



TEST REPORT

AS/NZS 3112

Approval and test specification—Plugs and socket-outlets

Report Number.....: CTB240315019S

Date of issue.....: 2024-04-23

Total number of pages.....: 188

Name of Testing Laboratory
preparing the Report.....: Shenzhen CTB Testing Technology Co., Ltd.
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Bao'an District, Shenzhen, Guangdong, China

Applicant's name.....: Wenzhou Weiwei Electric Co., Ltd
Address.....: Daqiao North Industrial Zone, Beibaixiang Town, Leqing City,
Zhejiang Province

Test specification:

Standard.....: AS/NZS 3112:2017+Amd1:2021
AS/NZS 3100:2022
AS 3133:2020

Test procedure.....: Type test

Non-standard test method.....: N/A

Test item description.....: Switched socket-outlet, Flush Type
Trade Mark.....: CHVOV, Nsunway, BERDIS
Manufacturer name.....: Wenzhou Weiwei Electric Co., Ltd
Address.....: Daqiao North Industrial Zone, Beibaixiang Town, Leqing City,
Zhejiang Province
Model/Type reference.....: See page 5-6 details
Ratings.....: 10A and 15A 250V~

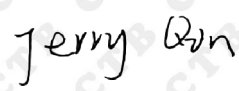
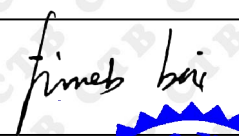
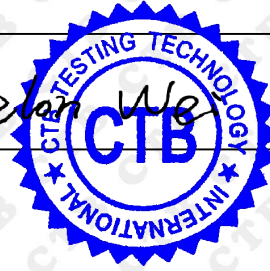
Test Report Form No.: AS/NZS 3112_B

Test Report Form(s) Originator.....: Shenzhen CTB Testing Technology Co., Ltd.

Master TRF.....: Dated 2021-10-30

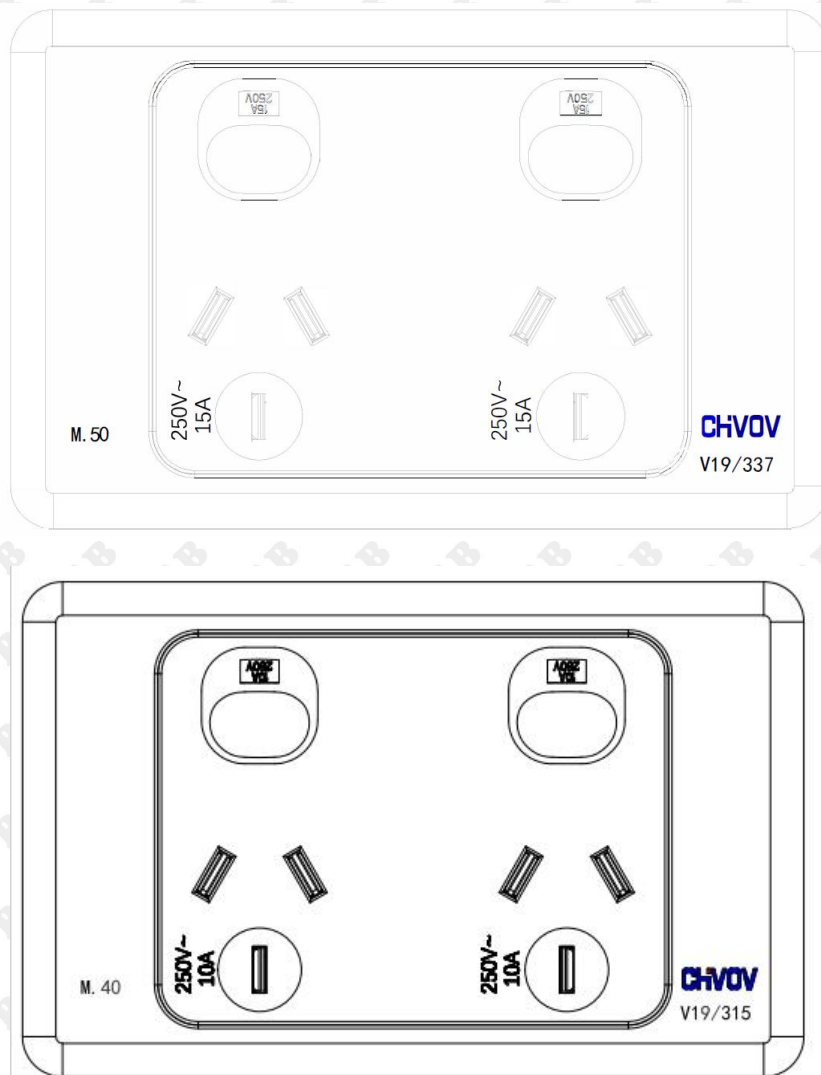
Note:

If there is any objection to the inspection results in this report, please submit a written report to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen CTB Testing Technology Co., Ltd. this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

Testing procedure and testing location:		
Testing Laboratory.....:	Shenzhen CTB Testing Technology Co., Ltd.	
Testing location/ address.....:	1&2/F., Building A, No.26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China	
Tested by(Test Engineer).....:	Jerry Qin	
Reviewed by(Supervisor).....:	Finerb Bai	
Approved by(Chief Engineer).....:	Helon Wei	 
List of Attachments (including a total number of pages in each attachment): Attachment No.1: General requirements of AS/NZS 3100:2022. (45 pages) Attachment No.2: Test report of AS 3133:2020. (26 pages) Attachment No.3: Components list. (1 pages) Attachment No.4: Photo documentation. (64 pages)		
Summary of testing:		
Tests performed (name of test and test clause): The submitted samples were found to comply with the requirements of: ➢ Electrical safety AS/NZS 3112:2017+Amd1:2021 AS/NZS 3100:2022 AS 3133:2020	Testing location: Testing laboratory: Shenzhen CTB Testing Technology Co., Ltd. Address: 1&2/F., Building A, No.26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China	
Summary of compliance with National Differences (List of countries addressed): --		

Copy of marking plate

The artwork below may be only a draft.



A, N, E (for terminals)



Remark:

The height of RCM mark should not less than 3mm.

This is a representative markings of model: V19/337 and V19/315, markings of all models are identical except for the model name and the current rating.

The above markings are the minimum requirements by the safety standard. For the final production samples. The additional markings which do not give rise to misunderstanding may be added.

Possible test case verdicts:

- test case does not apply to the test object..... : N/A
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement..... : F (Fail)

Testing..... :

Date of receipt of test item..... : 2024-03-14

Date (s) of performance of tests..... : From 2024-03-14 to 2024-04-23

General remarks:

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ (point) is used as the decimal separator.

The application includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :

☐ **Yes**☒ **Not applicable****When differences exist; they shall be identified in the General product information section.**

Name and address of factory (ies)..... : Wenzhou Weiwei Electric Co., Ltd
Daqiao North Industrial Zone, Beibaixiang Town,
Leqing City, Zhejiang Province

General product information:

- 1) Flush type switched socket-outlet rated 10A and 15A 250V~, with single or two ways socket outlets, with single pole switches, or with extra single pole switch, with flat live and earth pin aperture, with plastic or metal cover plate.
- 2) The samples for each group of testing were selected randomly from the samples provided by the manufacturer.
- 3) AS/NZS 3100:2022 also need be considered in conjunction with AS/NZS 3112:2017+Amd1:2021, see Attachment No.1 for additional requirements of AS/NZS 3100 test report.
- 4) For the tests of Integrated switches for controlling socket outlets portion and the incorporated single pole switch, See Attachment No.2 for AS 3133:2020 test report.
- 5) The difference between the all models are the number of switch assemblies and socket outlets, mounting orientation, electrical parameters, cover plate shape and cover plate material, there are metal cover plate and plastic plate. see the model list on the next for details.
- 6) All tests were performed on models V15/335, V19/335, V19/337 and V16/316B.

Model list

No.	Model	Trade mark	Electric Parameters	Description
1.	V15/313A	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Single switched socket-outlet, horizontal mount, plastic cover plate.
2.	V15/313B	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Single switched socket-outlet, horizontal mount, plastic cover plate.
3.	V15/313-V	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Single switched socket-outlet, vertical mount, plastic cover plate.
4.	V15/335	Nsunway, CHVOV, BERDIS	250Va.c., 15A	Single switched socket-outlet, horizontal mount, plastic cover plate.
5.	V15/335-V	N Nsunway, CHVOV, BERDIS	250Va.c., 15A	Single switched socket-outlet, vertical mount, plastic cover plate.
6.	V16/313	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Single switched socket-outlet, horizontal mount, metal cover plate.
7.	V19/313	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Single switched socket-outlet, horizontal mount, plastic cover plate.
8.	V19/313-V	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Single switched socket-outlet, vertical mount, plastic cover plate.
9.	V19/335	Nsunway, CHVOV, BERDIS	250Va.c., 15A	Single switched socket-outlet, horizontal mount, plastic cover plate.
10.	V19/335-V	Nsunway, CHVOV, BERDIS	250Va.c., 15A	Single switched socket-outlet, vertical mount, plastic cover plate.
11.	V19/314	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Single switched socket-outlet, horizontal mount, plastic cover plate, With extra switch rated 250Va.c., 10AX.
12.	V15/314	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Single switched socket-outlet, horizontal mount, plastic cover plate, With extra switch rated 250Va.c., 10AX.
13.	V15/315	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, horizontal mount, plastic cover plate,
14.	V15/315-V	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, vertical mount, plastic cover plate,
15.	V16/315	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, horizontal mount, metal cover plate,
16.	V15/337	Nsunway, CHVOV, BERDIS	250Va.c., 15A	Double switched socket-outlet, horizontal mount, plastic cover plate.
17.	V15/337-V	Nsunway, CHVOV, BERDIS	250Va.c., 15A	Double switched socket-outlet, vertical mount, plastic cover plate.
18.	V19/315	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, horizontal mount, plastic cover plate.
19.	V19/315-V	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, vertical mount, plastic cover plate.

20.	V19/337	Nsunway, CHVOV, BERDIS	250Va.c., 15A	Double switched socket-outlet, horizontal mount, plastic cover plate.
21.	V15/316	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, horizontal mount, plastic cover plate, With extra switch rated 250Va.c., 10AX.
22.	V15/316-V	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, vertical mount, plastic cover plate, With extra switch rated 250Va.c., 10AX.
23.	V16/316A	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, horizontal mount, metal cover plate, With extra switch rated 250Va.c., 10AX.
24.	V16/316B	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, horizontal mount, metal cover plate, With extra switch rated 250Va.c., 16AX.
25.	V19/316	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, horizontal mount, plastic cover plate, With extra switch rated 250Va.c., 10AX.
26.	V19/316-V	Nsunway, CHVOV, BERDIS	250Va.c., 10A	Double switched socket-outlet, vertical mount, plastic cover plate, With extra switch rated 250Va.c., 10AX.

AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict
Section 1	Section 1		P
1.2	Application		P
1.2.1	General requirements of AS/NZS 3100		P
	This Standard shall be read in conjunction with AS/NZS 3100, and the appropriate provisions of AS/NZS 3100 shall apply to the construction of a plug or socket-outlet and the insulation and safeguarding of parts that normally carry current.		P
1.2.2	Specific requirements of this standard		P
	A plug or socket-outlet shall be considered to comply with this Standard only if it complies with all the appropriate requirements of this Standard and passes the relevant tests specified herein.		P
	For special purpose plugs and socket-outlets, small deviations from the dimensions as specified in Figure 2.1, which give the impression of a standardized plug and socket-outlet and lead to confusion with standardized plugs and socket-outlets, are not allowed.	No such special purpose plugs and socket-outlets.	N/A
	For extra low voltage plugs and socket-outlets, refer to Appendix E. (AS/NZS 3112:2017/Amd1:2021)		N/A
	For protective dummy plugs, refer to Appendix I.		N/A
	For plug portions and equipment incorporating plug portions, refer to Appendix J. (AS/NZS 3112:2017/Amd1:2021)	No such equipment.	N/A

Section 2	Plugs		N/A
2.1	Terminals and internal connections		N/A
2.1.1	Materials		N/A
	Terminals and internal connections, intended primarily for carrying current, shall be of a corrosion-resisting metal with sufficient hardness and rigidity for the intended application.		N/A
2.1.2	Construction of terminals		N/A
	The terminals shall be of suitable size and form to accommodate the conductors of a flexible cord of current-carrying capacity corresponding to the marked current rating of the plug:		N/A
	Facilities shall be provided to prevent slipping or spreading of the conductors or conductor strands.		N/A
	Where the facilities are such that the conductor is to be located around the shank of the terminal screw and clamped under the screw head, the following requirements shall apply:		N/A
	(a) When the terminal screw is screwed in to the limit of its thread, the clearance between the head of the screw and the washer or other means of retention of the conductor shall not exceed 0.4 mm.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	(b) The terminal screw shall be of sufficient length to enable it to be backed off sufficiently from the washer or other means of retention of the conductor so that the conductor may be located around the shank without difficulty.		N/A
	(c) Where the means of retention of the conductor is not continuous, e.g. prongs, there shall be at least three points of retention and the maximum angle between any two points shall not exceed 150°.		N/A
	(d) Where the means of retention of the conductor is continuous, e.g. a portion of the insulating moulding, the angle subtended by the arc of the means of retention shall be not less than 180°.		N/A
2.2	Plug pins		N/A
2.2.1	Materials for pins		N/A
	Current-carrying parts of plug pins shall be of metal having mechanical strength, electrical conductivity and resistance to corrosion adequate		N/A
	- copper;		N/A
	- copper alloy containing at least 58 % copper for parts made from cold-rolled sheet or at least 50 % copper for other parts;		N/A
	- stainless steel with at least 13 % chromium and not more than 0.09 % carbon		N/A
2.2.2	Assembly of pins		N/A
	Where, during assembly, pins may become detached from the body of a plug yet remain attached to the conductors of a flexible cord, or have to be detached from the body to enable connection, it shall not be possible for a plug to be assembled with any pin located in a position other than that intended.		N/A
	In a plug made of resilient insulating material, the pins and terminals shall be held securely in position.		N/A
2.2.3	Form of pin		N/A
	The plug pins shall be adequately proportioned throughout, and the portion adjacent to the connection shall be designed to not introduce a stress concentration which may lead to a fracture of the pin, and shall be suitably shaped to prevent abrasion or cutting of conductor strands due to flexure in normal use.		N/A
	The exposed ends of plug pins shall have a bevel or radius to facilitate entry into socket outlets and to operate shutters.		N/A
	Round pins shall have a semicircular end profile.		N/A
	Flat pins with the following width and thickness profiles are deemed to comply:		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	(a) Flat pins with a radius on the end with side bevels, as shown in Figure 2.1(h), having the following profiles:		N/A
	(i) Width profile with an arc on the centre-line of the pin of – (A) 6 mm for all pins of 10A plugs and live pins of 15A plugs; or (B) 11 mm for earth pins of 15A plugs and all pins of 20A plugs.		N/A
	(ii) Thickness profile with each corner bevelled 0.3 mm to 0.4 mm along the sides, finishing along the pin at 0.8 mm to 1.0mm.		N/A
	(b) Flat pins square on the end with corner bevels and side bevels, as shown in Figure 2.1(i), having the following profiles:		N/A
	(i) Width profile that is square and with each corner bevelled 0.6mm finishing along the pin at 0.8mm to 1.0mm.		N/A
	(ii) Thickness profile with each corner bevelled 0.3mm to 0.4mm along the sides, finishing along the pin at 0.8mm to 1.0mm.		N/A
	(c) Flat pins square on the end with corner bevels and a radius on the sides, as shown in Figure 2.1(j), having the following profiles:		N/A
	(i) Width profile that is square and with each corner bevelled 0.6mm finishing along the pin at 0.8mm to 1.0mm.		N/A
	(ii) Thickness profile with a radius of approximately half the material thickness along the sides, finishing along the pin at 0.8mm to 1.0mm.		N/A
	The contact portion of the pins shall be smooth and free from openings or indentations		N/A
	A longitudinal seam or opening in the contact portion of one face up to 0.3 mm width is deemed to comply. The thickness of any pin at the seam is measured using a 0.3mm thick blade		N/A
	The opening of the contact portion of the flat-pin plugs as indicated in Figure 2.3 and shall not be less than 1.58mm.		N/A
	The exposed portion of earthing pins and pins of other than insulated pin plugs shall be free from any non-metallic coverings or coatings		N/A
2.2.4	Insulation of plug pins		N/A
	Live parts of insulated pin plugs shall not be exposed when the plug is partially or fully engaged with the associated socket		N/A
	Compliance for plugs of the types shown in Figure 2.1 is checked by measurement to Figure 2.4		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	For the purpose of this Clause, lacquer, enamel or sprayed insulating coating is not considered to be insulation material		N/A
	All live pins on low voltage plugs except for those shown in Figure 2.1(a2), (b) and (g) shall be of the insulated pin type.		N/A
	The colour green or a combination of green and yellow shall not be for the insulation of insulated pins		N/A
2.3	Insulating materials		N/A
2.3.1	General		N/A
	Except for ceramics, all insulating materials of a plug shall comply with Clause 2.13.11.		N/A
	The moulding or encapsulating material shall be of even texture throughout and of suitable proportions to ensure adequate physical properties. It shall be free of voids, which may significantly lessen the mechanical strength or electrical properties of the plug.		N/A
2.3.2	Plug body		N/A
	The insulating portion of a plug body shall consist of -		N/A
	(a) insulating material with properties not inferior to those specified in AS/NZS 3121 for insulating mouldings having a temperature class of 80°C; or		N/A
	(b) Ceramic material of a type that, after 48h immersion in water and after all visible drops of water have been removed from the surface by means of a clean dry cloth, it shall not have increased in mass by more than 2%.		N/A
2.3.3	Plug cover		N/A
	The insulating material of a plug cover shall have properties not inferior to those specified in AS/NZS 3121 for insulating mouldings with a temperature class of 60°C.		N/A
2.4	NON-REWIREABLE PLUGS		N/A
	A non-rewireable plug shall comply with the following requirements:		N/A
	(a) Each conductor shall be rigidly and effectively attached to the appropriate plug pin. Each plug pin, with the conductor attached to it, and the insulation of the conductor adjacent to the connection, shall be adequately supported and secured in position in the plug.		N/A
	(b) The conductors shall be attached to the plug pins by clamping, crimping, welding or soldering. Soldered connections shall comply with AS/NZS 3100. Soldering shall be used only to supplement a clamped or crimped connection unless the design of the plug is such that the soldered connection will not be subjected to flexure or undue mechanical stress during normal use of the plug and cord set.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	(c) The flexible cord, complete with any braid, cover or sheath, shall be taken into the body of the plug. The complete flexible cord shall be securely held in position in the plug by the moulding, encapsulation, cover or other suitable means that will effectively prevent any part of the flexible cord from moving out of the plug during normal use.		N/A
2.5	Means of entry and cord anchorage for flexible cord		N/A
2.5.1	General		N/A
	Provision shall be made for entry or a flexible cord together with any protective covering, and for effective anchorage of the flexible cord or range of cords which the plug is intended to accommodate.		N/A
	For rewirable plugs, the anchorage shall be effective for the range of flexible cords listed in table 2.1, except where —		N/A
	(a) there is a special aperture for the accommodation of only one type or size of flexible cord, a circular hole not being regarded as restricting the entry of cords having diameters smaller than that of the hole; or		N/A
	(b) the cord or range of cords as specified by the manufacturer is marked as required by Clause 2.12.3(d).		N/A
	The cord anchorage shall comply with Clause 2.13.4. In addition, except where the plug is specially designed to accept only parallel two-core unsheathed flexible cord, the following shall apply to rewirable resilient and thermoplastic plugs of the type referred to in Figure 2.1(a) and Figure 2.1(b):		N/A
	Two means of cord grip shall be provided: one that anchors each insulated core by a pillar, post, grip, tortuous path or equally effective means; the second that grips or clamps the sheathing of the flexible cord. Both means may be incorporated in one device.		N/A
2.5.2	Side-entry (of the flexible cord) plugs		N/A
	In addition to complying with the general requirements of Clause 2.5.1, low voltage flat pin side entry plugs having ratings up to and including 15 A, shall comply with Figure 2.1(d1) or Figure 2.1(d2), as appropriate.		N/A
	The angle of entry of the flexible cord for side entry plugs of the Figure 2.1(d2) type is not specified. However, for side entry plugs of this type, the edge of the flexible cord, including any protective covering or cord guard, closest to the plug face, shall be not less than 8.6 mm from the plug face.		N/A
2.6	Capacitors		N/A
	Where a capacitor is incorporated in a plug for the suppression of radio or television interference, the capacitor shall comply with the capacitor requirements of AS/NZS 3100.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
2.7	Capacitors		N/A
	A plug shall be provided with a functionally adequate finger –grip to permit easy insertion into, or withdrawal from its corresponding Socket		N/A
	Plugs complying with Figure 2.1 (a1), (c), (d), (f) or (g) shall permit easy insertion, or withdrawal from, a fully recessed socket-outlet complying with Figure 3.5		N/A
2.8	Ratings and dimensions of low voltage plugs		N/A
2.8.1	General		N/A
	Plugs with rating up to and including 20A, shall conform to the appropriate dimensions shown in Figure 2.1		N/A
	The distance between a live pin of any plug and the edge of the moulding of the plug, shall be not less than 9 mm		N/A
	Where doubt exists regarding conformance with this requirement, the gauge of Figure A1 in Appendix A or Figure B1 in Appendix B, or Figure F1(a) or Figure F1(b) in Appendix F, as appropriate, shall be placed over the pins to ensure contact with the highest points associated with the plug face.		N/A
	Using a 1.5 mm feeler gauge of greater than 3 mm width and applied without undue force between the plug and the plug gauge, penetration to within 9 mm of the live pin shall not be possible.		N/A
	No point on the front face of the plug shall protrude by more than 0.5 mm		N/A
	Dimensional requirements of Figure 2.1(e2) do not apply to plugs with greater than three pins as they will not engage with a standard socket-outlets complying with Figure 2.1.		N/A
2.8.2	Integrally moulded plug and cord		N/A
	A two-core flexible cord may be integrally moulded with a three-pin plug.		N/A
2.8.3	Two-pin flat-pin plugs with non-parallel pins		N/A
	A low voltage, two-pin, flat-pin plug with pins arranged as in Figure 2.1(c) shall have a current rating not exceeding that of the cord to which it is connected.		N/A
	Such plugs shall be permitted only where the plug has a maximum rating of 10 A and is integrally moulded.		N/A
2.8.4	Compliance with dimensional requirements of Figure 2.1		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	Low voltage plugs shall be checked for conformance with the prescribed dimensions of Figure 2.1 by any suitable means, except that conformance with the nominal dimensions covering disposition of pins, i.e. spacing from centre and angular orientation shall be checked by a gauge complying with Appendix A, Appendix B or Appendix F, as appropriate.		N/A
	In addition, low voltage flat pin, or combination of flat and round pin plugs having ratings up to 15 A of the Figure 2.1(a1), Figure 2.1(c), Figure 2.1(d), Figure 2.1(f) or Figure 2.1(g) type, shall comply with the dimensional requirements of Figure 2.1(e1 and e2).		N/A
	20 A plugs of the Figure 2.1(a2) type shall comply with the dimensional requirements of Figure 2.1(e2).		N/A
	Plugs with insulated pins, complying with this Standard, need not comply with dimension R20±1.0 mm of Figure 2.1(e2) provided there is at least 9mm from the edge of the live pins to the edge of the plug face Figure 2.1(e3).		N/A
2.8.5	Plugs, IP-rated, with threaded retaining device		N/A
	Where an IP-rated plug has a threaded retaining device, the dimensions of the retaining device shall comply with Appendix H. The pitch diameter (PD) on the threaded retaining device shall be as shown in Figure H1(d). (AS/NZS 3112:2017/Amd1:2021)		N/A
2.9	Internal connections		N/A
	The design and construction of a plug provided with earthing connections shall be such that when the plug is correctly wired and completely assembled—		N/A
	(a) A loose terminal screw or conductive material cannot bridge any live parts or earthing parts		N/A
	(b) The earthing parts are effectively isolated from contact with a live conductor which may become detached; and		N/A
	(c) The live parts are effectively isolated from contact with any earthing conductor which may become detached.		N/A
	Any connections for auxiliary devices, such as radio interference suppressors or visual indicators, shall comply with the above requirements.		N/A
2.10	Arrangement of earthing connections		N/A
	The earthing pin of any low voltage, three-pin plug shall be that pin which is radial to the circle embracing the pins		N/A
2.11	Fuses		N/A
	Plugs shall not include a fuse.		N/A
2.12	Marking		N/A
2.12.1	Required marking		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	The plug shall be marked with the following information in accordance with AS/NZS 3100:		N/A
	(a) The name, trade name, or mark of the manufacturer or of the supplier.....:		N/A
	(b) The current rating in amperes.....:		N/A
	(c) The voltage.....:		N/A
	(d) If not the only type of plug marketed by the manufacturer or supplier, the plug shall also be marked with a catalogue number, type number or name, or other marking that will distinguish it from any other plug marketed by that manufacturer or supplier.:		N/A
	Plugs of the same basic design incorporating identical components but with variations of pin arrangements, such as 10 A, 15 A or round earth pin, may have a common type marking.		N/A
	(e) Any IP rating greater than IP20, if claimed....:		N/A
2.12.2	Location of marking		N/A
	The marking required by clause 2.12.1 shall be located as follows:		N/A
	(a) Items (a) and (d) on any portion of the plug		N/A
	(b) Items (b), (c) and (e) on the external body of the plug		N/A
2.12.3	Additional requirements for rewirable plugs		N/A
	A rewirable plug shall also be supplied with instructions detailing the following:		N/A
	(a) A diagram illustrating the method of connection of the conductors and, in particular, the earthing conductor and the cord anchorage. This diagram shall show the earthing conductor printed in green and yellow. The live conductors shall not be coloured.		N/A
	(b) A full-scale diagram showing the length of sleeving and insulation to be stripped back.		N/A
	(c) A description of the method of connection of each conductor giving the permissible alternative colours for the active, neutral and earthing conductors, respectively.		N/A
	(d) The size and types of flexible cords with which it is intended to be used.		N/A
2.12.4	Earthing connections		N/A
	Rewirable earthing plug, marking in accordance with AS/NZS 3100		N/A
	This marking shall be supplemented by the application of a conspicuous green colour on, or adjacent to, the earthing terminal, if the plug is of the rewirable type.		N/A
	Where, detachable assemble, the above information shall be conspicuously marked on the earthing pin and on the body adjacent to the earthing pin position.		N/A
2.12.5	Live connections		N/A
2.12.5.1	General		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	The marking of live connections of rewirable plugs shall be as required by AS/NZS 3100, except that the active connection of plugs shall be indicated by the letter 'L', 'A' or 'P'. 'L' is the preferred letter.		N/A
2.12.5.2	Location of marking		N/A
	Where pins may become detached from the body or are required to be detached to enable connection to the terminals, the marking shall be inside the body of the plug adjacent to the terminals.		N/A
	In other cases, the marking may be on the terminals.		N/A
2.12.6	Configuration of plugs		N/A
	A plug conforming to Figure 2.1(a), Figure 2.1(c), Figure 2.1(f) or Figure 2.1(g) shall have its pins disposed so that, when the pins are correctly connected, the pin configuration, viewed as from the pins, shall be earth, neutral and active in a clockwise direction.		N/A
	Where there is no earthing pin, the live pins shall conform to this configuration.		N/A
2.13	Tests on plugs		N/A
2.13.1	General		N/A
	Plugs shall be subjected to the tests specified in Table 2.2, carried out in the stated order, and shall comply with the requirements specified for each test.		N/A
	The general test conditions described in AS/NZS 3100 shall be observed when carrying out the tests specified by this standard. (AS/NZS 3112:2017/Amd1:2021)		N/A
2.13.2	Insulation resistance test The insulation resistance of a plug shall be measured at a voltage of 500 V d.c. as follows:		N/A
	(a) Between all poles of the plug, taken in pairs.		N/A
	(b) Between live poles of the plug and any external metal, all live poles of the plug being connected together.		N/A
	(c) Between live poles of the plug and the earthing terminal of exposed metal, the live poles being connected together.		N/A
	(d) Between live poles and a flexible electrode applied to non-conducting parts normally handled in service all live poles connected together.		N/A
	(e) For insulated pin plugs, between live poles and a metal foil applied around the insulation on each live pin for a distance of approximately 4 mm from plug face, all live poles being connected together.		N/A
2.13.3	High voltage test (a.c., for 1 min):		N/A
	(a) 1000V		N/A
	(b) 3000V		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	(c) 1000V		N/A
	(d) 3000V		N/A
	(e) 1250V		N/A
	Without failure		N/A
2.13.4	Flexible cord anchorage test for rewirable plugs		N/A
	The cord anchorage shall be tested with the conductors connected to the appropriate terminals.		N/A
	A direct pull of the values specified in Column 4 of Table 2.4 shall be applied through the flexible cord in the direction in which it enters the plug.	Test force: ____ N	N/A
	Over a period of 10 s, the pull shall be increased uniformly to the appropriate value, maintained at that value for a further 10 s, and then released.		N/A
	This test shall be performed three times.		N/A
	The terminal screws of resilient and thermoplastic plugs shall be loosened as much as possible without removing the screws and a direct pull of the values specified in Column 5 of Table 2.4 shall be applied through the flexible cord. Over a period of 10 s, the pull shall be increased gradually to the appropriate value, maintained at that value for a further 10 s, then released.	Test force: ____ N	N/A
	This test shall be performed three times.		N/A
	The cord anchorage shall be considered inadequate if the flexible cord parts from the terminals, if the terminals break away or are impaired or, if during the test with the terminal screws loosened, the flexible cord moves longitudinally by 2 mm in the anchorage, either before the direct pull reaches the specified value or during the time that the pull is maintained.		N/A
2.13.5	Test of external nut or clamping ring		N/A
	Plugs that incorporate an external nut or clamping ring as a means of cord anchorage shall be subjected to the following test.		N/A
	A plug shall be wired with a minimum sized cord, as specified by the manufacturer, and an axial force of 110 N shall be applied to the external nut or clamping ring for 60 s and the external nut or clamping ring shall not become detached.		N/A
2.13.6	Attachment of covers		N/A
	A plug with a removable cover, which is not secured by screws and which, when removed, exposes live parts, shall, together with the test equipment, be heated to a temperature of 50±2°C for 1 h and shall be maintained at that temperature throughout the test. The test shall be conducted without a cord attached to the plug.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	The base of the plug shall be securely held in position. A force which, over a period of 10 s, shall be increased steadily to 60 ± 0.6 N and held at this value for a further 10 s, shall be applied evenly at the neck of the plug in a direction parallel to the pins. This procedure shall be conducted three times on the same plug, at intervals of 5 min, without disturbing the cover between tests.		N/A
	During the test period, the cover shall not separate from the base to enable live parts to be accessible to the standard test finger.		N/A
2.13.7	Mechanical strength of pin tests		N/A
2.13.7.1	Tumbling barrel test		N/A
	Three plugs, not subjected to any previous tests, shall be tested in a tumbling barrel as described in AS 60068.2.32. Rewireable plugs shall be fitted with a flexible cord as specified in Table 2.1, having the smallest cross-sectional area of the lightest type and a length of approximately 100 mm, measured from the outer end of the guard (if any) or the plug.		N/A
	Terminal screws and assembly screws shall be tightened with a torque equal to two-thirds of the torque specified in the test for screw threads and fixings of AS/NZS 3100.		N/A
	Non-rewireable plugs are tested with the flexible cord as delivered, the cord being cut so that a free length of approximately 100 mm projects from the outer end of the guard or the plug (if any).		N/A
	The samples shall be dropped from a height of 500 mm onto a steel plate, 3 mm thick. After each 100 drops the pins shall be inspected and straightened to pass through the gauge of Figure A1 or Figure F1. The total number of falls shall be 1 000.		N/A
	After the test, the sample shall show no damage		N/A
	The following shall apply:		N/A
	(a) Live parts shall not have become exposed to the standard test finger.		N/A
	(b) For earth pins, the resistance of the plug/socket-outlet circuit shall be such that compliance with clause 3.14.7 is maintained		N/A
	(c) Any other function affecting safety shall not be impaired		N/A
	(d) No live part shall have become detached or loosened, to the extent that a hazardous situation is created		N/A
	(e) Pins shall not be broken or show cracking		N/A
2.13.7.2	Pin bending test		N/A
	All flat pins of plugs rated up to and including 15 A shall be subjected to a pin bending test.		N/A
	After the tests the pins shall be inspected with normal or corrected to normal vision. The pin shall not be broken off		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	If in doubt, pins shall be disassembled from the plug and any insulation removed.		N/A
2.13.8	Temperature rise test		N/A
	Plugs shall comply with the following temperature rise test:		N/A
	(a) Non-rewireable plugs are tested as delivered with the minimum cross-sectional area of conductor size for each respective current rating		N/A
	(b) Rewireable plugs are fitted with polyvinyl chloride flexible cords with conductors having the minimum cross-sectional area specified in the manufacturer's instructions.		N/A
	The terminals screws or nuts are tightened with a torque equal to two-thirds of that specified in table 2.2 test No.5		N/A
	To ensure normal cooling of the terminals, the conductors connected to plug shall have a length of at least 1m		N/A
	The plug shall be tested in a draught-free environment and mounting as figure 2.9		N/A
	The plug is inserted into a appropriate clamping units with the dimensions specified in figure 2.10 which fitted on each live pins of the plug together with the thermocouple.		N/A
	An alternating current of 1.1 times rated current is passed for 1 h.....:		N/A
	Temperature rise of terminals not exceed 45 K (K).....:		N/A
2.13.9	Securement of pins		N/A
2.13.9.1	Movement of pins		N/A
	Plugs shall be tested for pin movement by applying a force of 18 ± 1 N to the pin under test.		N/A
	Except for non-rewireable plugs, the test shall be carried out without a cord attached to the plug, and with the terminal screws loosened sufficiently to allow a 1 mm ² conductor to be connected.		N/A
	The plug and test equipment shall be preconditioned at a temperature of $40 \pm 1^\circ\text{C}$ for 1 h.		N/A
	For all plugs, the point of application of the force shall be 14 ± 0.5 mm from the face of the plug along the pins, and the direction of the force shall be:		N/A
	(a) in both directions along the line perpendicular to the plane of the pin, and passing through the centre of the pin; and		N/A
	(b) in that plane in both directions along a line at right angles to that specified in item (a).		N/A
	Test maintain 10s and the maximum deflection shall not exceed 2.0 mm.		N/A

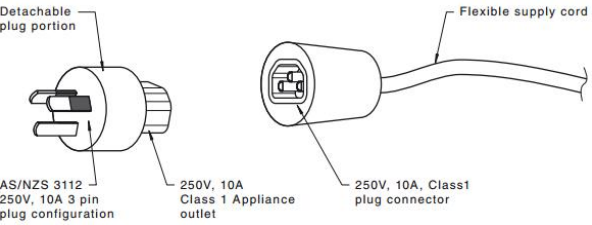
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Clause	Requirement+Test	Result-Remark	Verdict
	Following the test on all pins conforming figure 2.1 shall be such that it will not prevent the plug from being inserted in the appropriate standard gauges without the application of undue force.		N/A
	For other types of plugs, any distortion after 5 min shall be such that will not prevent the plug being inserted into an appropriate socket-outlet without the application of undue force.		N/A
2.13.9.2	Fixing of pins		N/A
	A plug shall be heated to a temperature of 50 $\pm 2^{\circ}\text{C}$ for 1 h		N/A
	The plug shall be held firmly		N/A
	Each pin, in turn, shall have applied to it a force which, over a period of 10 s, shall be increased steadily to 60 ± 0.6 N and held at this value for 10 min.		N/A
	Two tests on each pin shall be conducted, one with the direction of force along the length of the pin towards the body of the plug, and the other with the direction of force along the length of the pin away from the body.		N/A
	The attachment of pins shall be considered inadequate if any pin is displaced relative to the adjacent material of the body by more than 2.4 mm at any time during these tests, or if any pin fails to return to within 0.8 mm of its nominal length specified in Figure 2.1 within 5 min of the removal of the test force.		N/A
2.13.10	Determination of IP rating		N/A
	The IP rating of a plug shall be determined with a socket-outlet nominated by the manufacturer and with any retaining device engaged. The assembly shall be tested to AS 60529.		N/A
	Where a plug is to be tested to first characteristic numeral 5 of AS 60529 (dust test), testing shall be carried out under the conditions specified in AS 60529 for Category 2.		N/A
2.13.11	Determination of ignitability and combustion propagation		N/A
	Plugs shall comply with the requirements for resistance to fire in accordance with AS/NZS 3100 for equipment not designated as 'attended' or 'unattended'.		N/A
	The glow-wire test temperature 'T' shall be 750 $^{\circ}\text{C}$.		N/A
2.13.12	Tests on non-rewireable plug and flexible cord		N/A
2.13.12.1	General		N/A
2.13.12.2	Attachment of flexible cord		N/A
	The flexing test shall be conducted according to the following procedures:		N/A
	(a) Fixing the plug to the test apparatus		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	(b) Loading of flexible cord, the cord shall be loaded with a mass such that the force applied is - (i) $20 \pm 0.2\text{N}$ for accessories with cables or cords having a nominal cross-sectional area exceeding 0.75mm^2 ; or (ii) $10 \pm 0.1\text{N}$ for accessories with flexible cords having a nominal cross-sectional area not exceeding 0.75mm^2		N/A
	(c) Test method: The oscillating member shall be moved through an angle of 90° (45° on either side of the vertical), the number of flexings being 10 000 and the rate of flexing 60 per minute. Samples with circular section cables or cords are turned through 90° in the oscillating member after 5 000 flexings. Samples with flat cords are bent only in a direction perpendicular to the plane containing the axis of the cores.		N/A
	(d) Conformance during the flexing test, During the test, no strands shall pierce the insulation so that they become accessible.		N/A
	(e) Conformance after the test, The criteria for conformance are the following:		N/A
	The sample shall not show damage.		N/A
	The protective sleeve, if any, shall not have separated from the body.		N/A
	The insulation of the flexible cord shall not have been damaged.		N/A
	Not more than 10% of the number of strands of each conductor shall have broken.		N/A
2.13.12.3	Attachment of insulated cores		N/A
	Over a period of 10 s, the pull shall be increased uniformly to $110 \pm 1\text{ N}$, maintained at the maximum value for a further 10 s, and then released.		N/A
	The attachment of the insulated cores shall be considered inadequate if any core detaches from the plug, or if all conductor strands detach from a pin at any time during the test.		N/A
2.13.12.4	Attachment of sheathing (sheathed cords)		N/A
	Over a period of 10 s, the pull shall be increased uniformly to $130 \pm 1.3\text{ N}$, maintained at that value for a further 10 s, and then released.		N/A
	The attachment for sheathing shall be considered inadequate if the insulated cores are exposed at the point of entry to the plug or the cord guard (if permanently attached to the plug), either before the direct pull reaches the required value or during the time that the pull is maintained.	No insulated cores exposed	N/A
	Over a period of 10 s, the pull shall be increased uniformly to $130 \pm 1.3\text{ N}$, maintained at that value for a further 10 s, and then released.		N/A
2.13.12.5	Attachment of insulation (unsheathed cords)		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	Over a period of 10 s, the pull shall be increased uniformly to 65 ± 0.7 N, maintained at the maximum value for a period of 10 min, and then released.		N/A
	The attachment of insulation shall be considered inadequate if the insulation detaches from the plug, or if the conductors are exposed at, or near, to the entry of the body, at any time during the test.		N/A
2.13.12.6	Attachment of conductors		N/A
	Over a period of 10 s, the pull shall be increased gradually to 85 ± 0.9 N, maintained at that value for a period of 1 min, and then released.		N/A
	The attachment of conductors shall be considered inadequate if all conductor strands detach from the pin during any test.		N/A
2.13.13	Tests on the insulation material of insulated pin plugs		N/A
2.13.13.1	General		N/A
2.13.13.2	Pressure test at high temperature		N/A
	Apparatus shown in figure 2.5, with the test specimen in position, maintained for 2 h at $(160 \pm 5) ^\circ\text{C}$. Force applied through the blade: 2.5 N		N/A
	Thickness of the insulation measured: before the test (mm); after the test (mm) :	before the test (mm): after the test (mm) :	N/A
	Thickness remaining at the point of impression is not reduced by more than 50 % of its original value measured at the start of the test: percentage value (%) :		N/A
	Visual inspection shall be made and no cracks on the insulation material shall be visible with normal, or corrected to normal, vision without additional magnification, and the dimension of the insulating material shall not have changed below the minimum size shown in Figure 2.4.		N/A
2.13.13.3	Static damp heat test		N/A
	Two damp heat cycles in accordance with IEC 60068-2-30. Db (12+12 h cycle), 95% relative humidity, lower temperature $25 \pm 3^\circ\text{C}$ and upper temperature 40°C		N/A
	After this treatment and after recovery to room temperature, the specimen shall be subjected to—		N/A
	(a) the insulation resistance test in accordance with clause 2.13.2(e)		N/A
	(b) high voltage test in accordance with clause 2.13.3		N/A
	(c) abrasion test in accordance with clause 2.13.13.6		N/A
2.13.13.4	Low temperature test		N/A
	An insulated pin plug shall be maintained at $-15 \pm 2 ^\circ\text{C}$ for at least 24 h and returned to room temperature		N/A
	The specimen shall be subjected to—		N/A
	(a) the insulation resistance test in accordance with clause 2.13.2(e)		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	(b) high voltage test in accordance with clause 2.13.3		N/A
	(c) abrasion test in accordance with clause 2.13.13.6		N/A
2.13.13.5	Impact test at low temperature		N/A
	Specimens maintained at $-15^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 24h subjected to four impacts (mass 100g, height 100mm) by means of the apparatus shown in figure 2.6 rotating the specimen through 90° between impacts		N/A
	After the test, no cracks of the insulating material		N/A
2.13.13.6	Abrasion test		N/A
	An insulated pin of an insulated pin plug: 20000 movements, 4 N (apparatus shown in fig. 2.7)		N/A
	After the test, the pins shall show no damage, the insulating sleeve shall not have punctured or rucked up		N/A

