

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1
AMENDEMENT 1

**Appliance couplers for household and similar general purposes –
Part 2-4: Couplers dependent on appliance weight for engagement**

**Connecteurs pour usages domestiques et usages généraux analogues –
Partie 2-4: Connecteurs à connexion par gravité**

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FOREWORD

This amendment has been prepared by subcommittee 23G: Appliance couplers, of IEC technical committee 23: Electrical accessories.

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

CDV	Report on voting
23G/290/CDV	23G/291/RVC

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base 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- withdrawn,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.

1 Scope

Replace the existing NOTE 2 as follows:

NOTE 2 Appliance couplers dependent on appliance weight for engagement may be subject to spillage of liquid in normal use. They are classified according to whether protection against liquid spillage is provided, when installed in accordance with the manufacturer's installation instructions.

2 Normative references

Add the following new references to the list:

IEC/TR 60083, *Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC*

IEC 60112, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60730 (all parts), *Automatic electrical controls for household and similar use*

IEC 61058-1, *Switches for appliances – Part 1: General requirements*

Modify the following references:

IEC 60320-1, *Appliance couplers for household and similar general purposes – Part 1: General requirements*

IEC 60335-1, *Household and similar electrical appliances – Safety – Part 1: General requirements*

IEC 60664-1, *Insulation coordination for equipment within low voltage systems – Part 1: Principles, requirements and tests*

5 General notes on tests

5.2

Replace the third paragraph as follows:

For those clauses requiring the tests to be carried out on weight-engaged connectors and weight-engaged appliance inlets installed in accordance with the manufacturer's instructions, representative appliances or appliance parts shall be supplied.

5.5

Replace the second dashed item in the second paragraph by the following:

- set 2 of three specimens is subjected to the tests of Clauses 14, 15, 16, 19, 20, 21 and 25.101 (including the repetition of Clause 16)

Replace the third paragraph as follows:

For weight-engaged connectors which are declared as providing protection against liquid spillage, three additional specimens are required, which are subjected to the test of 14.2.

7 Classification

7.1.1

Replace the existing text with the following new text:

According to whether or not protection against liquid spillage is provided when the connector is installed according to the manufacturer's instructions.

7.1.5

Add the following text to the note:

A cycle is two strokes as defined in Clause 19; that is one connection followed by one disconnection.

Add the following new Subclauses 7.1.6 to 7.1.6.7:

7.1.6 The following information is recorded to cover required tests.

7.1.6.1 According to the specified minimum cross-sectional area of cord.

7.1.6.2 According to the maximum allowable terminal temperature rise.

7.1.6.3 According to the maximum allowable termination temperature rise.

7.1.6.4 According to the maximum allowable contact temperature rise.

7.1.6.5 According to the minimum appliance weight required for correct engagement.

- 7.1.6.6** According to the minimum base weight required for correct disengagement.
- 7.1.6.7** According to maximum pin temperature at the base of the pins of the corresponding appliance inlet:
- appliance couplers for cold conditions (pin temperature not exceeding 70 °C);
 - appliance couplers for hot conditions (pin temperature not exceeding 120 °C);
 - appliance couplers for very hot conditions (pin temperature not exceeding 155 °C).

NOTE Temperature rise limits apply to both the inlet and connector, and can be specified separately if required.

8 Marking

8.101

Replace the existing subclause as follows:

Instructions for installation and use shall be supplied with weight-engaged appliance couplers. These instructions shall contain the information necessary to ensure compliance with this standard and shall contain the classifications declared by the manufacturer according to Clause 7.

For weight-engaged couplers intended to be exclusively delivered to the equipment manufacturer, the instruction sheet may be replaced by a leaflet, letter, or drawing, etc. It is not necessary for each coupler to be accompanied by such a document.

10 Protection against electric shock

10.1

Replace the existing paragraph with the following:

Appliance couplers shall be so designed that live parts of the appliance inlets are not accessible when the connector is in partial or complete engagement.

Weight-engaged appliance connectors shall be so designed that the live parts and parts connected thereto are not accessible when the connector is properly assembled and wired as in normal use.

