



UL 62275

STANDARD FOR SAFETY

Cable Management Systems – Cable Ties for
Electrical Installations

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UL Standard for Safety for Cable Management Systems – Cable Ties For Electrical Installations, UL 62275

First Edition, Dated February 26, 2010

Summary of Topics

This revision of ANSI/UL 62275 is being issued to reaffirm approval as an American National Standard. No changes to the requirements have been made.

As noted in the Commitment for Amendments statement located on the back side of the title page, UL, CSA, and ANCE are committed to updating this harmonized standard jointly. However, the revision pages dated October 10, 2014 will not be jointly issued by UL, CSA, and ANCE as these revision pages only address UL ANSI approval date information.

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 revisions are substantially in accordance with Proposal(s) on this subject dated August 15, 2014.

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No Text on This Page

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Association of Standardization and Certification
NMX-J-623-ANCE
First Edition



CSA Group
CAN/CSA-C22.2 No. 62275-10
First Edition



Underwriters Laboratories Inc.
UL 62275
First Edition

Cable Management Systems – Cable Ties for Electrical Installations

February 26, 2010

(Title Page Reprinted: October 10, 2014)

This national standard is based on publication IEC 62275, First edition (2006)



ANSI/UL 62275-2010 (R2014)

Approved by



Standards Council of Canada
Conseil canadien des normes



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Commitment for Amendments

This standard is issued jointly by the Association of Standardization and Certification (ANCE), the Canadian Standards Association (operating as "CSA Group"), and Underwriters Laboratories Inc. (UL). Comments or proposals for revisions on any part of the standard may be submitted to ANCE, CSA Group, or UL at anytime. Revisions to this standard will be made only after processing according to the standards development procedures of ANCE, CSA Group, and UL. CSA Group and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue. ANCE will incorporate the same revisions into a new edition of the standard bearing the same date of issue as the CSA Group and UL pages.

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This Standard is subject to periodic review, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquires@csagroup.org and include "Proposal for change" in the subject line: Standard designation 62275; relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

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This ANSI/UL Standard for Safety consists of the First Edition.

The most recent designation of ANSI/UL 62275 as an American National Standard (ANSI) occurred on October 8, 2014. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the 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 <http://csds.ul.com>.

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CONTENTS

Preface	5
NATIONAL DIFFERENCES	8
FOREWORD	9
1 Scope	11
2 Normative references	11
3 Terms and definitions	13
4 General requirements	13
5 General notes on tests	14
6 Classification	21
6.1 According to material	21
6.2 According to loop tensile strength for cable ties	21
6.3 According to temperature	22
6.4 According to contribution to fire for non-metallic and composite cable ties only	23
6.5 According to environmental influences	24
7 Marking and documentation	24
8 Construction	27
9 Mechanical properties	29
9.1 Requirements	29
9.2 Installation test	31
9.3 Minimum installation temperature test for cable ties	31
9.4 Minimum operating temperature test for cable ties	32
9.5 Loop tensile strength test for cable ties classified according to 6.2.1	34
9.6 Loop tensile strength test for cable ties classified according to 6.2.2	36
9.7 Mechanical strength test for fixing devices	40
10 Contribution to fire	45
11 Environmental influences	48
11.1 Resistance to ultraviolet light	48
11.2 Resistance to corrosion	50
12 Electromagnetic compatibility	53
13DV Smoke and heat release test	53

ANNEX DVA (Normative) Adhesives

DVA.1 Scope	55
DVA.2 Requirements	55
DVA.3 Method – general	55
DVA.4 As-received test	56
DVA.5 Effect of temperature	56
DVA.6 Effect of humidity	58
DVA.7 Effect of cold	58
DVA.8 Effect of cyclic conditions	58
DVA.9 Other test considerations	59

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ANNEX DVB (Normative) Smoke and heat release test

