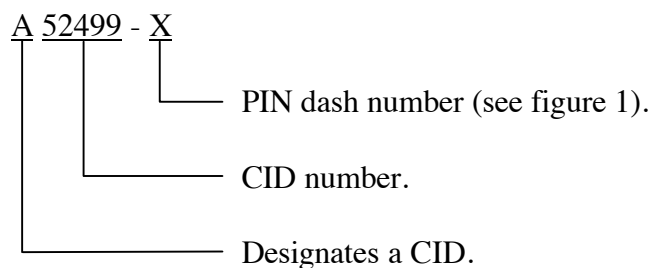
5.1.2 Army drawing. Copies of Army drawing 7056700 “Terminal, Special, Waterseal” are available from the U.S. Army Tank-Automotive Command, Warren, MI 48397-5000.

5.1.3 Industry standard. Copies of SAE J1127 JUN88 “Battery Cables” are available from the Society of Automotive Engineers, Inc. (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.

5.2 Ordering data. Acquisition documents must specify the following:

- a. Title, number, and date of this CID.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced.
- c. PIN number and quantity required (see 2.6 and 5.3).
- d. Selection of applicable level and packaging requirements (see 4).

5.3 Part or identification number (PIN). The PIN’s to be used for leads acquired to this CID are created as follows:



5.4 Cross-reference data. Leads conforming to this CID are interchangeable/substitutable with leads conforming to MS35915B. The CID dash numbers and the MS dash numbers are the same.

5.5 Regulatory requirements. The offeror/contractor is encouraged to use recovered materials in accordance with Public Law 94-580 to the maximum extent practicable.

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MILITARY INTERESTS:

Custodians

Army - AT

Review activity

DLA - GS

User activities

Army - ME

Navy - YD

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

PREPARING ACTIVITY:

Army - AT

(Project 6140-0783)