

UL 1839

Automotive Battery Booster Cables

Underwriters Laboratories Inc. (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096

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

First Edition, Dated December 9, 2005

Revisions: This Standard contains revisions through and including October 2, 2007.

Summary of Topics

This revision to the first edition of UL 1839 is being issued to:

1. Correct paragraph 4.5.2.7 to require that the average cable crushing resistance values have a minimum and not a maximum limit

Text that has been changed in any manner is marked with a vertical line in the margin. Changes in requirements are marked with a vertical line in the margin and are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

The following table lists the future effective dates with the corresponding item.

Future Effective Date	References
February 14, 2008	Sections 4.9, 4.11, 4.12 and paragraph 10.1.11

The new requirements are substantially in accordance with UL's Proposal(s) on this subject dated August 10, 2007.

The revisions dated October 2, 2007 include a reprinted title page (page1) for this Standard.

As indicated on the title page (page 1), this UL Standard for Safety is an American National Standard. Attention is directed to the note on the title page of this Standard outlining the procedures to be followed to retain the approved text of this ANSI/UL Standard.

The UL Foreword is no longer located within the UL Standard. For information concerning the use and application of the requirements contained in this Standard, the current version of the UL Foreword is located on ULStandardsInfoNet at: <http://ulstandardsinfo.net/ulforeword.html>

The master for this Standard at UL's Northbrook Office is the official document insofar as it relates to a UL service and the compliance of a product with respect to the requirements for that product and service, or if there are questions regarding the accuracy of this Standard.

UL's Standards for Safety are copyrighted by UL. Neither a printed copy of a Standard, nor the distribution diskette for a Standard-on-Diskette and the file for the Standard on the distribution diskette should be altered in any way. All of UL's Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of UL.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

Revisions of UL Standards for Safety are issued from time to time. A UL Standard for Safety is current only if it incorporates the most recently adopted revisions.

UL provides this Standard "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL's liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

UL will attempt to answer support requests concerning electronic versions of its Standards. However, this support service is offered on a reasonable efforts basis only, and UL may not be able to resolve every support request. UL supports the electronic versions of its Standards only if they are used under the conditions and operating systems for which it is intended. UL's support policies may change from time-to-time without notification.

UL reserves the right to change the format, presentation, file types and formats, delivery methods and formats, and the like of both its printed and electronic Standards without prior notice.

Purchasers of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgement (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

If a single-user version electronic Standard was purchased, one copy of this Standard may be stored on the hard disk of a single personal computer, or on a single LAN file-server or the permanent storage device of a multiple-user computer in such a manner that this Standard may only be accessed by one user at a time and for which there is no possibility of multiple concurrent access.

If a multiple-user version electronic Standard was purchased, one copy of the Standard may be stored on a single LAN file-server, or on the permanent storage device of a multiple-user computer, or on an Intranet server. The number of concurrent users shall not exceed the number of users authorized.

Electronic Standards are intended for on-line use, such as for viewing the requirements of a Standard, conducting a word search, and the like. Only one copy of the Standard may be printed from each single-user version of an electronic Standard. Only one copy of the Standard may be printed for each authorized user of a multiple-user version of an electronic Standard. Because of differences in the computer/software/printer setup used by UL and those of electronic Standards purchasers, the printed copy obtained by a purchaser may not look exactly like the on-line screen view or the printed Standard.

An employee of an organization purchasing a UL Standard can make a copy of the page or pages being viewed for their own fair and/or practical internal use.

The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

New product submittals made prior to a specified future effective date will be judged under all of the requirements in this Standard including those requirements with a specified future effective date, unless the applicant specifically requests that the product be judged under the current requirements. However, if

the applicant elects this option, it should be noted that compliance with all the requirements in this Standard will be required as a condition of continued Listing and Follow-Up Services after the effective date, and understanding of this should be signified in writing.

Copyright © 2007 Underwriters Laboratories Inc.