DVB.1 Scope	60
DVB.2 Apparatus	60

ANNEX DVC (Informative) Substitution of materials

DVC.1 Normative references	69
DVC.2 Criteria for substitution of materials	69

ANNEX DVD (Informative) Polymeric material modifications

DVD.1 Regrind material	70
DVD.2 Additives used in the moulding process	70
DVD.3 Blending materials	71

ANNEX DVE (Normative) Tests for Polymer Identification

DVE.1 Normative references	72
DVE.2 Infrared spectroscopy	72
DVE.3 Thermogravimetry	74
DVE.4 Differential scanning calorimetry	75

ANNEX DVF (Informative) Index of requirements by type**ANNEX DVG (Informative) Classifications worksheet (Canada and the United States)**

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Preface

This is the harmonized ANCE, CSA Group, and UL standard for Cable Management Systems – Cable Ties for Electrical Installations. It is the first edition of NMX-J-623-ANCE, the first edition of CAN/CSA-C22.2 No. 62275, and the first edition of UL 62275. This edition of CAN/CSA-C22.2 No. 62275 supersedes the requirements of CSA Standard C22.2 No. 18.5, published in 2002, for products covered in this standard, as indicated in the scope of this standard. This standard is an adoption, with national differences, of the identically titled CEI/IEC (Commission Electrotechnique Internationale/International Electrotechnical Commission) Standard IEC 62275 (first edition, 2006-10).

This harmonized standard was prepared by the Association of Standardization and Certification (ANCE), CSA Group, and Underwriters Laboratories Inc. (UL). The efforts and support of the CANENA Technical Harmonization Subcommittee 23A-62275 are gratefully acknowledged.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

The Mexican Standard was developed by the CT PIE-A from the Comité de Normalización de la Asociación de Normalización y Certificación, A.C., CONANCE, with the collaboration of the manufacturers and users.

This standard was reviewed by the CSA Integrated Committee on Fittings, Hardware, and Positioning Devices, under the jurisdiction of the CSA Technical Committee on Wiring Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

This standard has been approved as a National Standard of Canada by the Standards Council of Canada.

This standard has been approved by the American National Standards Institute (ANSI) as an American National Standard.

Where reference is made to a specific number of samples to be tested, the specified number is considered a minimum quantity.

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.

Level of harmonization

This standard adopts the IEC text with national differences.

This standard is published as an equivalent standard for ANCE, CSA, and UL.

An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

All national differences from the IEC text are included in the ANCE, CSA, and UL versions of the standard. While the technical content is the same in each organization's version, the format and presentation may differ.

Reasons for differences from IEC

This standard adopts the IEC text with national differences. Throughout the standard, national differences have been identified for the countries to which they apply. These differences are necessary in order to maintain compliance with existing nationally based codes and regulations, or to take into account essential safety practices or market based preferences.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

ANCE effective date

The effective date for ANCE will be announced through the Diario Oficial de la Federación (Official Gazette) and is indicated on the cover page.

CSA Group effective date

The effective date for CSA Group will be announced through CSA Informs or a CSA Group certification notice.

UL effective date

As of *June 1, 2014* all products Listed or Recognized by UL must comply with the requirements in this standard.

Between *February 26, 2010* and *June 1, 2014*, new product submittals to UL may be evaluated under all requirements in this standard or, if requested in writing, evaluated under presently effective requirements only. The presently effective requirements are contained in the Fourth edition of UL 1565.

A UL effective date is one established by Underwriters Laboratories Inc. and is not part of the ANSI approved standard.

IEC Copyright

For ANCE, the text, figures, and tables of International Electrotechnical Commission Publication 62275, Cable management systems – Cable ties for electrical installations, copyright 2006, are used in this standard according to the guidelines provided in the ISO/IEC/POCOSA.

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NATIONAL DIFFERENCES

GENERAL

National Differences from the text of International Electrotechnical Commission (IEC) Publication 62275, Cable management systems – Cable ties for electrical installations, first edition (2006-10), are indicated by notations (differences) and are presented in bold text.

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.

