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मानक

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Mazdoor Kisan Shakti Sangathan

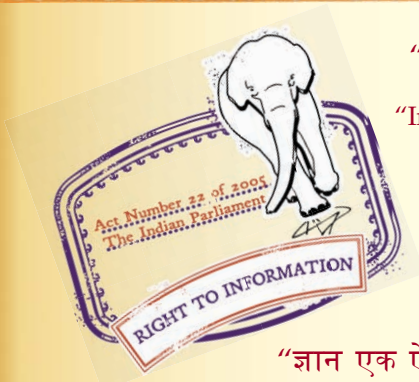
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“Step Out From the Old to the New”

IS 14927-2 (2001): Cable Trunking and Ducting Systems for Electrical Installations, Part 2: Cable Trunking and Ducting Systems Intended for Mounting on Walls or Ceiling [ETD 14: Electrical Wiring Accessories]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

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भाग 2 केबल तनाव एवं वाहिनी पद्धति — दीवारों पर या सीलिंग पर
लगाने के लिए वांछित

Indian Standard

**CABLE TRUNKING AND DUCTING SYSTEMS
FOR ELECTRICAL INSTALLATIONS**

**PART 2 CABLE TRUNKING AND DUCTING SYSTEMS INTENDED FOR
MOUNTING ON WALLS OR CEILINGS**

ICS 29.120.10

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FOREWORD

This Indian Standard (Part 2) was adopted by the Bureau of Indian Standards, after the draft finalized by the Wiring Accessories Sectional Committee had been approved by the Electrotechnical Division Council.

This standard covers the requirements of cable trunking and ducting systems commonly known as cable casing and capping intended for mounting on walls or ceilings.

The cable trunking and ducting systems is used to accommodate and where necessary, segregate the conductors, cables or cords.

This standard is to be read in conjunction with Part 1 of this standard which covers the general requirements of cable trunking and ducting. Clauses which are applicable (which means that the relevant provisions of that clause apply) or not applicable and the necessary changes, wherever required, are indicated accordingly. Clauses which are additional to those of Part 1 are numbered starting from 101; additional table is numbered 101 and additional Annex is lettered AA. Should, however, any deviation exists between Part 1 and this standard, the provision of later shall apply.

This standard is based on IEC 61084-2-1(1996) 'Cable trunking and ducting systems for electrical installations: Part 2 Particular requirements, Section 1 Cable trunking and ducting system intended to mounting on walls and ceilings' issued by the International Electrotechnical Commission (IEC).

It is intended to bring out other parts of the standard on cable trunking and ducting systems for other areas of application, for example, for installation on poles and installation in cabinet at a later date depending upon the need of the manufacturer and users.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding of numerical values (*revised*)' the number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

CABLE TRUNKING AND DUCTING SYSTEMS FOR ELECTRICAL INSTALLATIONS

PART 2 CABLE TRUNKING AND DUCTING SYSTEMS INTENDED FOR

MOUNTING ON WALLS OR CEILINGS

1 SCOPE

This standard (Part 2) specifies requirements for cable trunking and ducting systems intended for mounting on walls or ceilings. The cable trunking and ducting systems accommodate and, where necessary, segregate conductors, cables or cords and other electrical equipment. The systems are intended to be mounted directly on walls or ceilings, flush or semiflush or indirectly on walls or ceilings, or on structures away from on walls or ceilings.

Cable trunking and ducting system are hereinafter called CT/DS.

This standards does not apply to conduits, cable trays or cable ladders, electrical accessories, for example, switches, socket-outlets or the like, for which separate Indian Standards apply, or current carrying parts within the system.

The different types of the systems are shown in figure 101 and described in Annex A.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
11000 (Part 2/ Sec 1) : 1984	Fire hazard testing: Part 2 Test methods, Section 1 Glow wire test and guidance
14927 (Part 1) : 2001	Cable trunking and ducting systems for electrical installations: Part 1 General requirements

3 TERMINOLOGY

This clause of Part 1 is applicable except as follows:

Additional Sub-clause:

3.101 Cable Anchorage

A device intended to relieve strain on conductors especially at terminals or terminations or to prevent a cable from becoming detached from an enclosure.