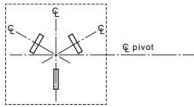
AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict
Appendix J	Integral or detachable plug portions of equipment for insertion into socket-outlets		N/A
J1	General		N/A
	This Appendix specifies additional dimensional and constructional requirements for detachable plug portions, or equipment incorporating integral supply pins or equipment incorporating detachable plug portions.		N/A
	This Appendix shall be read in conjunction with Section 2 of this Standard.		N/A
	For the purposes of this Appendix, where the term 'plug' is used in Section 2 it shall be taken to mean the plug portion of equipment or the detachable plug portion.		N/A
	For the purposes of this Appendix, where the term 'plug' is used in Section 2 it shall be taken to mean the plug portion of equipment or the detachable plug portion.		N/A
J2	Definitions		N/A
	For the purpose of this Appendix the definitions below apply.		N/A
J2.1	Detachable plug portion		N/A
	A plug portion that is detachable from the equipment and with connections including the following standardized outputs and other contacts:		N/A
	(a) Type A (see Figure J1):		N/A
	A detachable plug portion with a connection intended for plugging directly into equipment. The connection being via the equipment group 1 appliance inlet within the scope of AS/NZS 60320.1.		N/A
	 Figure J1 - Example detachable plug portion with a connection-Type A		N/A
	(b) Type B (see Figure J2):		N/A
	A detachable plug portion with a non-standardized connection intended for plugging directly into equipment.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	 (a) (b) Figure J2 - Example detachable plug portion with a non-standardized connection-Type B		N/A
	(c) Type C (see Figure J3):		N/A
	A detachable plug portion with a connection intended for use with an adaptor connected to a flexible cord so as to replicate a supply plug and flexible cord configuration. The connection being via a group 1 appliance outlet within scope of AS/NZS 60320.2.2, which is integral with the plug portion.		N/A
	 Figure J3 - Example detachable plug portion with a connection-Type C		N/A
J2.2	Integral plug portion		N/A
	A plug portion that is integral to the equipment enclosure and is not detachable.		N/A
J2.3	Plug portion		N/A
	A plug portion is that portion of equipment with pins for insertion into a socket-outlet, including the plug pins, terminals of the plug pins, external dimensions of the 'maximum projection' and any connections of a detachable plug portion.		N/A
J3	Requirements for the plug portion		N/A
J3.1	General		N/A
	The following provisions apply to the dimensional and constructional requirements of plug portions of equipment and any detachable connection between the plug portion and the equipment:		N/A
	(a) For detachable plug portions intended for connection to the equipment in multiple orientations, the relevant tests are performed in the most onerous orientation.		N/A
	(b) For Type A detachable plug portion, the relevant requirements of AS/NZS 3105 are applicable, in addition to conformance with relevant clauses of this Appendix.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	(c) For Type B detachable plug portions, the conformance is shown by the relevant clauses of this Appendix.		N/A
	(d) For Type C detachable plug portions, conformance is shown by assessment to Section 2 of this Standard (plugs) and relevant clauses of this Appendix.		N/A
J3.2	Plug pins of plug portions		N/A
	The requirements of Clause 2.2 are applicable for plug pins.		N/A
J3.3	Ratings and dimensions for low-voltage plug portions		N/A
	The requirements of Clauses 2.8.1 and 2.8.4 are applicable for ratings and dimensions.		N/A
J3.4	Internal connections for plug portions		N/A
	The requirements of Clause 2.9 are applicable for internal connections unless requirements are contained in the relevant product standard.		N/A
J3.5	Arrangement of earthing connections for plug portions		N/A
	The requirements of Clause 2.10 are applicable for the arrangement of earthing connections.		N/A
J3.6	Configuration of plug portions		N/A
	The requirements of Clause 2.12.6 are applicable to the configuration of the plug portion.		N/A
J4	TESTS		N/A
J4.1	General		N/A
	Plug portions of equipment shall be subjected to the following tests and unless stated otherwise, shall comply with the requirements specified in Section 2 for each test. The number of test samples shall be in accordance with Table J1		N/A
	For equipment with a detachable plug portion, the assessment(s) of Table J1 tests 2, 3, 5, 10 and 11 shall be conducted on the-		N/A
	(a) assembled equipment with the detachable plug portion connected; and		N/A
	(b) the detachable plug portion after it has been separated from the equipment.		N/A
J4.2	High voltage test		N/A
	The requirements of Clause 2.13.3 are applicable unless requirements are contained in the relevant product standard.		N/A
J4.3	Mechanical strength		N/A
J4.3.1	Tumbling barrel test		N/A
	The tumbling barrel test is applied to determine the mechanical strength of the plug portions and equipment having integral or detachable plug portions.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	For equipment with a detachable plug portion, the detachable plug portion may become detached during the test. If this occurs the detachable plug portion shall be reassembled with the equipment when the pins are straightened as per (a) and (b) below.		N/A
	Three samples that have not been subjected to any previous test are tested to the requirements of Clause 2.13.7.1, however the test is modified as follows:		N/A
	A sample is dropped—		N/A
	(a) 500 times if the mass of the specimen does not exceed 250 g. The pins being straightened after each 100 drops and at the completion of the test to pass through the appropriate gauge of Figure A1, Figure B1 or Figure F1; and		N/A
	(b) 250 times if the mass of the specimen exceeds 250 g. The pins being straightened after each 25 drops and at the completion of the test to pass through the appropriate gauge of Figures A1, Figure B1 or Figure F1.		N/A
J4.3.2	Impact test		N/A
	Plug portions and equipment having integral plug portions or detachable plug portions shall withstand lateral impact forces.		N/A
	All samples that were subjected to the tests in Paragraph J4.3.1 shall be tested as follows:		N/A
	(a) The sample shall be positioned at the centre of a steel plate with a thickness of at least 6 mm. Apertures in the steel plate for the plug pins to pass through shall conform to the corresponding socket Standard. The sample shall be held against the steel plate by clamping all the pins.		N/A
	(b) Samples shall be subjected to blows, with an impact energy of 1.0 ± 0.05 J by any means having the same performance as the spring-operated impact-test apparatus of AS/NZS 3100.		N/A
	(c) Three blows shall be applied to every point that is most likely to directly or indirectly stress the enclosure joints of the sample.		N/A
	Compliance shall be checked by Paragraph 14.3.3.		N/A
J4.3.3	Specific compliance criteria		N/A
	This Paragraph provides the common compliance assessment criteria for tests specified in Paragraphs J4.3.1 and J4.3.2.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	For equipment with an integral plug portion, the assessment(s) shall be made on the complete equipment.		N/A
	For equipment with a detachable plug portion, the assessment(s) shall be conducted on the-		N/A
	(a) assembled equipment with the detachable plug portion connected; and		N/A
	(b) the detachable plug portion after it has been separated from the equipment.		N/A
	Following each test the samples shall comply with Clause 2.13.7.1.		N/A
	The sample shall conform to the 'Guarding of live parts' requirements of AS/NZS 3100.		N/A
	Following each test, no internal conductive material or conductive part shall have become detached or loosened, to the extent that it creates a hazardous situation. The sample shall conform to the 'Separation of live parts from non-current-carrying conductive parts' requirements of AS/NZS 3100.		N/A
J4.3.4	Pin bending test		N/A
	The pins of the plug portion of three samples not subjected to any previous tests shall be tested for compliance with the pin bending test of Clause 2.13.7.2.		N/A
J4.4	Temperature rise test		N/A
	The relevant requirements of Clause 2.13.8 are applicable for the temperature rise test, except that the test current shall be that specified in the relevant product standard.		N/A
	The temperature rise of the pins shall not exceed 45 K irrespective of the temperature rise of parts specified in end-product standards.		N/A
	For detachable plug portions the temperature rise of terminals and contacts shall not exceed 45 K.		N/A
J4.5	Securement of pins of the plug portion		N/A
	The requirements of Clause 2.13.9 are applicable for the securement of pins.		N/A
J4.6	Tests on the insulation material of insulated pin-plug portions		N/A
	The requirements of Clause 2.13.13 are applicable for insulating material of insulated plug pins.		N/A
J4.7	Equipment with a plug portion intended to be supported by the contacts of a socket-outlet		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	Equipment with a plug portion intended to be supported by the contacts of socket-outlets shall not impose undue strain on those socket-outlets.		N/A
	Unless requirements are contained in the relevant product standard, conformance is checked by inserting the equipment with a plug portion, as in normal use, into a flush-mounting combination switch socket-outlet complying with this Standard. The socket-outlet being pivoted about a horizontal axis through the centre-lines of the contact apertures at a distance of 8 mm behind the engagement face of the socket-outlet (see Figure J4). The additional torque, which has to be applied to the socket-outlet to maintain the engagement face in the vertical plane, shall not exceed 0.25 Nm.	 FIGURE J4 ARRANGEMENT FOR DETERMINATION OF PIVOT	N/A
	For equipment with a plug portion having an outlet in the form of a flexible cord, the test is conducted with the centre-line of the axis of pivot of the socket-outlet located at a point 500 mm above a horizontal surface. The flexible cord is allowed to hang freely from the equipment with that flexible cord in excess of 500 mm resting on the horizontal surface during the test.		N/A
J4.8	Additional requirements for detachable plug portions		N/A
J4.8.1	Access to live parts		N/A
	The design and construction of the detachable plug portion shall be such that it is not possible to contact live parts with the small test finger of Figure 13 of IEC 61032.		N/A
	It shall not be possible to incorrectly assemble the plug portion to the equipment allowing access to live parts.		N/A
	Conformance is checked by inspection and applying small test finger of Figure 13 of IEC 61032:1997 to the plug portion. If an opening does not allow entry of the test finger, a force on the test finger in the straight position is increased to 20 N.		N/A
J4.8.2	Construction of detachable contacts where the input current of the equipment exceeds 0.2 A		N/A
	Contacts of the equipment shall be such that they make and maintain, under normal service conditions, satisfactory electrical and mechanical contact with the corresponding contact of the detachable plug portion.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	For connections intended to accommodate pins, contact shall be made on two surfaces diametrically opposite, except if a single spring-assisted contact is used.		N/A
	Contacts shall not rely exclusively on the resilience of the contact material and shall have an opposite face of material other than thermoplastic or resilient insulating material.		N/A
	The alignment and contact-making properties of contacts shall be independent of terminal screws. The effectiveness of the contacts shall be independent of pressure from any thermoplastic or resilient moulding.		N/A
	Conformance with the effectiveness of the contacts is checked by inspection and by the plug portion detachment requirements of Paragraph J4.8.3.		N/A
	A visual inspection is conducted to determine the existence of interference between the metal contacts and the thermoplastic or resilient moulding to provide supplementary contact pressure to the metal contacts.		N/A
J4.8.3	Plug portion detachment requirements		N/A
	For all Type B or C devices and for Type A devices where the outlet of the detachable plug portion is parallel to the plug supply pins, disengagement of the detachable plug portion from the equipment shall require at least two simultaneous independent actions or the use of a tool.		N/A
	Conformance is verified by inspection and the specified test		N/A
	The plug portion and the equipment/adaptor shall be connected and disconnected 50 times (100 strokes).		N/A
	The plug portion shall be securely held in position. A force which, over a period of 10 s, shall be increased steadily to 60 ± 0.6 N and held at this value for a further 10 s, shall be applied evenly at the connecting equipment in a direction parallel to the pins. This procedure shall be conducted three times on the same plug portion, at intervals of 5 min, without disturbing the plug portions between tests.		N/A
	During the test period, the plug portion shall not separate from the equipment.		N/A
	The test of AS/NZS 3112 'temperature rise test' for plugs shall be conducted immediately after the above test without disturbing the sample.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
J4.8.4	Resistance of insulating material to heat and fire		N/A
J4.8.4.1	Resistance to heat		N/A
	The test apply for Type B detachable plug portions parts of non-metallic material.		N/A
	Parts of insulating material supporting live parts including connections		N/A
	Parts of thermoplastic material providing supplementary insulation or reinforced insulation		N/A
	shall be sufficiently resistant to heat if their deterioration could cause the appliance to fail to comply with this Standard.		N/A
	This requirement does not apply to the insulation or sheath of flexible cords or internal wiring.		N/A
	Ball-pressure test according to IEC 60695-10-2		N/A
	The test is carried out at a temperature of $40 \pm 2^{\circ}\text{C}$ plus the maximum temperature rise determined during the temperature test of Paragraph J4.4, but it shall be at least—		N/A
	(a) $75 \pm 2^{\circ}\text{C}$, for external parts;		N/A
	(b) $125 \pm 2^{\circ}\text{C}$, for parts supporting live parts.		N/A
J4.8.4.2	Resistance to fire		N/A
	Plug portions shall comply with the requirements for resistance to fire in accordance with AS/NZS 3100. The glow-wire test temperature 'T' shall be 750°C .		N/A

AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict
Section 3	Socket-outlets		P
3.1	Terminals and internal connections		P
3.1.1	Material		P
	Terminals and internal connections intended primarily for carrying current shall be of a suitable corrosion-resisting metal having sufficient hardness and rigidity for the intended application.		P
3.1.2	Construction of terminals		P
	The terminals of socket-outlets shall be recessed into the body of the socket-outlet so as to prevent accidental contact with bare earthing conductors or with other exposed metal.		P
	Except in socket-outlets rated at 15 A or more, the live terminals of a socket-outlet shall be of suitable size and form.		P
	For all socket-outlets, earthing terminals shall be of suitable size and to accommodate at least two conductors of a size relative to the rating of the rating of the socket-outlets.		P
	Insulation piercing terminals or connecting devices shall conform to the relevant requirements of AS/NZS IEC 60998.2.3.	No such insulation piercing terminals or connecting devices.	N/A
	Any insulating cover retaining insulating piercing terminals or connecting devices shall be fixed in a reliable manner and withstand the mechanical stress occurring during normal use.		N/A
	Conformance with the above paragraph is confirmed by Appendix K.		N/A
3.2	Prohibited arrangements		P
	A low voltage fixed socket-outlet, or its faceplate, shall not incorporate a connecting device for telecommunications wiring, television or radio aerial wiring or other similar wiring systems.		P
	This does not preclude the use of integral SELV outputs compliant with the relevant safety standard when assembled in the socket-outlet and AS/NZS 3100 Clause 4.1.2, Segregation of internal wiring.	No SELV output.	N/A
3.3	Socket-outlet contacts		P
3.3.1	Material		P
	Contacts shall be of a corrosion-resisting metal having sufficient rigidity and durability for the intended application.		P
3.3.2	Construction		P
	Contacts shall be such that they make and maintain, under normal service conditions, satisfactory electrical and mechanical contact with the pins of the appropriate type of plug.		P

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Clause	Requirement+Test	Result-Remark	Verdict
	For socket-outlets intended to accommodate plugs with flat pins, contact shall be made with both sides of each pin, except that it shall be permissible to use spring-assisted single-sided contacts.		P
	These contacts shall not rely exclusively on the resilience of the contact material and shall have an opposite face of material other than thermoplastic or resilient insulating material.		P
	The alignment and contact making properties of contacts shall be independent of terminal screws.		P
	The effectiveness of the contacts shall be independent of pressure from any thermoplastic or resilient moulding.		P
	A visual inspection is conducted.		P
	The contacts independence shall be established in accordance with the requirements of Clause 3.14.8.1.		P
3.3.3	Entry or withdrawal of plug pins into a socket-outlet		P
	Within the socket-outlet, there shall be provision for effective guidance of the corresponding plug pins to ensure direct entry and withdrawal without critical distortion of the socket-outlet contacts.		P
3.3.4	Depth of contact		P
3.3.4.1	Depth of contact for socket apertures for flat pins		P
	For socket-outlets with apertures intended to accommodate plugs having flat pins, the following tests shall be performed.		P
	When the test gauge of Figure 3.1(a) or Figure 3.1(b), as appropriate, is inserted into the socket-outlet live contact apertures in any possible manner, without undue force, contact with live parts shall not be possible.	Figure 3.1(a)	P
	When the metal test gauge of Figure 3.1(d) or Figure 3.1(e), as appropriate, is inserted, perpendicular to the socket-outlet face, into each and every aperture for flat pins, contact shall be made before the gauge is fully inserted.	Figure 3.1(d)	P
	In addition, the three-pin plug of Figure C1 of Appendix C or of Figure G1 of Appendix G, as appropriate, shall be capable of being fully inserted into a socket-outlet.	Figure C1	P
3.3.4.2	Depth of contact for socket apertures for round pins		N/A
	For socket-outlets with apertures intended to accommodate plugs and having round pins conforming to the dimensional requirements of Figure 2.1, the following tests shall be performed.		N/A
	When the test gauge of Figure 3.1(c) is inserted into the socket-outlet live contact apertures in any possible manner, without undue force, contact with live parts shall not be possible.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	When the metal test gauge of Figure 3.1(f) is inserted, perpendicular to the socket-outlet face, into each and every round contact aperture, contact shall be made before the gauge is fully inserted.		N/A
	In addition, one of the three-pin test plugs shown in Figure G1 of Appendix G shall be capable of being fully inserted into a socket-outlet.		N/A
3.4	Socket-outlet construction		P
3.4.1	Insulating Materials		P
	The insulating portions of socket-outlets shall consist of either—		P
	(a) a material having properties not inferior to those of Class 100 mouldings complying with AS/NZS 3121; or	Tested according AS/NZS 3121, Classified 120°C.	P
	(b) ceramic material of a type such that, after immersion in water for 48 h and after all visible drops of water have been removed from the surface by means of a clean dry cloth, it shall not have increased in mass by more than 2%.		N/A
	All insulating materials, except ceramics, shall further comply with the requirements of Clause 3.14.11.	See clause 3.14.11.	P
	Thermoplastic escutcheon plates and faceplates associated with socket outlets, which in normal service have any part positioned within 50 mm of live parts, shall be regarded as insulating materials for the purpose of this Clause. However, this requirement is not applicable to decorative covers not required for the safe operation or installation of socket-outlets.		P
3.4.2	Faceplates		P
	Faceplates of socket outlets (see Figure 3.8), with or without aperture panels, shall be assembled such that they function reliably and withstand the mechanical stress occurring during normal use.		P
	Faceplates without aperture panels that are assembled without the use of screws or rivets shall not be able to be inadvertently removed from socket outlets.		P
	Aperture panels shall not be able to be inadvertently removed from socket outlets.		P
	The aperture panels shall be fixed in a reliable manner and withstand the mechanical stress occurring during normal use.		P
	Aperture panels shall provide insulation from live socket-outlet contacts. The panels may provide support for shutters.		P
	Aperture panels shall not be able to be removed—		P
	(a) without the use of a tool		P
	(b) inadvertently with a plug inserted; and		P
	(c) through the action of inserting and withdrawing the plug into the socket face apertures.		P

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Clause	Requirement+Test	Result-Remark	Verdict
	Aperture panels fixed with moulded clips or interfaces shall not be held in position by the mounting screws holding the socket outlet assembly to the mounting surface.		P
	Compliance is checked by inspection, and where required, the test of Clause 3.14.12.		P

3.5	Components		N/A
3.5.1	Capacitors		N/A
	Where a capacitor is incorporated in a socket-outlet for the suppression of radio or television interference, the capacitor shall comply with AS/NZS 3100.		N/A
3.5.2	Fuses		N/A
	A fuse intended to provide over-current protection shall not be incorporated in a socket outlet.		N/A

3.6	DIMENSIONS		P
3.6.1	Pin entry apertures for plugs		P
	Pin entry apertures in socket-outlets shall not exceed the dimensions specified in Table 3.1. These dimensions shall be checked by measurement.	See appended table 3.6	P
	The distance from the edge of the live pin aperture—		P
	(a) to the extremity of the socket-outlet face or faceplate, in Figure 3.2, shall be not less than 11.7 mm, except for 20 A rated socket-outlets, which shall be not less than 10.7 mm; or	See appended table 3.6	P
	(b) to the extremity of the socket-outlet shall not be less than 13.7 mm, and the shaping of the socket-outlet face profile of Figure 3.3, within the 13.7 mm distance specified, shall not be greater than 3 mm below the plane of the surface surrounding the pin apertures; and		N/A
	(c) to the nearest point of any metal faceplate shall be not less than 3 mm		P
3.6.2	Spacing of socket-outlets		P
	Where there is more than one socket-outlet, the center-to-center distance between adjacent socket-outlets shall be greater than 44mm.	See appended table 3.6	P
3.6.3	Socket-outlet faceplate		P
	No part of the device, shall project more than 8.6 mm from the surface of the socket-outlet face within the shaded area of Figure 3.4.		P
	This requirement applies to all socket-outlet except those with special design features, such as providing protection from dust, weather or mechanical damage		P
	There shall be no projections or protrusions greater than 0.5 mm in the area defined by R21.6 in Figure 3.4.		P

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Clause	Requirement+Test	Result-Remark	Verdict
	In case of doubt, to verify projection on the socket face do not interfere when a plug or plug in device is inserted, insert the gauge of appendix D modified as follows		N/A
	The dimension of the diameter 38 is change to 43.2, this diameter becomes a raise boss of 8.6mm to stimulate a plug/plug in device,when insert the modified gauge shall not interfere with any part of the device or switch.		N/A
3.6.4	Fully recessed socket-outlets		N/A
	Where the face of a 10 A, 15 A or 20 A socket-outlet for use with plugs complying with Figure 2.1(e) is fully recessed, the socket-outlet shall comply with Figure 3.5. Removable portions and breaks in the sidewall of the recess are not permitted. The socket-outlet face and recess sidewall shall form part of the fixed portion of the socket-outlet.		N/A
3.6.5	Socket, IP-rated, with threaded retaining device		N/A
	Where an IP-rated socket-outlet has an external thread, the dimensions of the thread shall comply with Appendix H. The pitch diameter (PD) on the socket shall be as shown in Figure H1(b) of Appendix H. (AS/NZS 3112:2017/Amd1:2021)		N/A
3.7	Arrangement of earthing connections		P
	During normal insertion of the appropriate plug (see Clause 3.8.1), the earthing connection is made before the live pins, during normal withdrawal, the earthing connection is broken after disconnection of the live pins.		P
	The earthing pin aperture and contact of any low voltage socket-outlet, shall be that aperture and contact that is radial to the circle embracing the pins (see Figure 2.1(a)).		P
3.8	Prevention of contact with live pins		P
3.8.1	During normal insertion		P
	At any stage during normal insertion of a non-insulated pin plug into a socket-outlet, with the faces of the plug and socket-outlet in parallel planes, it shall not be possible to touch, with the standard test finger (see AS/NZS 3100), a pin which may become alive.		P
3.8.2	During other than normal insertion		P
	The design and construction of a socket-outlet shall be such that it is not possible for any pin of a plug with which the socket-outlet may appropriately be used to touch a live contact except during normal insertion, i.e. with each pin entering or adjacent to the aperture for the appropriate contact.		P

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Clause	Requirement+Test	Result-Remark	Verdict
	For socket-outlets with covers that are to be— (AS/NZS 3112:2017/AMD1:2021)		P
	(a) removed (with or without the use of a tool) for adjustment of control settings as stated in manufacturer's instructions; or		N/A
	(b) removed for mounting of the socket-outlet, and that do not have visible indications of cover securing screws,		P
	this test shall be conducted with and without the cover in position.		P
3.8.3	Alignment of faceplates		P
	The socket-outlet shall incorporate positive means to preclude incorrect assembly and to ensure that the plug pin apertures in the socket-outlet faceplate will always be aligned with the appropriate contacts of the socket-outlet.		P
3.9	Socket-outlets for worktop installation		N/A
3.9.1	General		N/A
	Socket-outlets intended to be fixed in a worktop shall be arranged to prevent dust and water from accumulating in the socket-outlet. (AS/NZS 3112:2017/AMD1:2021)		N/A
3.9.2	Socket-outlets with a supply flexible cord		N/A
	Socket-outlets, intended to be fixed in location, in, on, under or behind a surface, that incorporate a supply flexible cord or an inlet plug shall comply with the requirements of AS/NZS 3105 notwithstanding the scope. (AS/NZS 3112:2017/AMD1:2021)		N/A
3.10	Floor socket-outlets		N/A
3.10.1	Socket-outlet assemblies mounted in a floor		N/A
	Socket-outlets intended to be mounted in a floor shall be fitted with a strong hinged orsliding close fitting cover of a material that is not combustible and that is capable ofwithstanding rough usage.		N/A
	The socket-outlet assembly shall be arranged so that dust and water will be prevented from accumulating in the socket-outlet.		N/A
	Conformance shall be checked by inspection.		N/A
3.10.2	Integral floor socket-outlets		N/A
	An integral floor socket-outlet contains all the respective components in one assembly, suchas the base assembly, the socket-outlet faceplate and the cover.		N/A
	The cover shall automatically close over the socket-outlet when the plug is withdrawn or		N/A
	Alternatively if the cover is not automatically closing the socket-outlet shall have shuttered outlets.		N/A
	Conformance shall be checked by inspection.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
3.10.3	Floor box or enclosure containing socket-outlet assemblies		N/A
	Socket-outlet assemblies complying with the requirements of this Standard, installed in a floor box or enclosure complying with AS/NZS IEC 60670.23 do not require enhanced protection.		N/A
3.11	Switched socket-outlets		P
3.11.1	Socket-outlets switched by insertion of plug pins shall be arranged and constructed so that-		N/A
	(a) the insertion of a plug into a socket-outlet shall cause the circuit to be made automatically after the engagement of the plug with the contacts of the socket-outlet;		N/A
	(b) the removal of a plug from a socket-outlet shall cause the circuit to be broken automatically prior to disengagement of the pins of the plug with the contacts of the socket-outlet		N/A
	(c) any arc formed during the process of making or breaking the contacts shall be confined in such a way as to eliminate the risk of fire or shock		N/A
	(d) the contacts shall not be subject to damage from repeated use		N/A
	In addition, the switch function shall comply with the requirements of clause 3.1 1.2 except that the "ON" position need not be indicated.		N/A
3.11.2	Socket-outlet switches		P
	Any switch intended for the control of a low voltage socket-outlet to be used with a plug complying with Figure 2.1(a), Figure 2.1(c) or Figure 2.1(d) shall comply with the Clause 3.14.9 switch tests.		P
	All switches provided shall be Category 2 switches and the visual indication of the switch shall be as per marking requirements of Clause 3.13.1(g).		P
3.12	Shuttered socket-outlets		N/A
	If a socket-outlet contains shutters, the shutters shall be activated either by—		N/A
	(a) the neutral pin alone; or		N/A
	(b) the neutral and active pins operating together; or		N/A
	c) the neutral and earth pins.		N/A
	The shutter shall not be activated by the active pin alone.		N/A
3.13	MARKING		P
3.13.1	Required marking		P
	Every socket-outlet shall be marked with the following information, in accordance with AS/NZS3100:		P

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Clause	Requirement+Test	Result-Remark	Verdict
	(a) The name, trade name or mark of the manufacturer or supplier.	Marked on the non-detachable cover	P
	(b) The current rating in amperes	10A or 15A	P
	(c) The voltage	250V	P
	(d) If limited by any component to use on alternating current or direct current, the socketoutlet shall be marked 'a.c.' or 'd.c.' respectively.	a.c. or ~	P
	(e) if not the only type of socket-outlet marketed by the manufacturer or responsible vendor, the socket-outlet shall also be marked with a catalogue number, type number, type name, or other marking which will distinguish it from any other type of socket-outlet marketed by manufacturer or supplier.	Marked on the non-detachable cover	P
	Sockets of the same basic design incorporating identical components but with variations of socket arrangements, such as 10 A, 15 A or round earth pin, may have a common type marking.		N/A
	(f) Designation of degree of protection (if greater than IP2X).	IP20	N/A
	g) Switches controlling low voltage socket outlets	Red used to indicate 'ON' position.	P
3.13.2	Location of marking		P
	The marking required by Items (a) to (f) of Clause 3.13.1 shall be located as follows:		P
	(a) Item (d)—on any visible position of the socket-outlet or its cover.		P
	(b) Item (a)—on any visible position of the socket-outlet or its cover, when installed.		P
	(c) Items (b), (c) and (f)—so that it is visible when the accessory is fixed in position and all covers are in place except that for socket-outlets intended to accommodate plugs with the dimensions specified in Figure 2.1,	(b), (c)	P
	such markings may be inside the cover if the cover can be detached and replaced without removal of the socket-outlet when it is mounted in position.		N/A
	If insulating caps, plugs or the like are field fitted over screw heads for socket-outlets to pass any tests, such information shall be stated in manufacturer's instructions.		N/A
	If an insulating shroud is required to pass the 'Insulation resistance test No. 1' or 'High voltage test' of Table 3.2, such information shall be stated in manufacturer's instructions.		N/A
	(d) Item (e)—on the socket-outlet or on a securely attached label, or on the container in which the socket-outlet is marketed.		P
3.13.3	Earthing connections		P

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Clause	Requirement+Test	Result-Remark	Verdict
	Where a socket-outlet incorporates a contact intended to provide an earthing facility, its terminal shall be distinguished by marking, in accordance with the requirements of AS/NZS 3100, for the marking of earth connections located either on, or adjacent to, the earthing terminal.	E	P
3.13.4	Live connections		P
	The live connections of socket-outlets designed to accept plugs that conform to Figure 2.1(a), Figure 2.1(c) and Figure 2.1(d) shall be marked either on or adjacent to the terminals, and shall comply with the requirements of AS/NZS3100 for the marking of live supply connections	A, N	P
	The marking shall correspond to the socket-outlet contacts being in the order of earth, active and neutral in a clockwise direction when viewed from the front of the socket-outlet		P
3.13.5	Instructions		P
	Instructions shall be provided to ensure that field-installed insulation is fitted correctly where this insulation is required for the socket to comply with the requirements for IP protection insulation resistance and high voltage tests.		P

3.14	Tests for socket-outlets		P
3.14.1	General		P
	Socket-outlets shall be subjected to the tests specified in Table 3.2, carried out in the stated order, and shall comply with the requirements specified for each test.		P
	The general test conditions described in AS/NZS 3100 shall be observed when carrying out the tests specified by this standard. (AS/NZS 3112:2017/AMD1:2021)		P
	Socket-outlets shall be mounted as in normal service and as follows:		P
	(a) Flush and semi-flush socket-outlets that may be used in walls with thermal insulation shall be mounted on a vertical wooden surface, not more than 6 mm thick, with the portion designed to fit into the recess completely enclosed in absorbent cotton wool, loosely packed and held in position by an appropriate metallic (wall box) enclosure.		P
	(b) Other socket-outlets shall be mounted in the minimum size enclosure or wall box.		N/A
	(c) If field-installed insulation as per Clause 3.13.5 can be removed without the use of a tool, then this field-installed insulation shall be removed for all tests. Verification of insulation able to be removed without the aid of a tool shall be in accordance with the non-detachable parts test as specified in Appendix K.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	(d) For socket outlets with removable covers, having demonstrated the removable cover does not provide an insulation function by complying with tests 4, 5 and 14 with the removable cover removed, the removable cover may remain fitted for the dimensional measurements.		P
3.14.2	Insulation resistance test No.1		P
	The insulation resistance of a socket-outlet shall be measured at a voltage of 500 V d.c. with the socket-outlet fitted with an appropriate plug, as follows:	See appended table 3.14.2 and 3.14.3	P
	(a) Between live terminals of the socket-outlet with the plug open-circuited;	>100MΩ	P
	(b) Between live terminals of the socket-outlet and any external metal, the live terminals of the plug being connected together;		N/A
	(c) Between live terminals of the socket-outlet and the metal plate, appropriate metallic enclosure and metal fixing screws, the live terminals of the plug being connected together;	>100MΩ	P
	(d) Between live terminals of the socket-outlet and the earthing terminal (if any), with the live terminals of the plug being connected together.	>100MΩ	P
	(e) Between live terminals of the socket-outlet and a flexible electrode applied to non-conducting parts normally accessible in service, including insulated heads of screws.	>100MΩ	P
	The insulation resistance measured shall be not less than 5MΩ		P
	For socket-outlets with covers that are to be— (AS/NZS 3112:2017/AMD1:2021)		P
	(a) removed (with or without the use of a tool) for adjustment of control settings as stated in manufacturer's instructions; or		N/A
	(b) removed for mounting of the socket-outlet, and that do not have visible indications of cover securing screws		P
	this test shall be conducted with and without the cover in position.		P
3.14.3	High voltage test		P
	The socket-outlet shall withstand, without failure, an a.c. voltage applied between the parts set out in Items (a), (b) and (d) of Clause 3.14.2 for 1 min in each case as follows:	See appended table 3.14.2 and 3.14.3	
	Item (a)—1000 V a.c.		P
	Item (b)—1250 V a.c.		N/A
	Item (d)—1000 V a.c.		P
	The socket-outlet shall further withstand, without failure, a voltage of 3000 V a.c. applied between the parts set out in Items (c) and (e) of Clause 3.14.2 for 1 min in each case.		P

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Clause	Requirement+Test	Result-Remark	Verdict
	The socket-outlet shall be fitted with an appropriate plug during the test.		P
	There shall be no failure or arcing-over during this test		P
3.14.4	Current breaking test	See appended table 3.14.4	P
	Test conditions:		P
	- The plug shall be inserted into, and withdrawn from, the socket-outlet 50 times (100 strokes); at a rate of 150 mm/s and 30 strokes per minute.	30 strokes per minute	P
	The test voltage shall be 1.06 times the rated voltage and test current shall be 1.25 times the rated current	265V, 12.5A (10A socket-outlets); 265V, 18.75A (15A socket-outlets).	P
	During the test, no sustained arcings shall occur		P
	After the test, the samples shall show no damage impairing their further use and the entry holes for the pins shall show no damage that may impair the safety of the socket-outlets.		P
3.14.5	Test of temperature rise		P
	-rated current of accessory(A) :	10A and 15A	—
	-nominal cross-sectional area (mm ²) :	1.5mm ² (for 10A socket-outlets); 2.5mm ² (for 15A socket-outlets).	—
	The plug is inserted into the socket outlet and an alternating current of 1.1 times rated current is passed.....:	11A (for 10A socket-outlets); 16.5A (for 15A socket-outlets);	—
	The temperature rise of any terminal or contact shall not exceed 45 K.	See appended table 3.14.5	P
	For the purpose of this test, the ambient temperature shall be maintained at 20±5°C.		P
3.14.6	Insulation resistance test No.2		P
	The insulation resistance test specified in Clause 3.14.2 shall be repeated. The insulation resistance measured shall be not less than 5 MΩ.	See appended table 3.14.6	P
	(a) Between live terminals of the socket-outlet with the plug open-circuited;	>100MΩ	P
	(b) Between live terminals of the socket-outlet and any external metal, the living terminals of the plug being connected together;		N/A
	(c) Between live terminals of the socket-outlet and the metal plate, appropriate metallic enclosure and metal fixing screws, the live terminals of the plug being connected together;	>100MΩ	P
	(d) Between live terminals of the socket-outlet and the earthing terminal (if any), with the live terminals of the plug being connected together.	>100MΩ	P
	(e) Between live terminals of the socket-outlet and a flexible electrode applied to non-conducting parts normally accessible in service, including insulated heads of screws.	>100MΩ	P

AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict
3.14.7	Test of earthing connection		P
	The resistance between the earthing terminal of any socket-outlet provided with an earthing contact and the earthing terminal of the plug used for testing shall be of a low resistance.	0.004Ω	P
	The earthing connections shall be tested in accordance with AS/NZS 3100.	See appended table 3.14.7	P
3.14.8	Strength of contact tests	See appended table 3.14.8.2 and 3.14.8.3	P
3.14.8.1	Contact independence tests		P
	Each socket contact should comply the withdrawal test, the test gauge refer to figure 3.10	Rated current: The force limited: ☒ 1.5N for I rated≤10A; ☒ 2N for 15A≤ I rated>10A; ☐ 3N for I rated>15A	P
	In socket-outlets designed for use with plugs complying with Figure 2.1, the contacts shall be self-adjusting in pitch and contact making.		P
3.14.8.2	Test of lateral strain		P
	Socket-outlets rated up to and including 10 A, and intended to be used with plugs of the Figure 2.1(a1) type or Figure 2.1(c) type, shall withstand the lateral strain imposed by equipment likely to be introduced into them.	Figure 2.1(a1) type	P
	Socket-outlets for use with plugs of the Figure 2.1(a1) type shall be tested by the application of the gauge shown in Figure 3.6 and Figure 3.7, and socket-outlets for use only with plugs of the Figure 2.1(c) type shall be tested by the application of the gauge shown in Figure 3.7 as follows:	Figure 2.1(a1) type	P
	(a) Application of test gauges The gauge shown in Figure 3.6 shall be applied to three socket-outlets not subjected to any previous test of this Standard. The gauge shown in Figure 3.7 shall be applied to three socket-outlets not subjected to any previous test of this Standard.		P
	(b) Test procedure Each specimen shall be mounted on a vertical surface with the plane through the socket contacts horizontal. The gauge shall be then fully engaged and a weight hung on it such that the force exerted is 5 N.		P
	The gauge shall be removed after 1 min and the socket-outlet shall be turned through 90° on the mounting surface. The test shall be made once in each of the following positions: 0°; 90°; 180°; 270°		P
	During the test, the gauge shall not come out		P

AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict
	After the tests, the socket-outlets shall show no damage within the meaning of this Standard and, in particular, socket-outlets intended for use with plugs of the type shown in Figure 2.1(a1) shall comply with the requirements of Clause 3.14.8.3.		P
	In addition the withdrawal force of each socket contact that has been subjected to the above tests shall be measured by a test pin gauge of Figure 3.10. The withdrawal force shall be not less than 1.5 N.		P
	Shutters, if any, shall be rendered inoperative so as not to affect the test.		N/A
3.14.8.3	Withdrawal force test		P
	This test is applicable only to socket-outlets rated at up to and including 10 A, and intended for use with plugs of the type shown in Figure 2.1(a1).		P
	The test shall be applied to all the socket-outlets subjected to the test of Clause 3.14.8.2.		P
	Manually insert the plug fully into and withdraw it from the socket-outlet 10 times.		P
	The plug is then fully reinserted and a withdrawal force gradually applied by any suitable means until the plug is fully withdrawn. The withdrawal force, during three subsequent and consecutive disengagements, shall be measured.		P
	The withdrawal forces measured shall be between 20 N and 50 N.	See appended table 3.14.8.2 and 3.14.8.3	P
3.14.9	Switch test		P
	Where a switch is combined with a socket-outlet, separate samples shall be used for testing the switch in accordance with AS/NZS 3133.		P
	For the purpose of this test, the terminals of the switch-socket-outlet combination (as used in service) shall be used for the connection of cables and the connecting cables shall be in accordance with this Standard and the ambient temperature shall be maintained at $20 \pm 5^\circ\text{C}$.		P
	The fluorescent load requirements are not applicable to an integral switch. A switch that can be removed shall comply with all the relevant requirements of AS/NZS 3133.		N/A
	In addition, the switch shall pass the test for motor control switches of AS/NZS 3133, using the following test currents:		P
	(a) For 10A socket-outlets.....40A		P
	(b) For 15A socket-outlets.....50A		P
	(c) For 20A socket-outlets.....63A		N/A
3.14.10	Determination of IP rating	IP20	P
3.14.10.1	General		P

AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict
	Socket-outlets shall have degree of protection IP2X when installed in accordance with manufacturer's instructions		P
	this degree of protection shall cover access to live parts and mounting screws for mounting brackets or wall boxes.		P
	The degree of protection shall comply with the appropriate requirements of AS 60529.		P
3.14.10.2	Tests		P
	For the purposes of testing, socket-outlets shall be mounted on a smooth wooden vertical surface and, for other than surface socket-outlets the rear of the mounting surface shall be sealed.		P
	Socket-outlets shall be tested in the most unfavourable position of normal use, in accordance with the mounting instruction, both with and without an integrally moulded plug inserted.		P
	Any hinged flap or cover relied upon for IP classification shall comply with Clauses 3.14.10.3 to 3.14.10.5, as relevant, prior to assessment of the requirements of AS 60529 specific to the classified degree of protection.		N/A
	For socket-outlets with covers that are to be—		P
	(a) removed (with or without the use of a tool) for adjustment of control settings as stated in manufacturer's instructions; or		N/A
	(b) removed for mounting of the socket-outlet, and that do not have visible indications of cover securing screws,		P
	this test shall be conducted with and without the cover in position.		P
	Where a socket-outlet is to be tested for first characteristic numeral 5, testing shall be carried out under the conditions stated for Category 2 in AS 60529.		N/A
	Socket-outlets are conditioned at 25°C±10°C for 24 h before the tests.		P
	Immediately after the appropriate test the socket-outlet shall withstand the test of Clause 3.14.3.		P
3.14.10.3	Requirements for hinged flaps or covers		N/A
	If a hinged flap or cover is required to maintain an IP rating it shall have a means to		N/A
	(a) close and hold the hinged flap or cover without manual assistance, or		N/A
	(b) close and latch the flap or cover to prevent opening without manual operation of the latch mechanism.		N/A
3.14.10.4	Tests for hinged flaps or covers		N/A
	Conformance to Clause 3.14.10.3 is checked by the specified test		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	(a) Initial verification of the strength of the latch.		N/A
	A test force of 50 N is applied to the latched cover at a point near the latch. The flap or cover shall not unlatch.		N/A
	(b) Closing by the spring alone and endurance of the latch.		N/A
	The flap or cover is opened at an angle of $45 \pm 5^\circ$ from the closed position and released allowing the spring alone to close flap or cover (and latch if fitted). This operation is repeated 100 times. The flap or cover shall completely close (or latch if fitted) each time.		N/A
3.14.10.5	Hinged flaps or cover closing means material verification		N/A
	If the closing means of the hinged flap or cover is a metallic spring, it shall be of non-corrosive metal and shall be verified by metallurgical test or supplier declaration.		N/A
3.14.11	Determination of ignitability and combustion propagation		P
	Socket-outlets shall comply with the requirements for resistance to fire in accordance with AS/NZS 3100 for equipment not designated as 'attended' or 'unattended' as follows:		P
	(a) The glow-wire test temperature 'T' for 'retaining parts' of fixed socket-outlets shall be—		P
	- (i) 850°C		N/A
	- (ii) 750°C , but there shall be no flaming for greater than 5s	See the appended table 3.14.11	P
	(b) The glow-wire test temperature 'T' for 'retaining parts' of other socket-outlets shall be 650°C .		N/A
	(c) The glow-wire test temperature for 'relevant parts' of fixed socket-outlets shall be 750°C .	See the appended table 3.14.11	P
	(d) The glow-wire test temperature for 'relevant parts' of other socket-outlets shall be 650°C		N/A
3.14.12	Inadvertent removal test		P
3.14.12.1	General		P
	The aperture set(s) subject to the plugging endurance test below shall be used for subsequent tests of Clause 3.14.12.		P
	Faceplates that are assembled without the use of screws or rivets and are— (AS/NZS 3112:2017/AMD1:2021)		P
	(a) to be removed (with or without the use of a tool) for adjustment of control settings as stated in manufacturer's instructions; or		N/A
	(c) to be removed for mounting of the socket-outlet, and that do not have visible indications of cover securing screws,		P

AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict
	the faceplate shall be removed and reinstalled 10 times prior to the tests of Clauses 3.14.12.2 to 3.14.12.6.		P
3.14.12.2	Plugging endurance test		P
	The plug shall be inserted into, and withdrawn from, the socket-outlet 500 times (1000 strokes) at a rate of 150 mm/s and 30 strokes per minute.		P
	Aperture panels incorporating more than one aperture set shall be subject to the test on each aperture set.		P
3.14.12.3	Preconditioning for push and pull tests		P
	The socket outlet shall be preconditioned at a temperature of $40 \pm 1^\circ\text{C}$ for 1 h ($^\circ\text{C}$) :	40	P
3.14.12.4	Push test		P
	A push force of 50 N by test probe 11 of IEC 61032 shall be applied without jerks for 10 s in the most unfavourable direction to the aperture set(s).		P
3.14.12.5	Pull test		P
	The following forces shall be applied at the centroid of each aperture set(s) without jerks for 10 s in a perpendicular direction. The pull force is applied by the following suitable means such that the test results are not affected:		P
	(a) A pull force of 50 N shall be applied if the shape of the aperture set(s) is such that the fingertips cannot easily slip off.		N/A
	(b) A pull force of 30 N shall be applied if the projection of the aperture set(s) that is gripped is less than 10 mm in the direction of removal.		P
	The pull test shall be repeated at 45° to the perpendicular in the following directions 0° , 90° , 180° , 270° consecutively without any adjustment of the aperture panel.		P
3.14.12.6	Compliance		P
	Following testing, the socket outlet shall not allow live parts to become exposed to the standard test finger (see AS/NZS 3100).		P
	The part incorporating the aperture set(s) shall not become detached.		P

Appendix K	Non-detachable parts test		P
K1	Scope		P
	This Appendix sets out the method for determining non-detachable parts that protect against access to live parts, moisture or contact with moving parts.		P
K2	General		P
	Non-detachable parts shall be fixed in a reliable manner and withstand the mechanical stress occurring during normal use.		P

AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict
	Snap-in devices used for the fixing of non-detachable parts shall have an obvious locked position.		P
	The fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing shall be reliable.		P
	Conformance is checked by the following test.		P
K3	Test		P
	Parts that are likely to be removed during installation or servicing shall be disassembled and assembled 10 times before the test is carried out.		P
	The test shall be carried out at room temperature. If conformance may be affected by the temperature of the equipment, the test is also carried out immediately after the equipment has been operated under the conditions specified in Clause 3.14.5.		P
	The test is applied to all parts that are likely to be detachable whether or not they are fixed by screws, rivets or similar parts.		P
	A force shall be applied without jerks for 10 s in the most unfavourable direction to parts likely to be weak as follows:		P
	(a) Push force, 50N		P
	(b) Pull force:		P
	(i) If the shape of the part is such that the fingertips cannot easily slip off, 50 N.		N/A
	(i) If the projection of the part that is gripped is less than 10 mm in the direction of removal, 30 N.		P
	The push force shall be applied by test probe 11 of IEC 61032.		P
	The pull force shall be applied by a suitable means, such as a suction cup, so that the test results are not affected. While the force is being applied, the test fingernail of Figure K1 is inserted in any aperture or joint with a force of 10 N. The fingernail is then slid sideways with a force of 10 N but is not twisted or used as a lever.		P
	If the shape of the part is such that an axial pull is unlikely, the pull force shall not be applied but the test fingernail is inserted in any aperture or joint with a force of 10 N and is then pulled for 10 s by means of the loop with a force of 30 N in the direction of removal.		P
	If the part is likely to be twisted, the following torque shall be applied at the same time as the pull or push force:		N/A
	(A) 2 Nm, for major dimensions up to 50 mm.		N/A
	(B) 4 Nm, for major dimensions over 50 mm.		N/A

AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict
	This torque is also applied when the test fingernail is pulled by means of the loop. If the projection of the part which is gripped is less than 10 mm, the torque is reduced by 50%.		N/A
	Parts shall remain in the locked position and not become detached.		P

AS/NZS 3112

Clause	Requirement+Test	Result-Remark	Verdict
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3.6 TABLE: SOCKET FACE PROJECTION

P

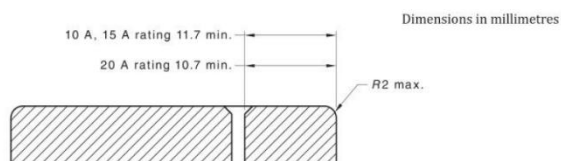


Figure 3.2 — Socket-outlet face profile in accordance with Clause 3.6.1(a)

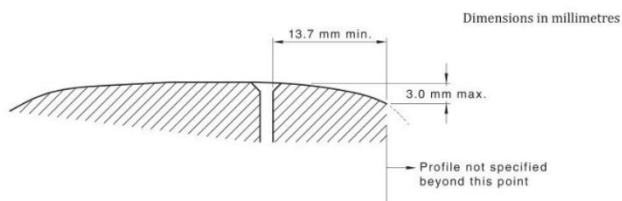


Figure 3.3 — Socket-outlet face profile in accordance with Clause 3.6.1(b)

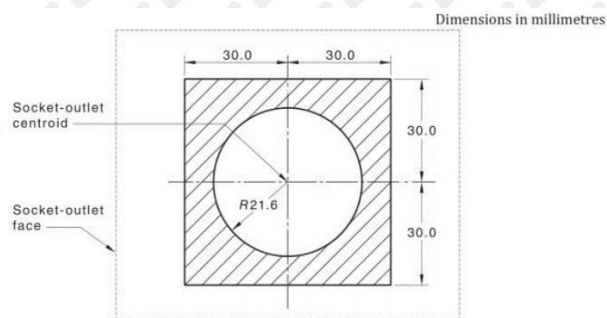


Figure 3.4 — Area of limited projection

DIMENSION

Distance from live pin aperture to the extremity of the socket-outlet face or faceplate

Requirement (mm) Measured (mm)

>11.7 13.90

Pin entry apertures (Table 3.1 of AS/NZS 3112)

Flat live pin aperture

Flat earthing pin aperture

Major axis

Minor axis

Major axis

Minor axis

Required (mm)

Measured (mm)

Required (mm)

Measured (mm)

Required (mm)

Measured (mm)

Required (mm)

Measured (mm)

For 10A socket

 ≤ 7.3 7.09 (A),
7.07 (N) ≤ 2.3 2.17 (A),
2.17 (N) ≤ 7.0

6.94

 ≤ 2.1

2.01

For 15A socket

 ≤ 7.3 7.09 (A),
7.08 (N) ≤ 2.3 2.15 (A),
2.17 (N) ≤ 9.7

9.67

 ≤ 2.1

2.08

For 20A socket

 ≤ 10.1 ≤ 2.3 ≤ 9.7 ≤ 2.1

The centre-to-centre distance between adjacent socket-outlets

Required (mm)

Measured (mm)

Required (mm): >44

Measured (mm): 46.38 (for model V15/315, V16/315, V15/337, V19/315, V19/337, V15/316, V16/316A, V16/316B, V19/316)

Measured (mm): 46.55 (for model V15/315-V, V15/337-V, V19/315-V, V15/316-V)

Supplementary information:

All test models were tested and the most adverse results were recorded.

3.14.2 and 3.14.3 Table: insulation resistance test and high voltage test

P

Tested parts

Insulation Resistance at

High voltage

AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict
	500V d.c.	Test voltage (V a.c.)	Verdict
(a) Between live terminals of the socket-outlet with the plug open-circuited.	>100MΩ	1000	Pass
(b) Between live terminals of the socket-outlet and any metal part that would be exposed when the socket-outlet is mounted in position, with the live terminals of the plug being connected together. This test shall be made with all exposed metal parts bonded together.	>100MΩ(Test for model V16/316B)	1250 (Test for model V16/316B)	Pass
(c) Between live terminals of the socket-outlet and the metal plate, appropriate metallic enclosure and metal fixing screws, the live terminals of the plug being connected together.	>100MΩ	3000	Pass
(d) Between live terminals of the socket-outlet and the earthing terminal (if any), with the live terminals of the plug being connected together.	>100MΩ	1000	Pass
(e) Between live terminals of the socket-outlet and a flexible electrode applied to non-conducting parts normally accessible in service, including insulated heads of screws.	>100MΩ	3000	Pass
Supplementary information: All test models were tested and the most adverse results were recorded.			

3.14.4	Table: result of current breaking test	P
Test current (A): 12.5A a.c. COSØ 0.75 lagging. For 10A socket-outlet; 18.75A a.c., COS Ø 0.75 lagging. For 15A socket-outlet.		
circuit voltage (V): 265Va.c.		
Requirement		Result
The socket shall satisfactorily withstand 50 times cycle of insertion-withdrawal operations at a rate of 150mm/s and 30 strokes per minute.		Pass
Supplementary information: All test models were tested and the most adverse results were recorded.		

3.14.5	Table: result of temperature rise test	P
Test current (1.1In): 11A (for 10A sockets-outlet); 16.5A (for 15A sockets-outlet)		
Nominal cross-section area of cable(mme):1.5mm ² (for 10A sockets-outlet); 2.5mm ² (for 15A sockets-outlet);		
Test requirements(K)	Test result (K)	Limit (K)
Model V15/335 (Test current: 16.5A)		
Temperature rise on terminations 'L'	29.4	45
Temperature rise on termination 'N'	28.8	45
Temperature rise on socket contact 'L'	34.3	45
Temperature rise on socket contact 'N'	32.9	45
Ambient	24.8°C	--
Model V19/335 (Test current: 16.5A)		

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AS/NZS 3112		
Clause	Requirement+Test	Result-Remark
Verdict		
Temperature rise on terminations 'L'		
	31.2	45
Temperature rise on termination 'N'		
	29.7	45
Temperature rise on socket contact 'L'		
	35.2	45
Temperature rise on socket contact 'N'		
	34.6	45
Ambient		
	24.5°C	--
Model V19/337 (Test current: 16.5A)		
Temperature rise on terminations 'L'		
	29.5	45
Temperature rise on termination 'N'		
	27.3	45
Temperature rise on socket contact 'L'		
	36.5	45
Temperature rise on socket contact 'N'		
	35.3	45
Ambient		
	24.7°C	--
Model V16/316B (Test current: 11A(for socket) +16A(for extra switch))		
Temperature rise on terminations 'L'		
	20.1	45
Temperature rise on termination 'N'		
	19.6	45
Temperature rise on socket contact 'L'		
	24.1	45
Temperature rise on socket contact 'N'		
	23.5	45
Temperature rise on terminations '1' (for extra switch)		
	31.5	45
Temperature rise on termination 'C' (for extra switch)		
	32.4	45
Ambient		
	24.4°C	--
Supplementary information:		

3.14.6	Table: results of insulation resistance test	P
Tested parts		Insulation Resistance at 500V d.c. (required $\geq 5\text{M}\Omega$)
Between live terminals of the socket-outlet with the plug open-circuited.		>100M Ω
Between live terminals of the socket-outlet and any metal part that would be exposed when the socket-outlet is mounted in position, with the live terminals of the plug being connected together. This test shall be made with all exposed metal parts bonded together.		>100M Ω (Test for model V16/316B)
Between live terminals of the socket-outlet and the metal plate, appropriate metallic enclosure and metal fixing screws, the live terminals of the plug being connected together.		>100M Ω
Between live terminals of the socket-outlet and the earthing terminal (if any), with the live terminals of the plug being connected together.		>100M Ω
Between live terminals of the socket-outlet and a flexible electrode applied to non-conducting parts normally accessible in service, including insulated heads of screws.		>100M Ω
Supplementary information:		
All test models were tested and the most adverse results were recorded.		

3.14.7	Table: tests of earthing connection	P
Test current (1.5In or 25A, whichever is the greater):25A		
Measured resistance(Ω): (Required resistance $\leq 0.1\Omega$)		0.004

AS/NZS 3112			
Clause	Requirement+Test	Result-Remark	Verdict

Supplementary information:

All test models were tested and the most adverse results were recorded.

3.14.8.2 and 3.14.8.3	Test of lateral strain (For socket-outlet portion)			P
Requirement:		Test result		
For 10A socket-outlets:				
Test with gauge Fig. 3.6		Sample 1	Sample 2	Sample 3
The test plug shall be fully engaged and a weight hung on it such that the force exerted is 5N, 4 times test, 90° rotation per time; during the tests, the test plug shall not		Pass	Pass	Pass
After above test, the test pin gauge is applied to verify withdraw force (N): (>1.5N)		Pass	Pass	Pass
Test with gauge Fig. 3.7		Sample 4	Sample 5	Sample 6
The test plug shall be fully engaged and a weight hung on it such that the force exerted is 5N,4 times test,90°rotation per time; during the tests, the test plug shall not come out		Pass	Pass	Pass
After above test, the test pin gauge is applied to verify withdraw force (N): (>1.5N)		Pass	Pass	Pass
Test result (after clause 3.14.8.2 with Fig. 3.6)		Sample 1	Sample 2	Sample 3
Measured withdrawal force (N): (Required: 20N-50N)		34.6N	32.8N	33.6N
Test result (after clause 3.14.8.2 with Fig. 3.7)		Sample 4	Sample 5	Sample 6
Measured withdrawal force (N): (Required: 20N-50N)		29.8N	30.4N	31.7N
Supplementary information:				
All test models were tested and the most adverse results were recorded.				

3.14.11	Table: Result of Glow wire test				P
Part under test	Test temperature (°C)	visible flame and sustained glowing (Y/N)	flame and glowing extinction time	ignition of the tissue paper (Y/N)	Result
Base (gray)	750	N	--	N	Pass
Cover (White)	750	N	--	N	Pass
Enclosure (White)	750	N	--	N	Pass
Switch rocker	750	N	--	N	Pass
Supplementary information:					

Attachment No. 1

AS/NZS 3100			
Clause	Requirement+Test	Result-Remark	Verdict
3	DESIGN AND CONSTRUCTION		P
3.1	General		P
	All equipment shall comply with the provisions of this Standard in respect of selection of materials, design, and construction, and with the tests specified herein.		P
	The selection and application of materials, and the design and construction of all equipment shall be such as will ensure, as far as is reasonably possible and		P
	economically practicable, that when the equipment is standing, supported, or fixed in a normal position and operating in a normal manner, and account being taken of ordinary wear and tear and other depreciating factors that can reasonably be anticipated, no person will be exposed to risk of injury or electric shock, and there will be no unwarrantable risk of fire either		P
	(a) through the functioning of the equipment under conditions required by its use at rated loading; or		P
	(b) Through the mechanical or electrical failure of any material or of the equipment itself or of any part thereof.		P
	This Standard does not, in general, take into account the use of equipment by young children or infirm persons without supervision, or playing with the equipment by young children.		P
3.2	Equipment to be suitable for conditions of use		P
	All equipment shall be of a type, design, and construction that will enable it to be installed in accordance with the National Wiring Rules and will provide protection against mechanical and electrical failure which can reasonably be expected to result from mechanical failure, or from exposure to weather, water or dampness, corrosive fumes, dust, steam, oil, high temperature or any other deleterious influences to which it will be exposed under the conditions of its use.		P
	Non-hygroscopic insulating materials shall be used where required in individual Standards. In other cases, hygroscopic materials may be used for insulation, provided that the materials are suitably impregnated or treated if liable to exposure to dampness. The position and fixing of the insulation shall be such as will maintain creepage distances and clearances during the normal life of the equipment.		P

Attachment No. 1

AS/NZS 3100			
Clause	Requirement+Test	Result-Remark	Verdict
	In general, timber shall not be acceptable as an insulating material except that it may be recognized in special cases where a particular grade is used for a specific purpose.		N/A
3.3	Selection of materials and parts		P
	Any material or part used in, or in the construction of, any equipment shall comply with any specific requirements set out in respect thereto in this Standard or in an individual Approval and test specification dealing with such materials or parts.		P
	Where any standard prescribes, for or in any equipment, the use of a particular kind of material or part, a material or part of another kind may be used instead, provided that its use will not introduce any risk of electric shock or fire and will not render the equipment less resistant to mechanical or electrical failure than would the use of a material or part of the kind prescribed.		P
3.4	Selection of components		P
	Any component part that is used in or in the construction of any equipment and which is depended upon for safety shall comply with the appropriate requirements of any relevant individual Approval and test specification.		P
3.5	Workmanship		P
	All fabrication and construction shall be carried out in a thoroughly workmanlike fashion complying with the appropriate requirements of this Standard and the generally accepted principles of sound and safe practice.		P
3.6	Fuses		N/A
3.6.1	Accessibility and shrouding		N/A
	This Clause shall not apply to internal fuses where the arrangement and enclosure of the fuses is such that they are not intended and are unlikely to be replaced other than by appropriate servicing personnel.		N/A
	For all other fuses, the following provisions shall apply:		N/A
	(a) Every fuse incorporated in equipment shall be exposed to view or have its location clearly indicated by suitable visible marking or by instructional literature provided with the equipment.		N/A
	(b) Every fuse shall be in an accessible position.		N/A

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	(c)Every fuse shall be so arranged that a person is not subject to the risk of inadvertent contact with (i) any part of a fuse that is mounted in a compartment accessible for normal routine cleaning; or (ii)live parts, when covers are removed to gain access to any fuse. Fuse carriers shall remain in position for the purpose of assessing this requirement.		N/A
	(d)Fuse-links, fuse-contacts and fixed contacts shall be so shielded as to protect a person from accidental contact with live metal while the fuse-carrier is being inserted or withdrawn in the normal manner.		N/A
3.6.2	Mounting		N/A
	A semi-enclosed fuse that is incorporated in equipment and is marked with the letter 'R' shall be mounted in such a manner that no earthed metal is introduced in, or adjacent to, the fusing chamber.		N/A
3.7	Identification of wiring		N/A
	For equipment other than that having a Type Z attachment insulated or covered conductors used as earthing conductors shall be coloured		N/A
	(a) green; or		N/A
	(b) green and yellow in the proportions specified in AS/NZS 3191.		N/A
	The colour green in combination with colours other than yellow shall be acceptable for live conductors, provided that the other colour covers not less than 30% of the surface of the conductor in any 15 mm length.		N/A
	The single colour green shall not be used to identify any live conductor except where		N/A
	(i) the conductor forms portion of the complex wiring of equipment; or		N/A
	(ii) it is specified by an individual Approval and test specification.		N/A
3.8	Regulating devices and switches		P
3.8.1	Fixing and mounting		P
	All regulating devices and switches shall be securely fixed in position.		P
	Rotary regulating devices and rotary switches shall be so fixed or located that they cannot turn bodily during operation.		N/A
	No regulating device or switch shall be mounted in a position or be marked in such a manner as to incorrectly indicate the intended contact position.		P
3.8.2	Visual indications of positions		P

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Clause	Requirement+Test	Result-Remark	Verdict
	The different positions of regulating devices and the different positions of switches may be indicated by figures, letters or other visual means which clearly indicate the intent.		P
	If figures are used for indicating the different positions, the 'off' position shall be indicated by the figure '0' or 'OFF' and the position of any energized state shall be indicated by a higher figure. The figure '0' shall not be used for any other indication.		N/A
	Any marking provided to indicate the position of a regulating device or switch shall be visible when the device or switch is in the corresponding position.		P
3.8.3	Voltage and current limitation		P
	No regulating device or switch shall control a normal operating voltage or current when the voltage with which the device or switch is supplied is more than 15% in excess of the voltage at which the device or switch is rated.		P
3.8.4	Switches for transportable machinery		N/A
3.8.5	Switch		P
	Any switch incorporated in equipment shall be a Category 1, 2 or 3 switch, as appropriate or comply with AS/NZS 61058 series, in accordance with the conditions occurring in the equipment.	Category 2	P
	A Category 1 switch shall comply with the relevant requirements of AS/NZS 3133, and its 'off' position shall be marked in accordance with Clause 3.8.2 herein.		N/A
	A Category 2 switch shall comply with the relevant requirements of AS/NZS 3133, and its 'off' position need not be marked.		P
	A Category 3 switch shall satisfy the test requirements of Clauses 13.1.10, 13.3 and 13.4 of AS/NZS 3133, and its 'off' position need not be marked. In addition it shall be subjected to 50 operations of making and breaking the normal load current of the circuit it controls, in accordance with Clause 13.5.4 and Table 3 of AS/NZS 3133, except that where appropriate for circuits including motors, the test current and power factor shall be the equivalent current and power factor of the circuit which the switch controls, with the rotors locked.		N/A

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	In addition, where Category 1 and 2 switches control circuits containing motors, these switches shall be subjected to a further 50 operations. The test current and power factor shall be equivalent to the current and power factor of the circuit with rotors locked and the rate of operation shall be in accordance with Clause 13.5.4 of AS/NZS 3133.		P
3.8.6	Electronic regulating devices and switches		N/A
	Electronic thermostats and electronic switches without a mechanical switch in the main circuit may not provide a reliable off-state. Therefore the circuit on the load side shall be considered to be live.		N/A
3.9	Socket-outlets		P
	Socket-outlets shall not be permitted in equipment intended for connection by flexible cord except in the following circumstances:		P
	(a) In those cases where there is little likelihood of cascading of similar equipment which could result in circuit overloading and extension of fault conditions.		N/A
	(b) Permitted by an individual Approval and test specification or by National Wiring Rules.		N/A
	(c) The equipment is basically providing a switching or control function.		N/A
	This does not preclude the use of socket-outlets or other facilities for connections within the equipment.		N/A
3.10	Equipment intended to be supported by contacts of socket-outlets		N/A
	Equipment having integral pins for insertion into socket outlets shall comply with Appendix J of AS/NZS 3112.		N/A
3.11	Static charge in equipment		N/A
	Attention is drawn to the hazard of shocks caused by the build-up of electrostatic charge in equipment such as hand-held tools. AS/NZS 1020 gives guidance on the control of undesirable static electricity.		N/A
3.12	Control methods		N/A
3.13	Stability		N/A
	Freestanding equipment intended to be used on a surface such as a floor or a table shall have adequate stability and shall be tested in accordance with Clause 8.14.		N/A
3.14	Equipment connected to supply by a plug		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	Equipment intended to be connected to the supply mains by means of a plug shall be constructed so that in normal use there is no risk of electric shock from charged capacitors when the pins of the plug are touched.		N/A
	The equipment is supplied at rated voltage. the equipment is disconnected from the supply mains at the instant of voltage peak. One second after disconnection, the voltage between the pins of the plug is measured with an instrument that does not appreciably affect the value to be measured.		N/A
	The voltage shall not exceed 34 V.		N/A
3.15	Capacitors		N/A
	Capacitors in appliances or accessories likely to be permanently subjected to the supply voltage and used for radiointerference suppression or for voltage dividing shall comply with IEC 60384-14. If they have to be tested, they are tested in accordance with Annex G.		N/A
3.16	Varistors		N/A
	Varistors connected to live parts incorporated in equipment shall comply with the following requirements.		N/A
	(a) Varistors shall comply with IEC 61051-2. The characteristics as defined within IEC 61051-1 for any such varistor shall be at least:		--
	• Lower category temperature: -10°C; Duration 2 h (Test A IEC 60068-2-1);		N/A
	• Upper category temperature: +85°C; Duration 1 000 h (Test B IEC 60068-2-2);		N/A
	• Damp heat steady state severity: Duration 21 days; Temperature (40 ± 2) °C; Relative Humidity (85 ± 3)% (Test Cab IEC 60068-2-78);		N/A
	• Over voltage category II.		N/A
	(b) Varistors shall have a continuous voltage rating of at least:		N/A
	• 1.25 times the rated voltage of the equipment, or		N/A
	• 1.25 times the upper limit of the rated voltage range of the equipment.		N/A
	(c) The body of the varistor shall have a flammability classification of at least V-1 in accordance with IEC 60695-11-10.		N/A
	(d) Equipment shall be protected against sudden failure of a varistor.		N/A
	Protection shall be provided by		N/A
	• a fuse having a current rating not exceeding 10 A and a breaking capacity of not less than 1500 A. The fuse being connected in series with the varistor; or		N/A

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	• a protective device connected in series with the varistor. The protective devicevaristor combination shall be subjected to a short-circuit test, with the varistorshort-circuited.		N/A
	Test carried out at rated voltage, supply source have a prospective short-current of at least 1500 A, and The circuit can be closed at any angle of the voltage.		N/A
	The test result shall be assessed against the criteria of clause 8.15.10.		N/A
	(e) Equipment shall be protected against gradual failure of any varistor.		N/A
	Compliance is checked by the test of clause 8.15.9.		N/A
	(f) A varistor shall not be connected to protective earth except in series with a GasDischarge Tube (GDT) provided that the GDT complies with the following:		N/A
	• the electric strength test for basic insulation; and		N/A
	• the external CLEARANCE and CREEPAGE DISTANCE requirements for basicinsulation.		N/A
3.17	Incorporated power supplies		N/A
3.17.1	Incorporated power supplies supplying Universal Serial Bus (USB) outlets shall comply with one of the following:		N/A
	(a) the appropriate part of the AS/NZ 61558 series of standards; or		N/A
	(b) AS/NZS 60950.1:2015; or		N/A
	(c) AS/NZS 62368.1:2017.		N/A
	After 28 June 2024 component transformers for incorporated power supplies shall comply with the appropriate part of the AS/NZ 61558 series of standards.		N/A
	Other incorporated power supplies shall comply with the requirements of the appropriate part of the AS/NZS 61558 series of standards.		N/A
3.17.2	Single Fault Conditions		N/A
	In addition to conforming with 3.17.1 (b) or (c), for incorporated power supplies under single fault conditions, the output voltage of the power supply shall not not be greater than 3 V or 10 % of the nominal rated output voltage, whichever is higher.		N/A
	Incorporated power supplies that can deliver a range of different nominal output voltages via negotiation with the connected device shall be tested at each of the output voltages that can be negotiated with the connected device.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	The output voltages under single fault conditions are measured with the output supply unloaded. Transient voltages of less than 1s are ignored provided the transient voltages are below 120 V Peak.		N/A
3.17.3	Temperature consideration		N/A
	In addition to conforming to 3.17.1 (a), (b) or (c), the assembly (of an electrical accessory and the incorporated power supply) shall conform to the following temperature rise test:		N/A
	Tested in accordance with the relevant end product standard with the loads applied to the power supply and the end product connected simultaneously. The load for the power supply is its rated load.		N/A
	Temperature limits of this standard or the relevant end product standard shall not be exceeded, whichever is more unfavourable.		N/A
3.17.4	Over voltage category		N/A
	a) Incorporated power supplies in equipment in the installation wiring shall comply as overvoltage Category III equipment in accordance with relevant Power Supply Standards. For example socket outlets and switch panels.		N/A
	b) Incorporated power supplies in all other equipment supplied from the installation wiring shall comply as overvoltage Category II equipment in accordance with relevant Power Supply Standards.		N/A
3.17.5	Capacitors Bridging Reinforced Insulation		N/A
	For overvoltage Category II accessories, accessible conductive parts separated by double or reinforced insulation from live parts may be bridged by a single Y1 capacitor with qualification approval in accordance with IEC 60384-14		N/A
	For overvoltage Category III equipment and overvoltage Category II equipment other than accessories, if double or reinforced insulation separating accessible conductive parts from live parts is bridged by capacitors, at least two Y1 capacitors shall be used.		N/A
3.17.6	Determination of Ignitibility and Combustion Propagation		N/A
	Incorporated power supplies shall conform to the Ignitibility and Combustion Propagation requirements of this standard and the relevant end product standard whichever is more onerous.		N/A

4	PROTECTION AGAINST MECHANICAL AND ELECTRICAL FAILURE		P
4.1	Prevention of short-circuit and arcing		P
4.1.1	General		P

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Clause	Requirement+Test	Result-Remark	Verdict
	All terminals, contacts and other live parts shall be so arranged that short-circuit or destructive arcing cannot take place, and that no part other than an easily replaceable contact can be appreciably damaged by an arc or overheating arising from the normal operation.		P
	Holes for fixing screws shall be so placed that no short-circuit or arcing can occur when the screws are in position.		P
4.1.2	Segregation of internal wiring		N/A
	Where extra-low voltage and low voltage equipment wiring is within the one enclosure and the extra-low voltage wiring or parts connected thereto are accessible to the standard test finger, either of the following requirements or a combination thereof, shall		N/A
	(a) The extra-low voltage wiring and associated connections shall be effectively separated from low voltage wiring by means of rigidly fixed screens or		N/A
	(b) The extra-low voltage wiring and exposed parts shall be insulated for the highest voltage and so arranged or fixed that bare extra-low voltage parts		N/A
	Parts of one voltage system provided with basic insulation shall not come into contact with live parts of other systems.		N/A
4.1.3	Creepage distances and clearances for appliances		P
	Creepage distances and clearances for appliances shall be not less than the values in millimetres shown in Table 4.1. The way in which creepage distances and clearances are measured is indicated in Annex C.	A to N: Cr: 3.7mm; CL: 3.7mm A to E: Cr: 4.2mm; CL: 4.2mm N to E: Cr: 4.3mm; CL: 4.3mm Limit: Cr: 3.0mm; CL: 3.0mm	P
	Distances through slots or openings in external parts of insulating material are measured to metal foil in contact with the accessible surface; the foil is pushed into corners and the like by means of the standard test finger shown in Figure 8.10 but it is not pressed into openings.		P
	If necessary, a force is applied to any point on bare conductors, other than those of heating elements, on uninsulated capillary tubes of thermostats and similar devices and to the outside of metal enclosures, in an endeavour to reduce the creepage distances and clearances while taking the measurements.		N/A
	The force is applied by means of a test finger having a tip as shown in Figure 8.10 and has a value of		N/A