Replacement / Replace – A replacement entails replacement of an entire clause, subclause, paragraph, table, figure, or annex with a new clause, subclause, paragraph, table, figure, or annex.

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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INTERNATIONAL ELECTROTECHNICAL COMMISSION**CABLE MANAGEMENT SYSTEMS – CABLE TIES FOR ELECTRICAL INSTALLATIONS****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 nongovernmental 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.

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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 62275 has been prepared by subcommittee 23A: Cable management systems, of IEC technical committee 23: Electrical accessories.

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

FDIS	Report on voting
23A/510/FDIS	23A/523/RVD

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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.

In this publication, the following print types are used:

- Requirements proper: in roman type.
- *Test specifications: in italic type.*
- Notes: in smaller roman type.

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.

DV.1 DE Add the following paragraph to the Foreword:

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.

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CABLE MANAGEMENT SYSTEMS – CABLE TIES FOR ELECTRICAL INSTALLATIONS

1 Scope

This International Standard specifies requirements for metallic, non-metallic and composite cable ties and their associated fixing devices used for the management and support of wiring systems in electrical installations.

Cable ties and associated fixing devices may also be suitable for other applications and where so used, regard should be taken of any additional requirements.

This standard does not contain requirements that evaluate any electrical insulation properties of the cable tie or mechanical protection of the cables provided by the cable tie.

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 60068-2-6:1995,
Environmental Testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)

IEC 60068-2-52:1996,
Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium, chloride solution)

IEC 60695-11-5:2004,
Fire hazard testing – Part 11-5: Test flames – Needle flame test method – Apparatus, confirmatory test arrangement and guidance

IEC 60216-4-1,
Electrical insulating materials – Thermal endurance properties – Part 4-1: Ageing ovens – Single-chamber ovens

ISO 4892-2:1994,
Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps¹⁾

ISO 4892-4:1994,
Plastics – Methods of exposure to laboratory light sources – Part 4: Open-flame carbon-arc lamps²⁾

ISO 6988:1985,
Metallic and other non organic coatings – Sulphur dioxide test with general condensation of moisture

¹⁾ This publication has been withdrawn and replaced by a 2006 edition.

²⁾ This publication has been withdrawn and replaced by a 2006 edition.

2DV.1 DC Delete the normative reference to ISO 6988.

2DV.2 D1 Add the following to Clause 2:

2DV.2.1 In Canada, the following additional references apply:

C22.1-09

Canadian Electrical Code, Part I

CAN/CSA-C22.2 No. 0-M91 (R2006)

General requirements – Canadian Electrical Code, Part II

CAN/CSA-C22.2 No. 0.17-00 (R2004)

Evaluation of properties of polymeric materials

2DV.2.2 In the United States, the following additional references apply:

National Electrical Code (NEC®)

ANSI/NFPA 70-2008

UL 94

Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances

UL 746A

Standard for Polymeric Materials – Short Term Properties

UL 746B

Standard for Polymeric Materials – Long Term Property Evaluations

UL 2043

Fire Test for Heat and Visible Smoke Release for Discrete Products and their Accessories Installed in Air-Handling Spaces

2DV.2.3 In Canada and the United States, the following additional references apply:

IEC 60695-11-10

Test flames – 50 W horizontal and vertical flame test methods

ISO 9227: 1990

Corrosion tests in artificial atmospheres – Salt spray tests

In Mexico, these references do not apply.

2DV.2.4 In Mexico, the following references apply:

NMX-D-122-ANCE-1973

Test method for corrosion resistance of coated metal parts used in motor vehicles – Salt spray (fog)

NMX-J-417-ANCE-2005

Wires and cables – Convection laboratories ovens for evaluation of electrical insulation – Specifications and test methods

NMX-J-553-ANCE-2002***Wires and cables – Weather resistance of insulation or jacket of electrical conductors – Test method*****3 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

3.1 cable tie band or length of material, employing a locking device, used for bundling or tying groups of cables together, securing and/or supporting the cables

NOTE Type 1 and Type 2 cable ties are classified in 6.2.1 and 6.2.2.