4 GENERAL REQUIREMENTS

This clause of Part 1 is applicable except as follows:

Additional subclause:

4.101 The manufacturer shall give instruction on how to install the system to ensure compliance with the standard. The Instructions shall give the classification of the CT/DS according to 6. If the, system is intended for the suspension of loads, the manufacturers instructions shall include information on the maximum load and method of suspension.

5 GENERAL CONDITIONS FOR TESTS

This clause of Part 1 is applicable except as follows:

Additional subclause:

5.101 The tests of the various clauses are carried out on the samples as specified in Table 101.

Table 101 Samples Required

Set of Sample	Description	Clause Ref to IS 14927 (Part 1)
A	One length of CT/DS and one of each CT/DS fittings	7, 9.1, 9.3, 9.5
B	Three 250-mm lengths of CT/DS	9.3.1, 9.3.2
C	2 m of CT/DS mounted with cables and electrical accessories	9.4
D	Three membranes assembled in the system	9.6.3, 9.6.4
E	Three glands assembled in the system	9.7.2
F	Three components with cable anchorage	9.101
G	Six lengths of 2 m of CT/DS with cover	10.2.3, 10.2.4
H	Six lengths of 250-mm of trunking or ducting lengths with cover	10.2.5, 10.2.6
J	Three lengths of 250-mm of trunking or ducting lengths with cover	10.3.3
K	Three lengths of 250-mm of CT/DS with cover	10.3.101
L	One length of 250-mm of CT/DS with Apparatus mounting device	10.5.101
M	One length of 250-mm of CT/DS with cover	10.6.2
N	Three lengths of 600-mm of CT/DS with cover and fittings	11, 12

6 CLASSIFICATION

This clause of Part 1 is applicable except as follows:

6.4.1 Addition:

The use of flame propagating CT/DS is not allowed.

6.6.2 Additional Classifications:

6.6.2.101 CT/DS giving protection against powerful water jets (IP × 6).

6.6.2.102 CT/DS giving protection against the effects of temporary immersion in water (IP × 7).

6.6.2.103 CT/DS giving protection against the effects of continuous immersion in water (IP × 8).

7 MARKING

This clause of Part 1 is applicable except as follows:

7.1 Add the following at the end of the first paragraph:

“except that the number of the specification may, as an alternative, be given in the manufacturer’s instructions.”

Additional subclause:

7.101 CT/DS shall be marked with the type reference, which may be a catalogue number.

7.102 BIS Standard Mark

The CT/DS may also be marked with the Standard Mark.

7.102.1 The use of standard mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of standard mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

8 DIMENSIONS

This clause of Part 1 is applicable.

9 CONSTRUCTION

This clause of Part 1 is applicable except as follows:

Additional subclause:

9.1.101 The cable anchorage, if any, shall be suitable for the different types of cables which may be used. The sheath of the cable shall be clamped within the cable anchorage.

Compliance is checked by inspection and by the following test.

The cable anchorage is fitted with a cable with the smallest outside diameter for which it is intended. The screws, if any, are tightened with 2/3 of the torque given in Part 1, Table 2.

The specimen is kept for 30 min at a temperature of $60 \pm 2^\circ\text{C}$ with the specimen still at this temperature, an axial force of $50 \text{ N} \pm 5\%$ is applied to the cable for $60 \pm 5 \text{ s}$.

The test is then repeated with the cable anchorage fitted with a cable with the greatest outside diameter for which it is intended.

After each test, the cable shall not have moved more than 3 mm in the cable anchorage and the sheaths of the cables shall show no signs of abrasion.

9.4.1 Add the following sentence:

The test is made after the removal of all parts, which can be removed without the aid of a tool.

10 MECHANICAL PROPERTIES

This clause of Part 1 is applicable except as follows:

10.3 Impact Test

10.3.1 Add the following sentence:

No blow shall be applied within 50 mm of the ends, or to knockouts

Additional subclause:

10.3.3.101 Trunking and ducting systems shall withstand impacts likely to occur under classified installations and permanent application temperature.