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	(a) for bare conductors and for uninsulated capillary tubes of thermostats and similar devices 2 N;		N/A
	(b) for enclosures 30 N.		N/A
4.1.4	Additional requirements for appliances		P
4.1.4.1	General		P
	TherequirementsinClauses4.1.4.2 to 4.1.4.5are applicable only to appliances.		P
4.1.4.2	Printed circuit boards		N/A
	For conductive patterns on printed circuit boards, except at their edges, the values in Table 4.1 between parts of different potential may be reduced as long as the peak value of the voltage stress does not exceed either		N/A
	(a) 150 V per millimetre with a minimum distance of 0.2 mm, if protected against the deposition of dirt; or		N/A
	(b) 100 V per millimetre with a minimum distance of 0.5 mm, if not protected against the deposition of dirt.		N/A
	For peak voltages exceeding 50 V, the reduced creepage distances apply only if the proof tracking index (PTI) of the printed circuit board is greater than 175 when measured in accordance with Paragraph B4, Annex B.		N/A
	These distances may be reduced further provided that the appliance complies with the requirements of Clause 8.15 when the distances are short-circuited in turn.		N/A
	Creepage distances and clearances within optocouplers are not measured.		N/A
	For live parts of different potential separated by basic insulation only, creepage distances and clearances smaller than those specified in Table 4.1 are allowed provided the requirements of Clause 8.15 are met if these creepage distances and clearances are short-circuited in turn.		N/A
4.1.4.3	Distances through insulation		P
	The distance through insulation between metal parts for working voltages up to an including 250 V shall be not less than 1.0 mm if they are separated by supplementary insulation and be not less than 2.0 mm if they are separated by reinforced insulation.		P
4.1.4.4	Insulationin sheet form		N/A
	The requirement in Clause 4.1.4.3 does not apply if the insulation is applied in thin sheet form, other than mica or similar scaly material, and		--
	(a) for supplementary insulation, consists of at least two layers and each of the layers withstands the electric strength test of Clause 8.4 for supplementary insulation; or	Number of layers:	N/A

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	(b) for reinforced insulation, consists of at least three layers and any two layers together withstand the electric strength test of Clause 8.4 for reinforced insulation.	Number of layers:	N/A
4.1.4.5	Supplementary insulation and reinforced insulation		N/A
	The requirement in Clause 4.1.4.3 does not apply if the supplementary or reinforced insulation is inaccessible and meets one of the following conditions:		--
	(a) The maximum temperature rise determined during the tests of Clause 8.15 does not exceed the value specified in Table 5.7.		N/A
	(b) The insulation, after having been conditioned as specified, withstands the electric strength test of Clause 8.4 both at the temperature occurring in the oven and room temperature.		N/A
	For optocouplers the conditioning procedure is carried out at a temperature of 50°C in excess of the maximum temperature rise measured on the optocoupler during the tests of Clauses 8.12 or 8.15, the optocoupler being operated under the most unfavourable conditions which occur during these tests.		N/A
4.2	Mechanical protection of conductors and cables		N/A
4.2.1	General		N/A
	All conductors and cables shall be of such a type or be so located or protected that mechanical or electrical failure is not likely to occur.		N/A
4.2.2	Adjacent material		N/A
	All material immediately adjacent to or in contact with a conductor shall not cause abrasion.		N/A
4.2.3	Passage for conductors		N/A
	Where conductors and cables (including flexible cables and flexible cords) are to be threaded through tubes or channels or passed through openings formed in metal work, the tubes, channels or openings shall be of ample size.		N/A
4.2.4	Protection near moving parts		N/A
	Equipment wiring near moving parts shall be so located or arranged as to guard against the possibility of abrasion of the conductor, or its insulation, braiding or sheathing.		N/A
4.2.5	Unprotected conductors with fibrous insulation		N/A
	Fibrous insulated cables, which are defined as 'unprotected' in AS 3158 shall be used only where they can be installed without damage.		N/A
4.3	Terminals and connecting facilities for supply conductors		P
4.3.1	Connecting facilities required		P
	All equipment shall be provided with facilities for the connection of supply conductors in one of the following forms:		--

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Clause	Requirement+Test	Result-Remark	Verdict
	(a) Terminals.	Connected to the fixed wiring.	P
	(b) Contact pins or spring contacts.		N/A
	(c) Connection of the conductors, flexible cord or flexible cable to internal leads, terminals, lugs or the like, by crimping or other similar suitable devices		N/A
	Twist-on connectors with suitable metal inserts may be used for live conductors but shall not be used for earthing connections.		N/A
	(d) Soldering may be used		N/A
	(i) for Type X attachments in equipment having a rated input not exceeding 250W; and		N/A
	(ii) for Type Y and Type Z attachments;		N/A
	and shall comply with Clause 4.3.5.		N/A
	No portable equipment shall be provided with facilities for the connection of more than one supply flexible cord, unless permitted in an individual Approval and tests specification.		N/A
	Any equipment intended for permanent connection to fixed wiring shall be provided with terminals as specified in Item (a).		N/A
4.3.2	Design and construction of terminals		P
	All terminals shall be inherently corrosion-resistant and shall be so designed and proportioned that a connection made thereto will not loosen or overheat under normal conditions of use.		P
	All terminals shall be so designed that the conductors connected thereto can be rigidly and effectively clamped between metal surfaces and shall comply with Clause 4.6.1.		P
	Terminals shall be either securely fixed in position within a terminal box or enclosure, or so arranged that movement of the connections is limited by location.		P
	Screws of tunnel-type terminals and other clamping devices, which are intended to clamp directly onto conductors, shall be so shaped and finished that strands of the conductor are not likely to be severed.		P
	Aluminium conductors shall not be clamped directly by screws in tunnel-type terminals other than special types.		N/A
	Indirect clamping by means of suitable ferrules, plates and the like shall be acceptable.		N/A
	In general, a self-tapping screw shall not be used as a terminal screw for conductors.		P
	Die-cast terminal blocks made from zinc-base alloy shall not be used.		P

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Clause	Requirement+Test	Result-Remark	Verdict
	Terminals provided for direct connection to fixed wiring shall be so designed and located as to permit the supply cables to be connected in accordance with one of the following methods:		P
	(a) Soldered into a cable-socket of appropriate size.		N/A
	(b) Clamped in a terminal or binding post.		P
	(c) Terminated in an approved solderless tag or terminating device.		N/A
4.3.3	Location of terminals		P
	The live terminals shall be within a terminal box or an enclosure, and shall be grouped together.		P
	Earthing terminal, if any, shall be either within the terminal box or enclosure or on the external surface of the equipment.		P
	In equipment, except for those which have Type Y or Type Z attachment, the terminal box or enclosure shall be such as will allow access to the terminals and replacement of the flexible cord without dismantling the equipment.		P
4.3.4	Terminal arrangements		P
	Except for equipment that is provided with a Type Y or Type Z attachment, the following provisions shall apply:		P
	(a) The arrangement of the terminals shall be such as will allow the supply flexible cord or flexible cable to be disconnected and replaced without removing any internal wiring or connections from the terminals.		P
	(b) The clamping of the supply conductor at a terminal shall be independent of the clamping of any internal lead at that terminal.		P
	(c) Screwless terminals that require special preparation of the conductors shall not be acceptable.		N/A
4.3.5	Soldered connections		N/A
	Where facilities for soldered connections are provided, they shall comply with the following requirements:		N/A
	(a) The soldering terminals, lugs or the like shall be so designed that the conductors are held in position independently of the soldering.		N/A
	(b) They shall be so located and arranged as to minimize the likelihood of insulation being bridged by excess solder.		N/A
4.3.6	Prevention of slipping or spreading of conductors		P
	All terminals shall be of a form that will prevent slipping or spreading of conductors or conductor strands;		P

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Clause	Requirement+Test	Result-Remark	Verdict
	Except for equipment with Type Y or Type Z attachments, a device shall not be acceptable as a means of preventing spreading of conductor strands on the terminals of portable equipment, unless it can be readily re-used when connection of the supply flexible cord is renewed.		N/A
	The requirement is not applicable to connections made in equipment with Type Y or Type Z attachment.		N/A
4.3.7	Earthing conductors		P
	Where the equipment includes an earthing terminal, provision shall be made by means of space within the terminal enclosure, the disposition of the terminals, a separate conductor way, suitable shielding, or other suitable means, to ensure that when correctly wired the connection is made without the earthing conductor of the flexible cord being held or pressed against live terminals or other live parts.		P
4.3.8	Conductors and terminals not to be stressed		P
	All conductors shall be so supported and connected that there will be no undue mechanical stress on either the conductors or the terminals to which they are connected.		P
4.3.9	Temperature at terminals		P
	The terminals on all equipment shall be so placed, arranged and ventilated that any conductors or cables connected thereto will not be liable to be exposed to temperatures in excess of those permissible for the conductor material and the class of insulation of the conductors or cables, where such insulation is relied upon to prevent short-circuit or contact with material through which leakage may occur.		P
	Where temperature conditions are such as will require the use of connecting cables of heat-resisting type, prominent marking shall be provided adjacent to the terminals to indicate the type of connecting cable necessary.		N/A
	For terminals for the connection of supply flexible cords to portable equipment, the temperature rises, in general, shall not exceed 50°C (to allow the connection of flexible cords having maximum operating temperature of 75°C) except under the circumstances covered by Footnote h to Table 5.7, which allows a higher operating temperature.		N/A
4.3.10	Access to terminal devices		P
	Terminal devices shall not be accessible without the aid of a tool, even if their live parts are not accessible.		P

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Clause	Requirement+Test	Result-Remark	Verdict
4.4	Flexible cord and connecting plug	Connected to the fixed wiring.	N/A
4.4.1	When required		N/A
	Any portable equipment having a rating not exceeding 20 A at low voltage shall be provided with a supply flexible cord, except that such flexible cord need not be provided for equipment intended for direct insertion into a socket-outlet, or incorporating a Group 3 appliance inlet, or a Group 2 appliance inlet intended to accommodate a connector with thermal control.		N/A
	The flexible cord shall		N/A
	(a) comply with AS/NZS3191;		N/A
	(b) unless varied in the individual Approval and test specification, have a length of not less than		N/A
	(i) 0.9m for table top or bench mounted equipment; or		N/A
	(ii) 1.8 m for other equipment;		N/A
	(c) unless varied in the individual Approval and test specification, be not less than		N/A
	(i) if elastomer insulated, ordinary duty sheathed flexible cord; or		N/A
	(ii) if polyvinyl chloride insulated		N/A
	(A) for equipment having a mass not exceeding 3 kg, light duty sheathed flexible cord; or		N/A
	(B) for equipment having a mass exceeding 3kg, ordinary duty sheathed flexible cord;		N/A
	(d) be of the appropriate current rating;		N/A
	(e) be correctly wired to a plug of appropriate type complying with AS/NZS 3112 or alternatively, for equipment with a rating not exceeding 600 W, with a plug socket adaptor complying with AS/NZS 3122;		N/A
	(f) be correctly connected to a connector of appropriate type if the equipment incorporates an appliance inlet or be correctly connected to terminals of the equipment;		N/A
	(g) incorporate an earthing conductor where the equipment has earthing facilities; and		N/A
	(h) not incorporate an earthing conductor where the equipment is of the double-insulated type.		N/A
	Polyvinyl chloride insulated flexible cords shall not be used for equipment having external metal parts, the temperature rise of which exceeds 75 K during the test of Clause 8.12, unless the design of the equipment is such that the power supply cord is not likely to touch such metal parts in normal use.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	Tinsel flexible cords and flexible cords with conductors having a nominal cross-sectional area of 0.5 mm ² shall not be used for earthing purposes. Tinsel flexible cord is recognized only for the connection of equipment of small current rating where extreme flexibility is required.		N/A
	Power supply cords shall have a nominal cross-sectional area not less than those given in Table 4.4.		N/A
4.4.2	Warning notice		N/A
	Any equipment with a current rating above 10 A but not exceeding 20 A, and which is intended for connection by flexible cord and plug to a socket-outlet, shall have a prominent and durable notice affixed adjacent to the flexible cord entry of the equipment to indicate that it must be connected only to a socket-outlet of appropriate current rating.		N/A
4.5	Supply connection and external flexible cables and cords		N/A
4.5.1	General		N/A
	Where a supply flexible cord or supply flexible cable is to be connected directly to equipment (that is, not through a connector or the like), the facilities for the connection of the supply flexible cord or cable shall, in addition to complying with Clause 4.3, comply with this Clause.		N/A
	Power supply cords shall be assembled with the equipment by one of the following methods:		--
	(a) Type X attachment.		N/A
	(b) Type Y attachment.		N/A
	(c) Type Z attachment.		N/A
	For equipment not covered by an individual Approval and test specification, Type Y or Type Z attachments may be provided in the following circumstances:		--
	(i) Where sealing or encapsulation provides an essential safety feature such as waterproofing or avoidance of tampering with adjustments.		N/A
	(ii) In all other cases where the replacement of the flexible cord or flexible cable by the user of the equipment is not intended or is unlikely.		N/A
4.5.2	Provision for entry of flexible cord		N/A
	The equipment shall include provision for entry of the flexible cord or cable within its protective covering or sheath.		N/A
4.5.3	Cord anchorage		N/A

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	All equipment intended for connection by means of a flexible cord or flexible cable shall be provided with a saddle, grip, tortuous path or other suitable means and shall comply with the test specified in Clause 8.6.		N/A
	Where cord anchorage is obtained by means of a screw bearing on the sheathing of a flexible cord, the assembly shall be such that in no way will it damage the flexible cord when correctly applied nor shall it loosen in service. The screw shall		N/A
	(a) be made of suitable insulating material;		N/A
	(b) have a nominal diameter not less than that of the aperture for the flexible cord; and		N/A
	(c) be so shaped as not to damage the flexible cord.		N/A
	The cord anchorage shall be capable of accommodating a flexible cord of size and type appropriate to the equipment.		N/A
4.5.4	Protection of supply flexible cord		N/A
	Porcelain beads, heat-resistant sleeving, tubing, taping or the like on supply flexible cords shall not be accepted as providing insulation or protection.		N/A
	The equipment shall include provision for guarding the supply flexible cord against damage from internal moving parts.		N/A
4.5.5	Interconnection cables and cords		N/A
	Facilities for the connection of detachable and non-detachable interconnection flexible cables or cords shall comply with the requirements for the supply cable or cord, except that		N/A
	(a) Connectors and appliance inlets used for the interconnection flexible cable or cord shall not be interchangeable.		N/A
	(b) The cross-sectional area of the conductors of the interconnection flexible cable or cord is determined on the basis of the maximum current.		N/A
4.6	Joints and connections		N/A
4.6.1	Joints and insulation		N/A
	Where insulation is required on joints or connections in equipment wiring, the thickness need only be equivalent to that required by Clause 5.2.3.		N/A
	All joints and connections, the failure of which could cause a hazard, shall utilize materials and forms of construction that will avoid deterioration or loss of contact pressure in service.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	Insulating materials which may shrink or deform in service in such a manner as to cause loss of contact pressure at a joint or connection shall not be used unless they are suitably treated or proofed to prevent such shrinkage or deformation, or unless the metallic parts of the joint or connection have sufficient resiliency to compensate for any such shrinkage or deformation and to retain adequate contact pressure in service.		N/A
	Stranded conductors shall not be consolidated by lead-tin soldering where they are subject to contact pressure		N/A
4.6.2	Soldered joints		N/A
	Soldered joints shall be made without the use of fluxes containing corrosive substances.		N/A
4.6.3	Limitations of soldered joints		N/A
	Soft-soldered joints and soft soldering shall not be used for the connection of conductors where the temperature of the joint is likely to exceed 120 °C in normal operation.		N/A
4.6.4	Joints and connections in lighting fittings		N/A
	No joint or connection shall be made within a lighting fitting except in a space incorporated for the purpose.		N/A
4.6.5	Solderless joints		N/A
	The attachment of conductors by crimped or similar forms of solderless pressure joints shall be made only with the use of the appropriate attaching tools.		N/A
4.6.6	Cascading of adaptors		N/A
	Two-way quick-connect tab and receptacle adaptors and the like shall not be cascaded.		N/A
4.7	Strength of screw threads and fixings		P
4.8	Space-threaded and thread-cutting screws		N/A
4.9	Direct connection to fixed wiring		P
	Equipment for direct connection to the supply circuit wiring shall comply with the following:		--
	(a) Provision shall be made for the entry of insulated conductors within their conduit, sheathing or other protective covering.		N/A
	(b) Terminals suitable for the connection of the supply conductors and an earthing conductor (if required) shall be provided; the terminals shall be fixed in position and shall be grouped together either in a terminal box or within the equipment enclosure		P
	(c) Where identification is necessary, live terminals shall be marked in accordance with Clause 7.6.		P

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Clause	Requirement+Test	Result-Remark	Verdict
	(d) Terminals of a heating element or thermostat shall not be used as a means for the connection of supply conductors.		N/A
4.10	Mechanical strength		P
	Equipment shall have adequate mechanical strength.		P
	Compliance is checked by inspection and, if necessary, by the test of Clause 8.8.		P
4.11	Degree of protection (IP classification)	IP20	P
	Where the equipment is marked to classify it as having a specified degree of protection, the equipment shall comply with the appropriate requirements of AS 60529.		P
	For equipment assigned with a second characteristic numeral greater than 0, the equipment shall then withstand the tests of Clause 8.4.		N/A
4.12	Equipment incorporating batteries		N/A
	Coin/button batteries and batteries designated R1 or smaller according to IEC 60086-2 shall not be accessible without the aid of a tool unless the cover of their compartment can only be opened after at least two independent movements have been applied simultaneously.		N/A
	If a screw is used to secure the battery compartment cover it must be of the captive type.		N/A

5	PROTECTION AGAINST RISK OF ELECTRIC SHOCK		P
5.1	Guarding of live parts		P
	No contact with live parts using test finger of fig.8.10.		P
	No contact with live parts using test pin with force of 10N through openings in enclosures giving access to preset		P
	Covers of equipment, other than accessories, relied upon to prevent inadvertent personal contact with live parts shall be fixed in position in such a manner that a tool is necessary to remove them		P
	A slot that will accept a coin is regarded as intended to accommodate a tool for the purpose of this Clause.		N/A
	the opening or removal of any cover or component, with or without tools, where such opening or removal is necessary as a normal operation of the equipment as distinct from maintenance, repairs, or adjustment, shall not expose live parts to inadvertent personal contact.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	If manufacturers instruct user to remove covers or components for maintenance, this shall not expose live		N/A
	Metal cover or casing enclosing live parts shall be of a strength sufficient to ensure that it cannot be deformed		N/A
	Edison-type screw lampholders incorporated in equipment shall be provided with adequate shielding facilities appropriate to the type of lamp with which they may be used.		N/A
5.1.1	Class II construction		N/A
	Class II equipment and class II constructions adequately protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only.		N/A
	Only possible to touch parts separated from live parts by double insulation or reinforced insulation.		N/A
5.2	Insulation of live parts		P
5.2.1	General		P
	Live parts of electrical equipment shall be adequately insulated and supported and shall comply with the following:		P
	(a) Clauses 8.3 and 8.4 of this Standard.		P
	(b) Any specified requirements for insulation thickness.		P
5.2.2	Separation of live parts from non-current-carrying conductive parts		P
	The support and insulation of every live part shall be such as will ensure that no live part can make contact with any non-current-carrying conductive part exposed to personal contact.		P
5.2.3	Equipment wiring	Connected to fixing wiring.	N/A
5.2.3.1	General requirements		N/A
	Where equipment wiring is insulated in order to comply with Clauses 5.1, 5.2.1 and 5.2.2, such insulation shall be of a grade appropriate to the voltage. Insulators covered by this Standard shall comply with		N/A
	(a) The thickness requirements of Clauses 5.2.3.2 or 5.2.3.3; or		N/A
	(b) The thickness requirements of AS/NZS3191.		N/A
	For other insulation electric strength test shall be made between the conductor and metal foil wrapped around the insulation, a test voltage of 2000V being applied for 15 min.		N/A
	Where the equipment wiring is in the form of a cable it shall comply with the relevant Approval and test specification except as provided in Clauses 5.2.3.2 and 5.2.3.3.		N/A
5.2.3.2	Specific requirements— PVC insulation		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	Specific requirements for wiring with PVC insulation are as follows:		N/A
	(a) For internal equipment wiring and accessible equipment wiring not subject to flexing or damage, the following shall apply:		N/A
	(i) General Insulation of internal equipment wiring of 250 V grade shall have an average aggregate thickness between any two live conductors and between any live conductor and exposed metal of not less than 0.5 mm, and in no case shall the minimum aggregate thickness at any point be less than 0.35 mm. Where insulating sleeving is used, it shall be a close fit over the conductor or other sleeving or otherwise shall be securely fixed in position.		N/A
	(ii) Maximum operating temperature Flexible cords with V70, V75 and V90 insulants may have a maximum operating temperature of 80 °C, 95 °C and 100 °C.		N/A
	(b) Accessible equipment wiring subject to flexing or external equipment wiring shall have an average aggregate thickness of not less than 0.8 mm, and the minimum thickness not less than 0.6 mm.		N/A
5.2.3.3	Specific requirements – fibrous insulation		N/A
	The thickness of 250 V grade fibrous insulation for internal, accessible and external equipment wiring shall comply with AS3158 or AS/NZS 3191, as appropriate.		N/A
5.2.4	Arrangement of equipment wiring		N/A
	Precautions shall be taken in the support and fixing of equipment wiring to ensure that live parts, cannot become exposed to personal contact.		N/A
	Attachment of one conductor to another by tying, lacing, clipping, or the like, is regarded as a satisfactory means of fixing and support.		N/A
5.3	Earthing facilities		P
5.3.1	Exposed metal parts to have means of earthing		N/A
	If equipment includes any exposed metal parts, then all such exposed metal parts shall be in good electrical contact with each other, and the equipment shall be provided with a common earthing facility.		N/A
	For combination gas-electric equipment, the main metallic gas pipe shall be bonded to the earthing terminal of the equipment.		N/A
	The coating of metal parts with porcelain enamel is not acceptable alone as justification of absence of earthing of such parts.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	Flexible metallic conduit or tubing enclosing the conductors between movable component parts of an equipment shall not be relied upon for earthing purposes.		N/A
5.3.2	Method of making the earth connection		P
	Facilities for earthing shall take one of the following forms:		P
	(a) A terminal suitable for the attachment of an earthing conductor.		P
	(b) The earthing contact of an appliance inlet.		N/A
	(c) Other approved means.		N/A
	A constructional bolt, stud, or screw may be used as the earthing terminal on equipment having exposed metal parts only if all the following conditions are observed:		--
	(i) The earthing conductor can be removed from the terminal without in any way reducing the effectiveness of the bolt, stud or screw as a constructional medium, or causing any parts of the equipment to lose their relative rigidity.		N/A
	(ii) The removal of any covers, or parts of which are likely to be removed in obtaining access to terminals or in adjusting the equipment or parts thereof, shall not disturb or reduce the effectiveness of the earthing connection.		N/A
	(iii) The bolt, stud or screw is not used for fixing the equipment in position or for adjusting the position of the equipment or any part of it.		N/A
5.3.3	Design and construction of earthing terminal		P
	The earthing terminal provided on any equipment shall be capable of accommodating an appropriate internal earthing conductor and a supply earthing conductor of the size required by the National Wiring Rules.		P
	The current-carrying capacity of any earthing terminal shall be not less than that of the earthing conductors to be connected.		P
5.3.4	Resistance of earthing connection		P
	The resistance between the earthing facility and any exposed metal parts shall not exceed 1 Ω for readily accessible exposed metal parts that rotate, reciprocate or oscillate continuously, and 0.1 Ω in all other cases, when tested in accordance with Clause 8.5.	0.004 Ω	P
5.3.5	Printed conductors		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	The printed conductors of printed circuit boards shall not be used to provide earthing continuity in hand-held equipment. They may be used to provide earthing continuity in other equipment if at least two tracks are used with independent soldering points and the equipment complies with the requirement of Clause 8.5 for each circuit.		N/A
5.4	Equipment with double insulation		P
5.4.1	General		P
	Equipment may be accepted as having double insulation only if it complies with Clause 5.4 and is capable of passing the tests prescribed herein.		N/A
	In addition, the following forms of construction are considered as acceptable:		N/A
	(a) Equipment having metal parts that can be touched and that are separated from live parts by insulation that is considered to be the equivalent of double insulation.		N/A
	(b) Equipment having metal parts that can be touched, and which are intentionally connected to live parts through an impedance which is designed to preserve the appropriate level of safety. Parts connected by protective impedances shall be separated by double insulation or reinforced insulation.		N/A
5.4.2	Supplementary insulation		N/A
	Supplementary insulation shall consist of suitable non-hygroscopic insulating materials and shall comply with the test requirements specified in Clause 8.4.3.		N/A
	Any supplementary insulation in the form of coverings, linings and the like shall be securely fixed in position and shall be such as it will maintain its position and insulating properties under any conditions of normal wear and tear, or other deteriorating factors that can be reasonably expected in service.		N/A
	In the event of failure of the basic insulation, the effectiveness of the supplementary insulation shall not be impaired.		N/A
5.4.3	Basic insulation		N/A
	Basic insulation shall consist of suitable material possessing adequate mechanical strength and shall comply with the test requirements specified in Clause 8.4.3.		N/A
5.4.4	Reinforced insulation		P
	Instead of double insulation, the use, in equipment, of a single layer of insulation may be accepted as affording equivalent protection under the following conditions:	Plastic enclosure used as reinforced insulation.	P

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Clause	Requirement+Test	Result-Remark	Verdict
	(a) The single layer of reinforced insulation shall be of non-hygroscopic insulating material possessing adequate mechanical strength.		P
	(b) The insulation shall be suitable for the particular application involved and shall not give rise to danger		P
	(c) Precautions shall be taken to guard against the accidental bridging of the insulation by metal or partially conducting material such as carbon dust or moisture, which can be reasonably anticipated to accumulate under normal conditions of use.		P
	(d) The insulation shall comply with the test requirements specified in Clause 8.4.3.		P
5.4.5	External metal parts		P
	The equipment shall have no external metal other than the parts listed in Items (b) to (d) of Clause 2.1.23		P
5.4.6	Detachable covers		N/A
	The removal of any covers that are detachable without the use of tools shall not expose to personal contact		N/A
	(a) live parts;		N/A
	(b) metal parts separated from live parts by basic insulation; or		N/A
	(c) the surface of basic insulation.		N/A
	Exposure of such parts due to the removal of a lamp from a lampholder shall not be a cause for rejection in terms of this requirement.		N/A
	Accessible or external equipment wiring that complies with Clause 5.2.3.2 (b) is deemed to comply with this Clause.		N/A
5.4.7	Arrangement of equipment wiring		N/A
	Precautions shall be taken in the support and fixing of equipment wiring to ensure compliance with the following requirements:		N/A
	(a) Live parts, including any one conductor that may become detached from its termination, cannot come into contact with either supplementary insulation or external metal parts or become exposed to personal contact by protruding through an opening.		N/A
	(b) Basic insulation cannot come into contact with external metal parts.		N/A
	(c) Basic insulation cannot become exposed to personal contact by protruding through an opening.		N/A
5.4.8	Insulation of internal wiring		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	The average aggregate thickness of basic insulation between any two live conductors and between any live conductor and supplementary insulation shall be not less than 0.5mm.		N/A
	The average aggregate thickness of supplementary insulation shall be not less than 0.6 mm.		N/A
	The aggregate thickness of insulation at any point shall be not less than 0.35 mm and 0.44 mm for basic and supplementary insulation respectively.		N/A
	Notwithstanding the requirements of this Clause, insulation thickness complying with AS/NZS 3191 is deemed to be satisfactory.		N/A
	For appliances, the requirements of Clause 4.1.4.3 are not applicable to the insulation of internal wiring complying with AS/NZS 3191.		N/A
5.4.9	Openings in external metal walls		N/A
	Where a flexible cord or other conductor passes through an external metal wall, a substantial insulating bush shall be securely fixed in the opening.		N/A
5.4.10	Radio interference suppression devices		N/A
	No radio interference suppression device shall be connected between live parts and external metal parts of double-insulated equipment.		N/A
	Any radio interference suppression capacitor connected between live parts and internal metal parts (for example, in parallel with the basic insulation) shall have a capacitance not exceeding 0.05 μ F.		N/A
5.5	Extra-low voltage equipment		N/A
	Clauses 5.1, 5.2 and 5.3 shall not apply to equipment rated at extra-low voltage, except that d.c. equipment rated above 50 V shall be capable of withstanding the high voltage test specified in Clause 8.4. If extra-low voltage wiring or parts connected thereto are accessible to the standard test finger without the use of tools, they shall be connected to a safety extra-low voltage supply.		N/A
5.6	Switches in portable heating appliances		N/A
5.7	Temperature rises for components and insulating material		P
	The temperature rises of components and of electrical insulating materials used in the construction of electrical equipment shall not exceed the values specified in Table 5.7 when tested in accordance with Clause 8.12.		P
5.8	Fault-indicating devices		N/A
	Any device, other than a circuit-interrupting device, intended to indicate to the user that a fault exists in equipment, shall be so designed and constructed that a defect in the fault-indicating device itself shall not give rise to a false indication.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
5.9	Fixing of handles, knobs, or the like		N/A

6	RESISTANCE TO HEAT, FIRE AND TRACKING		P
6.1	General		P
	This Section applies only to equipment designated 'attended' or 'unattended' in a particular Approval and test specification.		N/A
	For particular Approval and test specifications that do not designate equipment as 'attended' or 'unattended' the requirements of Annex A apply.	See Annex A	P
6.2	Resistance to heat		N/A
	External parts of non-metallic material, parts of insulating material supporting live parts including connections, and parts of thermoplastic material providing supplementary or reinforced insulation, the deterioration of which might cause the equipment to fail to comply with this Standard, shall be sufficiently resistant to heat.		N/A
	Compliance is checked, if required, by Footnote e to Table 5.7 and by Footnote † to Table 8.15.10, using the test of Paragraph B2, Annex B.		N/A
	For external parts: ball-pressure test (1h, 75 °C)		N/A
	After the test: diameter of impression ≤2 mm (mm):		N/A
	For part supporting live parts: ball-pressure test (1 h, 125 °C)		N/A
	After the test: diameter of impression ≤2 mm (mm) . :		N/A
6.3	Resistance to fire		N/A
	Parts of non-metallic material shall be resistant to ignition and spread of fire.		N/A
	Compliance is checked by the tests of Paragraph B3, Annex B.		N/A
	Alternatively, compliance may be checked as specified in Clause 30.2 of AS/NZS 60335.1.		N/A
6.4	Resistance to tracking		N/A
	Insulating material across which a tracking path may occur shall have adequate resistance to tracking, taking into account the severity of its duty conditions.		N/A
	Compliance is checked by the tests of Paragraph B4, Annex B.		N/A

7	MARKING		P
7.1	Information to be marked		P
	All equipment shall be marked with the following information:	See relevant clause of AS/NZS 3112	P
	(a) The name or registered trade name or mark of the manufacturer or of the responsible vendor.		P

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	(b) The operating voltage and the rating in amperes or loading in watts or volt-amperes. For equipment other than class III equipment, that is intended for connection to the supply mains the marking of the operating voltage for single phase equipment shall be at least 230 V and for polyphase equipment at least 400 V or a rated voltage range that includes 230 V for single phase equipment and 400 V for polyphase equipment.	10A/15A, 250V	P
	(c) Where the use of equipment is limited either by its own nature or by the nature of any component to a particular system, it shall be marked with those details of the system (such as d.c., a.c., phases, frequency) to which the use of the equipment or any component thereof is limited.	a.c. or ~	P
	(d) Where a manufacturer or responsible vendor markets a number of different types each shall be marked with the catalogue number, type number or name.		P
	e) If applicable, designation for degree of protection against moisture including any pressure, head or time.		N/A
	(f) If compliance depends upon the operation of a replaceable thermal link or fuse link, the reference number identifying the link shall be marked.		N/A
	Where abbreviations or symbols are used, the following shall apply:		P
	Name or unit / Abbreviation or symbol		P
	Volt..... V	V	P
	Ampere..... A	A	P
	Watt..... W (kW for kilowatt)		N/A
	Cycles per second..... Hz		N/A
	Direct current..... d.c. or		N/A
	Alternating current..... a.c. or	~	P
	The numerical value of the frequency and the number of phases may be coupled with the alternating current abbreviation or symbol.		N/A
	Notwithstanding the requirements of an individual Approval and test specification, the following requirements shall apply:		P
	(i) The above marking, viz: 'alternating current' or 'a.c. or ' shall be acceptable for designating equipment intended for operation on a.c. only. In addition, the presence of a marking that indicates the frequency of the supply voltage shall render the marking 'alternating current' or 'a.c. or ' unnecessary.		P

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	(ii)Any marking required shall be expressed in SI units, unless otherwise specified in an individual Approval and test specification.		P
7.2	Method of marking		P
	Marking required under Items (a), (b), (c), (d), (e) and (f) of Clause 7.1 shall be legible, indelible, and shall be made either on the equipment itself or on a nameplate securely fixed thereto.		P
	Adhesive metallic labels shall not be fixed in locations where, if they become detached, they may readily touch live parts or bridge insulation.		N/A
	Nameplates incorporating a durable surface finish, shall be regarded as indelible.		N/A
	Where marking is by adhesive non-metallic labels, surface transfers, painting, silk-screening, printing with etching dyes or similar means, the marking shall be sufficiently durable for its purpose.		P
	The marking of fixed equipment shall be clearly discernible from the outside after the equipment has been fixed as in normal use, but, if necessary, after removal of a cover.		P
	The marking of othe requirement shall be clearly discernible from the outside,if necessary,after removal of a cover; for portable equipment, the removalofthis cover shall not require the use ofa tool.		P
	Indications for switches, thermostats, thermal cut-outs and other control devices shall be placed in the vicinity of these components; they shall not be placed on removable parts if these parts can be replaced in such a way that the marking is misleading.		P
7.3	Double marking		N/A
	If any equipment is to be marked with its load in watts and is marked with more than one voltage but only one wattage, then the marked wattage shall correspond to the wattage measured at the highest marked voltage.		N/A
7.4	Marking of earth connections		P
	The provisions of this Clause shall apply to all equipment except that which has a Type Z attachment.		P
	The earthing terminal of any equipment shall be identified by means ofthe word 'earth' or theletter 'E' or the international earthsymbol,viz.  , or any combinationthereof.	E	P
	For equipment arranged only for direct connection to fixed wiring of an installation		P

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Clause	Requirement+Test	Result-Remark	Verdict
	(a) the earthing terminal need not be marked if its function is clearly evident.		N/A
	(b) if the earthing terminal is within a terminal box or enclosure, any marking may be in a durable manner by means such as painting or a suitable transfer.		N/A
	Lettering used for the marking of the earthing terminal shall be of such a size, or so indented or embossed, as to be conspicuous.		P
	The marking required by this Clause may be supplemented by other identifying features, such as plating or green colouring or the word 'green'.		N/A
7.5	Marking of class II equipment		N/A
	All Class II equipment, other than accessories, shall be identified by means of the international symbol for, double-insulated equipment, viz.  or the words 'DOUBLE INSULATED'.		N/A
	Such markings shall be legible and indelible and shall be made either on the equipment itself or on a nameplate securely fixed thereto.		N/A
	The symbol for Class II construction shall be so placed that it will be obvious that it is a part of the technical information and is unlikely to be confused with any other marking.		N/A
7.6	Marking of live supply connections		P
	Where it is necessary to mark and identify live supply connections, the following system shall be used unless otherwise specified in an individual Approval and test specification:		P
	(a) For active connections, any marking or abbreviation which clearly indicates the intent.		P
	(b) For neutral connections, N (or Neutral).	N	P
	In any equipment, marking as above shall not be used other than to indicate live connections.		P
7.7	Additional marking of multi-rated equipment		N/A
	Where an equipment is provided with facilities for supply by flexible cord and plug and is designed for conversion to a rating which exceeds that at which the equipment is initially intended to operate, the equipment shall be marked with the following information:		N/A
	(a) Instructions which clearly indicate how the equipment is to be converted to any higher rating.		N/A
	(b) Details for fitting the correct type of supply flexible cord and plug and the appropriate socket-outlet to be used for each rating which exceeds 10 A.		N/A
7.8	Equipment with type X, type Y and type Z attachments		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	The instructions shall contain the substance of the following:		--
	(a) For equipment with Type X attachment having a specially prepared cord, if the supply cord is damaged, it shall be replaced by a special cord or assembly available from the manufacturer or its service agent.		N/A
	(b) For equipment with Type Y attachment, if the supply cord is damaged, it shall be replaced by the manufacturer or its service agent or similarly qualified person in order to avoid a hazard.		N/A
	(c) ForequipmentwithTypeZattachment,thesupply cord cannot be replaced. If the cord is damaged the equipment should be scrapped.		N/A
7.9	Legibility of marking		P
	The marking required by Section 7 shall comply with Clause 8.13.		P
7.10	Instructions for installation and use		P
	If it is necessary to take special precautions when installing or using equipment, details shall be given in an instruction sheet, which shall accompany the equipment.		P
8	TEST		P
8.1	General		P
8.2	Void		--
8.3	Insulation resistance and leakage current		P
8.3.1	Insulation resistance	See relevant clause of AS/NZS 3112	P
8.3.2	Leakage current test		P
8.4	High voltage (electric strength) test	See relevant clause of AS/NZS 3112	P
8.4.1	Between live parts		P
	All accessories shall withstand the application between live parts of an a.c. voltage of the value indicated in Table 8.4, according to the working voltage between the parts to which the test is being applied.	1a. Working voltage between parts: $\leq 50V$, 1b. Testing voltage: 500Va.c. 2a. Working voltage between parts: $>50V \leq 250V$, 2b. Testing voltage: 1000Va.c. 3a. Working voltage between parts: $>250V \leq 650V$, 3b. Testing voltage: 1000Va.c. + 2 x working voltage with a maximum of 2000V	P
8.4.2	Equipment with earthing facilities		P

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Clause	Requirement+Test	Result-Remark	Verdict
	All equipment with earthing facilities shall withstand the application between live parts and exposed metal or earth, of an a.c. voltage of the value indicated in Table 8.4, according to the working voltage between the live parts and exposed metal or earth.		P
8.4.3	Equipment with double insulation		P
	This test shall not apply to insulation that encloses only conductors or live parts operating at extra-low voltage supplied from a transformer complying with AS/NZS 61558.2.6.		N/A
	The insulation between live parts and external metal, or live parts and a flexible electrode applied to the surface of the insulation, shall withstand high voltages applied as follows:		P
	(a) Across basic insulation 1250 V.		P
	(b) Across supplementary insulation 2500 V.		N/A
	Where it is not possible to test the basic and supplementary insulation separately, or where a single layer of insulation is provided as the equivalent of separate layers of basic and supplementary insulation, a test voltage of 3750 V shall be applied between live parts and external metal or live parts and a flexible electrode applied to the outer surface of the insulation.		P
8.4.4	Non-conducting external parts		P
	An a.c. voltage of 3750 V shall be applied between live parts and a flexible electrode applied to non-conducting parts normally handled in service.		P
8.4.5	Method of applying test		P
	The specified test voltage shall be maintained for the 1 min duration of the test within $\pm 3\%$.		P
	The test voltage shall be alternating, of any frequency between 25 Hz and 100 Hz, and approximately of sine waveform.		P
	There shall be no disruptive discharges, that is, flashovers or insulation punctures, during any high voltage tests.		P
	The high voltage transformer used for the test shall be so designed that when the output terminals are short-circuited, after the output voltage has been adjusted to the appropriate test voltage, the output current shall be greater than 180 mA. The overcurrent relay shall not trip when the output current is less than 100 mA.		P
8.4.6	Number of samples		P
8.5	Test of earthing connection		P

