



UL 60335-2-8

STANDARD FOR SAFETY

Household and Similar Electrical
Appliances – Safety – Part 2-8:
Particular Requirements for Shavers,
Hair Clippers and Similar Appliances

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UL Standard for Safety for Household and Similar Electrical Appliances – Safety – Part 2-8: Particular Requirements for Shavers, Hair Clippers and Similar Appliances, UL 60335-2-8

Sixth Edition, Dated June 25, 2018

Summary of Topics

This revision of ANSI/UL 60335-2-8 dated June 28, 2021 includes the following change in requirements:

- ***Updates to Include IEC Amendment 2 Issued in 2018 and Suggested Deletion or Modification of National Differences Based on the Changes to the IEC Standard; [3.103DV](#), [3.104DV](#), [3.105](#) – [3.108](#), [6.1](#), [6.1DV.1](#), [6.2](#), [7.1](#), [7.12](#), [7.12DV.1](#), [7.12DV.3.1](#), [7.12.1](#), [11.8](#), [11.8DV.1](#), Section [20](#), [21.1DV.101](#), [21.101](#), [21.101DV](#), [22.26](#), [22.36](#), [22.103](#), [25.24](#)***
- ***Addition of Abnormal Operation Test for USB Powered or Charged Appliances; [19.102DV](#)***
- ***Clarification of Allowance for SP-1 Type Cord for Light Weight Appliances; [Table 25.7DV.1.1](#), [Table B.25.7DV.1](#)***
- ***Revision to Reduce Minimum Cord Length Cordless Only Appliances; [Table B.25.7DV.1](#)***

Please note that the national difference document incorporates all of the U.S. national differences for UL 60335-2-8.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated April 23, 2021.

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ANSI/UL 60335-2-8-2021

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UL 60335-2-8

Standard for Household and Similar Electrical Appliances – Safety – Part 2-

8: Particular Requirements for Shavers, Hair Clippers, and Similar

Appliances

Efforts have been made to synchronize the UL edition number with that of the corresponding IEC standard. As a result, one or more edition numbers have been skipped in the process. The list of UL editions included here is a complete list of published UL editions.

Third Edition – Not Printed
Fourth Edition – Not Printed
Fifth Edition – October 2004

Sixth Edition

June 25, 2018

This ANSI/UL Standard for Safety consists of the Sixth Edition including revisions through June 28, 2021.

The most recent designation of ANSI/UL 60335-2-8 as an American National Standard (ANSI) occurred on June 28, 2021. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or Preface. The National Difference Page and IEC Foreword are also excluded from the ANSI approval of IEC-based standards.

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 <https://csds.ul.com>.

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Preface (UL)

This UL Standard is based on IEC Publication 60335-2-8: sixth edition Household and Similar Electrical Appliances – Safety – Part 2-8: Particular requirements for shavers, hair clippers and similar appliances, as revised by Amendment 1 and Amendment 2. IEC publication 60335-2-8 is copyrighted by the IEC.

Efforts have been made to synchronize the UL edition number with that of the corresponding IEC standard with which this standard is harmonized. As a result, one or more UL edition numbers have been skipped to match that of the IEC edition number.

This UL Standard 60335-2-8 Standard for Safety for Household and Similar Electrical Appliances – Safety – Part 2-8: Particular Requirements for Shavers, Hair Clippers and Similar Appliances, is to be used in conjunction with the sixth edition of UL 60335-1. The requirements for shavers, hair clippers and similar appliances are contained in this Part 2 Standard and UL 60335-1.

Requirements of this Part 2 Standard, where stated, amend the requirements of UL 60335-1.

Where a particular subclause of UL 60335-1 is not mentioned in UL 60335-2-8, the UL 60335-1 subclause applies.

These materials are subject to copyright claims of IEC and UL. No part of this publication may be reproduced in any form, including an electronic retrieval system, without the prior written permission of UL. All requests pertaining to the Standard for Household and Similar Electrical Appliances, Part 2: Particular Requirements for Shavers, Hair Clippers, and Similar Appliances, UL 60335-2-8 should be submitted to UL.

Note – Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.

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NATIONAL DIFFERENCES

GENERAL

National Differences from the text of International Electrotechnical Commission (IEC) Publication 60335-2-8, Household and Similar Electrical Appliances – Safety – Part 2-8: Particular Requirements for Shavers, Hair Clippers, and Similar Appliances copyright 2018 are indicated by notations (differences) and are presented in bold text. The national difference type is included in the body.

There are five types of National Differences as noted below. The difference type is noted on the first line of the National Difference in the standard. The standard may not include all types of these National Differences.

DR – These are National Differences based on the **national regulatory requirements**.

D1 – These are National Differences which are based on **basic safety principles and requirements**, elimination of which would compromise safety for consumers and users of products.

D2 – These are National Differences from IEC requirements based on existing **safety practices**. These requirements reflect national safety practices, where empirical substantiation (for the IEC or national requirement) is not available or the text has not been included in the IEC standard.

DC – These are National Differences based on the **component standards** and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE – These are National Differences based on **editorial comments or corrections**.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

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FOREWORD

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY – Part 2-8: Particular requirements for shavers, hair clippers and similar appliances

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.

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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.

