IEC 60364-7-717

Edition 2.0 2009-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Low-voltage electrical installations – Part 7-717: Requirements for special installations or locations – Mobile or transportable units

Installations électriques à basse tension – Partie 7-717: Règles pour les installations ou emplacements spéciaux – Unités mobiles ou transportables

IEC 60364-7-717:2009

Documents
Document Sharing Hub

Full document details: IEC 60364-7-717 2009

THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2009 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.
If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.
Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

- Catalogue of IEC publications: www.iec.ch/searchpub
The IEC on-line Catalogue enables you to search by a variety of criteria (reference number, text, technical committee,…). It also gives information on projects, withdrawn and replaced publications.
- IEC Just Published: www.iec.ch/online_news/justpub
Stay up to date on all new IEC publications. Just Published details twice a month all new publications released. Available on-line and also by email.
- Electropedia: www.electropedia.org
The world's leading online dictionary of electronic and electrical terms containing more than 20 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary online.
- Customer Service Centre: www.iec.ch/webstore/custserv
If you wish to give us your feedback on this publication or need further assistance, please visit the Customer Service Centre FAQ or contact us:
Email: csc@iec.ch
Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

- Catalogue des publications de la CEI: www.iec.ch/searchpub/cur_fut-f.htm
Le Catalogue en-ligne de la CEI vous permet d'effectuer des recherches en utilisant différents critères (numéro de référence, texte, comité d'études,…). Il donne aussi des informations sur les projets et les publications retirées ou remplacées.
- Just Published CEI: www.iec.ch/online_news/justpub
Restez informé sur les nouvelles publications de la CEI. Just Published détaille deux fois par mois les nouvelles publications parues. Disponible en-ligne et aussi par email.
- Electropedia: www.electropedia.org
Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International en ligne.
- Service Clients: www.iec.ch/webstore/custserv/custserv_entry-f.htm
Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions, visitez le FAQ du Service clients ou contactez-nous:
Email: csc@iec.ch
Tél.: +41 22 919 02 11
Fax: +41 22 919 03 00

Documents
Document Sharing Hub

Full document details: IEC 60364-7-717 2009

IEC 60364-7-717

Edition 2.0 2009-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Low-voltage electrical installations – Part 7-717: Requirements for special installations or locations – Mobile or transportable units

Installations électriques à basse tension – Partie 7-717: Règles pour les installations ou emplacements spéciaux – Unités mobiles ou transportables

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

PRICE CODE
CODE PRIX **S**

ICS 29.020; 91.140.50

ISBN 978-2-88910-178-8

® Registered trademark of the International Electrotechnical Commission
Marque déposée de la Commission Electrotechnique Internationale

Documents
Document Sharing Hub

Full document details: IEC 60364-7-717 2009

CONTENTS

FOREWORD 3
INTRODUCTION 5
717 Mobile or transportable units 6
717.1 Scope 6
717.2 Normative references 6
717.30 Assessment of general characteristics 7
717.31 Purposes, supplies and structure 7
717.312 Conductor arrangement and system earthing 7
717.313 Supplies 7
717.4 Protection for safety 8
717.41 Protection against electric shock 8
717.413 Protective measure: electrical separation 9
717.415 Additional protection 9
717.43 Protection against overcurrent 10
717.431 Requirements according to the nature of the circuits 10
717.5 Selection and erection of electrical equipment 10
717.51 Common rules 10
717.514 Identification 10
717.52 Wiring systems 10
717.55 Other equipment 11
Annex A (informative) List of notes concerning certain countries 20
Bibliography 21

Figure 717.1 – Example of connection to a Class I or Class II low voltage generating set located inside the unit with or without an earth electrode 12
Figure 717.2 – Example of connection to a Class II low voltage generating set located outside the unit 13
Figure 717.3 – Example of connection to any type of earthing system of a fixed installation with automatic disconnection of supply by residual current device (RCD), with or without an earth electrode 14
Figure 717.4 – Example of connection to a fixed electrical installation with any type of earthing system using a simple separation transformer and an IT system with an earth electrode 15
Figure 717.5 – Example of connection with simple separation and an IT system with an insulation monitoring device and disconnection of supply after a first fault 16
Figure 717.6 – Example of connection with simple separation and a TN system with or without an earth electrode 16
Figure 717.7 – Example of connection to a fixed electrical installation with any type of earthing system by using an IT system without automatic disconnection in the event of first fault 17
Figure 717.8 – Example of connection to a fixed electrical installation with any type of earthing system using electrical separation provided by an isolating transformer 18

Documents
Document Sharing Hub
Full document details: IEC 60364-7-717 2009

INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE ELECTRICAL INSTALLATIONS –

Part 7-717: Requirements for special installations or locations – Mobile or transportable units

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60364-7-717 has been prepared by IEC technical committee 64: Electrical installations and protection against electric shock.