Note 2 is not applicable.

Add the following new paragraph:

10.2 This clause of IEC 60320-1 applies amended as follows.

NOTE To be assessed when incorporated in the end product.

Add the following new subclause:

10.101 Test probe 13 of IEC 61032 is applied without appreciable force through openings in appliance connectors.

NOTE "Without appreciable force" is considered to be a force not exceeding 1 N.

It shall not be possible to touch live parts with the test probe.

11 Provision for earthing

11.2

Replace the existing text with the following new text:

The note of this subclause is not applicable.

12 Terminals and terminations

Replace the second line as follows:

“Replace the first two paragraphs as follows:”

Add the following new subclause:

12.3 This subclause of IEC 60320-1 does not apply.

13 Construction

13.1

Replace the existing text with the following.

The note of this subclause is not applicable.

13.4

Replace the first paragraph as follows:

Pins of weight-engaged appliance inlets shall

- be securely retained,
- have adequate mechanical strength,
- not be possible to remove without the aid of a tool, and
- live parts shall be surrounded by a shroud.

13.12

Replace the first three paragraphs as follows:

Fuses, relays, thermostats and thermal cut-outs incorporated in weight-engaged connectors and weight-engaged appliance inlets shall comply with the relevant IEC standards.

Switches or energy regulators incorporated in weight-engaged connectors or weight-engaged appliance inlets shall comply with IEC 61058 and IEC 60730 respectively.

Where an weight-engaged appliance inlet is integrated in or incorporated in an appliance or equipment, then that part which can be identified as the appliance inlet shall comply with the requirements of this standard.

14 Moisture resistance

14.2

Replace the existing text with the following new text:

14.2 Weight-engaged connectors which are declared as providing protection against liquid spillage shall be constructed so that, when installed into a representative power base, in accordance with manufacturer's installation instructions, the connector is not affected by liquid.

Compliance is checked by the following test:

The power base is placed on a horizontal surface and 30 ml of de-ionised water containing approximately 1 % NaCl is poured over the appliance connector through a vertical tube 30 mm long and having an internal diameter of 8 mm. The outlet of the tube is located 200 mm above the upper surface of the connector and the saline solution is poured steadily over a period of 2 s. For connectors having multiple contact apertures spaced more than 30 mm apart this test is repeated on clean samples of the power base over each contact aperture or aperture group.

The representative power base and connector installation shall then withstand the electric strength test of 15.3, the voltage for **reinforced insulation** however, being reduced to 2 500 V.

The test is performed using the apparatus of Annex CC.

Delete the NOTE.

15 Insulation resistance and electric strength

15.3

Replace the first paragraph as follows:

Immediately after the test of 15.2 the insulation is subjected for 1 min to a voltage of substantially sine-wave form and having a frequency of 50 Hz to 60 Hz. The values of the test voltage are shown in Table 101.

Add, after the third paragraph, the following:

Weight-engaged connectors are tested when in engagement with a weight-engaged appliance inlet and also when not in engagement.

Table 101 Test voltages

Replace the existing Table 101 with the following new Table 101:

Points of application	Test voltage V	
	Class II appliances and class II constructions	Other appliances
1. Between live parts and accessible parts separated from live parts by – basic insulation only – reinforced insulation	– 3 000	1 000 3 000
2. For parts with double insulation, between metal parts separated from live parts by basic insulation only and – live parts – accessible parts	1 250 2 500	1 250 2 500
3. Between metal enclosures or covers lined with insulating material and metal foil in contact with the inner surface of the lining, if the distance between live parts and these metal enclosures or covers, measured through the lining, is less than the appropriate clearance as specified in Clause 26.	2 500	1 250

16 Forces necessary to insert and withdraw the connector

16.2

Replace the first paragraph as follows:

The minimum weight for full engagement is determined by mounting a weight-engaged connector and weight-engaged appliance inlet so that they may engage freely, and that the axis of engagement is vertical. A force equal to the specified minimum appliance weight, less the weight of the appliance inlet, is applied vertically downwards to the appliance inlet. The appliance inlet shall fully enter the connector, in accordance with the manufacturer's installation instructions. Any initial resistance caused by sealing shutters and the like may be overcome manually, but the coupler shall be fully engaged under the specified force alone.