3.1DV D1 Add the following note to the definition of cable tie:

NOTE DV.1 In Canada and the United States, Type 11 and Type 21 cable ties are classified in 6.2.1DV and 6.2.2DV.1. In Mexico, Type 11 and Type 21 are not recognized classifications.

3.2 fixing device component (such as a block or bracket) specifically designed to secure the cable tie to a mounting surface

NOTE A cable tie and the fixing device may be manufactured as an integrated component.

3.3 metallic component component which consists of metal only

3.4 non-metallic component component which consists of non-metallic material only

3.5 composite component component comprising both metallic and non-metallic materials

3.6 environmental influence effect of corrosive or polluting substances or solar radiation etc.

3.7 loop tensile strength reference mechanical characteristic of a cable tie with its locking mechanism engaged

3.8 locking device feature of a cable tie for fixing it in a closed position

3DV D1 Add the following terms to Clause 3:

3DV.1 Air-handling spaces – ducts or plenums used for environmental air and other spaces used for environmental air, such as above hung ceilings or below raised floors. This does not include plenums used for the removal of dust, loose stock, or vapour, or for ventilation of commercial-type cooking equipment.

3DV.2 Type test – test conducted on sample representing production.

4 General requirements

A cable tie and a fixing device shall withstand the stresses likely to occur during recommended installation practice and perform under the conditions of classifications in Clause 6 as declared by the manufacturer.

Compliance is checked by carrying out all the appropriate tests specified.

4DV DC Add the following to Clause 4:

4DV.1 In Canada, general requirements are given in CAN/CSA-C22.2 No. 0.

4DV.2 In Canada and the United States, an adhesive relied upon for securement of a fixing device shall be tested in accordance with the requirements in Annex DVA, Adhesives.

5 General notes on tests

5.1 Tests according to this standard are type tests. Unless otherwise specified, tests are carried out with the cable ties and their associated fixing devices, where available, installed as in normal use according to the manufacturer's instructions.

NOTE For guidance in determining product types and sample sets, a family of cable ties or fixing devices having material, construction characteristics, and classifications according to Clause 6, in common, are considered of the same product type. Examples for consideration are material colours, or variable lengths of a cable tie of otherwise like construction.

The sample sets selected for testing from each product type should represent the extremes of the range (example: shortest and longest), and the minimum performance level obtained for either extreme should be determined to be representative of the entire range.

Consideration should be given to minor construction variations that can be determined by inspection to have no affect on performance, when determining product types.

5.2 Unless otherwise specified, tests on non-metallic and composite components shall commence when the samples have been removed from their packaging and then stabilised at a temperature of $(23 \pm 5) ^\circ\text{C}$ and at a relative humidity of $(50 \pm 5) \%$, for a period as indicated in Table 1.

NOTE This stabilisation intends to achieve equilibrium of moisture content for all samples before and after further conditioning and testing. Stabilisation time may be reduced if the product's moisture equilibrium is validated by a calibrated moisture analyzer device. Stabilisation time determined by this method may be different for as-received samples and following each required further conditioning.

5.2DV D2 Modify the NOTE as follows:

Delete the last two sentences of the Note in 5.2.

5.2ADV D2 Add the following new paragraph:

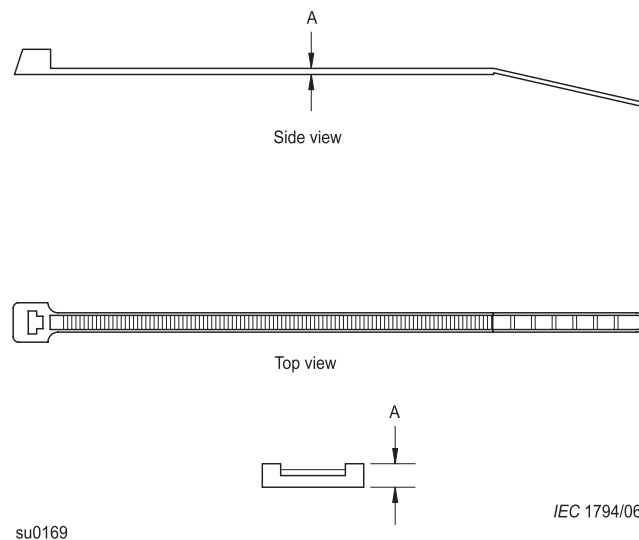
When the equilibrium moisture content for a material is determined through a method agreed to by the manufacturer and the testing laboratory, the stabilization time in Table 1 may be reduced under the following conditions:

- a) the product's moisture content in the as-received condition and after each appropriate conditioning is measured using a calibrated moisture analyzer device;
- b) the samples are subjected to exposure to a constant temperature not exceeding $50 \pm 2 ^\circ\text{C}$ and relative humidity not exceeding 80 ± 5 percent; and
- c) the product's equilibrium moisture content is verified using a calibrated moisture analyzer device.

Table 1 – Stabilisation time for samples

Reference thickness (RT) of the device mm	Stabilization time days
$RT \leq 1,2$	7 ± 1
$1,2 < RT \leq 1,4$	21^0_{-7}
$1,4 < RT$	35^0_{-7}

The reference thickness of a cable tie is measured at the midpoint of the strap. The reference thickness of a fixing device shall be the smallest cross section in the area that interfaces with the cable tie or as declared by the manufacturer. See Figure 1.

**Key**

A Reference thickness of cable tie

Figure 1 – Reference thickness for cable ties

5.3 Unless otherwise specified, the tests shall be carried out at an ambient temperature of $(23 \pm 5) ^\circ\text{C}$ and with a relative humidity of between 40 % and 60 %.

5.4 Unless otherwise specified, three new samples are submitted to the tests and the requirements are satisfied if all the tests are met. If only one of the samples does not satisfy a test due to an assembly or manufacturing fault, that test and any preceding one which may have influenced the results of the test shall be repeated and also the tests which follow shall be made in the required sequence on another full set of samples, all of which shall comply with the requirements.

NOTE The applicant, when submitting the first set of samples, may also submit an additional set of samples which may be necessary should one sample fail. The test station will then without further request test the additional set of samples and will reject only if a further failure occurs.

If the additional set of samples is not submitted at the same time, a failure of one sample will entail a rejection.

5.5 When toxic or hazardous processes are used, due regard shall be taken of the safety of persons within the test area.

5.6 Unless otherwise specified, the cross-head speed of a tensile machine used during the tests shall be $(25 \pm 2,5)$ mm/min.

5.7 Where required for heat ageing, a full draft circulating-air oven as specified in IEC 60216-4-1 shall be used. A portion of the air shall be allowed to re-circulate and a substantial amount of air shall be admitted continuously to maintain the normal air content surrounding the samples. The oven shall be adjusted to achieve more than 5 complete fresh-air changes per hour.

5.7DV D1 Modify by adding the following text:

In Mexico, an oven as specified in NMX-J-417-ANCE-2005 is considered equivalent.

5.8 A fixing device that is integral to a cable tie shall comply with the requirements for both the fixing device and the cable tie.

5.8DV D1 Add the following paragraphs to 5.8:

5.8DV.1 A surface-mounted fixing device, the performance of which is dependent on the mounting surface or the mounting orientation, shall comply with all applicable tests when the device is assembled on the surfaces for which it is intended, and in each intended mounting orientation declared by the manufacturer. If the manufacturer does not make a declaration of mounting orientation or when it can be determined that a particular mounting orientation represents the most onerous condition, the results of tests in that orientation may represent all mounting orientations.