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Clause	Requirement+Test	Result-Remark	Verdict
	The connection between the earthing terminal or earthing contact, and parts required to be connected thereto, shall be of low resistance.		P
	whereby a current derived from an a.c. source having a no-load voltage not exceeding 12 V, and equal to 1.5 times rated current of the equipment or 25 A, whichever is the greater, is passed between the earthing terminal or earthing contact, and each of the accessible metal parts in turn.		P
	The voltage drop between the earthing terminal of the equipment or the earthing contact of the appliance inlet and the accessible metal part is measured, and the resistance calculated from the current and this voltage drop.		P
	The resistance shall not exceed		P
	(a) for readily accessible exposed parts which rotate, reciprocate or oscillate continuously 1 Ω .		N/A
	(b) in all other cases 0.1 Ω .	0.004 Ω	P
8.6	Cord anchorage		N/A
	The cord shall then be subjected 25 times to a pull of the value shown in Table 8.6. The pulls are applied in the most unfavourable direction without jerks, each time for 1 s.		N/A
	Unless varied in an individual specification, accessories shall be subjected to a pull of 65 N.		N/A
	Immediately afterwards, the cord is subjected for 1 min to a torque of the value shown in Table 8.6.		N/A
	During the tests, the cord shall not be damaged.		N/A
	After the tests, the cord shall not have been longitudinally displaced by more than 2 mm and the conductors shall not have moved over a distance of more than 1 mm in the terminals, nor shall there be appreciable strain at the connection.		N/A
8.7	Test for screw threads and fixings (See Clause 4.7)		P
8.7.1	Threaded fastenings of metal in metal or thermosetting plastic or wood, or the like		P
	The screwed component shall be tightened and loosened in a steady and uniform manner the following number of times, by means of a suitable test screwdriver or other appropriate device applying a torque of appropriate value given in Table 8.7:		P
	(a) Where it operates in a thread in metal: 5 times.	Socket terminal screw: 4.83mm, 2.0Nm, 5 times. Extra switch terminal screw: 3.37mm, 0.8Nm, 5 times.	P

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Clause	Requirement+Test	Result-Remark	Verdict
	(b) Where it operates in a thread in insulating material:10 times.	Base screw: 2.88mm, 0.5Nm, 10 times.	P
	Threads of the screwed component and its fixing shall not strip, insulating material shall not crack, nor shall there be any other failure which would render the screwed component non-reusable.		P
8.7.2	Threaded fastenings with any component of thermoplastic material		N/A
	The length of thread engagement shall be measured and shall comply with Clause 4.7.		N/A
	The screwed components shall be tightened and loosened as described in Clause 8.7.1		N/A
	Threads of the fastening shall not jump or strip, insulating material shall not crack, nor shall there be any other failure which would render either component of the fastening non-reusable.		N/A
	Where a screw is intended to secure a conductor, the test shall be carried out so that the stress is applied to the working section of the thread.		N/A
8.8	Mechanical strength test		P
8.8.1	General		P
	Equipment shall be subjected to blows,with an impact energy of 0.5 ± 0.05 J.		P
8.8.2	Procedure		P
	The sample as a whole is rigidlysupported againsta plane surface and three blowsare applied to every point of the enclosure that is likely to be weak.		P
8.8.3	Criteria		P
	After the test, the sample shall show no damage within the meaning of this Specification; in particular, live parts shall not have become exposed so as to impair compliance with Clauses 5.1 and 5.2, and there shall not have been such distortion as to impair compliance with Clause 4.1.3. In case of doubt, supplementary insulation is subjected to an electric strength test as specified in Clause 8.4.3.		P
8.9	Standard electrodes for electric strength tests		P
8.10	Standard test finger and protective impedance		P
8.10.1	General		P
	For the purpose of determining whether or not either live parts (see Clause 5.1) or non-current-carrying conductive parts are exposed to personal contact, use shall be made of the standard test finger.		P
8.10.2	Design and construction		P
	The standard test finger, as shown in Figure 8.10		P
8.10.3	Method of use		P

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Clause	Requirement+Test	Result-Remark	Verdict
	The standard test finger may be applied directly to the live or non-current-carrying conductive part and a visual examination made to determine whether or not the finger is in contact with the part under test.		P
8.10.4	Protective impedance		N/A
	Protective impedance shall consist of at least two separate components, the impedances of which are unlikely to change significantly throughout the life of the equipment.		N/A
	Voltage, current and capacitance are measured between the relevant part and either pole of the supply source, the equipment being supplied at rated voltage.		N/A
	The circuit for measuring the current is that in Figure 4 of AS/NZS 60990.		N/A
	The quantity of electricity or energy in the discharge shall be measured into a load consisting of a non-inductive resistor of 2000 Ω .		N/A
	Resistors or capacitors used as protective impedances shall comply with Clause 14.1(a), or Clause 14.2 of AS/NZS 60065, as appropriate.		N/A
	If any one of the components is short-circuited or open-circuited, the current between the part and the supply source shall not exceed 2 mA for d.c. and its peak value shall not exceed 0.7 mA for a.c., and also the following shall apply:		N/A
	(a) For potentials not exceeding 450 V peak, the capacitance shall not exceed 0.1 μ F.		N/A
	(b) For potentials not exceeding 15 000 V peak, the quantity of electricity in the discharge shall not exceed 45 μ C.		N/A
	(c) For potentials exceeding 15 000 V peak, the energy in the discharge shall not exceed 350 mJ.		N/A
8.11	Temperature measurements		P
8.11.1	Methods of measurement		P
	Three methods of measuring temperatures are recognized,		P
	(a) thermometer method;		N/A
	(b) thermocouple method; and		P
	(c) increase-of-resistance method.		N/A
8.11.2	Thermometer method		N/A
	Three types of thermometer may be employed, viz. bulb thermometers containing either mercury or alcohol, and resistance thermometers.		N/A
8.11.3	Thermocouple method		P

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Clause	Requirement+Test	Result-Remark	Verdict
	The two conductors between which the thermo-electric effect is produced shall be welded or hard-soldered at both the hot and the cold junctions, care being taken to ensure that the wires at the junction make contact at one point only, and are not twisted together.		P
8.11.4	Increase-of-resistance method		N/A
	The increase-of-resistance method is suitable for the measurement of the average temperature of coils or windings.		N/A
8.11.5	Measurement of ambient temperature		P
8.11.6	Maximum temperature rise		P
8.12	Temperature and fire risk test		P
	Any material or insulation of equipment and the surfaces of the test surroundings referred to below shall not attain excessive temperatures in normal use.		P
	The equipment shall be operated at maximum normal load while connected to a supply of rated voltage for the rated time for short-time rated units, and until steady state conditions are attained for intermittent-rated and continuously rated units.		N/A
	During the test, over temperature cut-outs shall not operate.		N/A
	Where appropriate, the surface temperature of the surrounds shall not exceed 90 °C.		P
	The temperature of any material measured as above and corrected to the reference ambient temperature specified in Clause 8.1, or any other relevant Approval and test specification, shall not exceed the limits specified in Clauses 5.7 and 6.2 or in the relevant Approval and test specification, as appropriate.		P
8.13	Test of marking		P
	Nameplates, transfers and paintings used to provide the information required in accordance with Clause 7.1 shall be checked by inspection and by rubbing by hand for 15 s with a piece of cloth soaked with water and again with a piece of cloth soaked with petroleum spirit.		P
	At the completion of these tests, the marking shall comply with Clause 7.2.		P
8.14	Stability test		N/A
	Freestanding equipment intended for use on a surface such as a floor or a table shall have adequate stability.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	The equipment is placed, with the motor switched off, in any normal position of use on a plane inclined at an angle of 10° to the horizontal, the cord resting on the inclined plane in the most unfavourable position.		N/A
	The equipment shall not overturn.		N/A
8.15	Abnormal operation		N/A
8.15.1	General		N/A
8.15.2	Heating equipment test		N/A
8.15.3	Locked-rotor test		N/A
8.15.4	Equipment with three-phase motors		N/A
	Equipment incorporating three-phase motors is operated under normal load, with one phase disconnected, for a period as specified in Clause 8.15.3.		N/A
8.15.5	Running overload test		N/A
8.15.6	Equipment for short-time or intermittent operation		N/A
	When steady conditions are established, or immediately before the operation of the thermal cut-out, the temperature of the windings shall not exceed the values specified in Clause 8.15.5.		N/A
8.15.7	Equipment with series motors		N/A
	Equipment incorporating series motors is operated at a voltage equal to 1.3 times rated voltage, for 1 min, with the lowest possible load. Any heating elements shall be disconnected for this test.		N/A
	After this test, the safety of the equipment shall not have been impaired; in particular, windings and connections shall not have worked loose.		N/A
8.15.8	Equipment incorporating electronic components		N/A
	The equipment is operated at a supply voltage so that the input is equal to rated input. Components such as semiconductor devices, capacitors, resistors or inductors, the failure of which might cause a hazard, are short-circuited or disconnected, whichever is the more unfavourable.		N/A
	If a non-self-resetting thermal cut-out operates or if the current is otherwise interrupted in a non-self-resetting way before steady conditions are established, the operating period is considered to be ended.		N/A
	For equipment for short-term operation, the duration of the test is equal to the rated operating time.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	Positive temperature coefficient resistors (PTCs), negative temperature coefficient resistors (NTCs) and voltage dependent resistors (VDRs) are not short-circuited if they are used within their manufacturer's declared Specification.		N/A
8.15.9	Equipment incorporating Varistors		N/A
	This test is applied if required by clause 3.16(e).		N/A
	If the voltage rating of a MOV connected to live parts is such that it will conduct at twice the maximum rated voltage of the accessory, (2 Vr) or lower, the accessory and a test resistor Rx connected in series with the mains supply to the accessory is energized from an a.c. source of 2 Vr.		N/A
	Components in parallel with the MOV that may be affected by this test shall be disconnected. The test shall be performed with $R_x(1) = 2 V_r / 0.125$.		N/A
	If the circuit does not open, the test shall be continued for 4 h, then repeated with lower values of Rx in turn, until the circuit opens: $R_x(2) = 2 V_r / 0.5$, $R_x(3) = 2 V_r / 2.5$, $R_x(n) = R_x(n-1) / 2$, half the previous value, etc.		N/A
8.15.10	Test results		N/A
	During the tests of Clauses 8.15.2 to 8.15.9, the equipment shall not emit flames or molten metal, or poisonous or ignitable gas in hazardous amounts, enclosures shall not deform to such an extent as will impair compliance with this Specification and temperature rises shall not exceed the values shown in Table 8.15.10.		N/A
	After the tests, the insulation of equipment other than that of Class III, when cooled down to approximately room temperature, shall withstand an electric strength test as specified in Clause 8.4 the test voltage being		N/A
	(a) basic insulation: 1000V		N/A
	(b) supplementary insulation: 2750V		N/A
	(c) reinforced insulation: 3750V		N/A
	For equipment that is to be immersed in or filled with conducting liquid in normal use, the sample is immersed in or filled with water, as appropriate, for 24 h before the electric strength test is made.		N/A

A	Annex A; section 6: resistance to heat, fire and tracking and temperature of surfaces to be handled	P
A 6.1	Resistance to fire	P
A 6.1.1	General requirements for compliance of solid insulating materials and non metallic enclosures:	P
	Compliance of solid insulating materials and non metallic materials of electrical accessories is checked by A 6.1.2 to A 6.1.7.	P

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AS/NZS 3100			
Clause	Requirement+Test	Result-Remark	Verdict
	Glow-wire flammability test method for end-products is given in AS/NZS 60695.2.11. This includes guidance for the test temperature, a definition of small parts and evaluation of test results.		P
	The glow-wire test temperature 'T' is required to be specified in each product specification.		P
	The test method for Needle-Flame Test is given in AS/NZS 60695.11.5. This includes an evaluation of test results.		P
A 6.1.2	Materials and tests		P
	Tests are carried out on solid insulating materials and non metallic enclosure whilst assembled on a complete end product.		P
	Tests are not carried out on decorative trims, insulation of wires, knobs and other small parts unlikely to be ignited or to propagate flames originating from inside		P
A 6.1.3	Glow-wire tests on relevant parts		P
	Relevant parts, other than those in A 6.1.4 are subjected to the glow-wire test of AS/NZS 60695.2.11, which is carried out at 650 °C, unless otherwise specified in the relevant product standard.	(see appended table in AS/NZS 3112)	P
	The glow-wire test is not carried out on parts of material classified at least HB40 according to IEC 60695-11-10, provided that the test sample was no thicker than the relevant part.		N/A
A 6.1.4	Glow-wire tests on retaining parts		P
	Parts of insulating material retaining current carrying parts carrying more than 0.2A, subjected to the glow-wire test at temperature 'T' specified	(see appended table in AS/NZS 3112)	P
	Temperature 'T'	750°C	P
	Parts tested withstand the glow-wire test, but produce a flame that persists for longer than 2 s, consequential needle flame test of A 6.1.5 applies.	(see appended table in AS/NZS 3112)	P
A 6.1.5	Consequential needle flame test		N/A
	a) Needle-flame test of A 6.1.7 is applied to all parts of non-metallic material likely to be ignited by and positioned within a distance of 50 mm of those parts that flamed during the glow-wire test of A6.1.4.		N/A
	b) Needle-flame test of A 6.1.7 is applied to those parts contacted by the flame, outside the 50mm, subjected to burning droplets or glowing particles during the needleflame test of A6.1.5 b).		N/A
	c) Needle-flame test of A.6.1.7 is applied to those parts contacted by the flame or subjected to burning droplets or glowing particles during the needleflame test of A6.1.5 b).		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	Needle-flame test is not carried out on parts of material classified as V-0 or V-1 provided that the test sample was no thicker than the relevant part.		N/A
A 6.1.6	Needle flame tests on printed circuit boards		N/A
	Base material of printed circuit boards is subjected to the needle-flames or burning droplets;		N/A
	The test is not carried out:		--
	i) on printed circuit boards in a metal enclosure that confines flames or burning droplets;		N/A
	ii) if the material is classified as V-0 for correct thickness.		N/A
A 6.1.7	Needle-flame test method		N/A
	The needle-flame test shall be carried out in accordance with IEC 60695-11-5 with the following modifications.		N/A
	a) for the purpose of Clause 7 of IEC 60695-11-5, the duration of application of the test flame is 30 s $\pm$ 1 s;		N/A
	b) for the purpose of Clause 9.2 of IEC 60695-11-5, the specimen is arranged so that the flame can be applied to a vertical or horizontal edge;		N/A
	c) for the purpose of Clause 9.3 of IEC 60695-11-5, the first paragraph of 9.3 does not apply. If possible, the flame is applied at least 10 mm from a corner;		N/A
	d) for the purpose of Clause 9.4 of IEC 60695-11-5, the test is carried out on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall then withstand the test;		N/A
	e) for the purpose of Clause 11 of IEC 60695-11-5, the duration of burning (t _b) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s. Slight discolouration of the particle board is ignored.		N/A
A 6.2	Temperatures of surfaces to be handled		N/A
	The temperature rise of surfaces intended to be touched, when tested in accordance with Clause 8.12, shall not exceed the values specified in Table 5.7.		N/A
A 6.3	Resistance to tracking		P
	Insulating material across which a tracking path may occur between live parts of different polarity or between live parts and earthed metal parts, and insulating material of commutators and brush-caps, shall have adequate resistance to tracking, taking into account the severity of its duty conditions.		P

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Clause	Requirement+Test	Result-Remark	Verdict
	For parts of insulating material other than ceramic, compliance is checked by the proof tracking test specified in IEC 60112.		P
	For parts of insulating material used under severe duty conditions, the test voltage is 175V.		P
	For parts of insulating material used under extra-severe duty conditions, the test voltage is 250V.		N/A
	The needle-flame test is made on all parts of non-metallic material positioned within a distance of 50 mm from any place where a tracking path may occur, unless these parts are shielded by a separate barrier or enclosure from that tracking path, in which case the barrier or enclosure is subjected to the needle flame test.		N/A

B	Annex B; Tests of resistance to heat, fire and tracking		P
B1	Introduction		P
B2	Resistance to heat test	Referenced by AS 3133 clause 13.11 resistance to heat test.	P
	Unless varied in a particular specification, compliance is checked by subjecting the relevant part to the ball pressure test by means of the apparatus shown typically in Figure B2.		P
	Before starting the test, the relevant part is maintained for 24 h in an atmosphere having a temperature between 15 °C and 35 °C and a relative humidity between 45% and 75%.		P
	The part is supported so that its upper surface is horizontal and the spherical part of the apparatus is pressed against this surface with a force of 20 N. The thickness of the part under test shall be at least 2.5 mm.		P
	The test is made in a heating cabinet at a temperature of 40 °C ± 2 °C plus the maximum temperature rise determined during the test of Clause 8.12, but it shall be at least		P
	(a) for external parts 75 °C ± 2 °C;	(see appended table in test report of AS 3133)	P
	(b) for parts supporting live parts 125 °C ± 2 °C.	(see appended table in test report of AS 3133)	P
	However, for parts of thermoplastic material providing supplementary insulation or reinforced insulation, the test is made at a temperature of 25 °C ± 2 °C plus the maximum temperature rise determined during the tests of Clause 8.15, if this is higher.		P

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Clause	Requirement+Test	Result-Remark	Verdict
	The temperature rises of Clause 8.15.1 are not taken into account if the test of Clause 8.15 is terminated by the operation of a non-self-resetting protective device and it is necessary to remove a cover or to use a tool to reset it.		N/A
	Before the test is started, the test apparatus is brought to the temperature determined above.		P
	After 1 h the apparatus is removed and the part is immediately immersed in cold water so that it is cooled to approximately room temperature within 10 s. The diameter of the impression shall not exceed 2 mm.	(see appended table in test report of AS 3133)	P
B3	Resistance to fire tests		N/A
B3.1	General		N/A
	Unless varied in a particular specification, compliance is checked by the tests of Paragraph B3.2 and the applicable parts of Paragraph B3.3.		N/A
B3.2	Materials and tests		N/A
	Relevant parts of non-metallic material are subjected to the glow-wire test of IEC 60695-2-10, on the appropriate part of the equipment		N/A
	The test being made at a temperature of 550 °C.		N/A
	Insulating materials of winding bobbins and formers are subjected to the glow-wire test of IEC 60695-2-10		N/A
	The test being made at a temperature of 650 °C		N/A
	Base material of printed wiring boards together with any coating or encapsulation shall comply with the needle-flame test of Paragraph B3.4; however, flames shall have extinguished within 15 s of removal of the test flame.		N/A
	The flame shall be applied to an edge of the board having the lowest heat sink effect, with the board orientated in its normal position of use and at a point, if possible, not less than 10 mm from a corner.		N/A
B.3.3	Glow-wire test		N/A
	For equipment that is operated while attended:		N/A
	The parts of insulating material supporting, in contact with or within 3 mm to current-carrying connections, other than those in low-power circuits determined as described in Clause 19.11.1 of AS/NZS 60335.1, are subject to the glow-wire test of IEC 60695-2-10		N/A
	The test being made at a temperature of 650 °C.		N/A

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Clause	Requirement+Test	Result-Remark	Verdict
	However, parts of insulating material supporting, in contact with or within 3 mm to screw connections that carry a current exceeding 0.5 A during normal operation and which are likely to be made or remade during installation, user maintenance or when replacing a supply cord assembled with the equipment by a Type X attachment, are subject to the glow-wire test of IEC 60695-2-10		N/A
	The test being made at a temperature of 750 °C.		N/A
	This test is not made on hand-held equipment, on equipment that have to be kept switched on by hand or foot and on equipment that are continuously loaded by hand.		N/A
	For equipment that is operated while unattended:		N/A
	The parts of insulating material supporting, in contact with or within 3 mm to current carrying connections, other than those in low-power circuits determined as described in Clause 19.11.1 of AS/NZS 60335.1, are subject to the glow-wire test of IEC 60695-2-10.		N/A
	The test being made at a temperature of 750 °C.		N/A
	However, parts of insulating material supporting, in contact with or within 3 mm to screw connections, which carry a current exceeding 0.5 A during normal operation and which are likely to be made or remade during installation, user maintenance or when replacing a supply cord assembled with the equipment by a Type X attachment, are subject to the glow-wire test of IEC 60695-2-10.		N/A
	The test being made at a temperature of 850 °C.		N/A
	During application of the glow-wire the height and duration of flames are measured.		N/A
	for equipment that is operated while unattended with parts that withstand the glow-wire test but which flame during the application of the glow-wire, the surrounding parts are subjected to the needle-flame test of Paragraph B3.4 for the measured duration of the flame or 30 s, whichever is the least, if		N/A
	(a) they are positioned within a distance equal to the height of the flame; and		N/A
	(b) they are likely to be impinged upon by the flame.		N/A

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AS/NZS 3100			
Clause	Requirement+Test	Result-Remark	Verdict
	If parts, other than enclosures, do not withstand the test of Paragraph B3.3 by failure to extinguish within 30 s after removal of the glow-wire tip, the needle-flame test of Paragraph B3.4 is made on all parts of non-metallic material that are within a distance of 50 mm or that are likely to be impinged upon by flame during the test of Paragraph B3.3.		N/A
	Parts shielded by a separate barrier that meets the needle-flame tests are not tested.		N/A
B3.4	Needle-flame test		N/A
	The needle-flame test shall be carried out in accordance with IEC 60695-11-5. For the purposes of Clause 11 of IEC 60695-11-5, slight discolouration of the particle board is ignored		N/A
B4	Resistance to tracking test		N/A
	Insulating material across which a tracking path may occur shall have adequate resistance to tracking, taking into account the severity of its duty condition.		N/A
	A tracking path is considered likely to occur between live parts of different potential, live parts and earthed metal parts, and across insulating material of commutators and brush-caps.		N/A
	For parts of insulating material other than ceramic and phenolic, compliance is checked by the proof tracking test specified in IEC 60112.		N/A
	For parts of insulating material used under severe duty conditions, the test voltage is 175 V.		N/A
	If the specimens do not withstand this test and there is no hazard other than fire, surrounding parts shall comply with the needle-flame test referred to in Paragraph B3.4.		N/A
	For parts of insulating material used under extra-severe duty conditions, the test voltage is 250 V.		N/A
	If the specimens do not withstand this test, but withstand the test made with a test voltage of 175 V, and there is no hazard other than fire, surrounding parts shall comply with the needle-flame test referred to in Paragraph B3.4.		N/A
	The needle-flame test is made on all parts of non-metallic material positioned within a distance of 50 mm from any place where a tracking path may occur, unless these parts are shielded by a separate barrier or enclosure from that tracking path, in which case the barrier or enclosure is subjected to the needle-flame test.		N/A

F	Annex F Heat behaviour test		N/A
F1	General		N/A
F2	Test specimen		N/A

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Attachment No. 1

AS/NZS 3100			
Clause	Requirement+Test	Result-Remark	Verdict
	The test specimen shall be the complete equipment, except that when this is not practicable for test purposes it shall be a complete sub-assembly or component mounted in such a way as to simulate intended use.		N/A
	If not otherwise specified, the test specimen should be stored at $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$ and a relative humidity of $60\% \pm 15\%$ for 24 h immediately before the test.		N/A
	The test specimen shall be placed in an oven and heated at a predetermined temperature for a period of time.		N/A
F3	Test apparatus		N/A
	The test apparatus shall consist of an air-circulating oven capable of maintaining the temperature of its test space within $\pm 3^{\circ}\text{C}$ of the test temperature specified in Paragraph F4.		N/A
F4	Test method		N/A
	The test method shall be as follows:		N/A
	a) The oven control shall be adjusted to a setting which produces a test temperature 10 K higher than the highest temperature attained during conditions of normal use or 70°C , whichever is the higher. The oven shall be maintained at that setting for the duration of the test.		N/A
	b) The test specimen shall be positioned within the heated oven in the most unfavourable position likely to occur in normal use. The test specimen shall not be energized during the test.		N/A
	c) During the test, temperatures of external surfaces of the insulating enclosure shall be measured and temperatures of surfaces of components or sub-assemblies shall be measured within the equipment. Where the test is applied to sub-assemblies or components the temperature of the surfaces of the sub-assembly or component shall be measured.		N/A
	d) The test specimen shall be allowed to remain in the oven for 7 h after the measured temperature has reached the lower limit of the test temperature. The test specimen shall then be carefully removed and allowed to cool to room temperature.		N/A
F5	Tests results		N/A
	After the tests, inspection of the specimen shall be carried out. The following shall apply:		N/A
	iv) There shall be no exposure of live parts or bridging of live parts to accessible conductive parts.		N/A

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AS/NZS 3100			
Clause	Requirement+Test	Result-Remark	Verdict
	b) There shall be no change to the acceptable mechanical protection to internal parts of the equipment.		N/A
	c) There shall be no impairment of the normal operation of the equipment to the extent that the equipment fails the requirements of other tests of the appropriate Standard, for example IR, HV and tests of leakage current.		N/A

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
1	Scope and general		P
2	Terms and definitions		P
2.1	Air break switch		P
	Mechanical device for marking and breaking in air a circuit carrying a load current.		P
	Note 1 to entry: For the purpose of this Standard, "air-break switch" is referred to as "switch".		P
2.2	Flush switch		P
	Switch for mounting behind or incorporated with a switch plate, the back of the plate being flush with the surface of the wall or enclosure.		P
2.3	Intermediate switch		N/A
	Switch for controlling a circuit where more than two positions of control are required. Such a switch generally occupies an intermediate position between the other switches with which it is used in conjunction.		N/A
2.4	Isolating switch		N/A
	Switch that when in the open position conforms to the requirements specified for the isolating function.		N/A
2.5	May		P
	Indicates the existence of an option		P
2.6	Number of ways (of a switch)		P
	The number of conducting paths (outputs) provided for each pole.	Integrated switch: single-pole, single-way Incorporated switch (extra switch): single-pole, two-way	P
	Note 1 to entry: "Ways" are also referred to as "throws".		P
2.7	Operation		P
	The transfer of moving contact(s) from one position to an adjacent position.		P
2.8	Operating cycle		N/A
	A succession of operations from one position to another and back to the first position through all other positions, if any.		N/A
2.9	Pilot light		N/A
	Device incorporating a light source either integral or designed to be installed with the switch and intended to give for example an indication of the switch state or to indicate the switch location		N/A
2.10	Pole(s)		P
	number of electrically separated inputs.	Single-pole	P

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
2.11	Recovery voltage		P
	The r.m.s. value of the normal frequency voltage, or d.c. voltage, as appropriate, that exists across the terminals of each pole of the switch after final arc extinction.		P
2.12	self-ballasted lamp		N/A
	unit which cannot be dismantled without being permanently damaged, which is provided with a lamp cap or caps and which incorporates a light source and any additional elements necessary for starting and stable operation of the light source		N/A
2.13	shall		P
	indicates that a statement is mandatory		P
2.14	should		P
	indicates a recommendation		P
2.15	Surface switch		N/A
	Switch provided with a seating surface so that when mounted it projects wholly above the surface on which it is mounted.		N/A
2.16	Switch circuits		P
	standard switch arrangement configurations		P
2.17	Switch assemblies		P
	assembly of switches that can be configured by the installer into a single face plate.		P
2.18	unintentional disruptive discharge		N/A
	phenomena associated with the failure of insulation under electric stress, which include a drop in the voltage and the flowing of current		N/A
2.19	Wall switch		P
	switch primarily intended for mounting on, or in, a wall or related part of a building structure.		P
3	Conformance to Standards		P
3.1	General requirements of AS/NZS 3100.		P
	This Standard shall be read in conjunction with AS/NZS 3100 and the appropriate provisions of that Standard shall apply to the construction of the switch and the insulation and safeguarding of parts that normally carry current.		P
3.2	Specific requirements of this Standard		P
	A switch shall be deemed to comply with this Standard only if it complies with all the appropriate requirements of this Standard and passes the tests specified herein.		P

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	Additional requirements for isolating switches are provided in Appendix A.		N/A
3.3	Requirements of other Standards		N/A
3.3.1	AS 60947.3 utilization categories		N/A
	Switches in accordance with AS 60947.3 having current ratings greater than 63 A but not exceeding 300 A for utilization categories AC-21, AC-22, AC-23, DC-21, DC-22 and DC-23 conform to the requirements of this Standard.		N/A
3.3.2	AS/NZS 60669 series		N/A
	Switches in accordance with AS/NZS 60669.1 conform to the requirements of this Standard.		N/A
3.3.3	AS/NZS 61058.1 switches		N/A
	Switches intended to be incorporated in, on or with an appliance may comply with AS/NZS 61058.1 in lieu of this Standard.		N/A
4	Enclosure		P
	Any enclosure provided for a switch shall be constructed to prevent the emission of arcs, flame, molten metal or hot particles. Any insulating material used in the construction of the enclosure shall be not inferior to the class of material specified in AS/NZS 3121 in relation to the temperature at which the material is required to operate when the switch is tested in accordance with Clause 13.6.		P
	Where an IP rating is claimed for a switch, it shall comply with Clause 13.12.	IP20	P
5	Insulating materials		P
	Except for ceramic material, all materials used for insulation shall conform to the requirements of Clause 13.10. Any insulating material used as basic insulation shall have adequate mechanical and electrical strength, as described in AS/NZS 3100.		P
	Ceramic material shall be of a type that does not increase in mass by more than 2% after being immersed in water for a period of 48 h. This is determined after removal of surface moisture.		N/A
	Other insulating material shall be not inferior to the class of material specified in AS 3121 in relation to the temperature at which the material is required to operate when the switch is tested in accordance with Clause 13.6.		P
6	Form and action of contacts		P

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	Where switches are not marked "a.c.", means shall be provided to prevent excessive arcing or sustained partial contact that would result in burning of the switch contacts under the conditions of use. The switch shall open with a rapid action that is independent of the rate of movement of the operating means.		P
7	Sequence of operation		N/A
	The moving contacts of all poles of a multiple-pole switch, including a switch with a pole that operates in the neutral, shall be mechanically coupled in such a way that all poles make and break substantially together.		N/A
	If a switch has a switched neural pole without the same making and breaking capacity of the active poles, the switched neutral pole shall not open before and shall not close after the other pole(s).		N/A
8	Actuating mechanism		P
	The actuating mechanism shall be constructed so that the switch contacts can only remain in the completely closed or the completely open position when the switch is operated in the normal manner. Operation of the switch to obtain a position of the contact between the completely open and the closed positions shall not be regarded as normal operation.		P
9	Earthing facilities		N/A
	Facilities shall be provided for the earthing of any exposed metal parts. Such facilities shall take the form of a suitable terminal, which, unless its function as an earthing terminal is clearly evident, shall be legibly and durably marked in accordance with the requirements for the 'Marking of Earth Connections' described in AS/NZS 3100.		N/A
	For switches that are intended to be mounted in equipment, a separate earthing terminal shall not be required if the fixing means of the switch are such that they will provide good electrical continuity between exposed metal parts of the switch and metal parts of the equipment to which the switch is to be fixed.		N/A
	All exposed metal parts of a switch shall be in effective electrical connection with such facilities.		N/A
10	Prohibited arrangements		P

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	A wall switch or its faceplate shall not incorporate a connecting device for television or radio aerial wiring, telecommunications wiring or similar wiring systems.	No such connecting device.	P
11	Lamp load rating		P
	All single-pole, single-way and single-pole, two-way switches (see Figures 2.16 (a) (i) and (c) (i)) with a current rating up to and including 10 A shall have a fluorescent lamp load current rating equal to their current rating and SBL rating as per Table 11.		P
12	Marking		P
12.1	Information required:		P
	Except as indicated in Clause 12.4, switches shall be marked, in accordance with AS/NZS 3100, with the following information:		P
	(a) The name or registered trade name or mark, of the manufacturer or responsible vendor:	Integrated switches, evaluated in AS/NZS 3112 test report.	P
	(b) The operating voltage:		P
	(c) Current ratings, in amperes, corresponding to the marked voltage:		P
	(d) If a switch is suitable only for operation on either alternating current or direct current, the appropriate marking or symbol:		P
	(e) If it is not the only type of switch marketed by the manufacturer or responsible vendor, the switch shall be marked with a catalogue number, type number or name, or other marking which will distinguish it from any other type marketed by the manufacturer or responsible vendor.	Integrated switches, evaluated in AS/NZS 3112 test report.	P
	Switches of the same basic design incorporating identical components but variations of contact and terminal arrangements such as one-way, two-way, double-pole and intermediate assemblies, may have a common type marking.		N/A
	(f) Where the manufacturer or responsible vendor indicates that a switch is suitable for use with fluorescent lamp loads, such switches shall be marked the rated fluorescent lamp load current corresponding to the marked voltage.		P
	The rated fluorescent lamp load current shall be marked with the symbols AX or X placed adjacent to the current rating:	For extra switch	P
	(g) Where the manufacturer or responsible vendor indicates that a switch is suitable for control of motors, such switch shall be marked 'M' together with the nominated locked rotor current in amperes, e.g. 'M.30'.	Integrated switches, evaluated in AS/NZS 3112 test report.	P

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	(h) Where a switch may be construed as a circuit breaker and such switch does not provide overcurrent protection, it shall be suitably marked to indicate— (i) the function of the device; or (ii) that overcurrent protection is not provided.		N/A
	(i) The symbols for any neutral switching pole and earthing terminal.	Integrated switches, evaluated in AS/NZS 3112 test report.	P
	(j) Designation of degree of protection (if greater than IP2X)	IP20	N/A
	(k) Instructions to ensure that field-installed insulation is fitted correctly where this insulation is required for the switch to comply with the requirements for IP protection, insulation resistance and high voltage: instruction sheet provided for end product.	Integrated switches, evaluated in AS/NZS 3112 test report.	P
12.2	Location		P
	The marking specified in Clause 12.1 shall be located as follows:		P
	(a) Item (a)—on any visible position of the switch or its cover when installed. Where the cover can be removed without the use of a tool Item (a) shall be visible when installed and the cover is removed		P
	(b) Items (d), (e) and (h)—on any visible position of the switch or its cover	Integrated switches, evaluated in AS/NZS 3112 test report.	N/A
	(c) Items (b) and (c)—on any one of the following positions:		P
	(i) On any portion of the switch that is visible when the switch is mounted in position, but not on a cover that is removable and interchangeable or on the cover of a switch that may be panel-mounted or gang-mounted without its normal cover.		P
	(ii) Inside a removable and non-interchangeable cover.		N/A
	(iii) On a portion of the switch that is visible when the switch cover is removed.		N/A
	(iv) In a position that need not be visible after the switch is installed but shall be visible when the switch is removed from its fixings, without the need to disconnect any wiring from the terminals of the switch.		N/A
	(d) Items (f), (g), (i) and (j)—in any one of the following positions:	Integrated switches, evaluated in AS/NZS 3112 test report.	P

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	(i) on any portion of the switch or its cover; or		P
	(ii) on a label securely attached to the switch;		N/A
	(iii) on the container in which the switch is supplied, as well as in the manufacturer's instructions.		N/A
12.3	Method of marking		P
	Markings shall comply with the requirements for 'Method of Marking' described in AS/NZS 3100.		P
12.4	Switches in equipment		P
	Switches incorporated in appliances or equipment need not be marked in accordance with Clauses 12.1 and 12.2, but any such switch shall bear sufficient marking to identify the switch. No marking is required on any switch that forms an integral part of equipment or that is incorporated in sealed or encapsulated equipment.	Integrated switches, evaluated in AS/NZS 3112 test report.	P
	NOTE 1 It may be advantageous for switches that are not required to be marked to bear sufficient marking to identify them. Further testing may not be required if it can be substantiated from this marking that the switch has already been tested, either individually or in other equipment.		N/A
	NOTE 2 Other than for isolating switches, the marking of the "on" or "off" positions of other switches is not required by this Standard. Attention is drawn, however, to the fact that some individual Standards may require such marking, which may be on the equipment rather than the switch.		P
13	Tests		P
13.1	General		P
13.1.1	Compliance	The switches passed the tests listed in Table 13.1.5.	P
13.1.2	Containing cases		P
13.1.3	Switches in equipment		P
13.1.4	Auxiliary contacts		N/A
13.1.5	a.c. and d.c. switches	a.c. switches only	N/A
13.1.6	Earthing		N/A
	For the tests specified in Clauses 13.5, 13.13 and 13.14, the following parts shall be connected to earth through a fine-wire fuse of tinned copper wire not greater than 0.125 mm in diameter and having an unsupported length of not less than 75mm;		N/A

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	(a) external metal parts;		N/A
	(b) earth terminals;		N/A
	(c) 'loop-in' terminals; and		N/A
	(d) metallic enclosure [see Clause 13.2 (a)]		N/A
	A resistor shall be connected in series with the fine fuse to limit any fault current to earth to approximately 100A.		N/A
13.1.7	Switches for special purposes		N/A
	Specific load and endurance testing procedures for switches intended for momentary, intermittent or special duty operation shall be agreed between the manufacturer or responsible vendor, the test laboratory and the relevant approvals authority, having regard to relevant data marked on, or supplied with, the switch.		N/A
13.1.8	Screws		P
	Mounting screws and terminal screws shall be tightened to two-thirds of the value indicated in the table 'Test values for screw torque test' in AS/NZS 3100.		P
13.1.9	Test voltage		P
	Where switches are marked with a voltage within the range 220V to 240V a.c. (or 380V to 415 V a.c., multi-phase), the tests shall be carried out for Australia at 240V a.c. (or 415 V a.c.). In other cases, the tests shall be carried out at the highest marked voltage.	250V a.c.	P
13.1.10	Conditioning		P
	Prior to starting the tests on Sample A, the switch shall be conditional in an atmosphere of $93 \pm 2\%$ relative humidity at room temperature for a period of 48h.		P
	A relative humidity within the range of the above approximation at a temperature of 20 °C to 40 °C may be obtained in an enclosure using a saturated solution of K ₂ SO ₄ .		P
	Once the conditioning has been started at a temperature within this range, any sudden fluctuations of temperatures should be avoided, in order to maintain the desired relative humidity and to prevent deposition of moisture on the switch. Temperature differences between the conditioning atmosphere and the external atmosphere should also be avoided when the switch is removed after conditioning.		P
13.2	Mounting of switches for tests		P