This second edition cancels and replaces the first edition published in 2001 and constitutes a technical revision.

The main changes with respect to the previous edition are as follows:

– The scope has been improved, providing more detail;
– The content of Clause 717.41 has been updated following the new edition of IEC 60364-4-41;
– Clauses concerning protection by automatic disconnection of the supply and additional protection have been introduced;
– All figures have been updated.

Documents
Document Sharing Hub

Full document details: IEC 60364-7-717 2009

The text of this standard is based on the following documents:

FDIS	Report on voting
64/1675/FDIS	64/1684/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The reader's attention is drawn to the fact that Annex A lists all of the "in-some-country" clauses on differing practices of a less permanent nature relating to the subject of this standard.

IEC 60364 consists of the following parts, under the general title: *Low-voltage electrical installations:*

Part 1: Fundamental principles, assessment of general characteristics, definitions

Part 4: Protection for safety

Part 5: Selection and erection of electrical equipment

Part 6: Verification

Part 7: Requirements for special installations or locations

A list of all the parts in the IEC 60364 series can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

Documents
Document Sharing Hub

Full document details: IEC 60364-7-717 2009

INTRODUCTION

The requirements of this part of IEC 60364 supplement, modify or replace certain of the general requirements contained in Parts 1 to 6 of IEC 60364.

The clause numbering appearing after 717 refers to the corresponding parts or clauses of IEC 60364, Parts 1 to 6. Numbering of clauses does not, therefore, necessarily follow sequentially. Numbering of figures and tables takes the number of this part followed by a sequential number.

The absence of reference to a part or clause means that the general requirements contained in Parts 1 to 6 of IEC 60364 are applicable.

Documents
Document Sharing Hub

Full document details: IEC 60364-7-717 2009

LOW-VOLTAGE ELECTRICAL INSTALLATIONS –

Part 7-717: Requirements for special installations or locations – Mobile or transportable units

717 Mobile or transportable units

717.1 Scope

The particular requirements as specified in this part of IEC 60364 are applicable to mobile or transportable units.

For the purposes of this part, the term "unit" refers to a vehicle and/or mobile or transportable structure in which all or part of an electrical installation is contained.

Units are either of the mobile type or of the transportable type.

Examples are units for television and broadcasting, medical services, advertising, fire fighting, using special information technology, units for disaster relief, catering units and the like.

The requirements of this part also apply where two or more units are connected together to form a single electrical installation (see 717.551.6 and 717.551.7).

The requirements are not applicable to

– electrical circuits and equipment for automotive purposes,

– generating sets,

– units covered by other parts of Part 7 (e.g. caravan and motor-caravan),

– pleasure craft (see IEC 60092-507),

– mobile machinery in accordance with IEC 60204-1,

– traction equipment of electric vehicles,

– mobile or transportable homes, offices and the like for extended use at the same location (see general rules of IEC 60364).

Where applicable, additional requirements as laid down in other clauses of Part 7 are to be taken into consideration, e.g. for showers, medical locations, etc.

717.2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60227-3:1993, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 3: Non-sheathed cables for fixed wiring*

IEC 60245-4, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 4: Cords and flexible cables*

Documents
Document Sharing Hub

Full document details: IEC 60364-7-717 2009

IEC 60309-1, *Plugs, socket-outlets and couplers for industrial purposes – Part 1: General requirements*

IEC 60309-2, *Plugs, socket-outlets and couplers for industrial purposes – Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories*

IEC 60364-4-41:2005, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*

IEC 60364-5-55, *Electrical installations of buildings – Part 5-55: Selection and erection of electrical equipment – Other*

IEC 60364-7 (all parts) *Low-voltage electrical installations – Part 7: Requirements for special installations or locations*

IEC 60884-1, *Plugs and socket-outlets for household and similar purposes – Part 1: General*