This Consolidated version of IEC 60335-2-8 bears the edition number 6.2. It consists of the sixth edition (2012-12) [documents 61/4456/FDIS and 61/4510/RVD], its amendment 1 (2015-11) [documents 61/5000/FDIS and 61/5055/RVD] and its amendment 2 (2018-11) [documents 61/5710/FDIS and 61/5727/RVD]. The technical content is identical to the base edition and its amendments.

This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

The principal changes in this edition as compared with the fifth edition of IEC 60335-2-8 are as follows (minor changes are not listed):

– modified requirements for animal shearers (6.1, 11.8, 22.36);

- modified requirements for animal clippers (3.102, 11.8, 24.1.3);
- deleted reference to ISO 13732-1 from the Bibliography.

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

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 fifth edition (2010) 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 shavers, hair clippers and similar appliances.

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 the associated noun are also bold.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability 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.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

A list of all parts of the IEC 60335 series, under the general title: *Household and similar electrical appliances – Safety*, can be found on the IEC website.

The following differences exist in the countries indicated below.

- 6.1: Class 0 appliances are allowed provided that their rated voltage does not exceed 150 V (Japan).
- 11.7: Appliances for household use are operated for 20 min. Other appliances are operated for 5 min with rest periods of 5 min (USA).
- 24.1.3: The test is carried out for 6 000 operations (USA).
- 25.7: Supply cords specially intended for use with electric shavers and hair clippers are allowed (USA).
- 25.14: The tests are not carried out (USA).

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

101DV DE *Modification of the first paragraph after Note 3 in the part 2:*

Words in SMALL ROMAN CAPITALS in the text are defined in [Clause 3](#).

102DV DE *Add the following before the country clause in the part 2:*

The numbering system in the standard uses a space instead of a comma to indicate thousands and uses a comma instead of a period to indicate a decimal point. For example, 1 000 means 1,000 and 1,01 means 1.01.

103DV D2 *Deletion of the country deviations from the UL part 1 and the part 2:*

Delete all the country deviations.

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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 and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

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.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

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.

NOTE 2 Horizontal and generic standards covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards. For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.

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 that 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.

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-8: Particular requirements for shavers, hair clippers and similar appliances

1 Scope

This clause of Part 1 is replaced by the following.

BATTERY-OPERATED APPLIANCES and other d.c. supplied appliances are within the scope of this standard. Dual supply appliances, either mains-supplied or battery-operated, are regarded as BATTERY-OPERATED APPLIANCES when operated in the battery mode.

This International Standard deals with the safety of electric shavers, hair clippers and similar appliances intended for household and similar purposes, their RATED VOLTAGE being not more than 250 V.

NOTE 101 Examples of similar appliances are epilators and those appliances used for manicure, and pedicure.

Appliances not intended for normal household use, but which nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops and on farms, are within the scope of this standard.

NOTE 102 Examples of such appliances are ANIMAL CLIPPERS, ANIMAL SHEARERS and appliances for hairdressers.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

– persons (including children) whose

- physical, sensory or mental capabilities; or
- lack of experience and knowledge

prevents them from using the appliance safely without supervision or instruction;

– children playing with the appliance.

NOTE 103 Attention is drawn to the fact that

– for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;

– in many countries additional requirements are specified by national health authorities, national authorities responsible for the protection of labour and similar authorities.

NOTE 104 This standard does not apply to

– appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);

– massage appliances (IEC 60335-2-32);

– appliances for medical purposes (IEC 60601).

1DV.1 DR Modification of the second paragraph and Note 101 of the part 2 by replacement with the following:

This International Standard deals with the safety of electric shavers, hair clippers, epilators and similar appliances intended for household and similar purposes, their RATED VOLTAGE being not more than 250 V and intended to be installed or used in accordance with NFPA 70, National Electrical Code (NEC).

Hair clippers and shavers incorporating a suction feature to collect clippings or shavings during operation are also covered by this standard.

1DV.2 D2 Modification of Note 104 of the Part 2 by the addition of the following dashed items:

- lather makers (UL 499);
- barber shop vacuum cleaners for use on persons (UL 1017)
- manicure, pedicure, or personal grooming appliances used for similar purposes (UL 859). However, hair clipping and shaving appliances supplied with manicure, pedicure, or other similar attachments or accessories are investigated under these requirements and such additional requirements as are applicable to the appliance under consideration.
- lasers and intense light source hair removal devices (UL 60601).

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.9 Replacement:

NORMAL OPERATION: operation of the appliance under the following conditions:

The appliance is held by a clamp, with its major axis and the major axis of the cutting head or other accessory positioned in a horizontal plane, and operated without applying a load.

Appliances having adjustable shearing or clipping heads are operated with the blades adjusted so that the power input is 0,8 times RATED POWER INPUT, or 1,2 times the power input obtained after removing any DETACHABLE PARTS that could influence the load, whichever is the more unfavourable. No further adjustments are made.

NOTE 101 The clamp is selected so that there is negligible effect on the heat transfer from the appliance.

3.1.9DV D2 Modification to replace the second paragraph and Note 101 with the following:

The appliance is held by appropriate means so as to have negligent effect on blade movement, temperature and load. It is held with it major axis and the major axis of the

cutting head or other accessory positioned in a horizontal plane and operated without applying a load.

