

UL 2089

ISBN 0-7629-0894-7

Vehicle Battery Adapters

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

UL Standard for Safety for Vehicle Battery Adapters, UL 2089

Second Edition, Dated December 12, 2003

Revisions: This Standard contains revisions through and including March 30, 2006.

SUMMARY OF TOPICS

These revisions to UL 2089 include the following changes in requirements:

- *New requirements for adapters rated at greater than 8 Amps have been added to address the increased current source available for accessory plug devices in vehicles.*
- *The Push-Back Test has been added to provide a means of verification for the requirement in 17.2.*
- *Editorial revisions have been made to address reference updates.*

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 new and revised requirements are substantially in accordance with UL's Proposal(s) on this subject dated February 13, 2006.

The revisions dated March 30, 2006 include a reprinted title page (page1) for this 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>

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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that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

A change in an effective date is indicated by a note following the affected item, and giving both the previous effective date and the new date the requirement becomes effective.

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.

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

Page	Date
1-8B.....	March 30, 2006
9-11.....	December 12, 2003
12-14B.....	March 30, 2006
15-19.....	December 12, 2003
20-20B.....	March 30, 2006
21-25.....	December 12, 2003
26.....	March 30, 2006
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DECEMBER 12, 2003

(Title Page Reprinted: March 30, 2006)

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UL 2089

Standard for Vehicle Battery Adapters

First Edition – June, 1994

Second Edition

December 12, 2003

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

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.

ISBN 0-7629-0894-7

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INTRODUCTION

1 Scope

1.1 These requirements cover portable adapters rated 24 V dc or less that are intended to be supplied from the battery-powered electrical system of a vehicle and used in accordance with the National Electrical Code, NFPA 70. Connection to a vehicle electrical system in which the vehicle chassis is connected to the negative side of the battery supply is by means of a connector intended for insertion into a cigarette lighter receptacle or power outlet. Vehicle battery adapters may supply outputs for appliances such as portable radios, tape players, battery chargers, and tools.

1.1 revised March 30, 2006

1.2 Products covered by this standard include:

- a) Cord assemblies consisting of the connector for insertion into a cigarette lighter receptacle, adjacent cord, and connector intended for connection to an appliance; and
- b) Units consisting of the connector for insertion into a cigarette lighter receptacle, adjacent cord, and permanently attached filtering or regulating circuitry which may include an additional enclosure, output cord, and connector or battery receptacle.

1.3 This standard does not cover products intended for marine use in areas where ignition-protected equipment is required.

1.4 Power inverters intended to be supplied from the cigarette lighter receptacle of a vehicle are covered by the requirements in the Standard for Power Converters/Inverters and Power-Converter/Inverter Systems for Land Vehicles and Marine Craft, UL 458.

2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the applicable requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

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.

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

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.

3 General

3.1 Units of measurement

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

3.2 Undated references

3.2.1 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.

4 Glossary

4.1 For the purpose of this standard the following definitions apply.

4.2 CIGARETTE LIGHTER CONNECTOR – The male connector provided as part of a vehicle battery adapter for insertion into a cigarette lighter receptacle or a power outlet.

4.2 revised March 30, 2006

4.3 CIGARETTE LIGHTER RECEPTACLE – The female connector typically provided in a vehicle for the purpose of energizing the vehicle's cigarette lighter. The connector typically has the center contact connected to the positive side of the vehicle battery supply and the outer shell is connected to the negative (chassis) side of the supply. For the purposes of this Standard, the terms cigarette lighter receptacle and power outlet are considered equivalent.

4.3 revised March 30, 2006

4.4 CLASS 2 OUTPUT – An output complying with the construction, performance, and marking requirements in the Standard for Class 2 Power Units, UL 1310.

4.5 DIRECT CURRENT (DC) – A voltage or current waveform where the instantaneous value does not vary.

4.6 LOW-VOLTAGE LIMITED-ENERGY (LVLE) CIRCUIT – A circuit involving a potential of not more than 42.4 V peak for AC, or 60 V DC, with limited energy as described in Low-Voltage Limited-Energy Circuits, 14.2.

4.6.1 POWER OUTLET – The female connector typically provided in a vehicle for the purpose of accessory plug devices other than a cigarette lighter. The connector typically has the center contact connected to the positive side of the vehicle battery supply and the outer shell is connected to the negative (chassis) side of the supply. For the purposes of this Standard, the terms cigarette lighter receptacle and power outlet are considered equivalent.

4.6.1 added March 30, 2006

4.7 RISK OF ELECTRIC SHOCK – A risk of electric shock is considered to exist if the voltage between parts exceeds the value specified in 15.2.2.

4.8 RISK OF FIRE – A risk of fire is considered to exist if the conditions as specified in 26.1.2(a) and (b) occur.

4.9 RISK OF INJURY – A risk of injury to persons is considered to exist if one or more of the following conditions exist:

- a) If sharp edges, burrs, or projections are present that may result in injury during use or servicing.
- b) If the stability of a product is such that it may result in injury to persons.
- c) If there is likelihood that a part of the body could be endangered or that clothing would be entangled by the moving part, resulting in injury to persons.

The words "injury to persons" are in reference to physical harm to persons other than the physiological effects of electric shock.