

INTERNATIONAL STANDARD

IEC
60335-2-70

Second edition
2002-03

**Household and similar electrical appliances –
Safety –**

**Part 2-70:
Particular requirements for milking machines**

*Appareils électrodomestiques et analogues –
Sécurité –*

*Partie 2-70:
Règles particulières pour les machines à traire*

<https://standards.iteh.ai/catalog/standards/iec/bb743de5-5112-449c-9c89-10f75446568a/iec-60335-2-70-2002>

<https://standards.iteh.ai/catalog/standards/iec/bb743de5-5112-449c-9c89-10f75446568a/iec-60335-2-70-2002>



Reference number
IEC 60335-2-70:2002(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site** (www.iec.ch)

- **Catalogue of IEC publications**

The on-line catalogue on the IEC web site (www.iec.ch/catlg-e.htm) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

This summary of recently issued publications (www.iec.ch/JP.htm) is also available by email. Please contact the Customer Service Centre (see below) for further information.

- **Customer Service Centre**

If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre:

Email: custserv@iec.ch
Tel: +41 22 919 02 11
Fax: +41 22 919 03 00

INTERNATIONAL STANDARD

IEC 60335-2-70

Second edition
2002-03

Household and similar electrical appliances – Safety –

Part 2-70: Particular requirements for milking machines

*Appareils électrodomestiques et analogues –
Sécurité –*

*Partie 2-70:
Règles particulières pour les machines à traire*

<https://standards.iteh.ai/catalog/standards/iec/bb743de5-5112-449c-9c89-10f75446568a/iec-60335-2-70-2002>

<https://standards.iteh.ai/catalog/standards/iec/bb743de5-5112-449c-9c89-10f75446568a/iec-60335-2-70-2002>

© IEC 2002 — Copyright - all rights reserved

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 the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

R

For price, see current catalogue

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Definitions	7
4 General requirement.....	8
5 General conditions for the tests	8
6 Classification.....	8
7 Marking and instructions.....	9
8 Protection against access to live parts.....	10
9 Starting of motor-operated appliances	10
10 Power input and current.....	10
11 Heating.....	10
12 Void	10
13 Leakage current and electric strength at operating temperature.....	10
14 Transient overvoltages	10
15 Moisture resistance	10
16 Leakage current and electric strength.....	11
17 Overload protection of transformers and associated circuits	11
18 Endurance.....	11
19 Abnormal operation	11
20 Stability and mechanical hazards.....	11
21 Mechanical strength	11
22 Construction.....	12
23 Internal wiring.....	12
24 Components	12
25 Supply connection and external flexible cords	12
26 Terminals for external conductors.....	12
27 Provision for earthing	12
28 Screws and connections.....	13
29 Clearances, creepage distances and solid insulation	13
30 Resistance to heat and fire.....	13
31 Resistance to rusting.....	13
32 Radiation, toxicity and similar hazards.....	13
Annexes	14
Annex AA (informative) Examples of milking machines	14
Bibliography.....	18

Figure AA.1 – Example of a bucket or direct-to-can milking machine.....	14
Figure AA.2 – Example of a pipeline milking machine	15
Figure AA.3 – Example of a recorder milking machine	16
Figure AA.4 – Example of an independent air and milk transport milking machine.....	17

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[IEC 60335-2-70:2002](#)

<https://standards.iteh.ai/catalog/standards/iec/bb743de5-5112-449c-9c89-10f75446568a/iec-60335-2-70-2002>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –**

Part 2-70: Particular requirements for milking machines

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

This part of International Standard IEC 60335 has been prepared by sub-committee 61H: Safety of electrically-operated farm appliances, of IEC technical committee 61: Safety of household and similar electrical appliances.

This second edition cancels and replaces the first edition published in 1993. It constitutes a technical revision.

The text of this part of IEC 60335 is based on the following documents:

FDIS	Report on voting
61H/164/FDIS	61H/169/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 part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fourth edition (2001) of that standard.

NOTE 1 When "Part 1" is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for milking machines.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

- requirements: in roman type
- *test specifications: in italic type*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and associated noun are also in bold.

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date the publication will be

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

The following differences exist in the countries indicated below:

- 25.7: Ordinary PVC sheathed supply cords are permitted (Australia, New Zealand).

iTeh Standards

(<https://standards.itih.ai>)

Document Preview

IEC 60335-2-70:2002

<https://standards.itih.ai/catalog/standards/iec/bb743de5-5112-449c-9c89-10f75446568a/iec-60335-2-70-2002>

INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features which impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

[IEC 60335-2-70:2002](https://standards.iteh.ai/catalog/standards/iec/bb743de5-5112-449c-9c89-10f75446568a/iec-60335-2-70-2002)

<https://standards.iteh.ai/catalog/standards/iec/bb743de5-5112-449c-9c89-10f75446568a/iec-60335-2-70-2002>

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-70: Particular requirements for milking machines

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of **milking machines**, to be used in stalls and in the open, that are designed for milking farm animals, such as cows, the **rated voltage** of the **milking machine** being not more than 250 V for single-phase operation and 480 V for other operations.

NOTE 101 Examples of such machines are:

- bucket **milking machines**;
- direct-to-can **milking machines**;
- milking **pipeline machines**;
- recorder **milking machines**;
- independent air and milk transport **milking machines**.

NOTE 102 A detailed description of the types of **milking machines** covered by this standard is given in ISO 3918 and is indicated in Annex AA.

NOTE 103 The upper limit for the **rated voltage** of 250 V single-phase may be exceeded in cases where 480 V split-phase motors are required.

NOTE 104 This standard applies to milking **sub-assemblies** supplied by one manufacturer to form a complete **milking machine**. It can be used as guidance for the safety of **milking machines** formed from **sub-assemblies** supplied by different manufacturers.

NOTE 105 Attention is drawn to the fact that:

- for **milking machines** intended to be used in vehicles or on board ships, additional requirements may be necessary;
- in many countries, additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

2 Normative references

This clause of Part 1 is applicable.

3 Definitions

This clause of Part 1 is applicable except as follows.

3.1.9 Replacement:

normal operation

- **vacuum pumps** and those of a **pulsation system** are operated at **rated vacuum** during continuous operation;
- releser milk pumps are operated with the vacuum system being operated at **rated vacuum** of the **vacuum pump**;
- during milking the **vacuum pump**, the **pulsation system** and the **releser milk pump** are operated continuously according to the manufacturer's instructions,
- during cleaning the **vacuum pump**, the **pulsation system** and the **releser milk pump** and cleaning system are operated continuously according to the manufacturer's instructions

3.101

sub-assembly

part that in association with other parts, forms a complete **milking machine**

3.102

milking machine

complete machine installation for milking, usually comprising vacuum and pulsation systems, one or more clusters and other components

3.103

milking unit

assembly of **milking machine** components that is replicated in an installation so that more than one animal may be milked at one time

3.104

vacuum pump

air pump that produces a vacuum in the system

3.105

pulsation system

system in which cyclic pressure changes, initiated either pneumatically or electrically, are produced in the chambers of the **milking units**

3.106

releaser milk pump

device for pumping milk out of the vacuum system

3.107

rated vacuum

vacuum assigned to the **vacuum pump** or pulsation system by the manufacturer

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.2 Addition:

*The manufacturer shall provide a suitable test-assembly and installation instructions to enable the **milking machine** or its **sub-assemblies** to be tested.*

5.101 *Where tests are specified in this standard that require the **milking machine** to be operated under **normal operation**, the tests are to be carried out for each of the **normal operation** conditions given for milking and cleaning operations.*

6 Classification

This clause of Part 1 is applicable except as follows.