



SLOVENSKI STANDARD
SIST EN 50262:1999
01-november-1999

Kabelske kite za električne inštalacije (vsebuje popravek AC:1998)

Cable glands for electrical installations

Kabelverschraubungen für elektrische Installationen

Presse-étoupe pour installations électriques

Ta slovenski standard je istoveten z: EN 50262:1998

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29.080.20 Skoznjiki Bushings

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EUROPEAN STANDARD

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Descriptors: Electrical accessory, low voltage accessory, electrical installation, cable glands, requirement, definition, test, type test, classification, marking, technical document, construction characteristics, mechanical property, electrical property, electromagnetic compatibility

English version

Metric cable glands for electrical installations

Entrées de câble (presse-étoupe) à pas métrique pour installations électriques

Metrische Kabelverschraubungen für elektrische Installationen

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This European Standard was prepared by the working group WG11, Gland panels, of the Technical Committee CENELEC TC 20, Electric cables.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50262 on 1998-04-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 1999-03-01
- latest date by which the national standards
conflicting with the EN have to be withdrawn (dow) 2001-03-01

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1 Scope

This European standard provides requirements and tests for the construction and performance of metric cable glands. This standard covers complete glands as supplied by the manufacturer or supplier, but not parts of cable glands.

Requirements and tests for metric cable glands with multi-orifice seals are under consideration.

This standard does not cover cable glands:

- for fibre optic cables;
- for mineral insulated cables specified in HD 586;
- with a gland entry portion other than metric.

NOTE: Certain cable glands may also be used in 'Hazardous Areas'. Regard should then be taken of other or additional requirements necessary for equipment to be installed in such conditions, for example as specified in EN 50014.

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2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications as listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

All references to the standards listed in this clause are considered dated.

EN 50014	1992	Electrical apparatus for potentially explosive atmospheres
+ corr. October	1993	General requirements
EN 60335	series	Safety of household and similar electrical appliances (IEC 60335 series, modified)
EN 60423	1994	Conduits for electrical purposes - Outside diameters of conduits for electrical installations and threads for conduits and fittings (IEC 60423:1993, modified)
EN 60529	1991	Degrees of protection provided by enclosures (IP Code)
+ corr. May	1993	(IEC 60529:1989)
EN 60695-2-1/1	1996	Fire hazard testing - Part 2: Test methods Section 1/sheet 1: Glow-wire end-product test and guidance (IEC 60695-2-1/1:1994 + corr. May 1995)
EN 61058	series	Switches for appliances (IEC 61058 series)

HD 586	series	Mineral insulated cables with a rated voltage not exceeding 750 V
ISO 868	1985	Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness)

3 Definitions

For the purposes of this standard, the following definitions apply.

3.1 cable gland: A device designed to permit the entry of a cable or flexible cable into equipment, and which provides sealing and retention. It may also provide other functions such as earthing, bonding, insulation, cable guarding, strain relief or a combination of these.

3.2 size: The nominal diameter of the thread or nominal outside diameter of the gland entry portion which is attached to the equipment.

3.3 sealing system: The sealing system provides a seal between the cable gland and the cable. This may consist of different sealing arrangements such as:

- a single seal;
- two or more seals;
- multi-layer seals;

3.4 cable: An assembly consisting of:

- one or more cores and their individual covering(s), (if any);
- the assembly protection (if any);
- the protective covering (if any).

3.5 flexible cable: A cable which is required to be capable of being flexed while in service.

3.6 armoured cable: cable with a covering consisting of a metal tape(s) or wires, generally used to protect the cable from external mechanical effects.

3.7 cable retention: The ability of a cable gland to limit the displacement of a fitted cable without anchorage.

3.8 cable anchorage: Any means to secure a cable.

3.9 cable guard: A device which is part of a cable gland and provides additional protection when a flexible cable is subjected to excessive bending.

3.10 composite cable gland: A cable gland comprising of both metallic and non-metallic materials.

NOTE: Sealing systems are excluded from this definition.

3.11 family (of cable glands): Cable glands of the same classification and design conception but which differ dimensionally.

4 General requirements

Cable glands shall be designed to ensure the protection of the inserted cables or flexible cables in normal use.

Where component parts are used for cable gland assemblies which are integral with the equipment, the resulting assembly shall meet the requirements of this standard.

5 General conditions for tests

5.1 Tests according to this standard are type tests.

5.2 Unless otherwise specified, the tests shall be carried out on cable glands assembled and mounted in accordance with the manufacturers or suppliers instructions, which shall be equal to the values required in accordance with 7.3.

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There shall be no adjustment between or during the tests.

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5.3 Unless otherwise specified, the tests shall be carried out at an ambient temperature of (20 ± 5) °C.

5.4 Before the tests, in accordance with clauses 9 and 10 and subclause 12.1, non-metallic cable glands and composite cable glands as well as the sealing systems of metallic cable glands shall be placed in an oven, in which the temperature is maintained at (70 ± 2) °C for 168 h. If the temperature declared by the manufacturer or supplier is higher than the values specified in 8.6, the conditioning shall be carried out at this maximum temperature plus 5 °C.