IEC 61084 (all parts), *Cable trunking and ducting systems for electrical installations*

IEC 61140, *Protection against electric shock – Common aspects for installation and equipment*

IEC 61386-21: *Conduit systems for cable management – Part 21: Particular requirements – Rigid conduit systems*

IEC 61386-22: *Conduit systems for cable management – Part 22: Particular requirements – Pliable conduit systems*

IEC 61386-23: *Conduit systems for cable management – Part 23: Particular requirements – Flexible conduit systems*

717.30 Assessment of general characteristics

717.31 Purposes, supplies and structure

717.312 Conductor arrangement and system earthing

717.312.2 Types of system earthing

Add the following:

NOTE Where the designation TN or TT or IT is used in this Part 7-717, it means only that the protective principles of these systems apply. If a connection to the earth electrode is not provided, a connection to the conductive enclosure or to the protective bonding of the unit may be sufficient.

717.312.2.1 TN Systems

Add the following:

The use of the TN-C system is not permitted inside any unit.

717.313 Supplies

Add the following:

One or more of the following methods shall be used to supply a unit:

a) connection to a low-voltage generating set in accordance with IEC 60364-5-55 (see Figures 717.1 and 717.2);

AVA Documents
Document Sharing Hub

b) connection to a fixed electrical installation in which the protective measures are effective (see Figure 717.3);

c) connection through means providing simple separation, in accordance with IEC 61140, from a fixed electrical installation (see Figures 717.4, 717.5, 717.6 and 717.7);

d) connection through means providing electrical separation from a fixed electrical installation (see example in Figure 717.8).

NOTE 1 In cases a), b) and c), an earth electrode may be provided.

NOTE 2 In the case of Figure 717.4, an earth electrode may be necessary for protective purposes (see 717.411.6.2b, second dash).

NOTE 3 Simple separation or electrical separation is appropriate, for example, where information technology equipment is used in the unit or where a reduction of electromagnetic influences is necessary, or if high leakage currents are to be expected (use of frequency converters), and/or if the supply of the unit comes from alternative supply systems (as is the case in disaster management).

The sources, means of connection or separation may be within the unit.

NOTE 4 Where there is a potential hazard due to moving the unit while connected to an external installation, it is recommended to equip the unit with an electric interlock, warning, alarm or other appropriate means to reduce the risk.

NOTE 5 For the purpose of this Part 7-717, power inverters or frequency converters that are supplied by the low-voltage vehicle electrical system or auxiliary drive systems of the combustion engine are also considered as low-voltage generating sets.

Power inverters or frequency converters shall include at least simple separation where both a d.c. system and a.c. system are earthed.

717.4 Protection for safety

717.41 Protection against electric shock

717.411 Protective measure: automatic disconnection of supply

Add the following:

a) For a supply in accordance with 717.313 a), only TN and IT systems are permitted. Protection shall be provided by automatic disconnection of supply, and
   - in a TN system, 717.411.4.1 applies;
   - in an IT system, 717.411.6.2 applies.

b) For a supply in accordance with 717.313 b), automatic disconnection of the supply shall be provided by a residual current protective device, with a rated residual operating current not exceeding 30 mA.

c) In all cases a) to d) of 717.313, any equipment installed between the source of supply and the protective devices providing automatic disconnection of the supply within the unit, including these protective devices themselves, shall be protected by use of class II equipment or by equivalent insulation.

717.411.3 Requirements for fault protection

717.411.3.1 Protective earthing and protective equipotential bonding

717.411.3.1.2 Protective equipotential bonding

Add the following:

Accessible conductive parts of the unit, such as the chassis, shall be connected through the protective bonding conductors to the main earthing terminal within the unit.

The protective bonding conductors shall be finely stranded.

AVA Documents Document Sharing Hub

Full document details: IEC 60364-7-717 2009

NOTE Type 227 IEC 02 in accordance with IEC 60227-3 is appropriate.

717.411.4 TN system

717.411.4.1

Add the following:

Where a TN system is used within a unit with a conductive enclosure and supplied according to 717.313 a) or c), this enclosure shall be connected to the neutral point or, if not available, a line conductor (see Figures 717.1, 717.2 and 717.6).

For a unit without a conductive enclosure, the exposed-conductive-parts of the equipment inside the unit shall be connected by means of a protective conductor to the neutral point or, if not available, to a line conductor.