16.3

Replace the last paragraph as follows:

Weight-engaged connectors for which a maximum ambient working temperature is specified in 7.1.4 which is higher than ambient temperature are tested twice, once at an ambient temperature, and once after the appliance inlet has been raised to the specified maximum ambient working temperature.

17 Operation of contacts

Replace the first paragraph as follows:

The third paragraph of IEC 60320-1 is replaced as follows:

Compliance with the requirements is checked by inspection and by the tests of Clauses 16, 18, 19, 20, 21 and 25.101.

Delete the second paragraph.

18 Resistance to heating of appliance couplers for hot conditions or very hot conditions

Replace the existing paragraph as follows:

This clause of IEC 60320-1 applies, amended as follows:

NOTE Where the appliance coupler is a weight-engaged appliance coupler of a non-standard pattern the test of 18.2 and 18.3 may be combined using the manufacturer's weight-engaged connector engaged with the corresponding weight-engaged appliance inlet.

19 Breaking capacity

Replace the third paragraph beginning with "This test is not carried out ..." and add the new NOTE 1 as follows:

This test is not carried out on weight-engaged couplers specifically intended never to be disengaged while the current is flowing.

NOTE 1 Some lateral movement is allowed to simulate intended use.

Replace the existing note as follows:

NOTE 2 A stroke is a connection or a disconnection of the connector.

Add the following new NOTE 3:

NOTE 3 This test is carried out at ambient temperature.

20 Normal operation

Replace the first paragraph after the instruction "This Clause of IEC 60320-1 is replaced as follows:" by the following:

Weight-engaged appliance couplers shall withstand, without excessive wear or other harmful effects, the mechanical, electrical and thermal stresses occurring in normal use.

Add, at the end of this clause and before the existing note, the following new paragraph:

In case of doubt over excessive wear, the Test probe 13 of IEC 61032 is applied without appreciable force through openings in appliance connectors. It shall not be possible to touch live parts with the test probe. "Without appreciable force" is considered to be a force not exceeding 1 N.

Renumber the existing note as NOTE 1 and add the following new NOTE 2:

NOTE 2 Some lateral movement of the mating connector to the appliance inlet under test is allowed to simulate intended use.

21 Temperature rise

Replace the sixth paragraph with the following new text:

Alternatively, heating test requirements from the appropriate appliance standard can be used instead of the test at 1,25 times rated current for 1 h.

Change the existing note to NOTE 1 and add the following new NOTE 2:

NOTE 2 For connectors with an earthing contact, Subclause 25.101 is applicable.

23 Mechanical strength

23.1

Replace the second paragraph as follows:

Compliance is checked on weight-engaged couplers, installed as specified by the manufacturer, by the test of 23.5.

24 Resistance to heat and ageing

24.1.2

Replace the first paragraph as follows:

Parts of insulating material of weight-engaged appliance inlets and of weight-engaged connectors shall be sufficiently resistant to heat if their deterioration could cause the appliance inlet or connector to fail to comply with this standard.

25 Screws, current-carrying parts and connections

At the end of Clause 25, add the following new subclause:

25.101 For couplers with earthing contacts the connection between the earthing terminal or termination and earthed metal parts shall have low resistance.

If the clearances of basic insulation in a protective extra-low voltage circuit are based on the rated voltage of the appliance, this requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit.

Compliance is checked by the following test performed in a representative appliance in which the coupler is intended to be used:

A current derived from a source having a no-load voltage not exceeding 12 V (a.c. or d.c.) and equal to 1,5 times the rated current of the appliance or 25 A, whichever is higher, is passed between the earthing terminal or earthing contact of the connector and each of the accessible metal parts of the representative appliance in turn.

The voltage drop between the earthing terminal or termination of the appliance connector and the accessible metal part of the representative appliance is measured. The resistance calculated from the current and this voltage drop shall not exceed 0,1 Ω .

NOTE 1 In case of doubt, the test is carried out until steady conditions have been established.