



UL 1839

STANDARD FOR SAFETY

Automotive Battery Booster Cables

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UL Standard for Safety for Automotive Battery Booster Cables, UL 1839

Second Edition, Dated August 31, 2016

Summary of Topics

This new edition was issued to clarify the requirements for conductor materials.

The revised requirements are substantially in accordance with Proposal(s) on this subject dated January 23, 2015.

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AUGUST 31, 2016



ANSI/UL 1839-2016

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UL 1839

Standard for Automotive Battery Booster Cables

First Edition – December, 2005

Second Edition

August 31, 2016

This ANSI/UL Standard for Safety consists of the Second Edition.

The most recent designation of ANSI/UL 1839 as an American National Standard (ANSI) occurred on August 31, 2016. ANSI approval for a standard does not include the Cover Page, Transmittal Pages and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <http://csds.ul.com>.

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INTRODUCTION

1 Scope

1.1 These requirements cover battery booster cable sets used for providing a temporary connection of a surface vehicle battery of up to 24 volts to another similar battery to provide emergency starting power when required.

1.2 These requirements do not cover wiring or cabling intended for connection of electrical systems in a vehicle or for wiring or cabling used in the recharging function of electric vehicle recharging equipment.

2 Units of Measurement

2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

3 Components

3.1 Except as indicated in 3.2, a component of a product covered by this standard shall comply with the requirements for that component.

3.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

3.3 A component shall be used in accordance with its rating established for the intended conditions of use.

3.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

4 Undated References

4.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

5 Glossary

5.1 For the purpose of these requirements the following definitions apply.

5.2 CLAMP – Device located at both ends of the booster cable which contains the jaw ends, connectors, and handles, which are used to make the connections to the battery.

5.3 CONDUCTORS – Wiring used in the booster cable.

5.4 CONNECTORS – Portion of the clamp that contacts the battery terminals.

5.5 INSULATION – Protective covering of the conductors, cable, and clamps.

5.6 JAW END – Portion of the clamp that opens in order to accommodate the battery terminals.

5.7 MIDDLE CONNECTOR – A connector located in the middle of the cable that is disconnected prior to the clamps being connected to the vehicle batteries and then used to complete the connection once the clamps are connected to the respective battery terminals.

CONSTRUCTION

6 Cable

6.1 Conductors shall be of copper per the Standard Specification for Soft or Annealed Copper Wire, ASTM B3; or the Standard Specification for Soft or Annealed Copper Wire for Electrical Purposes, ASTM B33; or copper clad aluminum per the Standard Specification for Copper-Clad Aluminum Wire, ASTM B566. The conductors shall comply with the specifications in Table 6.1 and the applicable tests for cables in Section 7.

Table 6.1
Conductor constructions

SAE wire ^a size	Metric wire ^b Size (mm ²)	Minimum conductor area for finished cable		No. strands/ gage	Strand diameter	
		Cir. mil.	(mm ²)		in	(mm)
10	(6)	9343	(4.65)	19/23	0.0226	(0.574)
8	(10)	14810	(7.23)	19/21	0.0285	(0.724)
6	(16)	24538	(12.1)	37/21	0.0285	(0.724)
4	(25)	37360	(18.3)	61/22	0.0253	(0.643)
2	(35)	62450	(31.1)	127/23	0.0226	(0.574)
1	(50)	77790	(38.1)	127/22	0.0253	(0.643)
0	(50)	98980	(48.3)	127/21	0.0285	(0.724)
2/0	(70)	125100	(59.8)	127/20	0.0320	(0.813)
3/0	(95)	158600	(77.6)	259/22	0.0253	(0.643)
4/0	(120)	205500	(98.5)	427/23	0.0226	(0.574)

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Table 6.1 Continued on Next Page  Document Sharing Hub

Table 6.1 Continued

SAE wire ^a size	Metric wire ^b Size (mm ²)	Minimum conductor area for finished cable		No. strands/ gage	Strand diameter	
		Cir. mil.	(mm ²)		in	(mm)
^a The SAE wire size number indicates that the cross sectional area of the conductors approximates the area of the American Wire Gage for equivalent sizes.						
^b The metric wire size shown is the next larger standard metric wire size (except for the size shown for the 1/0) for the SAE wire size. Note that the mm ² for each type is the same number as the metric wire size i.e., a metric wire size of 6 is 6 mm ² . The metric dimensions are not the direct conversion from the circular mils.						
Note: Stranding other than those shown for SAE and metric wire sizes are not prohibited when they meet the minimum conductor area specifications in Table 6.1.						

6.2 The conductor insulation material shall be thermoplastic or a thermoset with a minimum average insulation thickness of not less than 1.5 mm (0.06 in) for 10 – 2 AWG (6 – 35 mm²) wire and 2.0 mm (0.08 in) for 1 – 4/0 AWG (50 – 120 mm²) wire. A separator shall be used between uncoated conductors and insulations with a sulfur cure. Separators are optional for other constructions.

6.3 The booster cable set shall not be less than 3700 mm (12 ft) in length, measured from jaw-end to jaw-end.

6.4 The conductors of a booster cable set employing parallel conductors shall be separated at each end to allow the jaw ends of the clamps to span a minimum distance of 920 mm (3 ft).

6.5 The cable insulation shall resist mechanical abuse that is encountered during use and storage. In addition, the cables shall be capable of being flexed under wide temperature fluctuations. Cables shall be tested in accordance with Section 7.

PERFORMANCE

7 Cable

7.1 Deformation test

7.1.1 Specimens of insulation from thermoplastic insulated cable are to be subjected to the load indicated in Table 7.1 while being maintained at a temperature of 121°C ±1.0°C (249.8°F ±1.8°F). Insulation thickness shall not be decreased more than 50 percent.