717.411.6 IT system

717.411.6.2

Add the following:

Where an IT system is used within a unit with a conductive enclosure, connection of the exposed-conductive-parts of the equipment to the conductive enclosure is necessary.

For a unit without a conductive enclosure, the exposed-conductive-parts inside shall be connected to one another and to a protective conductor.

An IT system can be provided by

a) an isolating transformer or a low-voltage generating set, with an insulation monitoring device or an insulation fault location system, both without automatic disconnection of supply in the case of a first fault and without need for a connection to an earthing installation (see Figure 717.7); the second fault shall be automatically disconnected by an overcurrent protective device according to 411.6.4,
b) an isolating transformer providing electrical separation, e.g. in accordance with IEC 60364-4-41, only
   – where an insulation monitoring device is installed providing automatic disconnection of the supply in case of a first fault between live parts and the frame of the unit (see Figure 717.5), or
   – where a residual current protective device and an earth electrode are installed to provide automatic disconnection in the case of failure in the transformer providing simple separation (see Figure 717.4). Each equipment used outside the unit shall be protected by a separate residual current protective device with a rated residual operating current not exceeding 30 mA.

717.413 Protective measure: electrical separation

Add the following:

(For example see Figure 717.8).

717.415 Additional protection

717.415.1 Additional protection: residual current protective devices (RCDs)

Add the following:

Documents
Document Sharing Hub

Full document details: IEC 60364-7-717 2009

Additional protection by residual current protective devices with a rated residual operating current not exceeding 30 mA is necessary for all socket-outlets intended to supply current-using equipment outside the unit, with the exception of socket-outlets which are supplied from circuits with protection by

– SELV, or
– PELV, or
– electrical separation.

717.43 Protection against overcurrent

717.431 Requirements according to the nature of the circuits

717.431.1 Protection of line conductors

Add the following:

Where the supply is in accordance with 717.313 a) or c), and where a line conductor is connected to the conductive enclosure of the unit, no overcurrent protective device is required in this line conductor.

717.5 Selection and erection of electrical equipment

717.51 Common rules

717.514 Identification

Add the following:

A permanent notice of durable material shall be fixed to the unit in a prominent position, preferably adjacent to the supply inlet connector. The notice should state in clear and unambiguous terms the following:

– the type of supply which may be connected to the unit;
– the voltage rating of the unit;
– the number of phases and their configuration;
– the on-board earthing arrangement;
– the maximum power requirement of the unit.

For socket-outlets individually protected by the protective measure electrical separation (see 413.1.2), a durable indication shall be located adjacent to these socket-outlets stating that only one item of current-using electrical equipment shall be connected to each socket-outlet.

717.52 Wiring systems

Add the following:

717.52.1 Cables of type 245 according to IEC 60245-4 or cables of equivalent design having a minimum cross-sectional area of 2,5 mm^2 Cu shall be used for connecting the unit to the supply. The flexible cable shall enter the unit by an insulating inlet in such a way as to minimize the possibility of any insulation damage or fault which might energize the exposed-conductive-parts of the unit. The cable sheath shall be firmly gripped by the cable gland of the connector or anchored to the unit during operation to prevent stress on the termination.

717.52.2 The wiring systems shall be installed using one or more of the following:

a) insulated single-core cables, with flexible conductors or with stranded conductors (minimum of 7 strands), in

Documents
Document Sharing Hub

Full document details: IEC 60364-7-717 2009

- non-metallic conduits, or
- non-metallic cable trunking systems, or
- non-metallic cable ducting systems;

b) sheathed flexible cables.

All cables shall, as a minimum, meet the requirements of IEC 60227-3 and IEC 60332-1-2.

Conduits shall comply with IEC 61386-21, IEC 61386-22 or IEC 61386-23.

Trunking and ducting systems in accordance with IEC 61084 may be used.

717.55 Other equipment

717.551.6 Additional requirements for installations where the generating set provides a supply as a switched alternative to the normal supply to the installation

Add the following:

Units with different power supply systems and different earthing systems shall not be interconnected.

717.551.7 Additional requirements for installations where the generating set may operate in parallel with other sources including systems for distribution of electricity to the public

Add the following:

Units with different power supply systems and different earthing systems shall not be interconnected.