3.101 ANIMAL SHEARER: appliance for commercial use for shearing the fleece of an animal such as a sheep

3.101DV D2 Modification to replace the definition for animal shearer with the following:

ANIMAL SHEARER: appliance for commercial use for shearing the fleece of an animal such as a sheep, in which the distance between the stationary blade teeth is typically large enough to introduce a risk of personal injury.

3.102 ANIMAL CLIPPER: appliance for commercial use in parlours or for household use for trimming the hair of an animal such as a dog

3.103 WASHABLE SHAVER: shaver, the hand-held part of which can be cleaned under water

3.103DV D2 National Difference deleted

3.104 WET SHAVER: shaver, the hand-held part of which may be used in a bath or shower

3.104DV D2 National Difference deleted

3.105 WASHABLE CLIPPER: clipper, the hand-held part of which can be cleaned under water

3.106 WET CLIPPER: clipper, the hand-held part of which may be used in a bath or shower

3.107 WASHABLE EPILATOR: epilator, the hand-held part of which can be cleaned under water

3.108 WET EPILATOR: epilator, the hand-held part of which may be used in a bath or shower

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.

5.8.2 Addition:

If an appliance is marked for use at two different RATED VOLTAGES, and the instructions indicate that it is suitable for use at two different ranges of voltages, the appliance is assumed to have two RATED VOLTAGE RANGES.

5.8.2DV D2 Modification to add the following:

During the required tests for a CLASS III APPLIANCE, each USB connection shall be connected to an independent 5,25 V dc, 8 A capacity DC source of supply unless otherwise indicated. If the appliance has a USB power delivery connection, the voltage shall instead be 21,5 V or 1,05 times the declared operating voltage if less than 20 V. When it is stated that the supply voltage is the RATED VOLTAGE multiplied by a factor, this is disregarded for a CLASS III APPLIANCE.

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 Modification:

ANIMAL SHEARERS shall be CLASS I, CLASS II or CLASS III.

WASHABLE SHAVERS, WET SHAVERS, WASHABLE CLIPPERS, WET CLIPPERS, WASHABLE EPILATORS and WET EPILATORS shall be CLASS II or CLASS III.

Other appliances having a RATED VOLTAGE not exceeding 150 V shall be of CLASS 0, CLASS I, CLASS II or CLASS III.

Other appliances shall be CLASS II or CLASS III.

6.1DV.1 D2 Replacement of the second paragraph of 6.1 of the Part 2 with the following:

WASHABLE SHAVERS, WET SHAVERS, WASHABLE CLIPPERS, WET CLIPPERS, WASHABLE EPILATORS and WET EPILATORS shall be CLASS I, CLASS II or CLASS III.

6.1DV.2 D2 Modification to add the following:

CLASS III APPLIANCES are allowed for appliances powered or charged via a USB connection.

6.2 Addition:

WASHABLE SHAVERS, WET SHAVERS, WASHABLE CLIPPERS, WET CLIPPERS, WASHABLE EPILATORS and WET EPILATORS shall be at least IPX7. However, parts that are intended to be fixed, and transformers with pins for insertion into socket-outlets, shall be at least IPX4. This classification does not apply to parts of CLASS III CONSTRUCTION.

7 Marking and instructions

This clause of Part 1 is applicable except as follows:

7.1 Addition:

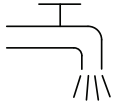
Hand-held parts of WASHABLE SHAVERS, WASHABLE CLIPPERS and WASHABLE EPILATORS shall be marked with symbol IEC 60417-5574 (2002-10).

Hand-held parts of WET SHAVERS, WET CLIPPERS and WET EPILATORS shall be marked with symbol IEC 60417-5582 (2002-10).

7.1DV.101 DR Modification to add the following:

A CLASS 0, CLASS I or CLASS II appliance shall be rated for use on a 120 V branch circuit. The RATED VOLTAGE shall be 115, 120 or 125 V or the RATED VOLTAGE RANGE shall include 120 V.

7.6 Addition:



[symbol IEC 60417-5574 (2002-10)]

suitable for cleaning under an open water tap



[symbol IEC 60417-5582 (2002-10)]

suitable for use in a bath or shower

su0372

7.10DV D2 Modification to add the following to 7.10 of the UL part 1:

A manually operated motor-control switch for an appliance that indicates disconnection from the mains, as required by [22.40DV](#), shall have a plainly identified OFF POSITION.

7.12 Addition:

The instructions for ANIMAL CLIPPERS shall state that the appliance is intended for trimming purposes only.

If ANIMAL CLIPPERS are intended for household use only, this shall be stated.

The instructions for ANIMAL CLIPPERS for commercial use and ANIMAL SHEARERS shall include the substance of the following.

WARNING: Cutting blades may become hot after prolonged use.

If symbol IEC 60417-5574 (2002-10) or symbol IEC 60417-5582 (2002-10) is used, its meaning shall be explained.

The instructions for appliances, other than WASHABLE SHAVERS, WET SHAVERS, WASHABLE CLIPPERS, WET CLIPPERS, WASHABLE EPILATORS and WET EPILATORS, shall include the substance of the following.

WARNING: Keep the appliance dry.

The instructions for WASHABLE SHAVERS, WASHABLE CLIPPERS and WASHABLE EPILATORS with DETACHABLE INTERCONNECTION CORDS shall include the substance of the following:

WARNING: Detach the hand-held part from the supply cord before cleaning it in water.