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	Unless otherwise indicated, during the tests specified in Clauses 13.3 to 13.15 switches shall be mounted as for normal service and as follows:		P
	(a) Switches that may be used in walls with thermal insulation shall be mounted on a vertical wooden surface, not more than 6 mm thick, with the portion designed to fit into the recess completely enclosed in absorbent cotton wool loosely packed and held in position by a suitable metallic (wall box) enclosure.		P
	(b) Surface switches shall be mounted in an enclosure or wall box of the minimum size that can be used with such switches.		N/A
	(c) If field-installed insulation [per Item 12.1(k)] can be removed without the use of a tool, then this field-installed insulation shall be removed for all tests. Compliance shall be checked by the test specified in AS/NZS 60335.1:2011, Clause 22.11.		N/A
	(d) Where assemblies of switches with more than one mechanism on a face plate are available, the most onerous configuration of mechanisms shall be selected.		N/A
13.3	Insulation resistance test	(see Table Annex 1)	P
13.3.1	Preparation		P
13.3.2	Test		P
13.4	High voltage test No.1	(see Table Annex 1)	P
13.5	Endurance test	(see Table Annex 2)	P
13.5.1	General		P
13.5.2	Test conditions		P
	The switch shall be tested under the appropriate condition as follows:		P
	(a) Switches intended for operation with specific loads. Any switch designed to operate with a particular load shall be tested in conjunction with the intended supply and load, or in a circuit comprising a supply and artificial load which approximates the voltage and current waveform magnitudes and characteristics of the intended operating condition.		N/A
	(b) Other switches. Other switches shall be connected in a circuit in which the test current has been adjusted to the marked current rating of the switch.		P

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	For a.c. switches or the 'a.c.' sample of a.c./d.c. switches, the test shall be conducted with alternating current in a circuit arranged in accordance with the general requirements for tests of AS/NZS 3100. The frequency shall be 50 Hz and the circuit shall have a waveform approximating as nearly as possible to a sine wave. The power factor of the test circuit shall be between 0.75 lagging and 0.8 lagging for all a.c. or a.c./d.c. switches.		P
	For d.c. switches or the 'd.c.' sample of a.c./d.c. switches, the test shall be conducted with direct current in a non-inductive circuit. The test voltage shall be the marked voltage of the switch.		N/A
	The recovery voltage shall be equal to the marked voltage rating of the switch $\pm 5\%$.		P
13.5.3	Number of operating cycles		P
13.5.3.1	Test cycles		P
	Switches shall be subject to the relevant number of operating cycles as determined from Figure 2, Switches shall be connected as shown in Figure 1 according to the particular switch configuration.	12000/10000 operating cycles	P
13.5.3.2	Single way switches	Single-way, single-pole	P
13.5.3.3	Rotary switches		N/A
13.5.3.4	Two-way switches	For incorporated switch, two-way switch	P
13.5.3.5	Intermediate switches		N/A
13.5.3.6	Multiple push button switches		N/A
13.5.3.7	Other switches		N/A
13.5.4	Rate of operation		P
	For rotary switches, the test shall be conducted at a speed which will allow the contacts under electrical test to make for the period specified in column 3 of Table 3.		N/A
	For other switches, the number of operation cycles and the period make shall be as specified in columns 2 and 3 of Table 3 respectively.		P
13.5.5	Criteria		P
	The switch shall not fail to interrupt the current, and shall not fail in any way, electrically or mechanically, and the fine-wire fuse shall not rupture (see Clause 13.1.6).		P
13.6	Temperature test	(see Table Annex 3)	P
13.7	High voltage test No.2	(see Table Annex 4)	P
13.8	Earthing facilities	- no earthing for switch portion.	N/A

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
13.9	Inspection of switch		P
	At the completion of the tests specified in Clause 13.3 to 13.8, the switch shall be inspected and shall be in such condition that it is still capable of normal operation and shall comply with the requirements of Clause 13.7.		P
13.10	Determination of ignitability and combustion propagation	(see Table Annex 5)	P
	Switches shall comply with the requirements for resistance to fire set out in AS/NZS 3100:2017, Annex A. The glow-wire test temperature, 'T', shall be 750°C.		P
13.11	Resistance to heat test	(see Table Annex 6)	P
	The resistance to heat test described in AS/NZS 3100:2017 Class B.2, shall be performed as specified on all switches.		P
13.12	Test of IP ratings		P
13.12.1	General		P
	Switches or switch assemblies shall have a minimum degree of protection IP2X when installed in accordance with the manufacturer's instructions and Clause 13.2, to the extent that this degree of protection shall cover access to live parts and contact with screws for mounting brackets or wall boxes.	IP20	P
	The requirements of AS 60529 shall be applied for the specific degree of protection, and the jointed test finger of AS 60529 shall not contact screws at 84 mm mounting centres for mounting brackets or wall boxes.		P
	Switches or switch assemblies constructed with mounting centres for metal mounting brackets or wall boxes other than 84 mm mounting centres in accordance with manufacturer's instructions shall be tested with the associated bracket/wall box.		N/A
13.12.2	Tests		N/A
	Switches are conditioned at 25°C ± 10% for 24h before the tests		N/A
	For the purposes of testing, switches or switch assemblies shall be mounted on a smooth, wooden, vertical surface. The rear of the mounting surface shall be sealed for switches other than surface switches or switch assemblies.		N/A
	Switches shall be tested in the most unfavorable of normal use		N/A

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	For switches or switch assemblies with face plates that are intended to be removed shall be conducted with and without the face plate in position		N/A
	Where a switch or switch assembly is to be tested for first characteristic numeral 5 (refer to Table 5 of AS 60529), testing shall be carried out under the conditions stated for Category 2 enclosures in AS 60529.		N/A
	Immediately after the appropriate test, the switch or switch assembly shall withstand the high voltage test specified in Clause 13.4 while still in place in the wooden test fixture (see Clause 13.2).		N/A
13.13	Motor control test	(see Table Annex 7)	P
13.14	Endurance test for switches intended for fluorescent lamp loads	(see Table Annex 8)	P
13.14.1	General		P
13.14.2	Test load details		P
13.14.3	Procedure		P
	The test shall be carried out on a new sample		P
	the test supply voltage shall be the operating voltage $\pm 5\%$ of that marked on the test sample.		P
	Switches rated ≤ 10 A are tested for 5000 operating cycles at the rate of 15 operating cycles per min.		P
	Switches rated > 10 A to 20 A are tested for 2500 operating cycles at the rate of 7.5 operating cycles per min.		P
	The 'on' period shall be 25% of the operating cycle.		P
	During the test, the sample shall function correctly and no sustained arcing or welding shall occur.		P
	After the test and without disturbing the connections of the test sample, the temperature rise test of Clause 13.6 shall be carried out.		P
	After this test, the switch shall comply with Clause 13.9.		P
13.15	Test for switches intended for self-ballasted lamp loads	(see Table Annex 9)	P
13.15.1	General		P
13.15.2	Test load setup		P
	The calculations are based on the following parameters in order to have the required values for inrush current and I^2t :		P

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	(a) A prospective short-circuit current (rms) of the supply of 3 kA at $\cos \phi = 0,9$ [lagging].		P
	(b) A resistance R_3 equal to 0.25Ω in the test circuit to the load. This value is obtained with a wire having a cross-sectional area of $1,5 \text{ mm}^2$ when switches with rated current up to and including 15.9 A are being tested and $2,5 \text{ mm}^2$ when switches with rated current over 15.9 A up to and including 20 A are being tested.		P
13.15.3	Test and criteria		P
	Compliance is checked by the following test.		P
	The metal support of the switch, if any, on which the switch is mounted, and the accessible metal parts of the switch, if any, shall be earthed through a wire fuse (F) which shall not blow during the test. The fuse element shall consist of a copper wire of 0,1 mm diameter and not less than 50 mm in length. R_1 is a resistor limiting the current to about 100 A.		P
	During this test, the switch shall be operated so that the test apparatus does not interfere with the normal action of the switch mechanism and the free movement of the actuating member.		P
	There shall be no forced actuation.		P
	No sustained arcing or welding of the contacts shall occur.		P
	Sticking of the contacts which does not prevent the next operation of the switch is not regarded as welding.		P
	After the test, the specimens shall withstand an electric strength test as specified in Clause 13.7 and a terminal temperature rise test as specified in Clause 13.6.		P
	After these tests, it shall also be possible to make and break the switch by hand in the test circuit and the specimen shall not show—		P
	(a) wear impairing further use;		P
	(b) discrepancy between the position of the actuating member and that of the moving contacts, if the position of the actuating member is indicated;		P
	(c) deterioration of the enclosures, insulating lining or barriers to such an extent that the switch cannot be further operated or allow access to live parts after all of the detachable parts have been removed;		P
	(d) loosening of electrical or mechanical connections; or		P

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	(e) seepage of sealing compound.		P

Appendix A Additional requirements for isolating switches			N/A
A.1	Scope		N/A
A.2	Marking		N/A
	(a) the word 'OFF' or the symbol 'O'; and		N/A
	(b) the symbol for isolating function:		N/A
	Where the isolating switch is mounted and wired, the marking required in Item (a) shall be visible on the front of the isolating switch after installation, even after removal of covers of the enclosure.		N/A
	The symbol specified in Item (b) shall be visible on a part such that it can be seen when the isolation switch is removed from its fixture, without disconnecting any wiring from the terminals of the switch. The symbol may not be visible after the isolating switch is installed.		N/A
A.3	Construction		N/A
A.3.1	General		N/A
	Isolating switches shall be constructed so as to—		N/A
	(a) not falsely indicate that the contacts are 'open';		N/A
	(b) clearly and reliably indicate the isolating position;		N/A
	(c) prevent unintentional closure; and		N/A
	(d) have an appropriate contact gap in accordance with Clause A.3.4; or		N/A
	(e) be able to withstand an impulse voltage that can occur at the point of installation.		N/A
A.3.2	Indication		N/A
	The position of the contact(s) shall be indicated by the position of the actuating member or by other suitable means or both. The indication shall not rely solely on illuminating devices.		N/A
	The actuating member shall not indicate the 'open' position unless all the moving contacts are in the 'open' position.		N/A
	If the actuating member is used to indicate the 'open' position, the isolating switch shall be designed so that the actuating member shall correctly indicate the position of the contact(s).		N/A
	When a means of locking the isolation switch in the 'open' position is provided, locking in that position shall only be possible when the contact(s) are in the 'open' position.		N/A

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
A.3.3	Unintentional closure		N/A
	An isolating switch shall be constructed so as to prevent unintentional closure, The actuating member shall have adequate mechanical strength.		N/A
	Conformance shall be checked by the test specified in Clause A.4.4.		N/A
A.3.4	Contact gap		N/A
	The contact gap shall be not less than 4 mm unless the isolating switch is capable of with-standing the test specified in Clause A.4.3.		N/A
A.4	Procedures		N/A
A.4.1	General notes on tests		N/A
A.4.2	Leakage current	(see Table Annex 10)	N/A
A.4.3	Test of contact gap by an impulse voltage	(see Table Annex 11)	N/A
A.4.4	Mechanical strength of the actuating member and indication of the position of the contact(s)	(see Table Annex 12)	N/A

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict

ANNEX 1**RESULTS OF INSULATION RESISTANCE TEST AND HIGH VOLTAGE TEST NO. 1**

Tested parts	Insulation Resistance at 500V d.c.		High voltage	
	Required	Measured	Test voltage (V a.c.)	Result
With the switch in the "ON" position(s)—between all terminals connected together and the body.	≥5MΩ	>100MΩ	2000	Pass
With the switch in the "ON" position(s)—between each pole in turn and all other terminals connected together and to the body.	≥2MΩ	>100MΩ	2000	Pass
With switch in the "OFF" position(s)—across the switch breaks and to the body:				
(i) Between all incoming terminals connected together and each outgoing terminal in turn, with other outgoing terminals bonded together and connected to the body – with contact gap ≥ 1.2mm	≥2MΩ	>100MΩ	2000	Pass
(ii) Between all incoming terminals connected together and each incoming terminal in turn, with other outgoing terminals bonded together and connected to the body – with contact gap ≥ 1.2mm	≥2MΩ	>100MΩ	2000	Pass
Between metal parts of the mechanism, when insulated from live parts, and:				
(i) Live parts.	≥5MΩ	N/A	2000	N/A
(ii) Metal foil in contact with the surface of the knob or a similar actuating member; or the key of key-operated switches, if insulation is required.	≥5MΩ	N/A	2000	N/A
(iii) The point of anchorage of the cord, chain or rod of switches operated by such means, if insulation is required.	≥5MΩ	N/A	2000	N/A
Between any metal enclosure and metal foil in contact with the inner surface of its insulation linings or shroud, if any. This test is only performed if any insulation is necessary.	≥5MΩ	>100MΩ	3000	Pass
Between live parts and accessible metal parts if the metal parts of the mechanism are not insulated from live parts.	-	-	3000	N/A
Between live parts and parts of the mechanism:				
(i) If the latter parts are not insulated from accessible metal parts.	-	-	3000	N/A
(ii) If the letter parts are not insulated from the point of contact with a removable key or operating cord, chain or rod.	-	-	3000	N/A
Between live parts and metal knobs, push-buttons and metal foil in contact with the outer surface of accessible external parts and operating keys of	-	-	3000	Pass

Attachment No. 2

AS 3133				
Clause	Requirement+Test	Result-Remark		Verdict
	insulating material.			
Supplementary information: All test models were tested and the most adverse results were recorded.				

ANNEX 2
RESULTS OF ENDURANCE TEST

Test requirements	
the test shall be conducted with alternating current in a circuit arranged in accordance with the general requirements for tests of AS/NZS 3100 and The frequency shall be 50 Hz.	
- The power factor of the test circuit (0.75-0.8):	0.8
- The test voltage (V)	250
- The test current (A)	15A
- Number of operating cycles	10000
Supplementary information: (Testing on model V15/335, for integrated switch 15A)	

Test requirements	
the test shall be conducted with alternating current in a circuit arranged in accordance with the general requirements for tests of AS/NZS 3100 and The frequency shall be 50 Hz.	
- The power factor of the test circuit (0.75-0.8):	0.8
- The test voltage (V)	250
- The test current (A)	15A
- Number of operating cycles	10000
Supplementary information: (Testing on model V19/335, for integrated switch 15A)	

Test requirements	
the test shall be conducted with alternating current in a circuit arranged in accordance with the general requirements for tests of AS/NZS 3100 and The frequency shall be 50 Hz.	
- The power factor of the test circuit (0.75-0.8):	0.8
- The test voltage (V)	250
- The test current (A)	15A
- Number of operating cycles	10000
Supplementary information: (Testing on model V19/337, for integrated switch 15A)	

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
Test requirements			
the test shall be conducted with alternating current in a circuit arranged in accordance with the general requirements for tests of AS/NZS 3100 and The frequency shall be 50 Hz.			
- The power factor of the test circuit (0.75-0.8):		0.8	
- The test voltage (V)		250	
- The test current (A)		10A/16A	
- Number of operating cycles		12000/10000	
Supplementary information: (Testing on model V16/316B, for integrated switch 10A, incorporated switch 16A)			

Test requirements			
the test shall be conducted with alternating current in a circuit arranged in accordance with the general requirements for tests of AS/NZS 3100 and The frequency shall be 50 Hz.			
- The power factor of the test circuit (0.75-0.8):		0.8	
- The test voltage (V)		250	
- The test current (A)		10A	
- Number of operating cycles		12000	
Supplementary information: (Testing on model V16/316A, incorporated switch 10A)			

ANNEX 3**RESULTS OF TEMPERATURE RISE TEST**

Test current: 10A a.c. / 15A a.c.	
Nominal cross-section area of cable (mm ²): 1.5 (for 10A), 2.5 (for 16A)	
Test requirements (K)	Test result (K)
Model V15/335 (Test current: 15A)	
Temperature rise on termination A: ≤40	Max. 29.4
Temperature rise on termination N: ≤40	Max. 28.8
Model V19/335 (Test current: 15A)	
Temperature rise on termination A: ≤40	Max. 31.2
Temperature rise on termination N: ≤40	Max. 29.7
Model V19/337 (Test current: 15A)	
Temperature rise on termination A: ≤40	Max. 29.5
Temperature rise on termination N: ≤40	Max. 27.3

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
Model V16/316B (Test current: 10A)			
Temperature rise on termination A: ≤40 (For socket terminal)		Max. 19.4	
Temperature rise on termination N: ≤40 (For socket terminal)		Max. 18.7	
Temperature rise on termination 1: ≤40 (For extra switch terminal, test current 16AX)		Max. 34.7	
Temperature rise on termination C: ≤40 (For extra switch terminal, test current 16AX)		Max. 35.2	
Model V16/316A (Test current: 10A)			
Temperature rise on termination 1: ≤40 (For extra switch terminal, test current 10AX)		Max. 20.7	
Temperature rise on termination C: ≤40 (For extra switch terminal, test current 10AX)		Max. 20.1	
Supplementary information:			

ANNEX 4**RESULTS OF HIGH VOLTAGE TEST NO. 2**

TESTED PARTS	High voltage	
	Required	Measured
	Test voltage (V a.c.)	Result
With the switch in the "ON" position(s)—between all terminals connected together and the body.	1500	Pass
With the switch in the "ON" position(s)—between each pole in turn and all other terminals connected together and to the body.	1500	Pass
With switch in the "OFF" position(s)—across the switch breaks and to the body:		
(iii) Between all incoming terminals connected together and each outgoing terminal in turn, with other outgoing terminals bonded together and connected to the body – with contact gap ≥ 1.2mm	1500	Pass
(iv) Between all outgoing terminals connected together and each incoming terminal in turn, with other incoming terminals bonded together and connected to the body – with contact gap ≥ 1.2mm	1500	Pass
Between metal parts of the mechanism, when insulated from live parts, and:		
(iv) Live parts.	1500	N/A
(v) Metal foil in contact with the surface of the knob or a similar actuating member; or the key of key-operated switches, if insulation is required.	1500	N/A
(vi) The point of anchorage of the cord, chain or rod of switches operated by such means, if insulation is required.	1500	N/A
Between any metal enclosure and metal foil in contact with the inner surface of its insulation linings or shroud, if any. This test is only performed if any insulation is necessary.	2500	Pass
Between live parts and accessible metal parts if the metal parts of the mechanism	2500	N/A

Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	are not insulated from live parts.		
	Between live parts and parts of the mechanism:		
	(iii) If the latter parts are not insulated from accessible metal parts.	2500	N/A
	(iv) If the letter parts are not insulated from the point of contact with a removable key or operating cord, chain or rod.	2500	N/A
	Between live parts and metal knobs, push-buttons and metal foil in contact with the outer surface of accessible external parts and operating keys of insulating material.	2500	Pass
Supplementary information: All test models were tested and the most adverse results were recorded.			

ANNEX 5
RESULT OF DETERMINATION OF IGNITABILITY AND COMBUSTION PROPAGATION

Tested parts	Test temperature (°C)	Ignition of tissue paper?	Scorching of pinewood board?	Visible flame?	Extinguish within 30 s after removal of the glow wire?
Rocker	750	No	No	No	-
Base	750	No	No	No	-
Cover	750	No	No	No	-
Supplementary information:					

ANNEX 6
RESULT OF RESISTANCE TO HEAT TEST

Test requirements	Test result (mm)
The part is supported so that its upper surface is horizontal and the spherical part of the apparatus is pressed against this surface with a force of 20N. The thickness of the part under test shall be at least 2.5mm.	
- For Rocker (125°C)	Max. 1.4mm
- For parts supporting live parts, switch base (125°C)	Max. 1.2mm
- For cover plate and enclosure (75°C)	Max. 0.9mm
Supplementary information:	

ANNEX 7
RESULT OF MOTOR CONTROL TEST

Test requirements	Test result
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Attachment No. 2

AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
the test shall be conducted with alternating current in a circuit arranged in accordance with the below requirements and switch test of AS/NZS 3112 Clause 3.14.9			
- The power factor of the test circuit:		0.5	
- The test voltage (V)		250V~	
- The test current (A)		40A (for 10A switch); 50A (for 15A switch);	
- Number of operating cycles		50	
The switch shall not fail to interrupt the current, fail in any way electrically or mechanically, and the fine wire fuse shall not rupture.		Pass	
Supplementary information:			
All test models were tested and the most adverse results were recorded.			

RESULTS OF HIGH VOLTAGE TEST NO. 2 (after motor control test)

Tested parts	High voltage	
	Required Test voltage (V a.c.)	Measured Result
With the switch in the "ON" position(s)—between all terminals connected together and the body.	1500	Pass
With the switch in the "ON" position(s)—between each pole in turn and all other terminals connected together and to the body.	1500	Pass
With switch in the "OFF" position(s)—across the switch breaks and to the body:		
(iii) Between all incoming terminals connected together and each outgoing terminal in turn, with other outgoing terminals bonded together and connected to the body – with contact gap $\geq 1.2\text{mm}$	1500	Pass
(iv) Between all outgoing terminals connected together and each incoming terminal in turn, with other incoming terminals bonded together and connected to the body – with contact gap $\geq 1.2\text{mm}$	1500	Pass
Between metal parts of the mechanism, when insulated from live parts, and:		
(iv) Live parts.	1500	N/A
(v) Metal foil in contact with the surface of the knob or a similar actuating member; or the key of key-operated switches, if insulation is required.	1500	N/A
(vi) The point of anchorage of the cord, chain or rod of switches operated by such means, if insulation is required.	1500	N/A
Between any metal enclosure and metal foil in contact with the inner surface of its insulation linings or shroud, if any. This test is only performed if any insulation is necessary.	2500	Pass
Between live parts and accessible metal parts if the metal parts of the mechanism are not insulated from live parts.	2500	N/A
Between live parts and parts of the mechanism:		
(iii) If the latter parts are not insulated from accessible metal parts.	2500	N/A
(iv) If the latter parts are not insulated from the point of contact with a removable key or operating cord, chain or rod.	2500	N/A
Between live parts and metal knobs, push-buttons and metal foil in contact	2500	Pass

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
	with the outer surface of accessible external parts and operating keys of insulating material.		
Supplementary information: All test models were tested and the most adverse results were recorded.			

ANNEX 8**Endurance test for switches intended for fluorescent lamp loads**

Test requirements	Test result (mm)
- way	2
- nominal cross-sectional area (mm ²);	2.5
- number of operating cycles;	2500
- rate (operations per minute);	7.5
- test voltage (Vn); test current (In) (cos φ 0.9);	250V~; 16A
During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts	Pass
After the tests it is possible to make and break the switch by hand, and specimen not show: - wear impairing their further use; - discrepancy between the position of the actuating member (if indicated) and that of the moving contacts - deterioration of enclosures, insulating lining or barriers; - loosening of electrical or mechanical connections; - displacement of moving contacts of switches pattern number 2, 3 or 6/2	Pass
Supplementary information: Test model V16/316B, for extra switch 16A	

Test requirements	Test result (mm)
- way	2
- nominal cross-sectional area (mm ²);	1.5
- number of operating cycles;	5000
- rate (operations per minute);	15
- test voltage (Vn); test current (In) (cos φ 0.9);	250V~; 10A
During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts	Pass
After the tests it is possible to make and break the switch by hand, and specimen not show: - wear impairing their further use; - discrepancy between the position of the actuating member (if indicated) and that of the moving contacts - deterioration of enclosures, insulating lining or barriers; - loosening of electrical or mechanical connections; - displacement of moving contacts of switches pattern number 2, 3 or 6/2	Pass
Supplementary information: Test model V16/316A, for extra switch 10A	

RESULTS OF TEMPERATURE RISE TEST (after fluorescent lamp load endurance)

Test current: 10AX/16AX

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Clause	Requirement+Test	Result-Remark	Verdict
Nominal cross-section area of cable (mm ²): 1.5(for 10A); 2.5(for 16A)			
Test requirements (K)		Test result (K)	
Test model V16/316A, for extra switch 10AX			
Temperature rise on termination 1:≤40 (For extra switch terminal)		Max. 21.2	
Temperature rise on termination C :≤40 (For extra switch terminal)		Max. 21.7	
Test model V16/316B, for extra switch 16AX			
Temperature rise on termination 1:≤40 (For extra switch terminal)		Max. 33.8	
Temperature rise on termination C :≤40 (For extra switch terminal)		Max. 33.3	
Supplementary information:			

RESULTS OF HIGH VOLTAGE TEST NO. 2 (after fluorescent lamp load endurance)

Tested parts	High voltage	
	Required	Measured
	Test voltage (V a.c.)	Result
With the switch in the "ON" position(s)—between all terminals connected together and the body.	1500	Pass
With the switch in the "ON" position(s)—between each pole in turn and all other terminals connected together and to the body.	1500	Pass
With switch in the "OFF" position(s)—across the switch breaks and to the body:		
(iii) Between all incoming terminals connected together and each outgoing terminal in turn, with other outgoing terminals bonded together and connected to the body – with contact gap ≥ 1.2mm	1500	Pass
(iv) Between all outgoing terminals connected together and each incoming terminal in turn, with other incoming terminals bonded together and connected to the body – with contact gap ≥ 1.2mm	1500	Pass
Between metal parts of the mechanism, when insulated from live parts, and:		
(iv) Live parts.	1500	N/A
(v) Metal foil in contact with the surface of the knob or a similar actuating member; or the key of key-operated switches, if insulation is required.	1500	N/A
(vi) The point of anchorage of the cord, chain or rod of switches operated by such means, if insulation is required.	1500	N/A
Between any metal enclosure and metal foil in contact with the inner surface of its insulation linings or shroud, if any. This test is only performed if any insulation is necessary.	2500	Pass
Between live parts and accessible metal parts if the metal parts of the mechanism are not insulated from live parts.	2500	N/A
Between live parts and parts of the mechanism:		
(iii) If the latter parts are not insulated from accessible metal parts.	2500	N/A
(iv) If the latter parts are not insulated from the point of contact with a removable key or operating cord, chain or rod.	2500	N/A
Between live parts and metal knobs, push-buttons and metal foil in contact with the outer surface of accessible external parts and operating keys of insulating material.	2500	Pass
Supplementary information:		
Test model V16/316B		

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict

ANNEX 9**Test for switches intended for self-ballasted lamp loads**

Test requirements	Test result (mm)
- way	2
- nominal cross-sectional area (mm ²);	2.5
- test voltage (Vn); test current (In) (cos φ 0.9);	250V~; 16A
During this test, the switch shall be operated so that the test apparatus does not interfere with the normal action of the switch mechanism and the free movement of the actuating member.	Pass
After these tests, it shall also be possible to make and break the switch by hand in the test circuit and the specimen shall not show: - wear impairing their further use; - discrepancy between the position of the actuating member and that of the moving contacts, if the position of the actuating member is indicated; - deterioration of the enclosures, insulating lining or barriers to such an extent that the switch cannot be further operated or allow access to live parts after all of the detachable parts have been removed;; - loosening of electrical or mechanical connections; - seepage of sealing compound.	Pass
Supplementary information: Test model V16/316B, for extra switch 16A	

Test requirements	Test result (mm)
- way	2
- nominal cross-sectional area (mm ²);	1.5
- test voltage (Vn); test current (In) (cos φ 0.9);	250V~; 10A
During this test, the switch shall be operated so that the test apparatus does not interfere with the normal action of the switch mechanism and the free movement of the actuating member.	Pass
After these tests, it shall also be possible to make and break the switch by hand in the test circuit and the specimen shall not show: - wear impairing their further use; - discrepancy between the position of the actuating member and that of the moving contacts, if the position of the actuating member is indicated; - deterioration of the enclosures, insulating lining or barriers to such an extent that the switch cannot be further operated or allow access to live parts after all of the detachable parts have been removed;; - loosening of electrical or mechanical connections; - seepage of sealing compound.	Pass
Supplementary information: Test model V16/316A, for extra switch 10A	

RESULTS OF TEMPERATURE RISE TEST (after self-ballasted lamp load test)

Test current: 10AX/16AX	
Nominal cross-section area of cable (mm ²): 1.5(for 10A); 2.5(for 16A)	
Test requirements (K)	Test result (K)
Test model V16/316A, for extra switch 10AX	

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AS 3133			
Clause	Requirement+Test	Result-Remark	Verdict
Temperature rise on termination 1:≤40 (For extra switch terminal)		Max. 21.5	
Temperature rise on termination C :≤40 (For extra switch terminal)		Max. 21.3	
Test model V16/316B, for extra switch 16AX			
Temperature rise on termination 1:≤40 (For extra switch terminal)		Max. 32.9	
Temperature rise on termination C :≤40 (For extra switch terminal)		Max. 32.6	
Supplementary information:			

RESULTS OF HIGH VOLTAGE TEST NO. 2 (after self-ballasted lamp load test)

Tested parts	High voltage	
	Required	Measured
	Test voltage (V a.c.)	Result
With the switch in the "ON" position(s)—between all terminals connected together and the body.	1500	Pass
With the switch in the "ON" position(s)—between each pole in turn and all other terminals connected together and to the body.	1500	Pass
With switch in the "OFF" position(s)—across the switch breaks and to the body:		
(iii) Between all incoming terminals connected together and each outgoing terminal in turn, with other outgoing terminals bonded together and connected to the body – with contact gap ≥ 1.2mm	1500	Pass
(iv) Between all outgoing terminals connected together and each incoming terminal in turn, with other incoming terminals bonded together and connected to the body – with contact gap ≥ 1.2mm	1500	Pass
Between metal parts of the mechanism, when insulated from live parts, and:		
(iv) Live parts.	1500	N/A
(v) Metal foil in contact with the surface of the knob or a similar actuating member; or the key of key-operated switches, if insulation is required.	1500	N/A
(vi) The point of anchorage of the cord, chain or rod of switches operated by such means, if insulation is required.	1500	N/A
Between any metal enclosure and metal foil in contact with the inner surface of its insulation linings or shroud, if any. This test is only performed if any insulation is necessary.	2500	Pass
Between live parts and accessible metal parts if the metal parts of the mechanism are not insulated from live parts.	2500	N/A
Between live parts and parts of the mechanism:		
(iii) If the latter parts are not insulated from accessible metal parts.	2500	N/A
(iv) If the latter parts are not insulated from the point of contact with a removable key or operating cord, chain or rod.	2500	N/A
Between live parts and metal knobs, push-buttons and metal foil in contact with the outer surface of accessible external parts and operating keys of insulating material.	2500	Pass
Supplementary information:		

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Clause	Requirement+Test	Result-Remark	Verdict
Test model V16/316B			

ANNEX 10
LEAKAGE CURRENT TEST

Test Voltage:	
Leakage current measured:	Test
N/A	N/A
Supplementary information:	

ANNEX 11
IMPULSE VOLTAGE TEST

Test requirements	Test result (mm)
Three positive and three negative impulses shall be applied at minimum intervals of 1 s	
Test Voltage:	N/A
During the test: There is no unintentional disruptive discharges during the test.	N/A
Supplementary information:	

ANNEX 12
MECHANICAL STRENGTH TEST

Test requirements	Test result (mm)
- Test force (N)	N/A
- Test time;	N/A
- The direction of the force:	N/A
After the test: the means of indicating the position of the contact(s) do not incorrectly indicate the 'open' position.	N/A
Supplementary information:	

Attachment No. 3: Critical Components list

TABLE: Critical Components Information					
Object/ part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark (s) of conformity
Cover plate, Frame enclosure (Plastic)	Jiangxi Jiancheng Plastic Co., Ltd	PC-001	V-0, Min. 2.0mm thickness, 120°C	AS/NZS 3112, AS/NZS 3133, AS/NZS 3100	Test with product
Base (gray)	Jiangxi Jiancheng Plastic Co., Ltd	PC-003	V-0, Min. 2.0mm thickness, 120°C	AS/NZS 3112, AS/NZS 3133, AS/NZS 3100	Test with product
Incorporated switch	Wenzhou Weiwei Electric Co., Ltd	WW-001	250Va.c., 10AX	AS/NZS 3112, AS/NZS 3133, AS/NZS 3100	Test with product
Incorporated switch	Wenzhou Weiwei Electric Co., Ltd	WW-007	250Va.c., 16AX	AS/NZS 3112, AS/NZS 3133, AS/NZS 3100	Test with product
Switch rocker	Jiangxi Jiancheng Plastic Co., Ltd	PC-001	V-0, Min. 2.0mm thickness, 120°C	AS/NZS 3112, AS/NZS 3133, AS/NZS 3100	Test with product
Switch base	Jiangxi Jiancheng Plastic Co., Ltd	PC-003	V-0, Min. 2.0mm thickness, 120°C	AS/NZS 3112, AS/NZS 3133, AS/NZS 3100	Test with product
Moving contacts of switch	Wenzhou Weiwei Electric Co., Ltd	WW-002	Copper content 68%	AS/NZS 3112, AS/NZS 3133, AS/NZS 3100	Test with product
Terminals (A, N, E)	Wenzhou Baizheng Technology Co., Ltd	BZ-001	Copper content 68%	AS/NZS 3112, AS/NZS 3133, AS/NZS 3100	Test with product
Contacts of Socket outlets	Wenzhou Weiwei Electric Co., Ltd	WW-004	Copper content 68%	AS/NZS 3112, AS/NZS 3133, AS/NZS 3100	Test with product
Internal copper conductor	Wenzhou Weiwei Electric Co., Ltd	WW-005	Copper content 68%	AS/NZS 3112, AS/NZS 3133, AS/NZS 3100	Test with product
Supplementary information:					

Attachment No. 4: Photo documentation

Photo documentation

Photo 1

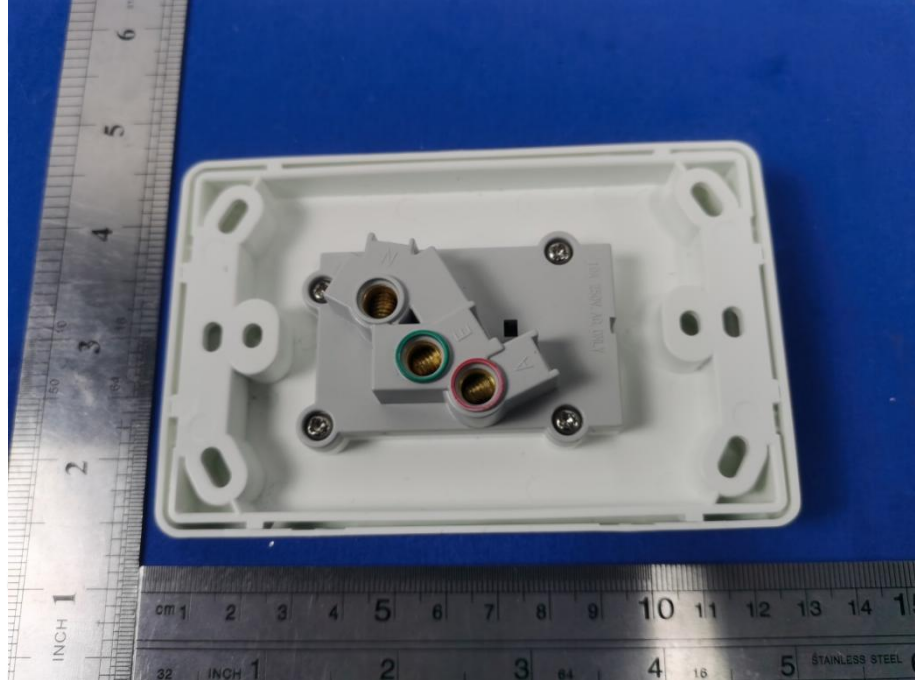
External View



Model: V15/313A (Rating: 250Va.c., 10A)

Photo 2

External View



Model: V15/313A (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 3

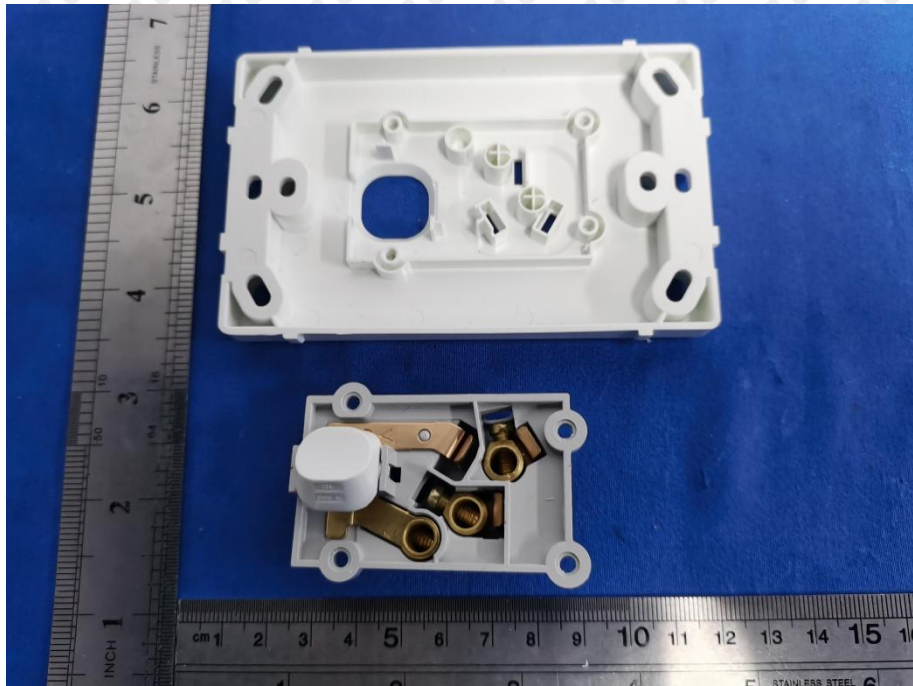
Internal View



Model: V15/313A (Rating: 250Va.c., 10A)