The test is carried out on three samples each 250^{+5}_{-0} mm long,

provided with fittings, if any. All the samples are assembled and mounted as in normal use, according to the manufacturers instructions, on a piece of wooden fibreboard of 19 mm thickness.

The test apparatus according to Fig. 2 of Part 1 together with the samples, is placed in a refrigerator, the temperature of which is maintained at the appropriate value specified in Part 1, Table 1, col 3 within $\pm 1^\circ\text{C}$.

After 2 h, each sample is in turn placed in position in the apparatus such that a blow can be applied firstly to the centre of a length, or cover, if any, and secondly on each side facing, even if the impact is not at the centre point of the hammer. No blow shall be applied within 50 mm of the ends, or to knockouts.

A blow is applied on the front face of the fitting mounted on each of the three samples under test. Impact locations are evenly scattered on the front face of the tested fitting.

Front face means a face logically exposed to blows when the fitting is mounted. The line separating two front faces is part of both faces and may be hit during the test.

The hammer is allowed to fall so that an impact energy according to Part 1, Table 4 is applied. The mass of the hammer and the fall height shall be as specified in Part 1, Table 4.

10.3.4 Add a second paragraph:

Neither the cover nor the fittings shall be ejected, except that this does not apply to knockouts.

10.4 Linear Deflection Test

Replacement:

For suspended CT/DS all system components shall withstand the static stresses that can be expected in normal use when mounted according to the manufacturer instructions.

Compliance is checked by the following test.

(Test is under consideration)

10.5 External Load Test

Additional subclause:

10.5.101 Apparatus mounting devices shall be firmly attached to the main part of the system.

Compliance is checked by the following tests:

If the results of the tests are dependent on the temperature, the tests are carried out at $40 \pm 2^\circ\text{C}$ the appropriate temperature specified in Part 1, Table 1, col 3.

A sample of a trunking length of 250 ± 5 mm is fitted with an apparatus mounting device according to the manufacturer's instructions. Other components may

be included, if necessary, to prevent the movement of the apparatus mounting device during the test.

A force of 100 ± 5 N is applied to the apparatus fixing device of the apparatus mounting device for 60 ± 5 s in the most unfavourable direction within the angle of 45 to 90°C from the front surface.

During the test, the apparatus mounting device shall not become detached.

Immediately after this test, the apparatus mounting device is subjected to a torque of 3 ± 0.2 Nm, clockwise and anticlockwise respectively.

The duration of the test shall be $60 \begin{smallmatrix} +5 \\ -0 \end{smallmatrix}$ s in each direction.

During the test the apparatus mounting device shall not turn more than 15° from its initial position.

11 RESISTANCE TO FLAME PROPAGATION

This clause of Part 1 is applicable.

12 ELECTRICAL CHARACTERISTICS

This clause of Part 1 is applicable.

13 EXTERNAL INFLUENCES

This clause of Part 1 is applicable.

ANNEX A

(Clause 1.1)