7.12DV.1 D2 Modification to replace the first, second, third, and fourth paragraphs of 7.12 of the Part 2 addition with the following:

The instructions shall state whether the appliance is intended for household or commercial use.

If the blade temperatures exceed the limit for handles held for short periods only in Table 3, the instructions for ANIMAL CLIPPERS for commercial use and ANIMAL SHEARERS shall include the substance of the following.

WARNING: Cutting blades may become hot after prolonged use.

If a symbol is used in place of required marking text, such as for the OFF POSITION in 7.10DV, its meaning shall be explained.

7.12DV.2 D2 Modification to replace the sixth paragraph of 7.12 of the Part 1 with the following:

The instructions for CLASS III APPLIANCES shall include the substance of the following and shall warn against using unapproved sources:

Use only with a USB Power Source on a certified product, such as on a computer, receptacle, lamp, class 2 power supply or automotive adaptor.

7.12DV.3 D2 Addition of 7.12DV.3.1 – 7.12DV.3.4 to the part 2:

7.12DV.3.1 The instructions shall include the substance of the items in the following list, as applicable, and any other instructions that the manufacturer requires for the appliance. The statement "Read all instructions before using" shall precede the list of items following the word "DANGER." The items are not required to be numbered.

IMPORTANT SAFETY INSTRUCTIONS

When using an electrical appliance, basic precautions are required to always be followed, including the following:

Read all instructions before using (this appliance)

DANGER – To reduce the risk of electric shock:

1. Do not reach for an appliance that has fallen into water. Unplug immediately from receptacle. (This statement is not needed for a WET SHAVER, WET CLIPPER or WET EPILATOR.)

2. Do not use while bathing or in a shower. (This statement is not needed for a WET SHAVER, WET CLIPPER or WET EPILATOR.)

3. Do not place or store appliance where it is able to fall or be pulled into a tub or sink. Do not place in or drop into water or other liquid. (This statement is not needed for a WET SHAVER, WET CLIPPER or WET EPILATOR.)

4. Except when charging, always unplug this appliance from the electrical outlet immediately after using.

5. Unplug this appliance before cleaning.

WARNING – To reduce the risk of burns, fire, electric shock, or injury to persons:

1. An appliance shall never be left unattended when plugged in. (This statement need not be included for a battery-operated appliance that must be recharged.)

2. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

3. Use this appliance only for its intended use as describe in this manual. Do not use attachments not specified by the manufacturer.

4. Never operate this appliance when it has a damaged cord or plug, when it is not working properly, after it has been dropped or damaged, or after it has been dropped into water. Return the appliance to a service center for examination and repair.

5. Keep the cord away from heated surfaces.

6. Keep the air openings free of lint, hair, and similar objects.

7. Never drop or insert any object into any opening.

8. Do not use outdoors or operate while aerosol (spray) products are being used.

9. Do not use this appliance with a damaged or broken comb, as it has the potential to result in facial injury.

10. Always attach plug to appliance first, then to outlet. To disconnect, turn all controls to off position (e.g. "0") then remove plug from outlet.

SAVE THESE INSTRUCTIONS

7.12DV.3.2 As applicable, the following instructions shall be included in the list, following the word "WARNING," in addition to the instructions specified in [7.12DV.3.1](#):

a) For a CLASS I APPLIANCE: Connect this appliance to a properly grounded outlet only. See Grounding Instructions

b) For an ANIMAL CLIPPER or ANIMAL SHEARER: Do not charge, place or leave the appliance where it is expected to be:

1) Subject to damage by an animal, or

2) Exposed to weather.

c) For a wall-hung appliance: Periodically inspect the wall unit for secure mounting.

d) For a dual-voltage appliance:

1) Be sure dual-voltage selector is in the correct voltage position before operating. Before plugging in, read the information about dual voltage contained in the instruction section of this manual.

2) "This appliance was set at the factory to operate at __ volts. Refer to Operating Instructions section of this manual for conversion to __ volt operation or the equivalent." The blanks are to be filled in with the applicable voltage information.

e) For an appliance or DETACHABLE SUPPLY UNIT with pins for insertion into the socket-outlet (See [Figure B.25.7DV.1](#) appliance configurations D or E):

1) Plug charger directly into receptacle – do not use an extension cord.

2) Unplug charger before plugging or unplugging appliance.

f) For appliances provided with a liquid cleaning system:

1) Use only on a level surface.

2) Unplug this appliance before filling. Use only cleaning solution recommended by the manufacturer. Do not overfill (or specify filling instructions).

3) Use only liquid cleaning system provided or recommended by manufacturer.

4) Unless the cleaning solution is not considered to be flammable: "The cleaning solution is flammable. Avoid flame, hot surfaces or smoking during use. Keep out of reach of children. Store in a well-ventilated, cool area."

7.12DV.3.3 This instruction in [7.12DV.3.2](#)(d) does not apply to an appliance that operates over a range of voltages and does not require adjustment by the user. For example, an appliance that uses a switch-mode power supply intended for use over a range of voltages and does not require adjustment by the user.

7.12DV.3.4 The required important safety instructions, installation instructions, and user servicing instructions shall be provided in an instruction sheet, manual, booklet, or similar printed material, and shall be repeated in any electronic media instructions provided. All other instructions may be provided in electronic read-only media format only, such as CD-ROM. The printed instruction material shall contain detailed instructions of how to obtain a printed copy of the material contained in electronic format.