Photo 4

Internal View

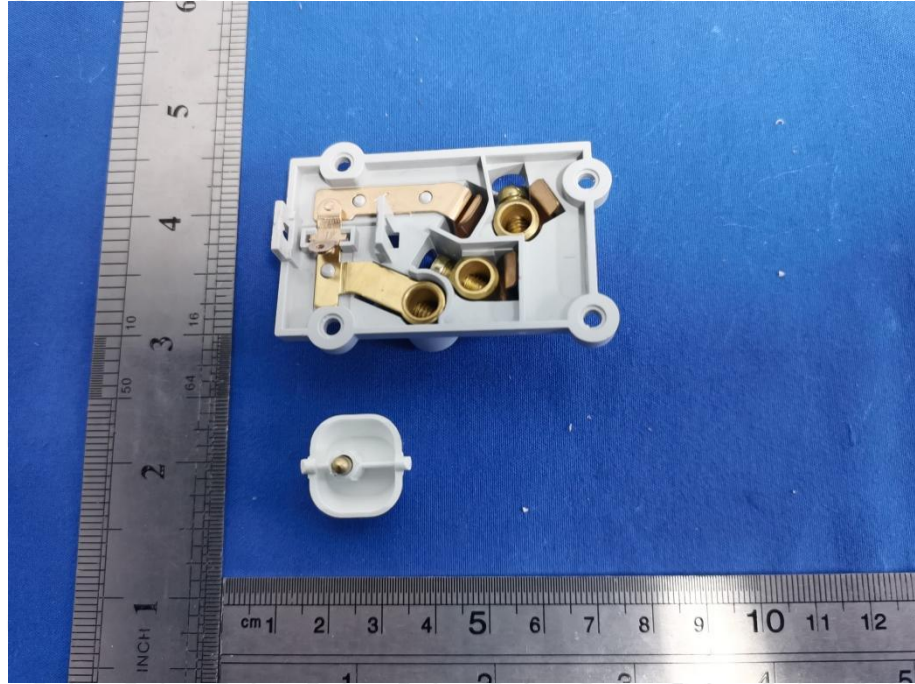


Model: V15/313A (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 5

Internal View



Model: V15/313A (Rating: 250Va.c., 10A)

Photo 6

External View

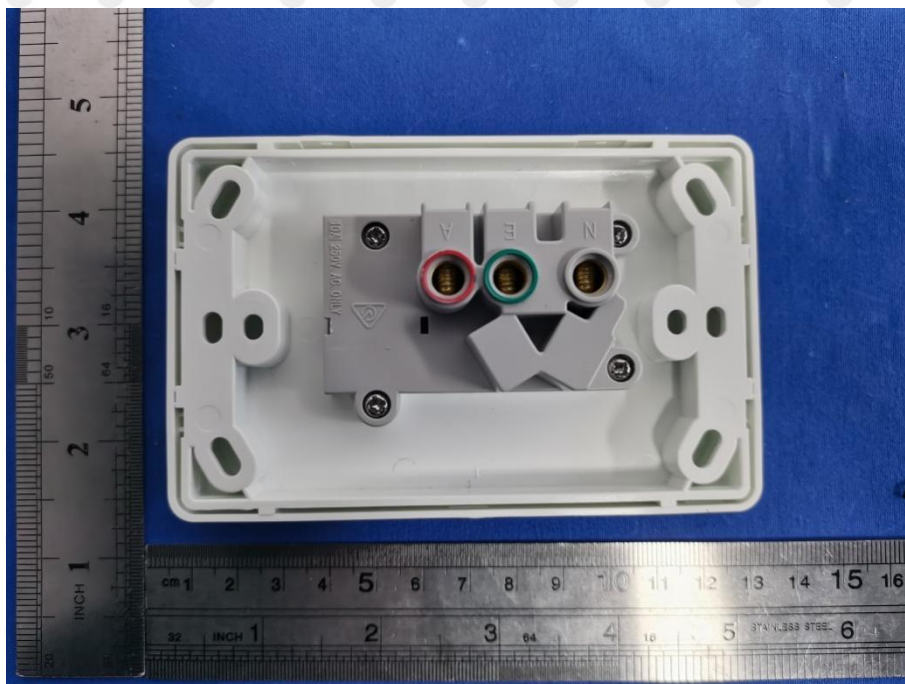


Model: V15/313B (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 7

External View



Model: V15/313B (Rating: 250Va.c., 10A)

Photo 8

Internal View

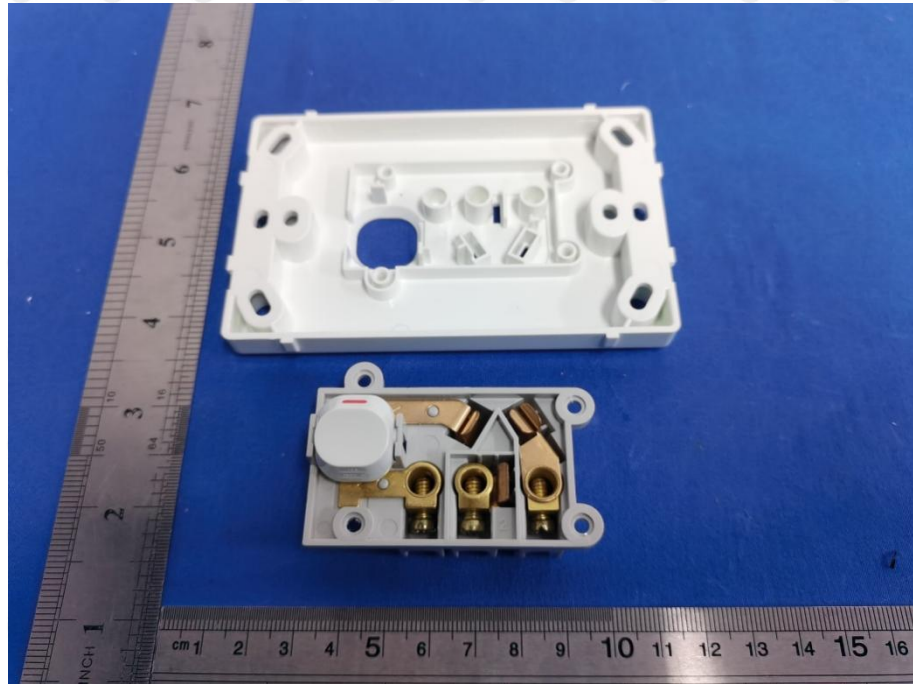


Model: V15/313B (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 9

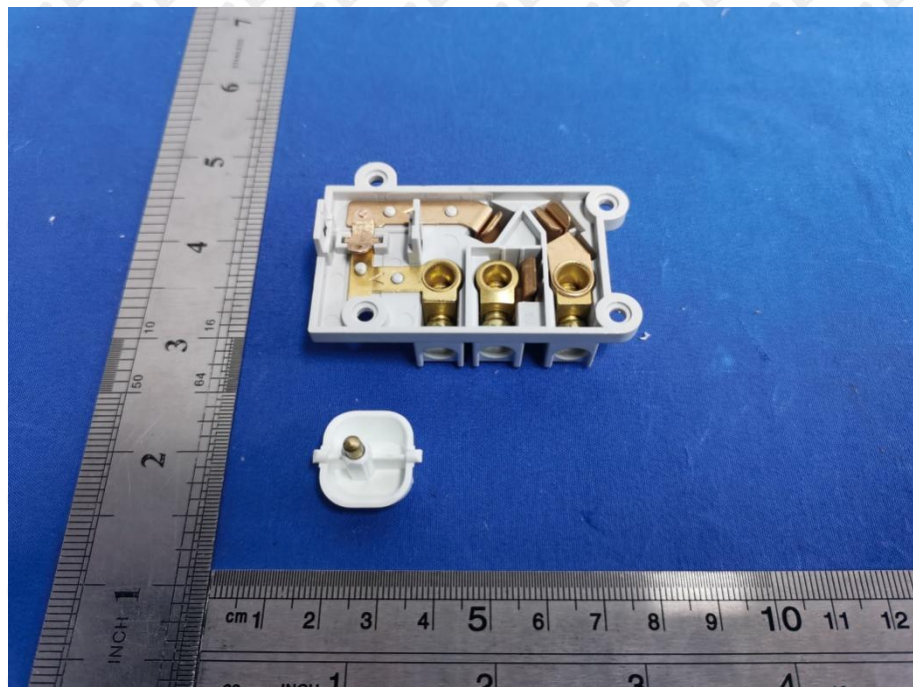
Internal View



Model: V15/313B (Rating: 250Va.c., 10A)

Photo 10

Internal View



Model: V15/313B (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 11

External View



Model: V15/335 (Rating: 250Va.c., 15A)

Photo 12

External View



Model: V15/335 (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 13

Internal View



Model: V15/335 (Rating: 250Va.c., 15A)

Photo 14

External View

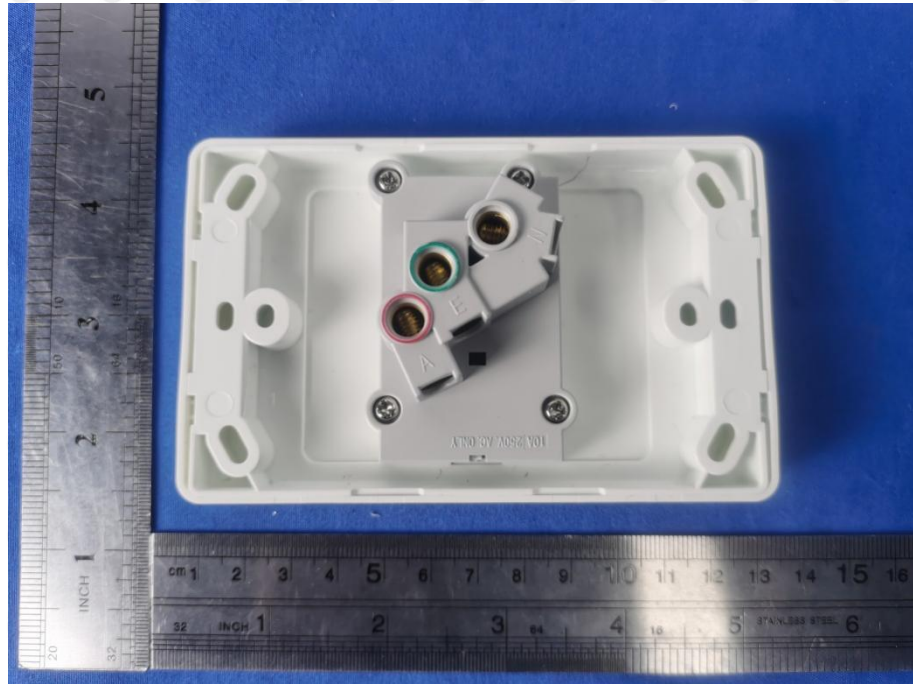


Model: V19/313-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 15

External View



Model: V19/313-V (Rating: 250Va.c., 10A)

Photo 16

Internal View

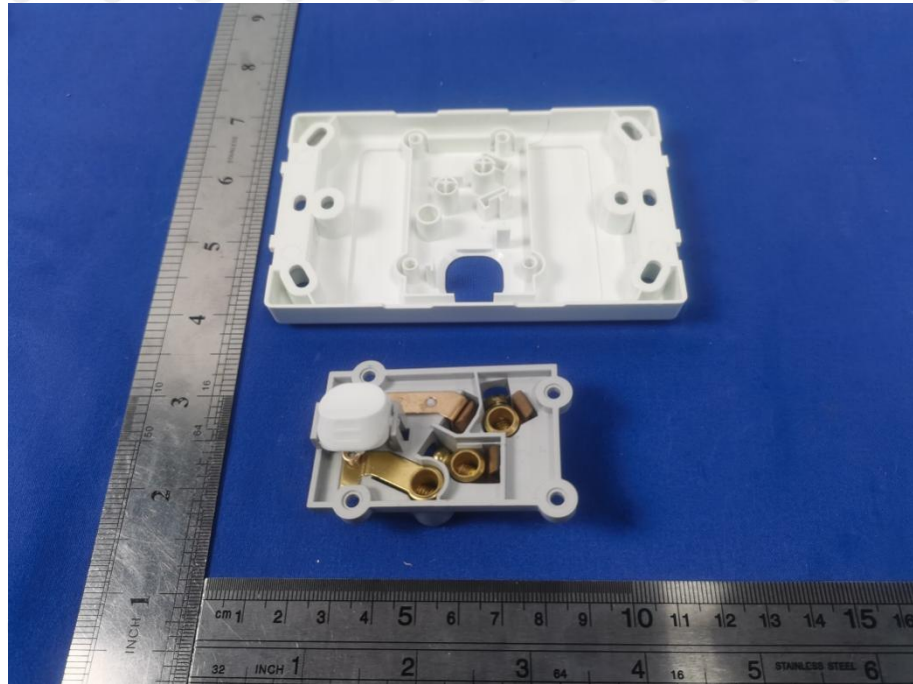


Model: V19/313-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 17

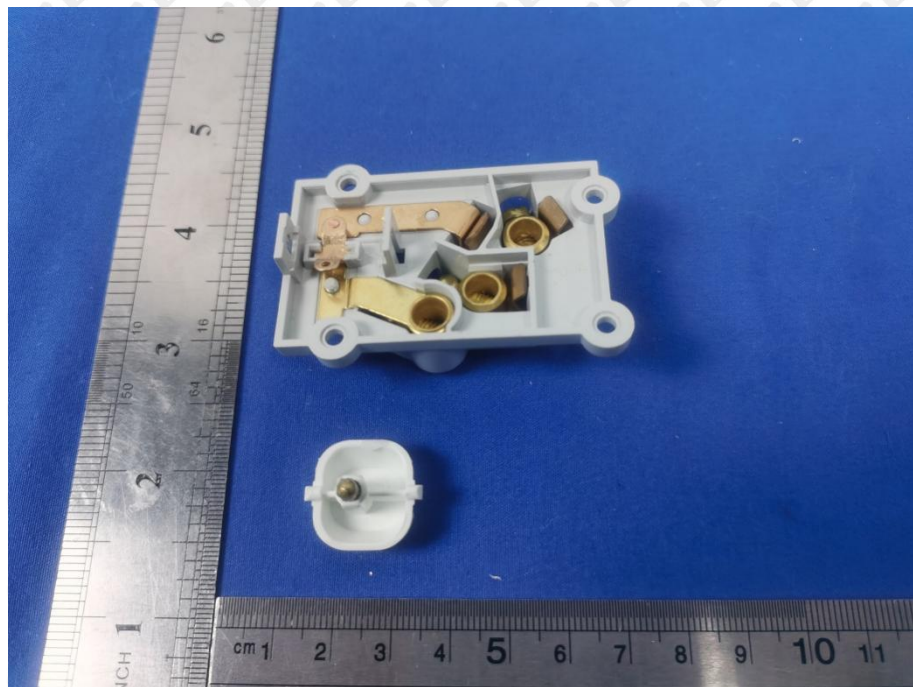
Internal View



Model: V19/313-V (Rating: 250Va.c., 10A)

Photo 18

Internal View



Model: V19/313-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 19

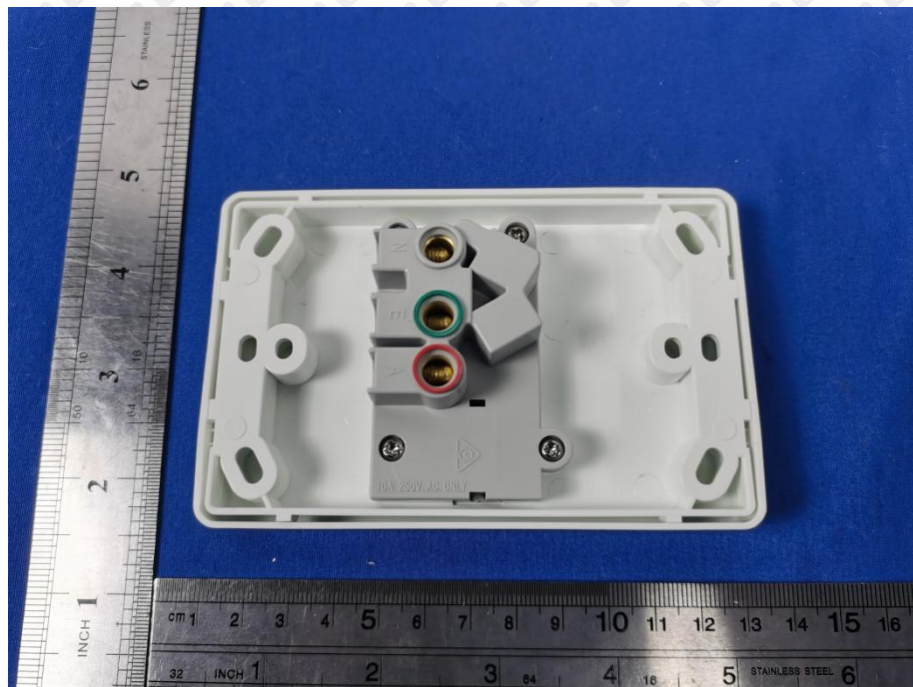
External View



Model: V15/313-V (Rating: 250Va.c., 10A)

Photo 20

External View



Model: V15/313-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 21

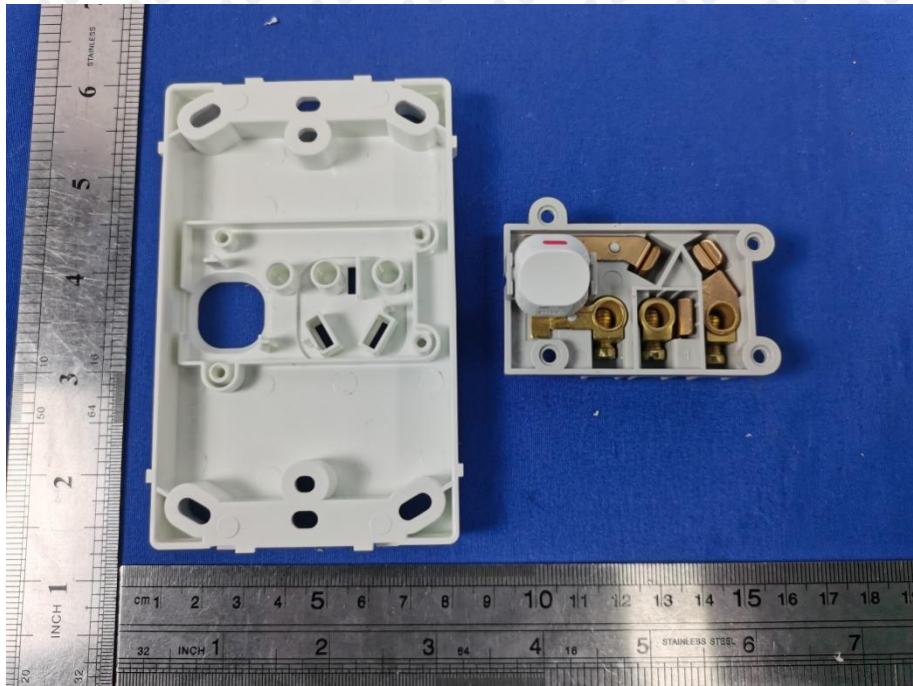
Internal View



Model: V15/313-V (Rating: 250Va.c., 10A)

Photo 22

Internal View

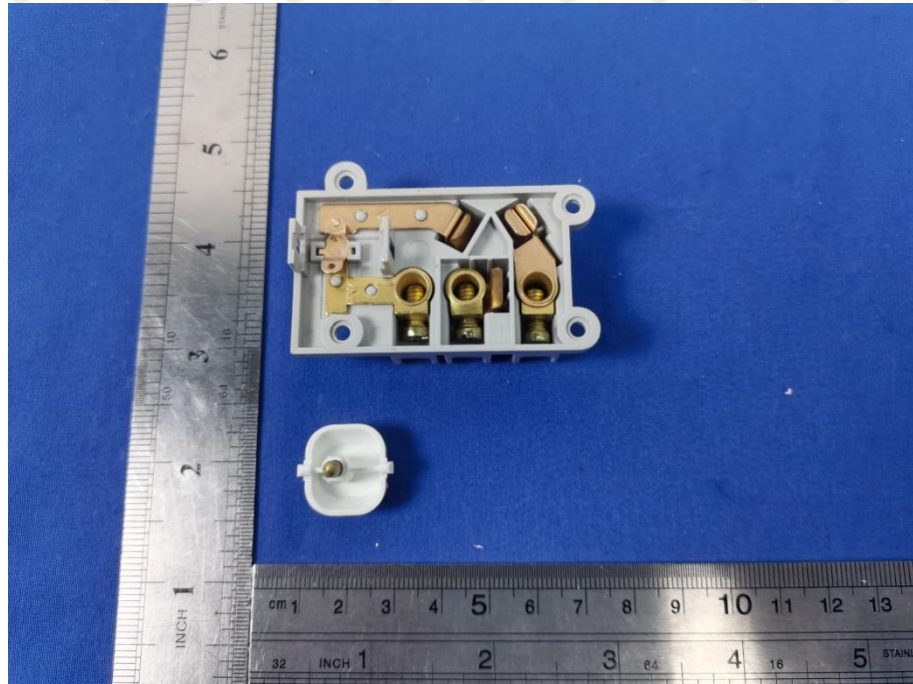


Model: V15/313-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 23

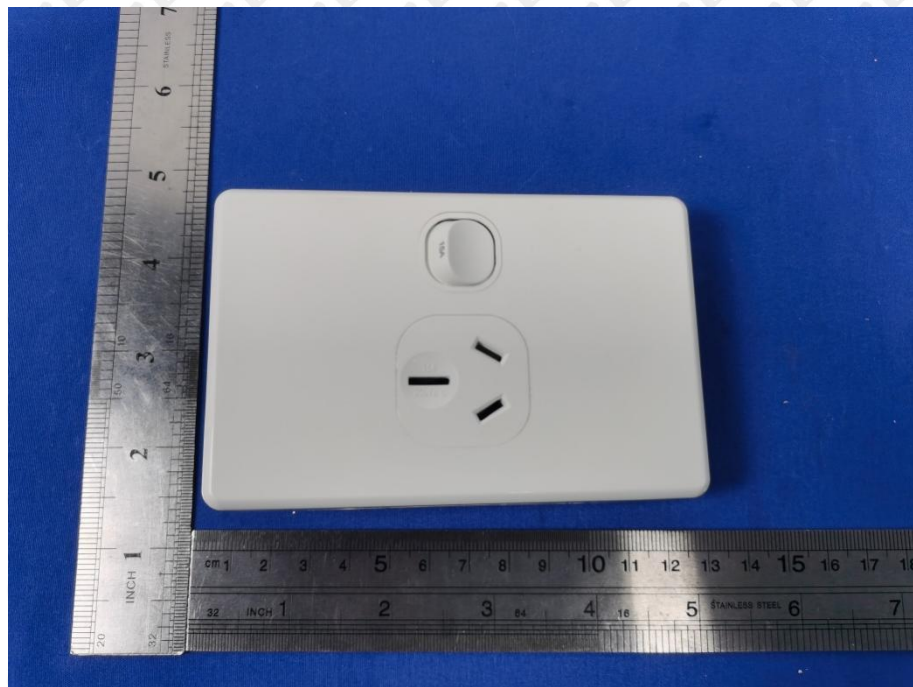
Internal View



Model: V15/313-V (Rating: 250Va.c., 10A)

Photo 24

External View

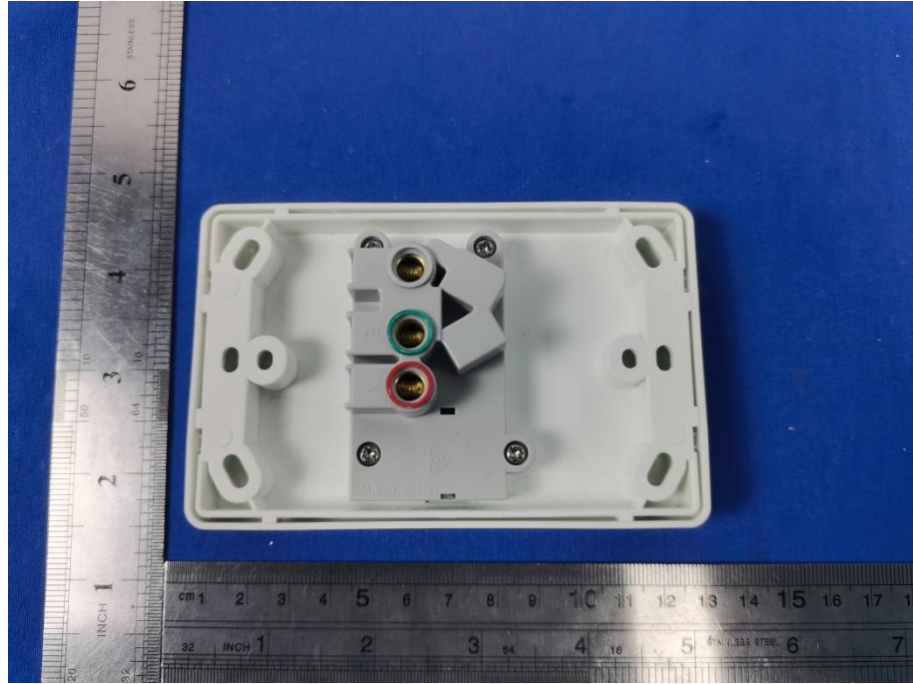


Model: V15/335-V (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 25

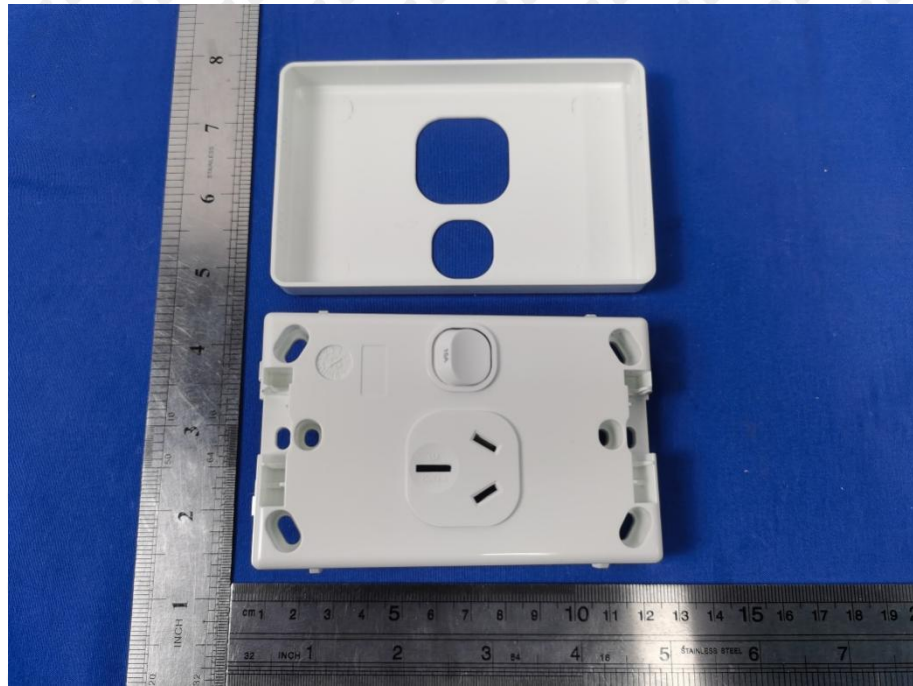
External View



Model: V15/335-V (Rating: 250Va.c., 15A)

Photo 26

Internal View



Model: V15/335-V (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 27

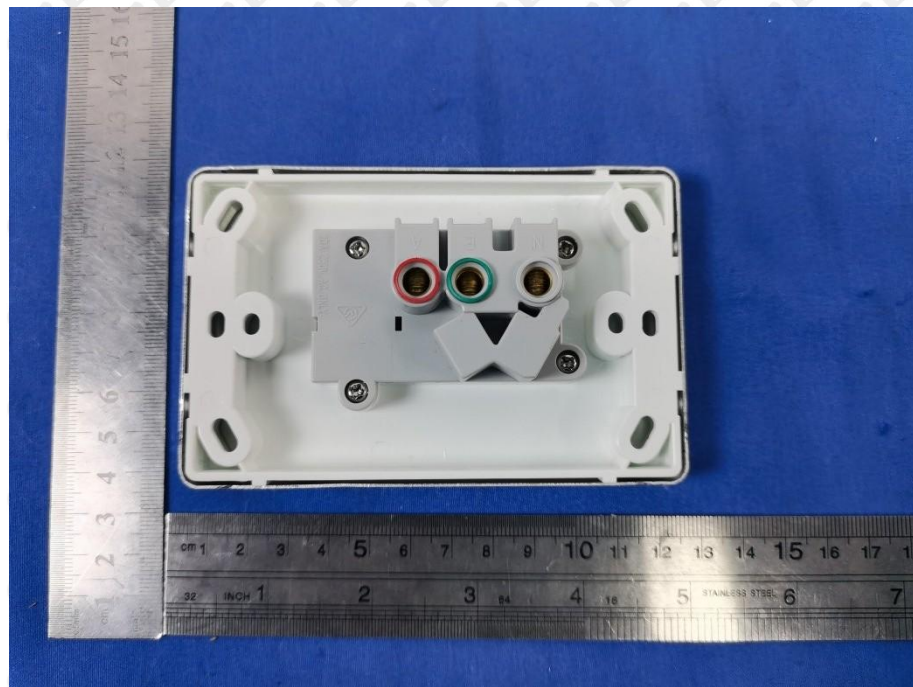
External View



Model: V16/313 (Rating: 250Va.c., 10A)

Photo 28

External View

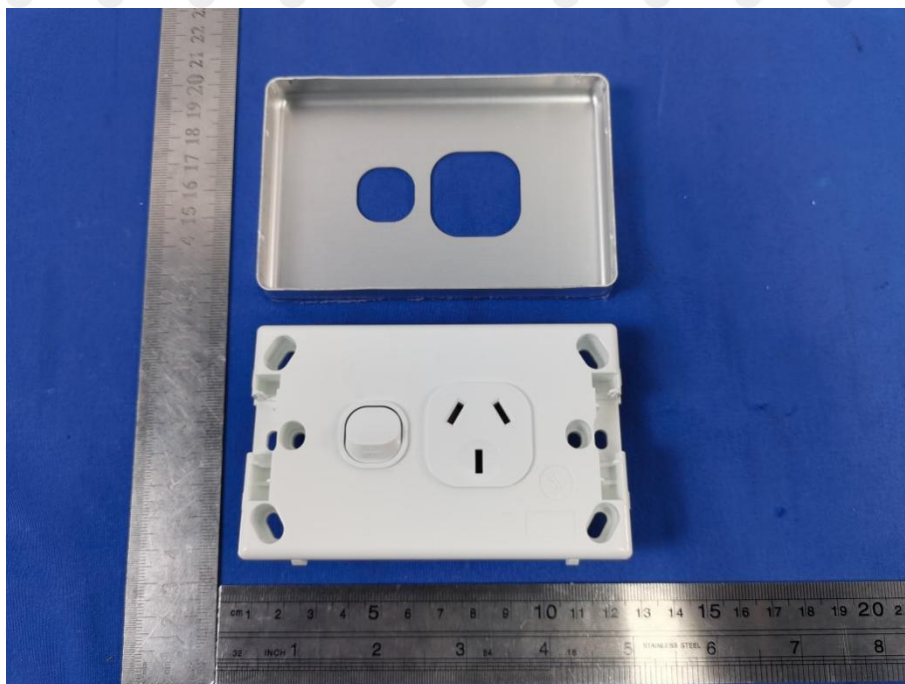


Model: V16/313 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 29

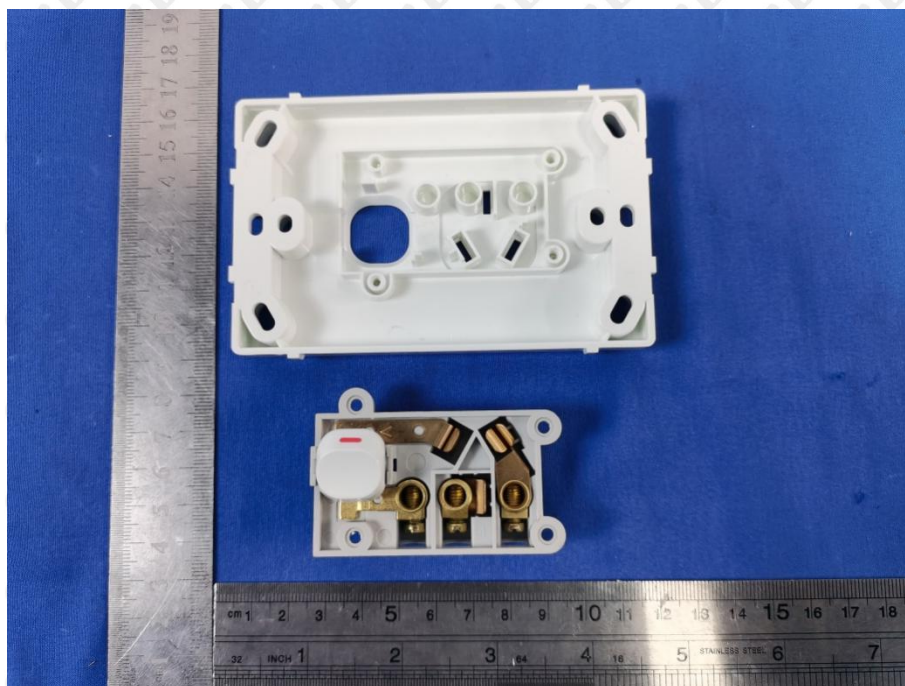
Internal View



Model: V16/313 (Rating: 250Va.c., 10A)

Photo 30

Internal View

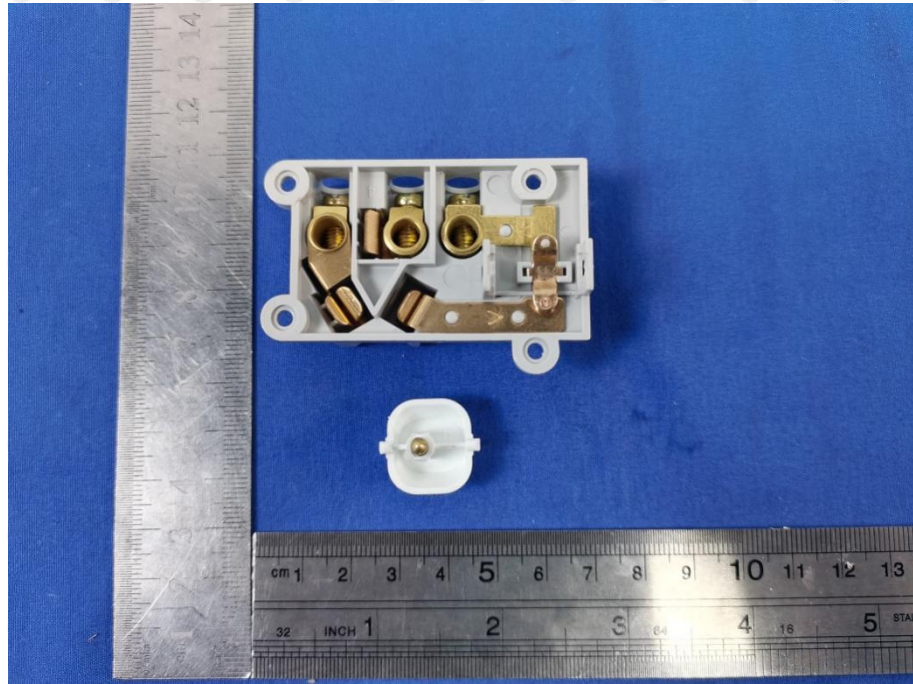


Model: V16/313 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 31

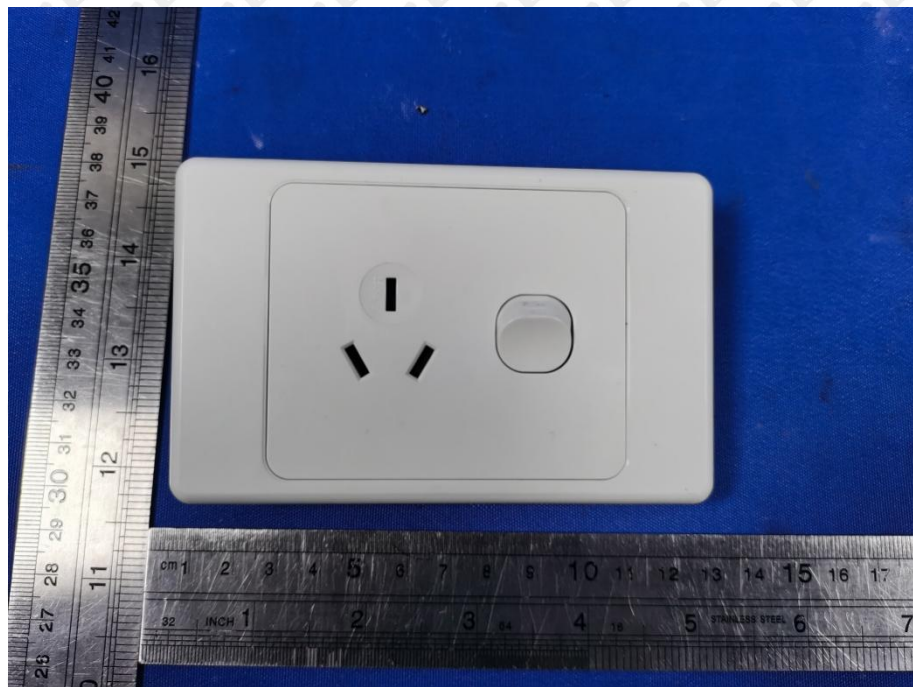
Internal View



Model: V16/313 (Rating: 250Va.c., 10A)