Then they shall be kept for at least 24 h at ambient temperature.

5.5 Cable glands shall be conditioned for at least 24 h at a temperature of (20 ± 5) °C and a relative humidity between 40 % and 60 %.

5.6 Unless otherwise specified, three samples shall be subjected to the relevant tests.

In the case of a family of cable glands, three samples of the largest and smallest and one sample of all other sizes of the same family shall be subjected to the relevant tests.

In the case of a cable gland utilising alternative sealing arrangements, each sealing arrangement as specified by the manufacturer or supplier shall be considered as a sample.

If a sample 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 a full set of three samples of that size, all of which shall comply with the requirements.

5.7 Unless otherwise specified test mandrels shall consist of a metallic rod with an elastomeric sleeving having a hardness of 70 Shore D \pm 10 points in accordance with ISO 868 and a sleeve thickness as specified in table 2 or table 3 respectively. The complete test mandrel shall have a tolerance of \pm 0,2 mm for mandrels up to and including 16 mm diameter and \pm 0,3 mm for mandrels larger than 16 mm diameter. The shape shall be circular or a profile simulating the outer dimension of the cable as declared by the manufacturer or supplier.

5.8 Clearance holes shall have the values as given in table 1.

Table 1: Clearance holes for cable glands

Size	6	8	10	12	16	20	25	32	40	50	63	75
Thread size	M6	M8	M10	M12	M16	M20	M25	M32	M40	M50	M63	M75
Clearance hole diameter mm (+0,2 -0,4)	6,5	8,5	10,5	12,5	16,5	20,5	25,5	32,5	40,5	50,5	63,5	75,5

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6 Classification

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Cable glands shall be classified for test purposes in accordance with 6.1 and 6.2 and, where appropriate, with 6.3 and 6.4.

6.1 According to material

6.1.1 Metallic cable glands

6.1.2 Non metallic cable glands

6.1.3 Composite cable glands

6.2 According to mechanical properties

6.2.1 Without cable anchorage

6.2.2 With cable anchorage

This classification shall not be used for cable glands classified in accordance with 6.3.1.3.

6.2.2.1 Type A

6.2.2.2 Type B

6.2.3 Impact category

6.3 According to electrical properties

6.3.1 With electrical continuity characteristics

6.3.1.1 Electrical bonding to equipment

6.3.1.2 Electrical connection to metallic layer(s) of cable

NOTE: A metallic layer may be provided for purposes such as earthing, screening, armouring or mechanical protection.

6.3.1.3 Protective bonding to earth

6.3.1.3.1 Category A

6.3.1.3.2 Category B

6.3.1.3.3 Category C

6.3.2 With insulating characteristics

6.4 According to resistance to external influences

6.4.1 IP code in accordance with EN 60529 if different from 8.4

6.4.2 Temperature range if different from 8.6

7 Marking and documentation

7.1 An appropriate part of the cable gland shall be legibly and durably marked in a visible place with the following:

- name, logo or registered mark of the manufacturer or supplier;
- identification of the product.

The identification of the product can be given alternatively on the smallest package unit.

Compliance is checked by inspection. In addition, marking not made by pressing, moulding or engraving is tested in accordance with 7.2.

7.2 The test is made by rubbing the marking by hand for 15 s with a piece of cotton cloth soaked with water and again for 15 s with a piece of cotton cloth soaked in petroleum spirit.

After this test, the marking shall be legible to normal or corrected vision without additional magnification.

The marking shall remain legible after all the non-destructive tests of this standard. It shall not be possible to remove labels easily and they shall not show curling.

NOTE: Petroleum spirit is defined as an aliphatic solvent hexane with a content of aromatics of maximum 0,1 volume percentage, a kauri-butanol value of 29, an initial boiling point of approximately 65 °C , a dry point of approximately 69 °C and specific gravity of approximately 0,68 kg/l.

7.3 The manufacturer or supplier shall provide in his literature all information necessary for the proper use and safe installation, such as:

- sealing range (maximum and minimum cable dimensions);
- installation torques, if any;
- entry thread length, if any;
- type of cable anchorage and anchorage range, if any;
- impact category;
- correct assembly of the cable gland for use as part of the PE conductor or electrical connection;
- IP code in accordance with EN 60529 if different from subclause 8.4;
- temperature range if different from subclause 8.6.

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Compliance is checked by inspection.

8 Construction

8.1 Those parts of a cable gland that are used for tightening or for holding during installations should be of hexagon form.

Alternatives to the hexagon form are acceptable providing the cable gland meets the test requirements of this standard.

The entry thread, if any, shall be constructed in accordance with EN 60423 table 1.

Compliance is checked by inspection and in case of doubt, by measurement.

8.2 All external projecting edges, and corners of cable gland components shall be smooth, to prevent danger from injury in handling the cable gland.

Compliance is checked by inspection and manual test.

8.3 Cable glands shall be constructed to avoid cable damage when installed in accordance with the manufacturers or suppliers instructions.

Compliance is checked by inspection and in conjunction with the tests in 9.1 or 9.3.