7.12.1 Addition:

The installation instructions for WASHABLE SHAVERS, WET SHAVERS, WASHABLE CLIPPERS, WET CLIPPERS, WASHABLE EPILATORS and WET EPILATORS, other than those classified IPX7, shall state that the parts that have to be fixed must be installed so they cannot fall into water.

7.12.2DV D2 Modification to add the following to 7.12.2 of the UL part 1:

Cord-connected, CLASS I appliances shall be provided with the substance of the following Grounding Instructions.

Grounding Instructions

This appliance should be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This appliance is equipped with a cord having a grounding wire with an appropriate grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER – Improper use of the grounding plug can result in a risk of electric shock.

If repair or replacement of the cord or plug is necessary, do not connect the grounding wire to either flat-blade terminal. The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire.

Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the appliance is properly grounded. Do not modify the plug provided; if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

7.14 Addition:

The height of symbol IEC 60417-5574 (2002-10) and symbol IEC 60417-5582 (2002-10) shall be at least 5 mm.

7.14DV D2 Modification of [7.14](#) to add the following:

The signal words Warning, Caution, and Danger shall be in uppercase letters having a height not less than:

- 3,5 mm for appliances normally used on the floor;
- 2,0 mm for portable appliances with a printable surface of less than 10 cm²; and
- 3,0 mm for other appliances.

Uppercase letters of the text explaining the signal word shall be no smaller than 1,6 mm, with other letters according to the font size of the uppercase letter. Unless contrasting colors are used, molded in, engraved, or stamped markings shall be either raised above or have a depth below the surface of at least 0,25 mm.

7.101DV D2 Addition:

Unless the cleaning solution is not considered to be flammable, the cleaning reservoir shall be marked with the following:

The cleaning solution is flammable. Avoid flame, hot surfaces or smoking during use. Keep out of reach of children. Store in a well-ventilated, cool area.

8 Protection against access to live parts

This clause of Part 1 is applicable.

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

10 Power input and current

This clause of Part 1 is applicable.

11 Heating

This clause of Part 1 is applicable except as follows.

11.3DV D2 Modification to replace the fifth paragraph and the first line of the sixth paragraph of 11.3 of the Part 1 with the following:

Temperature rises of windings are determined by thermocouples or the resistance method. At the beginning of the test, the windings are to be at room temperature.

When using the resistance method, the temperature rise of a winding is calculated from the following formula:

$$\Delta t = \frac{R_2 - R_1}{R_1} (k + 1) - (t_2 - t_1)$$

where

Δt is the temperature rise of the winding;

R_1 is the resistance at the beginning of the test;

R_2 is the resistance at the end of the test;

k is equal to

- 225 for aluminium windings and copper/aluminium windings with an aluminium content ≥ 85 %,
- 229,75 for copper/aluminium windings with an copper content > 15 % to < 85 %,
- 234,5 for copper windings and copper/aluminium windings with an copper content ≥ 85 %;

t_1 is the room temperature at the beginning of the test;

t_2 is the room temperature at the end of the test.

11.5DV D2 Modification to replace 11.5 of the part 1:

MOTOR-OPERATED APPLIANCES are operated under NORMAL OPERATION and supplied at 120 V, and for appliance with a RATED VOLTAGE other than 120 V, the test shall be repeated at the RATED VOLTAGE or at the most unfavourable voltage of the RATED VOLTAGE RANGE.

11.6DV D2 Modification to replace 11.6 of the part 1:

COMBINED APPLIANCES are operated under NORMAL OPERATION and supplied at 120 V, and for appliance with a RATED VOLTAGE other than 120 V, the test shall be repeated at the RATED VOLTAGE or at the most unfavorable voltage of the RATED VOLTAGE RANGE.

11.7 Replacement:

Appliances intended for household use only are operated continuously for 10 min.

ANIMAL SHEARERS are operated until steady conditions are established.

ANIMAL CLIPPERS and other appliances are operated for 10 min followed by a rest period of 10 min. This cycle of operation is repeated until steady conditions are established.

11.7DV D2 Modification to replace the second and third paragraphs of 11.7 of the part 2 with the following:

ANIMAL CLIPPERS for commercial use, ANIMAL SHEARERS, and other commercial appliances are operated for 5 min followed by a rest period of 5 min. This cycle of operation is repeated until steady conditions are established.

11.8 Addition:

The temperature rise of parts that are in contact with skin in normal use, or are held in the hand, shall not exceed the limits specified for handles which are continuously held in normal use. The temperature rise of parts of hair clippers or trimmers that are in contact with hair in normal use, and may contact the skin for short periods, shall not exceed the limits specified for handles which in normal use are held for short periods only. The temperature rise of cutting blades of ANIMAL CLIPPERS for commercial use and ANIMAL SHEARERS that may come in contact with the animal skin or hair in normal use is 50 K.

11.8DV.1 D2 Modification to replace the 2nd sentence of 11.8 of the Part 2 addition with the following:

The temperature rise of parts that are in contact with hair in normal use, but only contact the skin for short periods, such as the blades of a hair clipper or trimmer, shall not exceed the limits specified in [Table 11.8DV](#).