5.8DV.2 A fixing device, the performance of which is dependent on the mounting hole size, the thickness of the material to which it is to be mounted, or the mounting orientation, shall comply with all applicable tests when the device is assembled to the minimum and maximum thickness of each mounting surface and in each intended mounting orientation declared by the manufacturer. If the manufacturer does not make a declaration of mounting orientation or when it can be determined that a particular mounting orientation represents the most onerous condition, the results of tests in that orientation may represent all mounting orientations.

5.9 Unless otherwise specified, when conducting the tests on cable ties in Clause 9, the samples shall be installed according to the manufacturer's instructions on a steel or aluminium mandrel which has a diameter A:

- equal to (20 ± 2) mm for cable ties with a maximum declared diameter of 38 mm or less; or

- equal to (38 ± 2) mm for cable ties with a maximum declared diameter greater than 38 mm.

The width B of the mandrel shall be at least 5 mm greater than the maximum width of the cable tie as shown in Figure 2.

If the cable tie is too short to meet the diameter of the test mandrel, then a test mandrel that has the maximum diameter as declared by the manufacturer shall be used.

If the minimum diameter of the cable tie is greater than the diameter of the test mandrel, then a test mandrel that has the minimum diameter as declared by the manufacturer shall be used.

For the loop tensile strength tests, the mandrel shall be split in two equal parts and the cable ties positioned as shown in Figure 2.

The excess end (tail) of the cable tie is permitted to be cut off after assembly, except in the tests where marking is required for the purpose of measurement (see 9.6).

5.9DV.1 D2 Replace the third paragraph with the following:

If the cable tie is too short to meet the diameter of the smallest test mandrel, then a test mandrel having a diameter of 9.5 mm shall be used.

5.9DV.2 DE Replace the fifth paragraph with the following:

For the loop tensile strength tests, the mandrel shall be split in two equal parts and the cable ties positioned as shown in the top half of Figure 2DV.

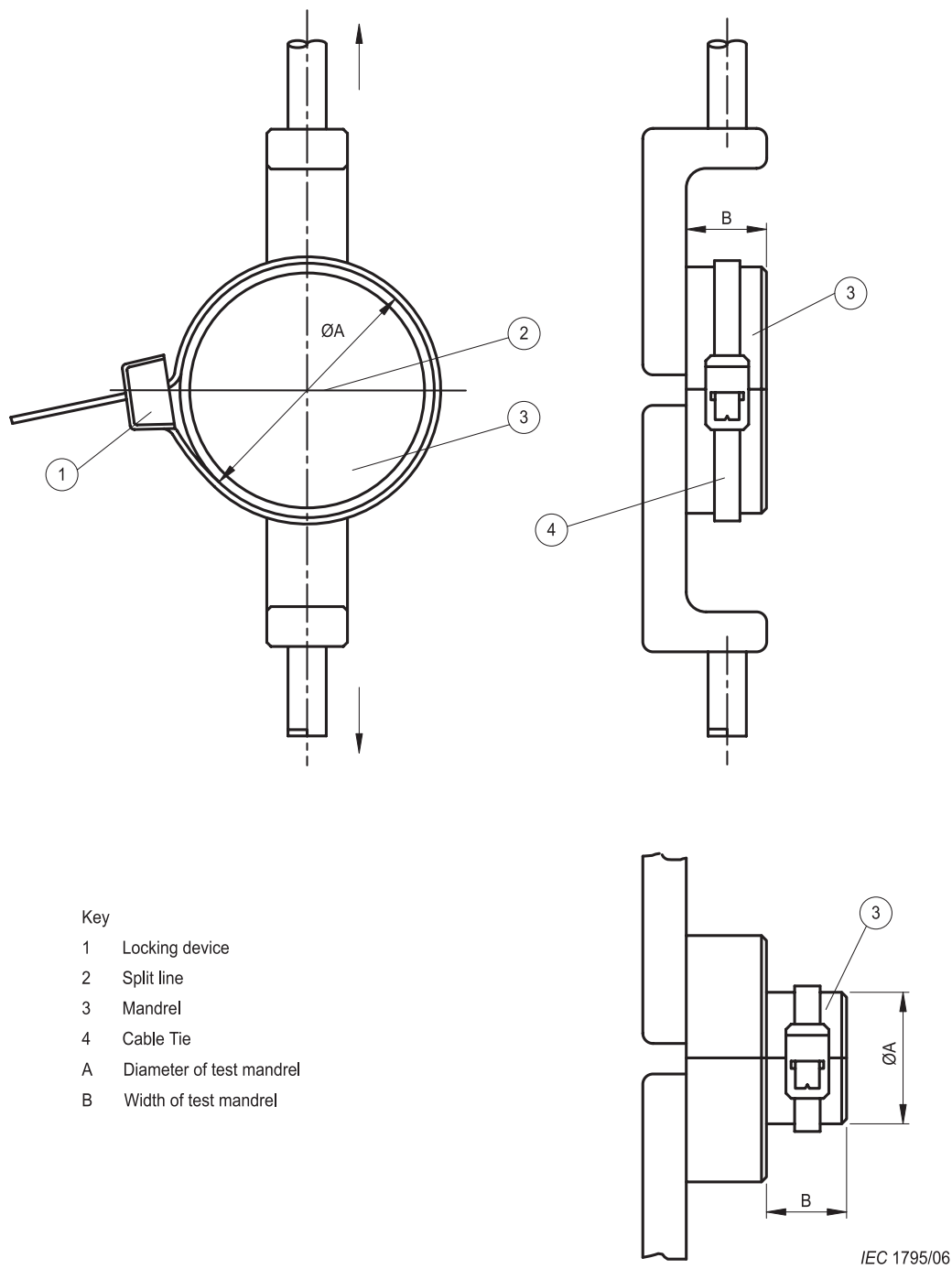
5.9DV.3 D1 Add the following paragraph after the fifth paragraph:

