INTERNATIONAL STANDARD

ISO 6469-3

Third edition
2018-10

AMENDMENT 1
2020-03

Electrically propelled road vehicles — Safety specifications —

Part 3: Electrical safety

AMENDMENT 1: Withstand voltage test for electric power sources

Véhicules routiers électriques — Spécifications de sécurité — Partie 3: Sécurité électrique

AMENDEMENT 1: Essai de tension de tenue pour les sources d'alimentation électrique

Reference number
ISO 6469-3:2018/Amd.1:2020(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road Vehicles*, Subcommittee SC 37, *Electrically propelled vehicles*.

A list of all parts in the ISO 6469 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Electrically propelled road vehicles — Safety specifications —

Part 3: Electrical safety

AMENDMENT 1: Withstand voltage test for electric power sources

Clause 3

Add the following terminological entry:

3.37
electric power source
system that provides electric energy

EXAMPLE RESS, fuel cell system, photovoltaic system.

10.6.1

Add following text after the second paragraph:

Electric power sources, which can be de-energized, shall be de-energized and included into the balance of the electric circuit.

Electric power sources, which are not part of the balance of the electric circuit shall be tested according to 10.7.

10.7

Add the following subclauses after 10.6 and before the Bibliography:

10.7 Withstand voltage test for electric power sources which are not de-energized

10.7.1 General

This test is intended to demonstrate the adequacy of the protection measures to isolate live parts of voltage class B electric circuits.

It applies to voltage class B electric circuits of electric power sources that are not conductively connected to a voltage class A electric circuit or to the electric chassis.

The test may be performed at the vehicle level at the discretion of the vehicle manufacturer.

For this test, device under test (DUT) refers to a voltage class B electric power source that cannot be de-energized.

The voltage withstand test for the components of DUT (e.g. control unit, contactor) can be performed separately unless it affects the test results. For components of the DUT which are de-energized when disconnected, the test procedures in 10.6 shall be applied.

Surge protective devices (SPDs) that can affect the test result shall be disconnected before testing. Components such as RFI filters shall be included in the test.

The withstand voltage test considers the influence of the DUT internal voltage. The items below are different from the withstand voltage test for the balance of electric circuit in 10.6.

— Live parts of the plus and minus poles of the circuit under test are handled separately.

— The insulation of live parts connected to the positive terminal and the insulation of live parts connected to the negative terminal are tested separately.

— DC test voltage is applied between the electric power source positive terminal and the electric chassis and applied between the electric power source negative terminal and the electric chassis.

— Polarity of the applied test voltage is specified to avoid overstressing the insulation due to the DUT internal voltage that adds to the test voltage

10.7.2 Preconditioning and conditioning

The DUT shall be preconditioned and conditioned as defined in 10.6.2.

10.7.3 Test

The test shall include protective barriers/protective enclosures.

The DC test voltage and test duration as defined in 10.6.3.2 shall be used.

The following test procedure shall be applied to the voltage class B electric circuit under test:

— The DUT may be disconnected at its terminals from the balance of the electric circuits. If the DUT is not disconnected, the balance of the electric circuit conductively connected to the DUT is included in the test.

— If the voltage class B electric circuit of the DUT under test has conductively connected voltage class A sections, then these voltage class A sections shall remain connected.

— All live parts of all electric circuits currently not under test and electric chassis shall be connected to each other excluding electrical power sources that cannot be de-energized. For a DUT with conductive housing, all exposed conductive parts of the component shall be connected to the electric chassis. The conductive housing can be considered as the electric chassis.

— For a DUT with non-conductive housing, an electrode shall be wrapped around the housing and shall be connected to the electric chassis for the test.

— The test shall cover all live parts of the electric power source. If main contactors are part of the DUT, the DUT may be modified such, that all DUT live parts are covered by the test. In this case these main contactors shall be tested for voltage withstand capability separately if not covered by the test.

EXAMPLE 1 Main contactors of the DUT are replaced by conductive bridges.

EXAMPLE 2 Main contactors are replaced by main contactors with internal shorts in the current path.

EXAMPLE 3 The control lines of the main contactors are led outside the battery in order to allow applying working voltage to the contactor coils.

— At the end of the conditioning, the test voltage shall be applied between the electric power source positive terminal and the electric chassis see Figure 5. In a second measurement the test voltage