Table 11.8DV
Temperature rise limits for blades in contact with hair during normal use

Surfaces of parts in contact with hair in normal use	Temperature rise, K
– of bare metal	40
– of coated metal	44
– of porcelain or vitreous material	50
– of plastic having a thickness exceeding 0,4 mm	65
^a The temperature limits are based on the limits in Table 3 of the Part 1 for handles held for short periods only for normal use, but are increased 5°C to accommodate for the reduction in blade temperatures when the appliance is moved during normal operation.	

11.8DV.2 D2 Modification to add the following to 11.8:

For appliances provided with a heated cleaning reservoir, surfaces in contact with the cleaning fluid shall not exceed 50°C unless the cleaning solution is suitable for use at higher temperatures or not considered to be flammable.

12 Void**13 Leakage current and electric strength at operating temperature**

This clause of Part 1 is applicable.

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable.

16 Leakage current and electric strength

This clause of Part 1 is applicable.

17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

17DV DC Modification to add the following Note to Clause 17 of the part 1:

NOTE 101 This test is not applicable for transformers or power supplies complying with the standards specified in Annex [DVA](#) or those supplied from a LIMITED POWER SOURCE.

18 Endurance

This clause of Part 1 is not applicable.

19 Abnormal operation

This clause of Part 1 is applicable except as follows.

19.1 Addition:

HAND-HELD APPLIANCES are also subjected to the test of [19.101](#).

19.7 Addition:

Appliances that are not hand-held or are not kept switched on by hand are tested for 5 min.

19.7DV D2 Modification to add the following Notes to [19.7](#) of the part 2:

NOTE 101 The movable portion of a vibrating armature is to be locked in the unenergized position.

NOTE 102 This test is not applicable for products supplied from a LIMITED POWER SOURCE.

19.10 Addition:

NOTE 101 The lowest possible load is obtained with the appliance operating under NORMAL OPERATION but after removal of any DETACHABLE PART that may influence the load.

19.101 *HAND-HELD APPLIANCES are placed on a soft-wood board in the most unfavorable position. They are supplied at RATED VOLTAGE and operated until steady conditions are established.*

19.102DV D2 Addition of 19.102DV.1 – 19.102DV.5 to the Part 2:

19.102DV.1 A CLASS III APPLIANCE or a CLASS III CONSTRUCTION part of an appliance supplied from a USB port, including any manufacturer supplied USB cable, shall be placed on a soft wood surface covered by two layers of tissue paper. The appliance shall be covered by one layer of untreated 100% cotton medical gauze or cheesecloth. The appliance shall be operated as specified in Clause [11](#) while supplied via the USB input from a power source with a voltage equal to 5 volts greater than the voltage specified in [5.8.2DV](#) and with an available current of twice that specified in [5.8.2DV](#).

19.102DV.2 During the test, for battery-operated appliances, venting of cells is permitted and, for lithium-ion systems, each cell voltage shall be continuously monitored to determine if it has exceeded the upper limit charging voltage.

19.102DV.3 During the test,

- a) there shall be no explosion,
- b) there shall be no charring or burning of the medical gauze, cheesecloth or tissue paper,
- c) for lithium-ion systems, cells shall not have exceeded the upper limit charging voltage by more than 150 mV or, if they have, then they shall be permanently disabled from being recharged, and
- d) there shall be no venting through other than cell vents and no evidence of damage to a cell that obstructs a cell vent so as to defeat its operation if venting is relied upon for compliance with this standard.

19.102DV.4 The test shall be continued until:

- a PROTECTIVE DEVICE operates,
- the appliance temperatures return to within 5 K of the ambient temperature, or
- twice the normal charge period, but at least 3 hours, has elapsed.

19.102DV.5 The test is then repeated while increasing the USB input voltage at 5 volt increments up to 60 V d. c or until a PROTECTIVE DEVICE operates, whichever occurs first.

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.1 Replacement:

Appliances, other than FIXED APPLIANCES and HAND-HELD APPLIANCES without a charging stand, intended to be used on a surface such as the floor or a table, shall have adequate stability.

Compliance is checked by the following test, appliances incorporating an appliance inlet being fitted with an appropriate connector and flexible cord. HAND-HELD APPLIANCES with a charging stand are subjected to the test while placed on their charging stand.

The appliance, not connected to the supply mains, is placed in any normal position of use on a plane inclined at an angle of 10° to the horizontal, the SUPPLY CORD resting on the inclined plane in the most unfavourable position. However, if part of an appliance comes into contact with the horizontal supporting surface when the appliance is tilted through an angle of 10°, the appliance is placed on a horizontal support and tilted in the most unfavourable direction through an angle of 10°.

NOTE 101 The test on the horizontal support can be necessary for appliances provided with rollers, castors or feet. In this case, castors or wheels can be blocked to prevent the appliance from rolling.

Appliances intended to be filled with liquid by the user in normal use are tested empty or filled with the most unfavourable quantity of water up to the capacity indicated in the instructions.

The appliance shall not overturn unless the appliance or the part of the appliance which overturns complies with all of the following:

- it only contains circuits operating at SELV according to 8.1.4;*
- it only contains low power circuits according to 19.11.1;*
- it is dropped from a height of 700 mm on a rigidly supported hard wood board 5 times, the appliance being held in different positions likely to occur. After the drops, the appliance or part of the appliance as relevant shall maintain compliance with 15.1 and 20.2;*
- if the weight is more than 200 g, it does not have sharp edges when ready for use. An edge with a radius of 1 mm or more is not considered a sharp edge.*

The test is repeated on appliances with heating elements with the angle of inclination increased to 15°. If the appliance overturns in one or more positions, it is subjected to the tests of Clause 11 in each of these overturned positions.