717.55.1 Plugs and socket-outlets shall comply with IEC 60309-1, IEC 60309-2 or IEC 60884-1, except those dedicated for special equipment, such as broadcasting equipment where combined connectors for information signals and power supply are used.

Connecting devices used to connect the unit to the supply shall comply with IEC 60309-1 or IEC 60309-2 when interchangeability is required, and with the following requirements:

– plugs shall have an enclosure of insulating material;
– plugs and socket-outlets shall afford a degree of protection of not less than IP44, if located outside;
– appliance inlets with their enclosures shall provide a degree of protection of at least IP55;
– the plug part shall be situated on the unit.

717.55.2 Socket-outlets located outside the unit shall be provided with an enclosure affording a degree of protection not less than IP54.

717.55.3 A generating set, able to produce extra-low voltage and used with protective measures other than SELV or PELV, mounted in the unit, shall be switched off automatically in case of an accident to the unit (e.g. event causing the release of air-bags).

717.62.2.1

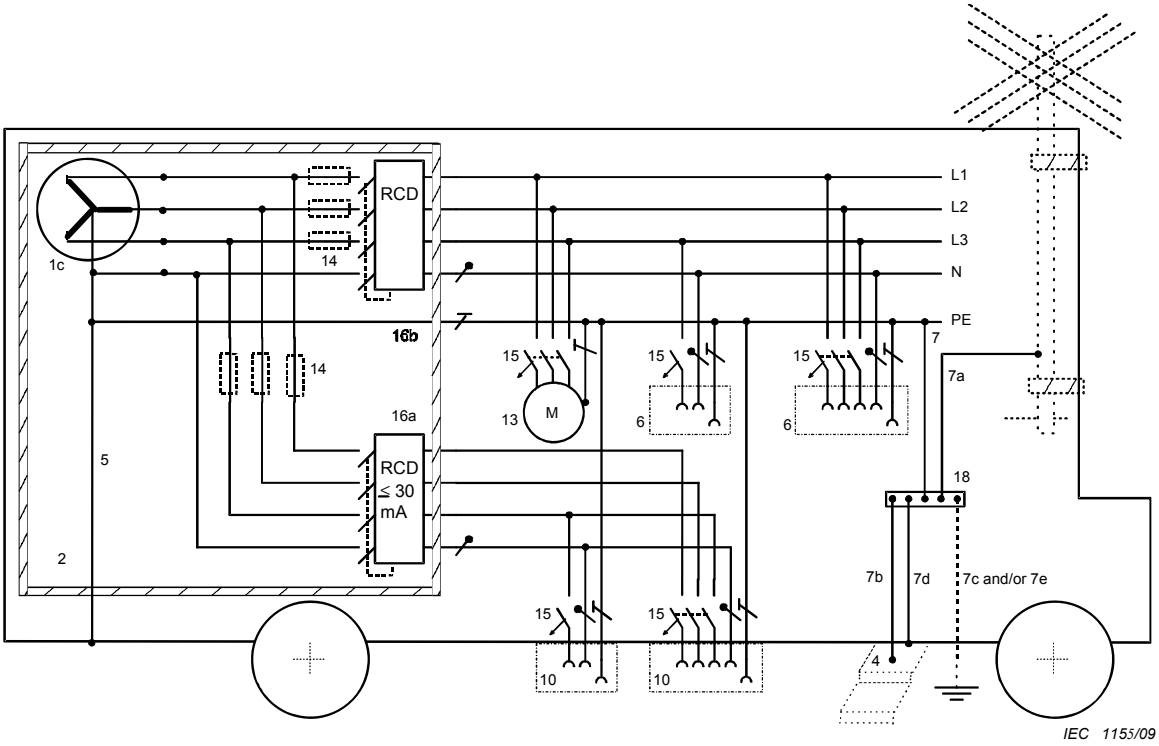
Add the following:

For mobile units, it is recommended to verify the unit at least once every 12 months.

AVA Documents Document Sharing Hub

Full document details: IEC 60364-7-717 2009

For transportable units, it is recommended to verify the unit at least once every 2 years.



NOTE Protection by automatic disconnection of supply by residual current protective devices (RCD).

Figure 717.1 – Example of connection to a class I or class II low-voltage generating set located inside the unit with or without an earth electrode

Documents
Document Sharing Hub
Full document details: IEC 60364-7-717 2009