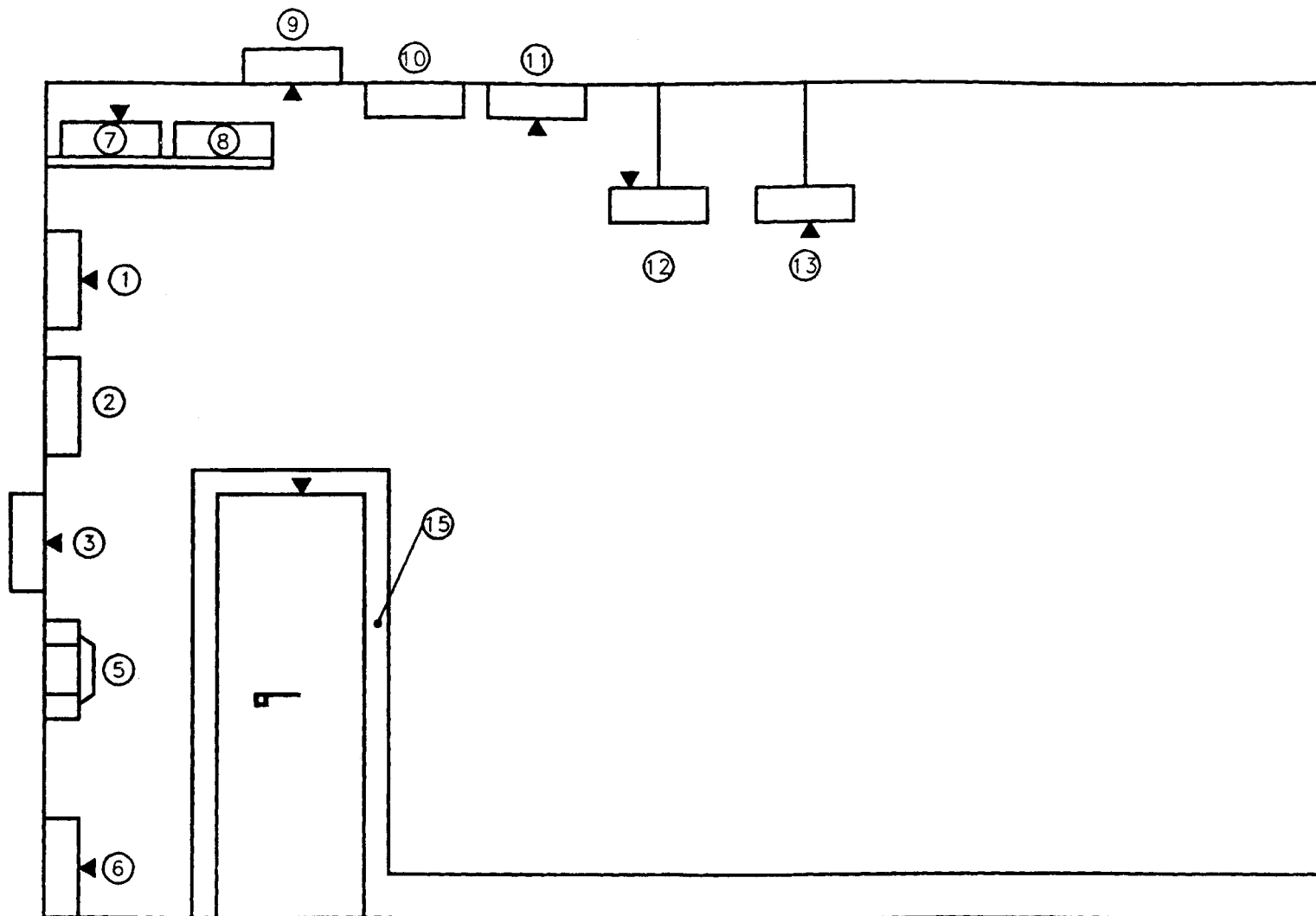
INFORMATION

A This Annex of Part 1 is applicable except as follows.

A-1 Types of trunking and ducting systems for wall or ceiling installation.

Replace- ment No. in Fig. 101	Definition	For	Mounting
1 7 11 12 13	Trunking and accessories	Insulated conductors, cables, cords, mounting devices for apparatus	Surface on wall or ceiling, on walls mounted horizontal or vertical, ceiling suspended
5	Trunking and accessories	Insulated conductors, cables, cords, mounting devices for apparatus	Surface on wall or ceiling on walls mounted horizontal or vertical, ceiling suspended
2 8 10 12	Ducting and accessories	Insulated conductors, cables, cords, mounting devices for apparatus	Surface on wall or ceiling, on walls mounted horizontal or vertical, ceiling suspended
3 9	Trunking and accessories	Insulated conductors, cables, cords, mounting devices for apparatus	Flush in wall or ceiling, in walls mounted horizontal or vertical
6	Skirting, trunking and accessories	Insulated conductors, cables, cords, mounting devices for apparatus	Surface on wall and ceiling

A-2 Not applicable.



Number 5 represents an apparatus in a trunking system.

▼ Indicate a removable cover for a trunking system.

FIG. 101 TYPES AND APPLICATION OF TRUNKING AND DUCTING SYSTEMS FOR WALL OR CEILING INSTALLATIONS

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