During this test, temperature rises shall not exceed the values shown in Table 9.

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 Addition:

Blows with an impact energy of 0,5 J are only applied to those parts that could hit the floor if the appliance is dropped. Three blows are applied to other parts with an impact energy of 0,35 J.

Blows are not applied to cutting heads.

21.1DV.101 D2 National Difference deleted

21.101 Hand-held parts of appliances shall have adequate mechanical strength and be constructed to withstand such rough handling that may be expected in normal use.

Compliance is checked by the following test.

The hand-held part of the appliance is placed in a sling that is constructed by tying together the four corners of a single layer of cheese cloth. The lowest point of the sling is suspended at a height of 700 mm for ANIMAL CLIPPERS and ANIMAL SHEARERS above a rigidly supported hardwood board surface and at a height 900 mm above a concrete or similar hard surface for other appliances.

The hand-held part of the appliance in the sling is dropped from a stationary position. The test is carried out a total of five times with the hand-held part of the appliance being positioned so that it falls onto the surface in five different orientations.

The appliance shall not be damaged to such an extent that compliance with 8.1 and Clause [29](#) is impaired.

21.101DV D2 Modification to add the following to 21.101:

The polymeric enclosure of a HAND-HELD APPLIANCES or a hand-held part of an appliance may instead comply with the Drop Impact Test of UL 746C.

22 Construction

This clause of Part 1 is applicable except as follows

22.26 Addition:

Hand-held parts of WASHABLE SHAVERS, WASHABLE CLIPPERS and WASHABLE EPILATORS shall be CLASS III CONSTRUCTION having a WORKING VOLTAGE not exceeding 24 V.

Hand-held parts of WET SHAVERS, WET CLIPPERS and WET EPILATORS shall be CLASS III CONSTRUCTION having a WORKING VOLTAGE not exceeding 12 V, except when they are being charged when the WORKING VOLTAGE shall not exceed 24 V.

Compliance is checked by inspection and by measurement.

22.36 Addition:

Hand-held parts shall be CLASS II CONSTRUCTION OR CLASS III CONSTRUCTION.

For appliances having a RATED VOLTAGE not exceeding 150 V, hand-held parts except those of WASHABLE SHAVERS, WET SHAVERS, WASHABLE CLIPPERS, WET CLIPPERS, WASHABLE EPILATORS, and WET EPILATORS may be of CLASS 0 CONSTRUCTION.

22.36DV D2 Modification to replace the Part 2 addition with the following:

For appliances having a RATED VOLTAGE exceeding 150 V, hand-held parts shall be CLASS II CONSTRUCTION OR CLASS III CONSTRUCTION.

22.40 Replacement:

ANIMAL SHEARERS and ANIMAL CLIPPERS shall be fitted with a switch to control the motor.

Compliance is checked by inspection.

22.40DV D2 Modification to replace the first paragraph of 22.40 with the following:

A manually operated motor-control switch shall be provided if operation of the appliance presents a risk of injury, such as for ANIMAL SHEARERS, or in a cord-connected appliance that employs a motor rated more than 1/3 hp (250 W output).

22.52DV D2 Replace 22.52DV of the Part 1 with the following:

Socket-outlets are not allowed on products covered under the scope of this standard.

22.54DV D1 Modification to replace 22.54 of the Part 1 by the following:

To reduce the risk of injury due to battery ingestion, the battery compartment of an appliance or any accessory, such as a wireless control, incorporating one or more coin cell batteries of lithium technologies shall comply with the Standard for Products Incorporating Button or Coin Cell Batteries of Lithium Technologies, UL 4200A, if the appliance or any accessory:

- a) Is intended for use with one or more single cell batteries having a diameter of 32 mm (1,25 in) or less where the cell diameter is greater than its height; and**
- b) The appliance is intended for household use.**

22.101 Appliances shall not have openings that would allow small items to penetrate and touch LIVE PARTS.

Compliance is checked by inspection and by measuring the distance between the supporting surface and LIVE PARTS through openings. This distance shall be at least 6 mm. However, if the appliance is fitted with legs, this distance is increased to 10 mm if the appliance is intended to stand on a table and to 20 mm if it is intended to stand on the floor.

22.102 Shavers and hair clippers shall be constructed so that the penetration of clippings cannot give rise to electrical or mechanical faults.

Compliance is checked by inspection.

22.103 WASHABLE SHAVERS, WET SHAVERS, WASHABLE CLIPPERS, WET CLIPPERS, WASHABLE EPILATORS and WET EPILATORS, other than those classified IPX7, shall be constructed so that parts that are intended to be fixed can be fixed securely.

Compliance is checked by inspection.

NOTE Keyhole slots, hooks and similar means, without further means to prevent the appliance from being inadvertently lifted off the support, are not considered to be adequate means for fixing the appliance securely.

23 Internal wiring

This clause of Part 1 is applicable

24 Components

This clause of Part 1 is applicable except as follows

24.1DV DC Modification to add the following:

Components complying with Annex [DVA](#) are considered to comply with 24.1DV.4 – 24.1DV.8 of the Part 1.