Cable ties having a low-profile locking device (head) with a parallel entry strap shall be mounted to the mandrel as shown in the lower half of Figure 2DV.

5.9DV.4 D1 Add the following paragraph after the sixth paragraph:

The use of separate steel or aluminum conditioning mandrels is permitted. The conditioning mandrels need not be split but shall have a diameter approximately equivalent to the appropriate test mandrel, to allow the transfer of the sample to the test mandrel. Conditioned samples shall be carefully transferred to the appropriate test mandrel for carrying out the loop tensile strength test. Where it has been determined that the transfer of the samples from a conditioning mandrel to a test mandrel has influenced test results, an additional sample set shall be conditioned and tested.

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Mandrels shall be made of steel or aluminium and shall be smooth and free of burrs.

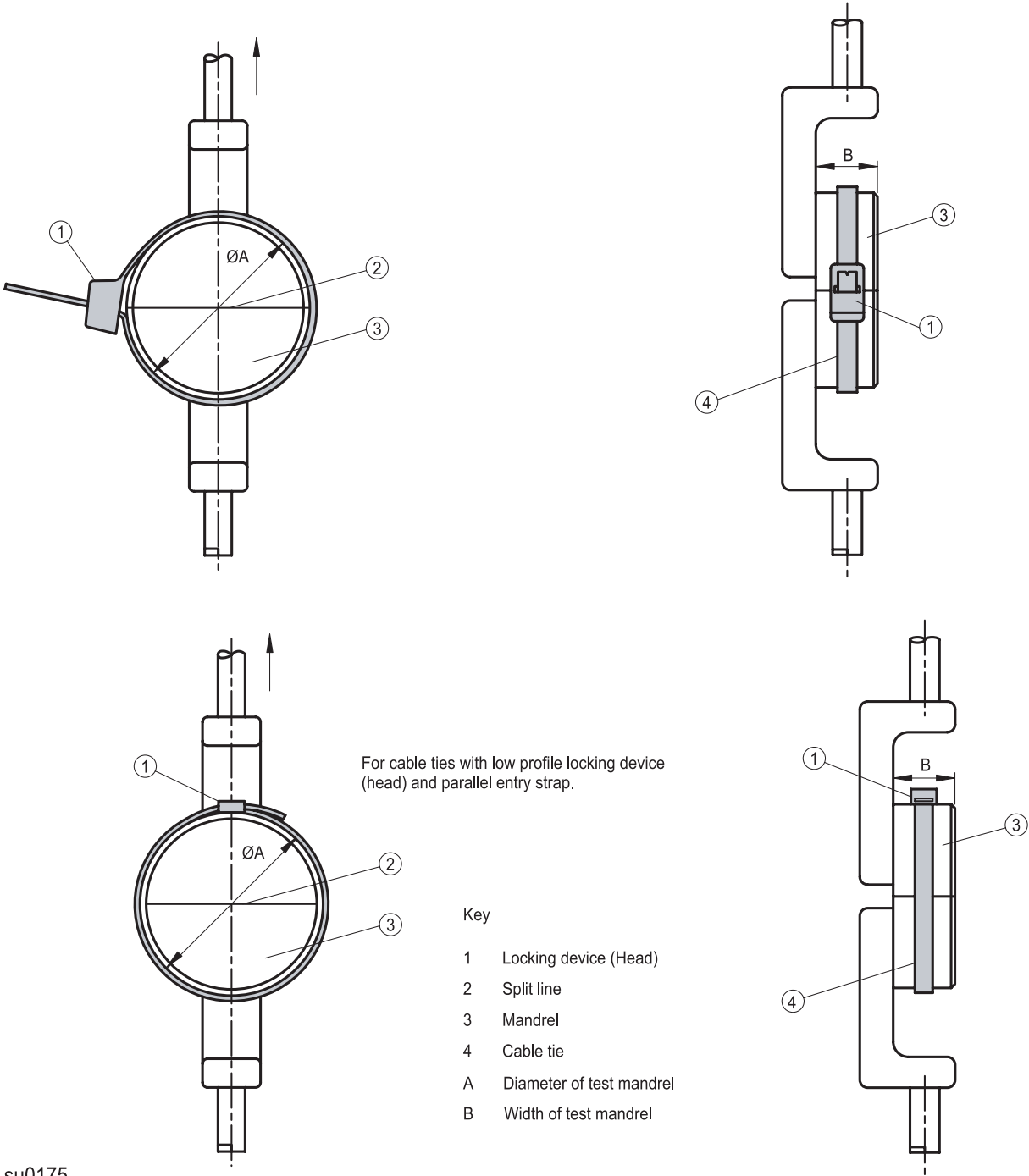
NOTE Care should be taken that the separation of the two halves of the mandrel remains parallel to the split line.

Figure 2 – Test mandrel for cable tie test

Figure 2DV D1 Replace Figure 2 with the following:

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Figure 2DV
Test mandrel for cable tie test



su0175

Mandrels shall be made of steel or aluminum and shall be smooth and free of burrs.

NOTE Care should be taken that the separation of the two halves of the mandrel remains parallel to the split line.

6 Classification

6.1 According to material

6.1.1 Metallic component

6.1.2 Non-metallic component

6.1.3 Composite component

6.2 According to loop tensile strength for cable ties

As given in Table 2.

Table 2 – Loop tensile strength

Loop tensile strength	
N	
50	530
80	800
130	890
180	1 150
220	1 300
360	2 200
450	

Other values may be declared at the manufacturer's discretion.

NOTE Loop tensile strength does not provide an indication of long-term static load-bearing capabilities.

6.2.1 Type 1 – Retains at least 50 percent of declared loop tensile strength after test conditions

6.2.1DV D1 Add the following to 6.2.1:

Type 11 – In Canada and the United States, the Type 11 classification refers to Type 1 according to 6.2.1 with additional pre-qualification to long-term performance characteristics of nonmetallic moulding materials according to CAN/CSA-C22.2 No. 0.17 or UL 746B. In Mexico, this classification does not apply.

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