This Standard consists of pages dated as shown in the following checklist:

Page	Date
1	October 2, 2007
2-3	September 12, 2006
4	December 9, 2005
5-7	September 12, 2006
8-12	December 9, 2005
13	October 2, 2007
14-16	December 9, 2005
17	February 14, 2006
18-22B	September 12, 2006
23-24	December 9, 2005
25	September 12, 2006
26	February 14, 2006
27-28	December 9, 2005

电缆情缘

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

No Text on This Page

电缆情缘

Document Was Downloaded By Rice, Shi SHIMISHENG
For Use By KUANTECH CO LTD
2039 : 10/18/2007 - 2:27 AM

UL COPYRIGHTED MATERIAL -
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents

Document Sharing Hub

December 9, 2005
(Title Page Reprinted: October 2, 2007)



ANSI/UL 1839-2007

1

UL 1839

Standard for Automotive Battery Booster Cables

First Edition

December 9, 2005

The most recent designation of ANSI/UL 1839 as an American National Standard (ANSI) occurred on September 28, 2007. The ANSI approval for this standard does not include the cover page, transmittal pages, or the title page.

This ANSI/UL Standard for Safety, which consists of the first edition with revisions through October 2, 2007, is under continuous maintenance, whereby each revision is ANSI approved upon publication.

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc. and is not part of the ANSI approved standard.

Revisions of this Standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revised requirements. 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>.

COPYRIGHT © 2005, 2007 UNDERWRITERS LABORATORIES INC.

Document Was Downloaded By Rice, Shi SHIMISHENG
For Use By KUANTECH CO LTD
2039 : 10/18/2007 - 2:27 AM

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM

Documents
Document Sharing Hub

No Text on This Page

电缆情缘

CONTENTS

INTRODUCTION

1 Scope	5
2 General	5
2.1 Units of measurement	5
2.2 Components	5
2.3 Undated references	6
2.4 Glossary	6

CONSTRUCTION

3 Cable	6
---------------	---

PERFORMANCE

4 Cable	7
4.1 General	7
4.2 Deformation test	8
4.3 Heat shock test	11
4.4 Cold bend test	12
4.5 Crushing resistance and abrasion test	13
4.6 Chemical exposure	16
4.7 Water absorption	16
4.8 Dielectric voltage-withstand test	17
4.9 Ampacity test	17
4.10 Cold impact test	18
4.11 Flame test	18
4.12 Temperature rating	18
5 Clamps	18
5.1 General	18
5.2 Cold drop	19
5.3 Aging	19
5.4 Water absorption	19
5.5 Acid exposure	20
5.6 Abrasion test	20
5.7 Water exposure	21
5.8 Dielectric voltage-withstand test	21
5.9 Clamp retention	22
6 Middle Connector (When Provided)	23
6.1 Crush test	23
6.2 Cold drop	23
6.3 Aging	23
6.4 Acid exposure	24
6.5 Water exposure	24
6.6 Dielectric voltage-withstand test	24

MANUFACTURING AND PRODUCTION TESTS

7 General	24
8 Polarity Test	24

MARKING

9 General 25

10 Instructions 26

 10.1 General 26

11 Packaging 27

电缆情缘

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.

1.1 revised September 12, 2006

1.2 deleted September 12, 2006.

1.3 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.

1.3 revised September 12, 2006

2 General

2.1 Units of measurement

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

2.2 Components

2.2.1 Except as indicated in 2.2.2, a component of a product covered by this standard shall comply with the requirements for that component.

2.2.2 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.

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

2.2.4 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.

2.3 Undated references

2.3.1 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.

2.4 Glossary

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

2.4.2 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.

2.4.3 CONDUCTORS – Wiring used in the booster cable.

2.4.3 revised September 12, 2006

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

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

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

2.4.7 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

3 Cable

3.1 Conductors shall be of copper or copper clad aluminum. The conductors shall comply with the specifications in Table 3.1 and the applicable tests for cables in Section 4.

3.1 revised September 12, 2006

Table 3.1
Conductor constructions

Table 3.1 revised September 12, 2006

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)

Table 3.1 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 3.1.						

3.2 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.

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

3.4 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).

3.5 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 4.

3.5 revised September 12, 2006

PERFORMANCE

4 Cable

4.1 General

4.1 relocated as 5.1 September 12, 2006

4.1.1 relocated as 5.1.1 September 12, 2006.

4.1.2 revised and relocated as 5.1.2 September 12, 2006.

4.1.3 revised and relocated as 5.1.3 September 12, 2006.