24.1.3 Addition:

Switches incorporated in ANIMAL CLIPPERS for commercial use and ANIMAL SHEARERS, and hair clippers for hairdressers, the number of cycles of operation declared for Subclause 7.1.4 of IEC 61058-1 shall be at least 50 000.

For switches incorporated in hair clippers intended for household use only and ANIMAL CLIPPERS intended for household use only, the number of cycles of operation declared for subclause 7.1.4 of IEC 61058-1 shall be at least 3 000.

For switches incorporated in shavers intended for household use only, the number of cycles of operation declared for subclause 7.1.4 of IEC 61058-1 shall be at least 6 000.

24.1.3DV D2 Modification to replace the first paragraph by the following:

For switches incorporated in ANIMAL CLIPPERS for commercial use and hair clippers for hairdressers, the number of cycles of operation declared for Subclause 7.1.4 of IEC 61058-1 shall be at least 10 000. For switches incorporated in ANIMAL SHEARERS, the number of cycles of operation declared for Subclause 7.1.4 of IEC 61058-1 shall be at least 50 000.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows

25.1DV.101 DR Modification to add the following to 25.1 of the Part 1:

An appliance having an appliance inlet for connection to the supply mains shall be provided with a DETACHABLE CORD. An appliance that is required to employ a polarized attachment plug as specified in [25.1DV.1.1](#) and that is supplied with a DETACHABLE CORD shall also employ an appliance inlet of the polarized type.

25.1DV.1.1 DR Modification to replace 25.1DV.1.1 of the Part 1 with the following:

The SUPPLY CORD of appliances incorporating a screwshell type lampholder and of appliances, other than Class II shavers, incorporating a manually operated, mains connected, single-pole switch intended for appliance on-off operation shall be fitted with a polarized attachment plug. The switch shall be electrically connected to a terminal or lead intended for connection to an ungrounded conductor of the supply circuit.

25.5 Addition:

TYPE Z ATTACHMENT is allowed for appliances intended for household use only.

TYPE X ATTACHMENTS are not allowed on appliances with an IP classification exceeding IPX4.

25.5DV D2 Modification to replace the second sentence of [25.5](#) of the Part 2 addition with the following:

TYPE X ATTACHMENT is not allowed.

25.7 Addition:

Flat twin tinsel cord is allowed for appliances intended for household use only as long as they are fitted with a non-rewirable plug.

Rubber insulated SUPPLY CORDS of ANIMAL SHEARERS shall be polychloroprene sheathed and not be lighter than ordinary polychloroprene sheathed flexible cord (code designation 60245 IEC 57).

SUPPLY CORDS shall have a length of at least 1,7 m. This requirement is not applicable to SUPPLY CORDS on battery charging units.

25.7DV D2 Modification of [25.7](#) by replacement of both the Part 1 and the Part 2 with [25.7DV.101](#) – [25.7DV.102](#):

25.7DV.101 The flexible cord shall be of a length and Type as specified in [Table 25.7DV.1.1](#) or shall have properties such that it is at least equally as serviceable for the appliance.

Table 25.7DV.1.1 D2 Addition to the part 2:

Table 25.7DV.1.1
Cords for mains connected appliances

Application	Types of cord ^a	Minimum Length ^b	
		m	(ft)
ANIMAL CLIPPERS	TST ^c , SV	1,83	(6)
ANIMAL SHEARER	SJ	1,83	(6)
Hair clippers	TPT ^c , TST ^c , SP-1 ^d , SV	1,83	(6)

Table 25.7DV.1.1 Continued on Next Page

Table 25.7DV.1.1 Continued

Application	Types of cord ^a	Minimum Length ^b	
		m	(ft)
Shavers	TPT ^c , TST ^c , SP-1 ^d , SV	1,5	(5)
^a The cord type may include additional suffix letters. ^b Minimum length includes the attachment plug, and for a cord set includes fittings. ^c Tinsel cord is allowed only under the conditions specified in 25.7DV.102 . ^d Only appliances weighing 227 g (1/2 lb) or less are allowed to use SP-1, SPE-1, or SPT-1 cord. The weight of the appliance is to be determined without the power supply cord.			

25.7DV.102 When a tinsel cord is employed, the appliance and cord shall comply with the following conditions:

- a) The cord shall not be longer than 2,45 m (8 ft);
- b) The cord shall be attached to the appliance directly or by means of a plug other than a standard flatiron or appliance plug;
- c) The appliance rating shall not be more than 50 W;
- d) The cord is attached to the hand-held portion of the appliance so as to necessitate use of an extremely flexible cord; and
- e) The cord is not used for protective earthing.

25.14 *Modification:*

The number of flexings for TYPE Z ATTACHMENT is 100 000 and for other attachments 50 000.

25.24 *Addition:*

INTERCONNECTION CORDS OF WASHABLE SHAVERS, WASHABLE CLIPPERS and WASHABLE EPILATORS shall be detachable.

WET SHAVERS, WET CLIPPERS and WET EPILATORS shall not have an INTERCONNECTION CORD unless they cannot be operated when connected to the supply mains.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable.

28 Screws and connections

This clause of Part 1 is applicable

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

30.2.3 Not applicable.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

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Annexes

The annexes of Part 1 are applicable except as follows.

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