Photo 32

External View

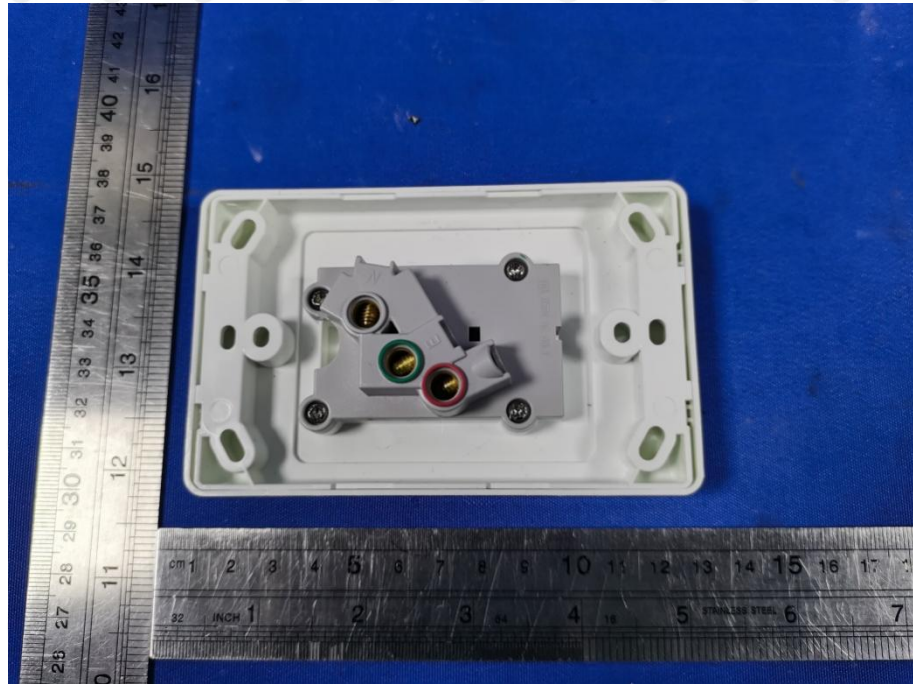


Model: V19/313 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 33

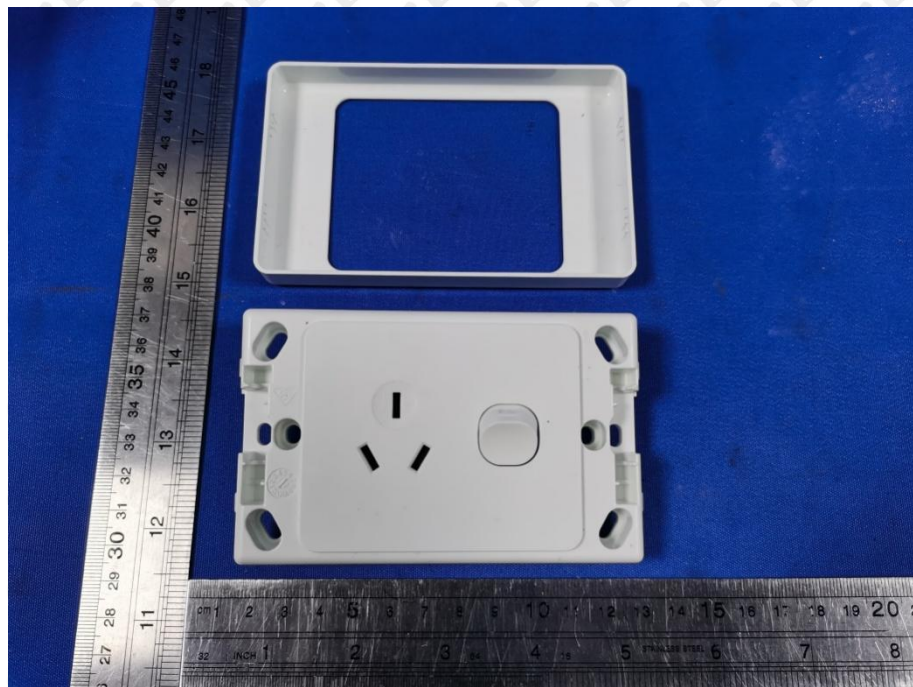
External View



Model: V19/313 (Rating: 250Va.c., 10A)

Photo 34

Internal View

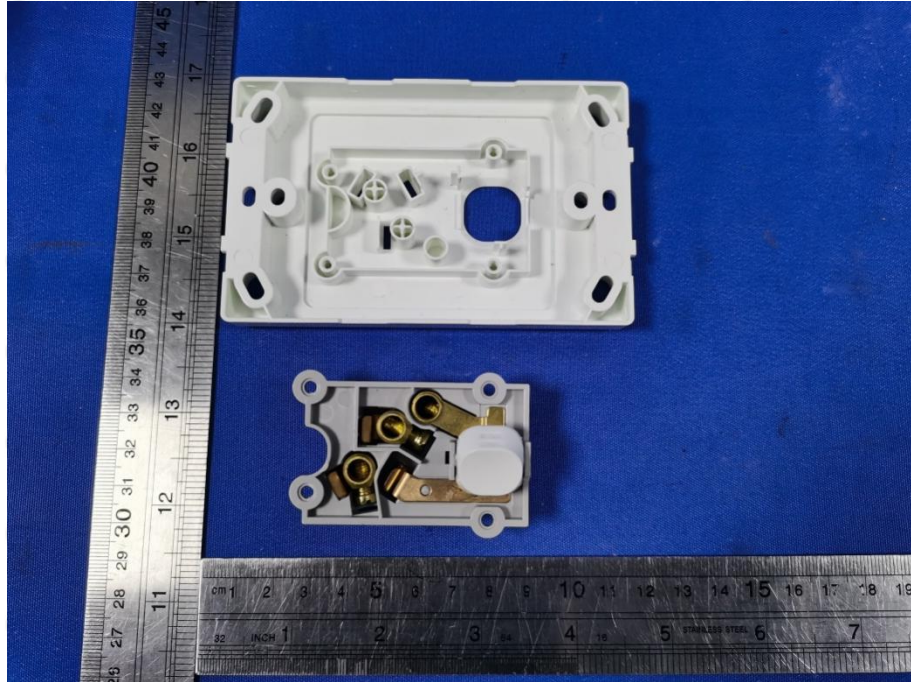


Model: V19/313 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 35

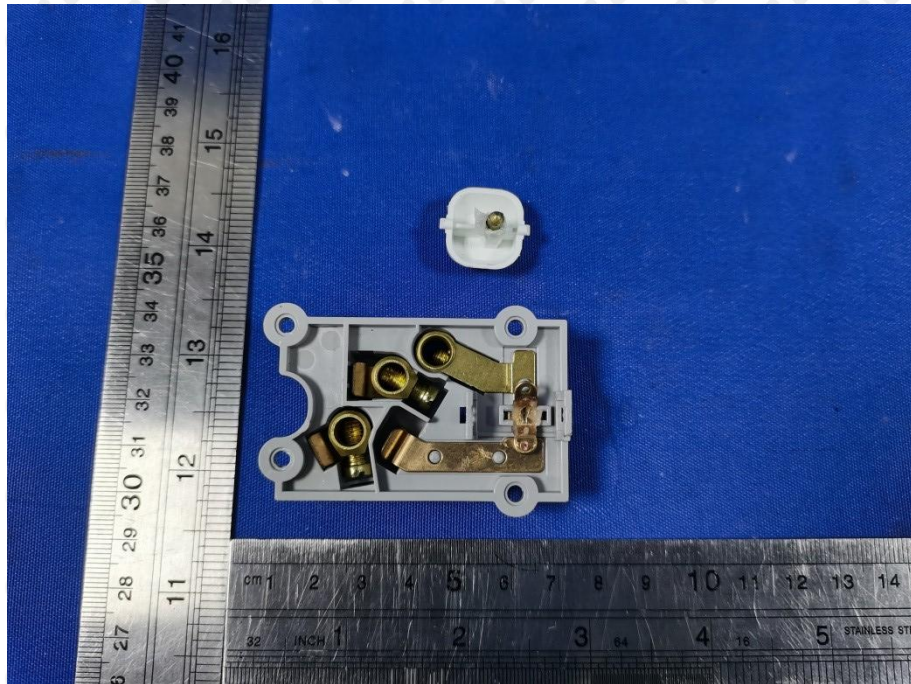
Internal View



Model: V19/313 (Rating: 250Va.c., 10A)

Photo 36

Internal View

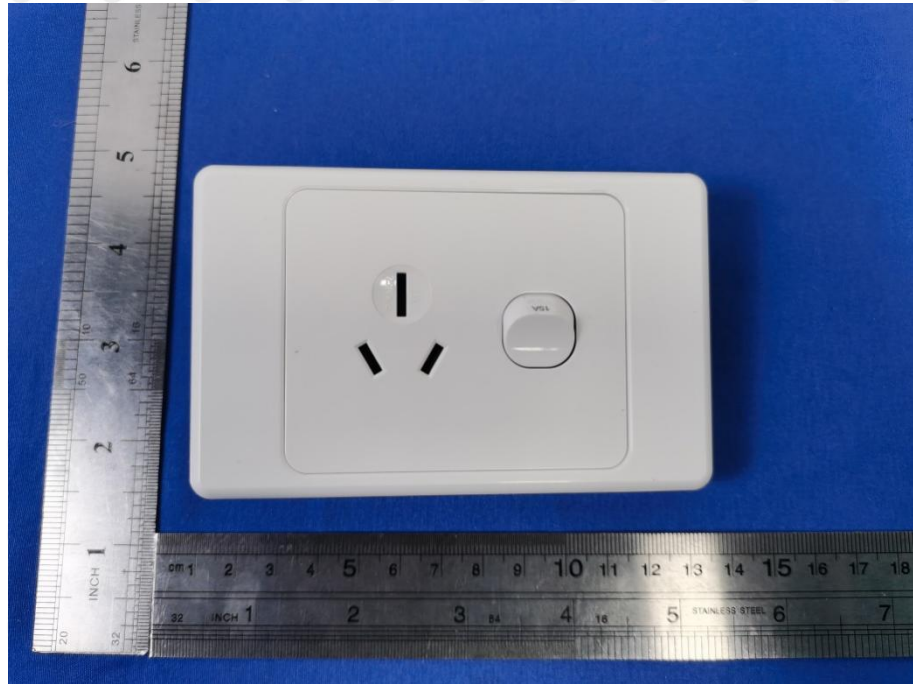


Model: V19/313 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 37

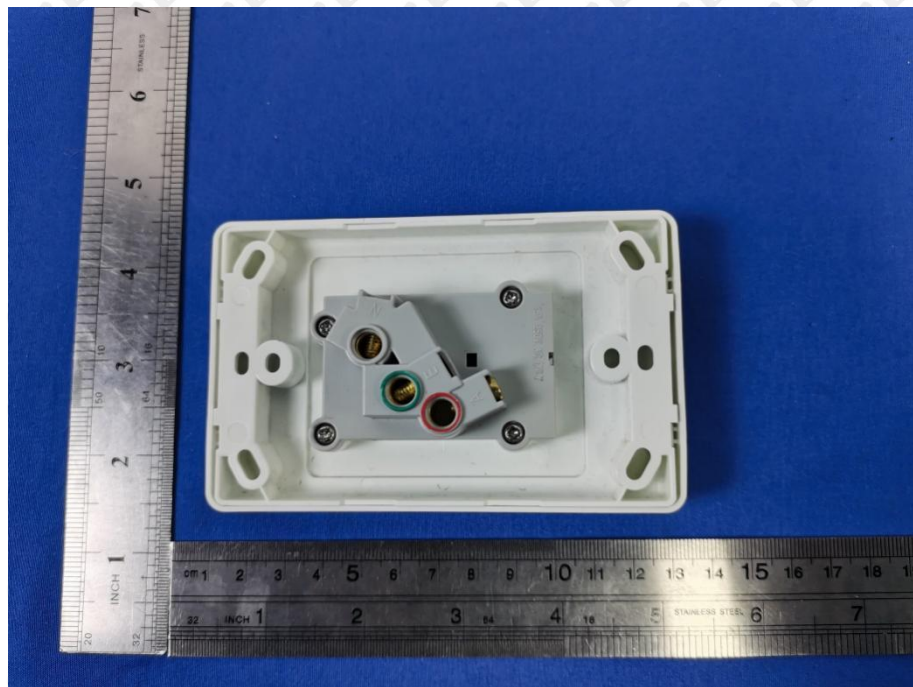
External View



Model: V19/335 (Rating: 250Va.c., 15A)

Photo 38

External View

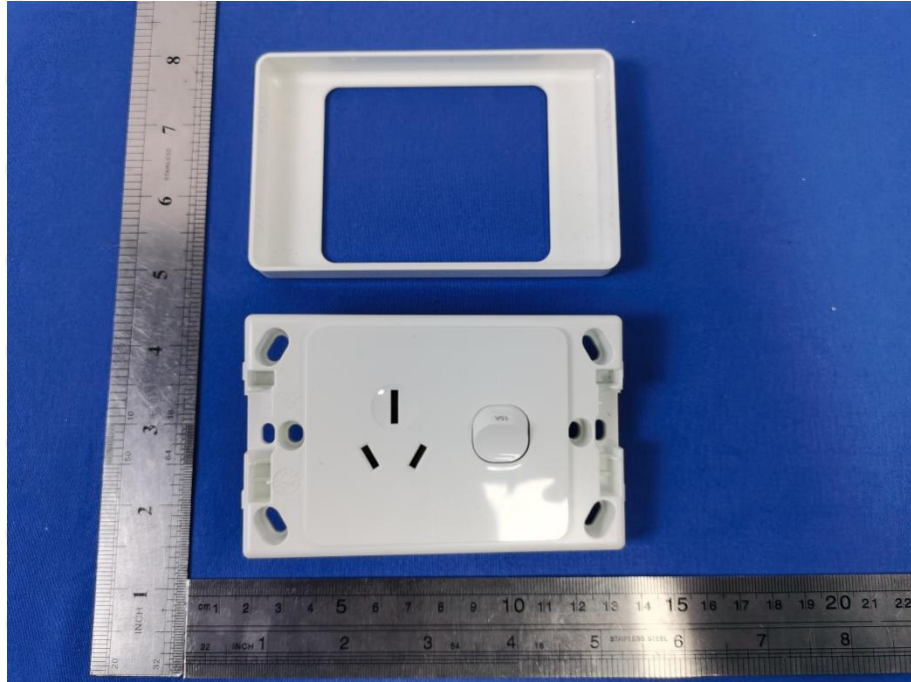


Model: V19/335 (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 39

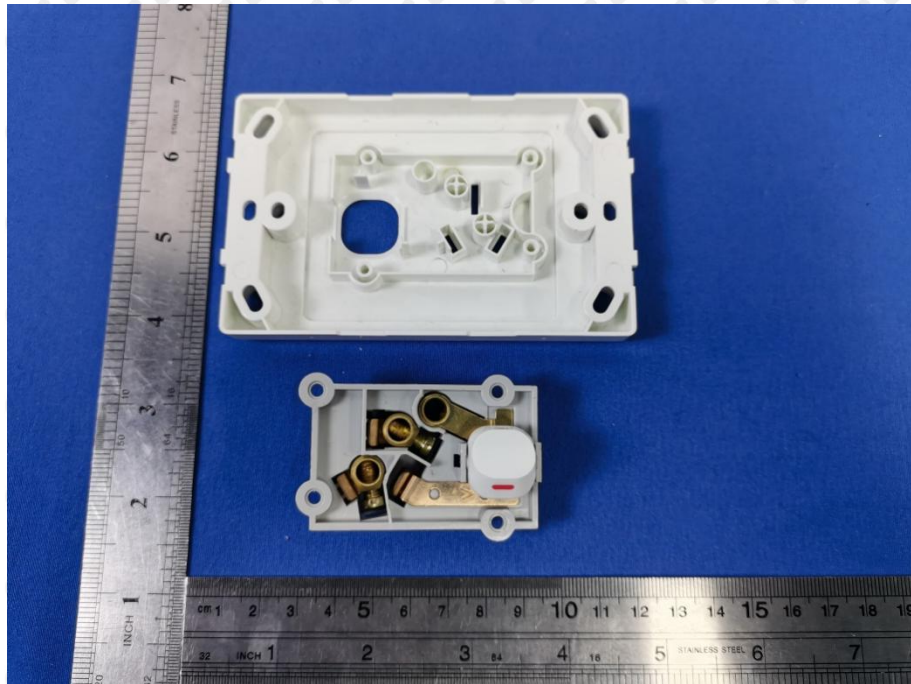
Internal View



Model: V19/335 (Rating: 250Va.c., 15A)

Photo 40

Internal View

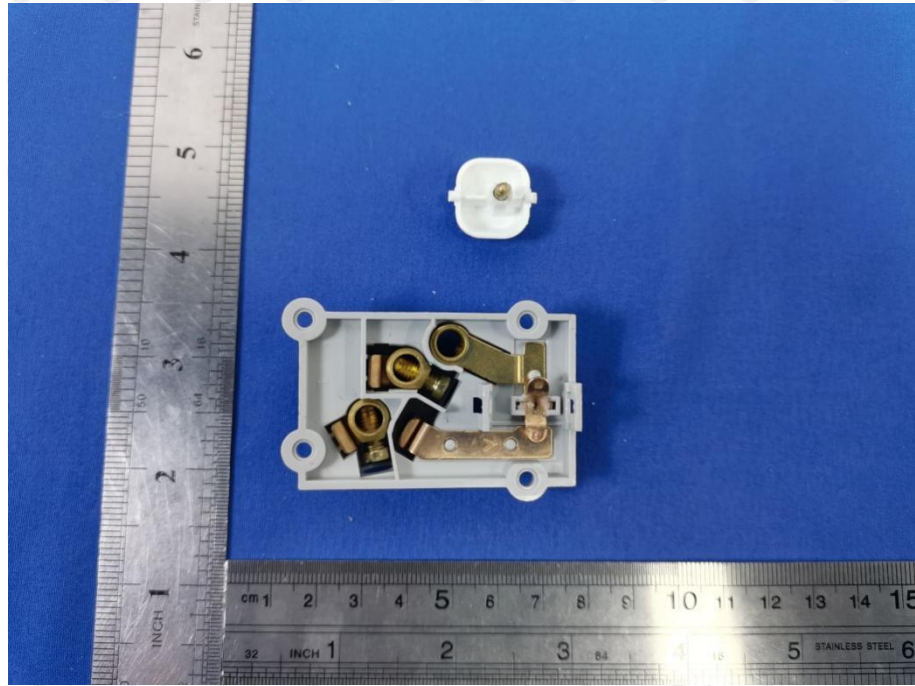


Model: V19/335 (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 41

Internal View



Model: V19/335 (Rating: 250Va.c., 15A)

Photo 42

External View

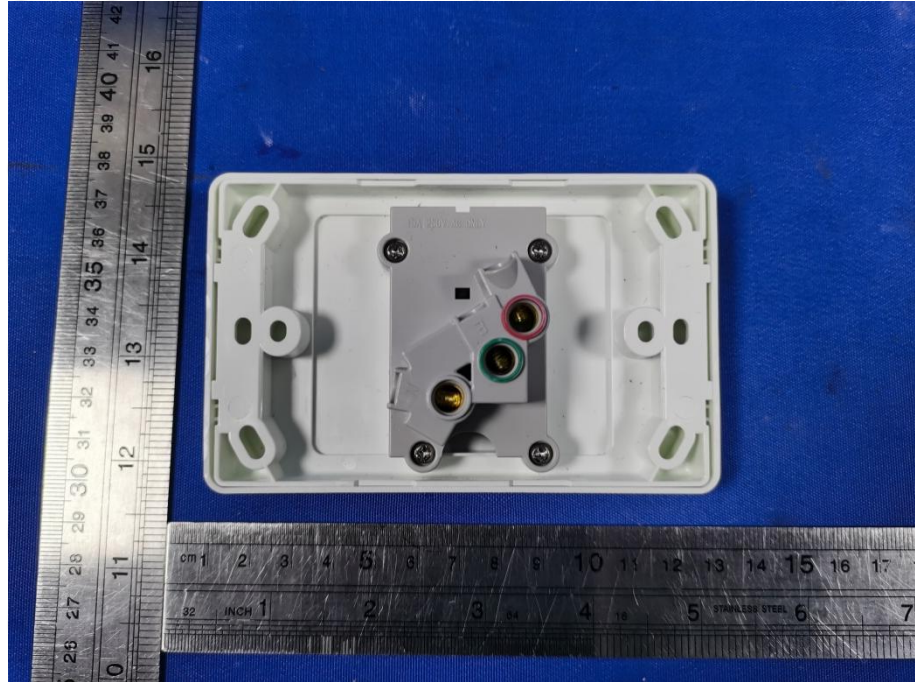


Model: V19/335-V (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 43

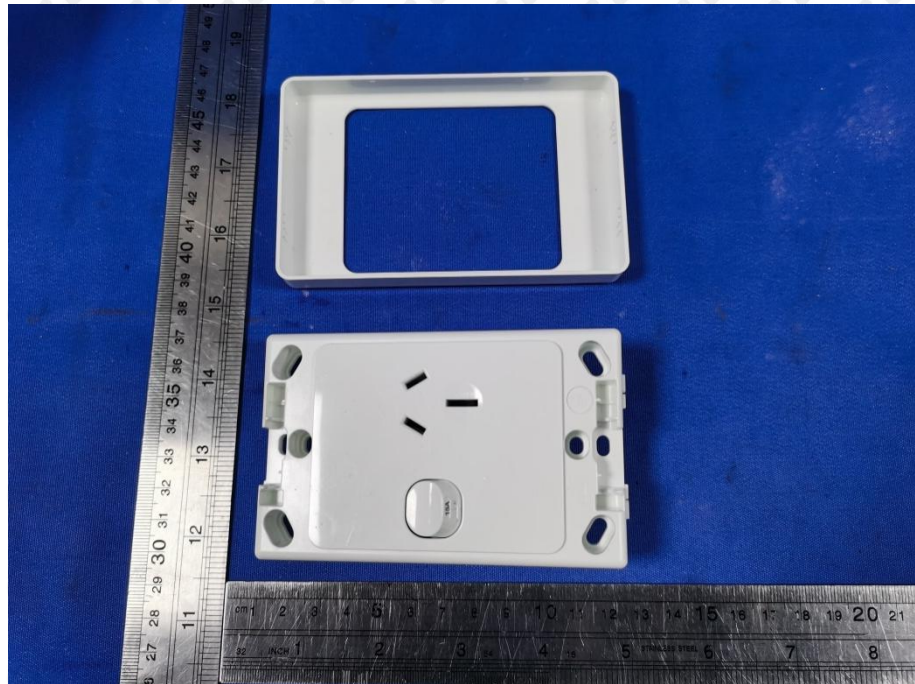
External View



Model: V19/335-V (Rating: 250Va.c., 15A)

Photo 44

Internal View

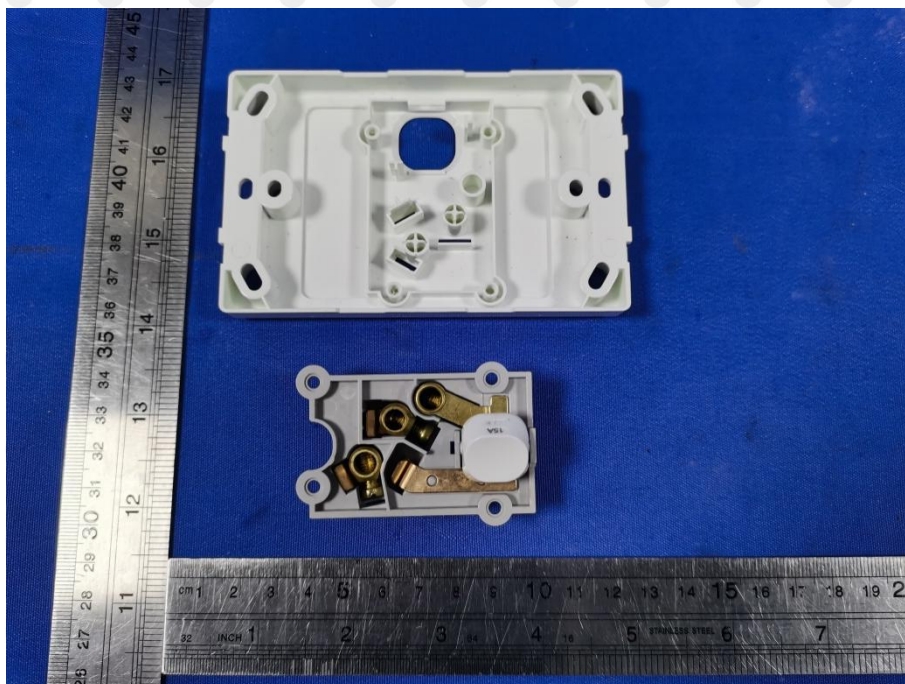


Model: V19/335-V (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 45

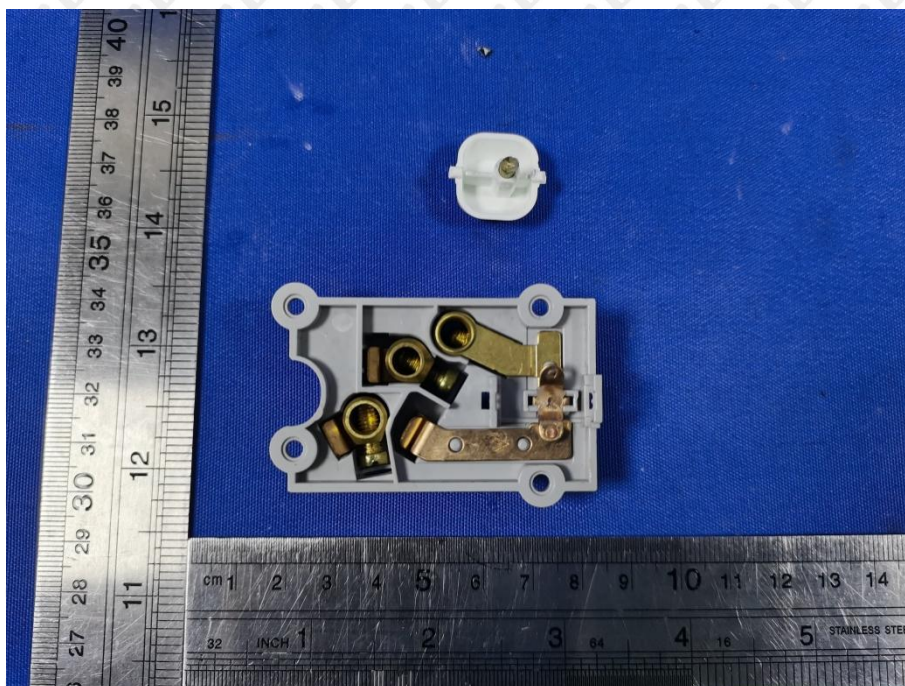
Internal View



Model: V19/335-V (Rating: 250Va.c., 15A)

Photo 46

Internal View



Model: V19/335-V (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 47

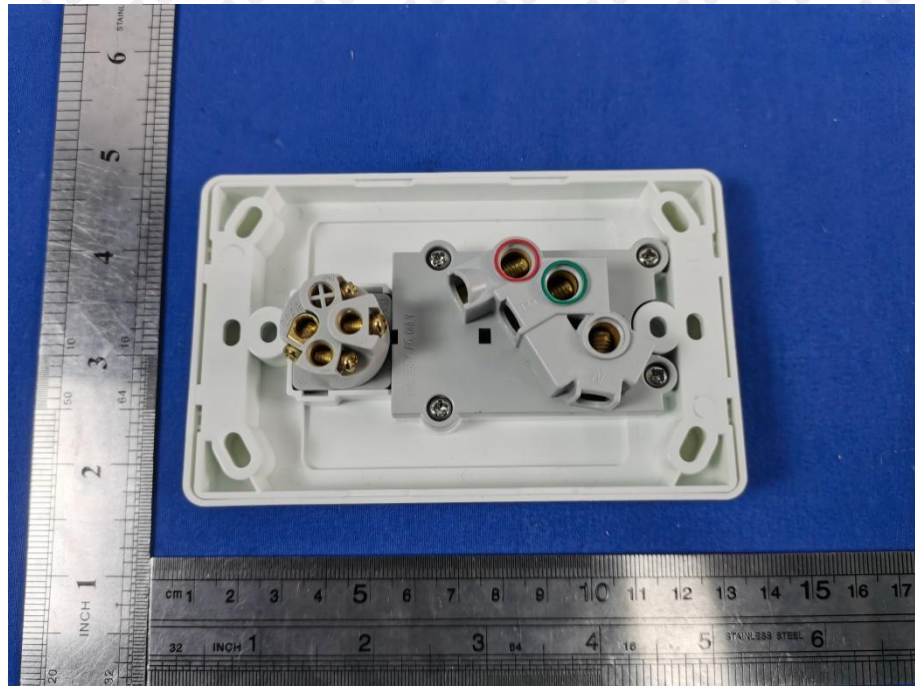
External View



Model: V19/314 (Rating: 250Va.c., 10A)

Photo 48

External View

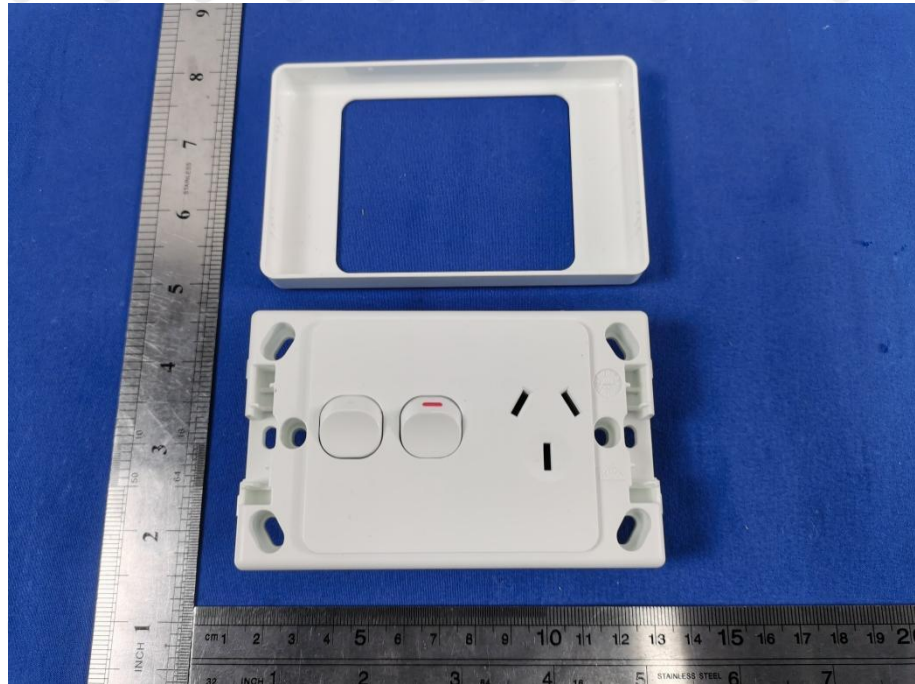


Model: V19/314 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 49

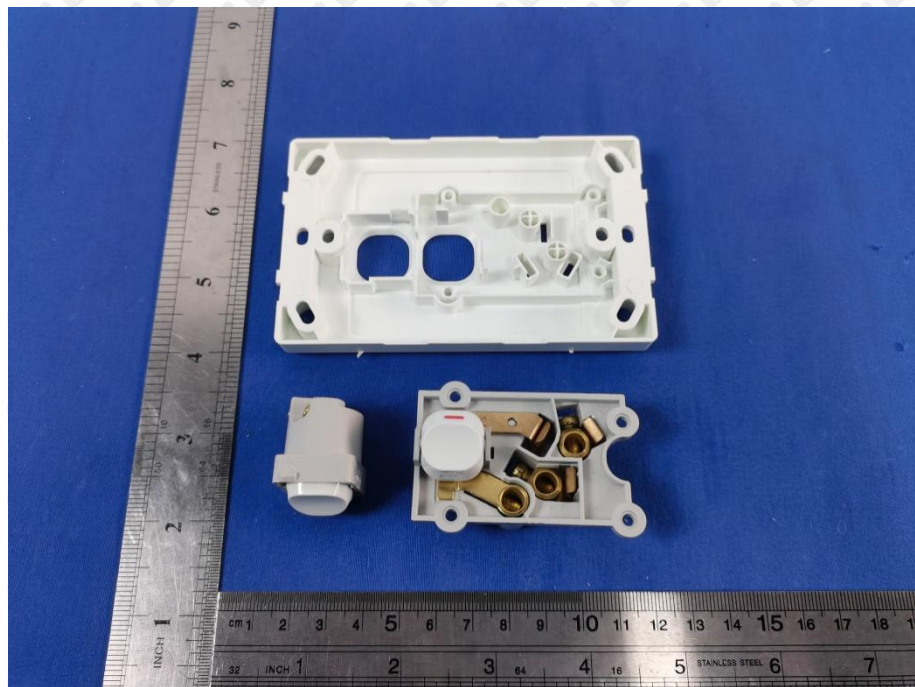
Internal View



Model: V19/314 (Rating: 250Va.c., 10A)

Photo 50

Internal View



Model: V19/314 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 51

External View



Model: V15/314 (Rating: 250Va.c., 10A)

Photo 52

External View

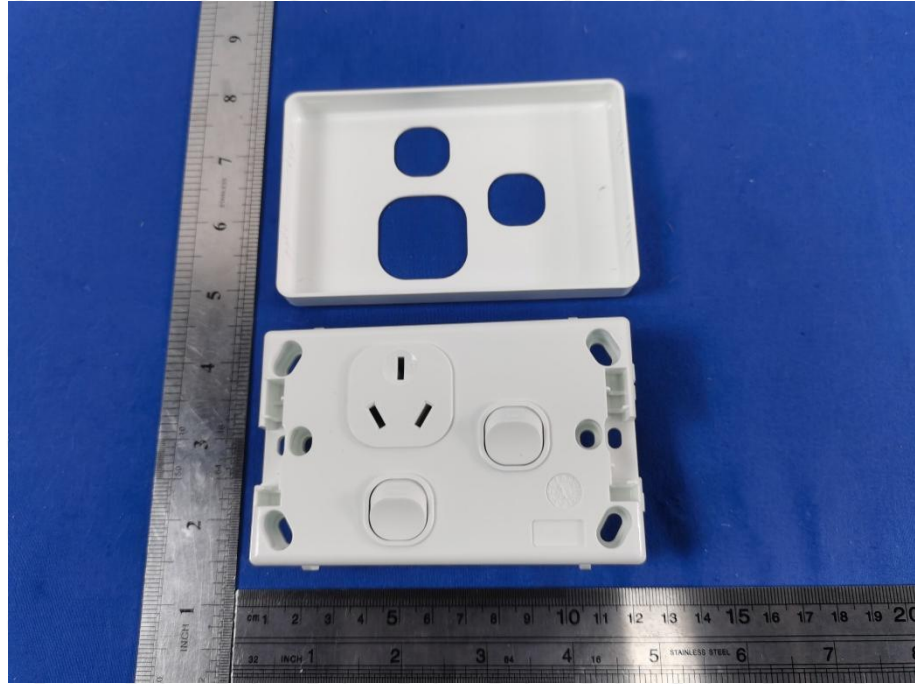


Model: V15/314 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 53

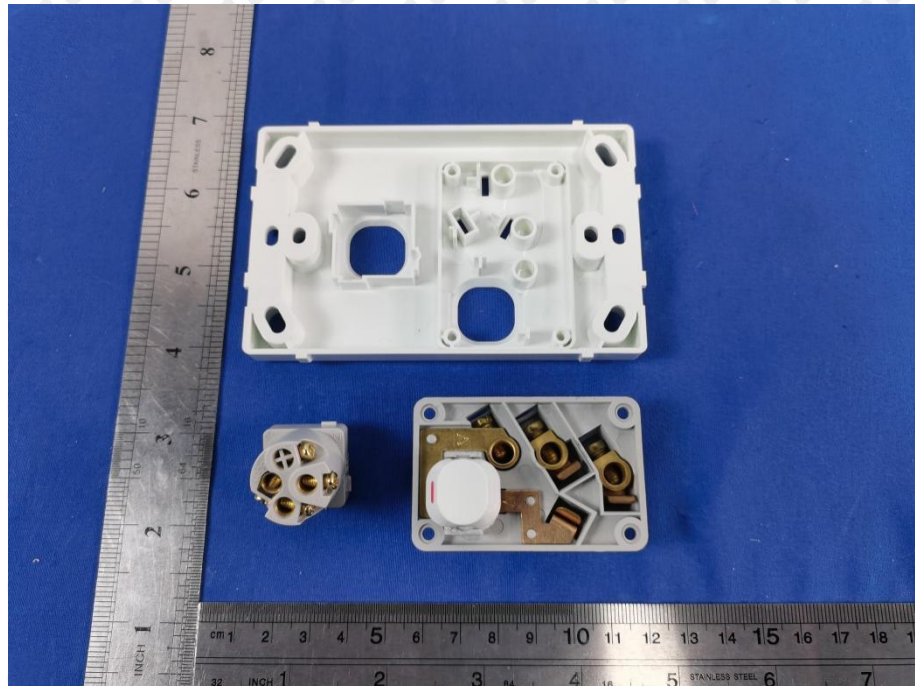
Internal View



Model: V15/314 (Rating: 250Va.c., 10A)

Photo 54

Internal View



Model: V15/314 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 55

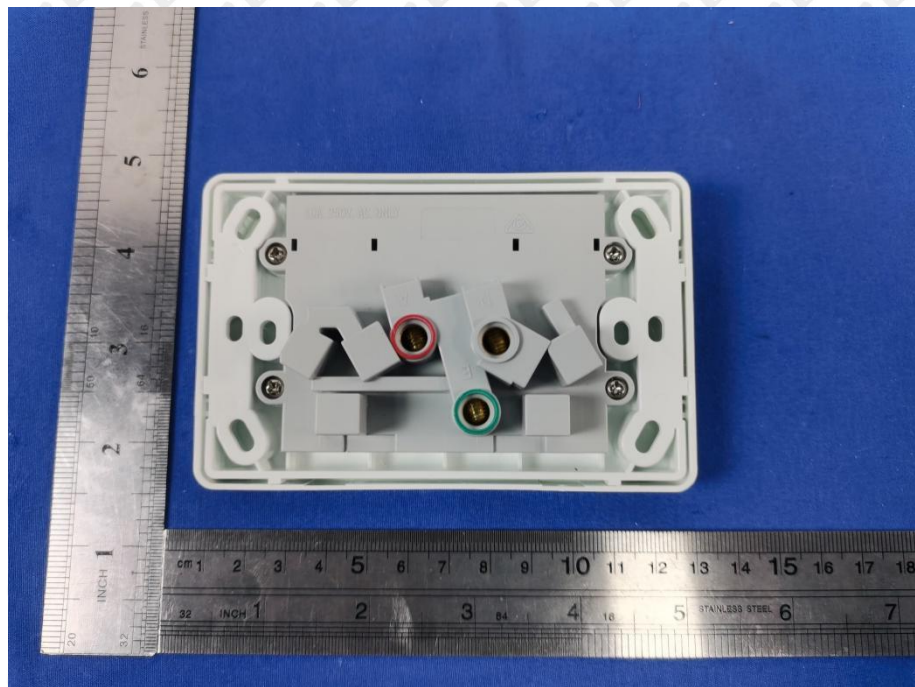
External View



Model: V15/315 (Rating: 250Va.c., 10A)

Photo 56

External View

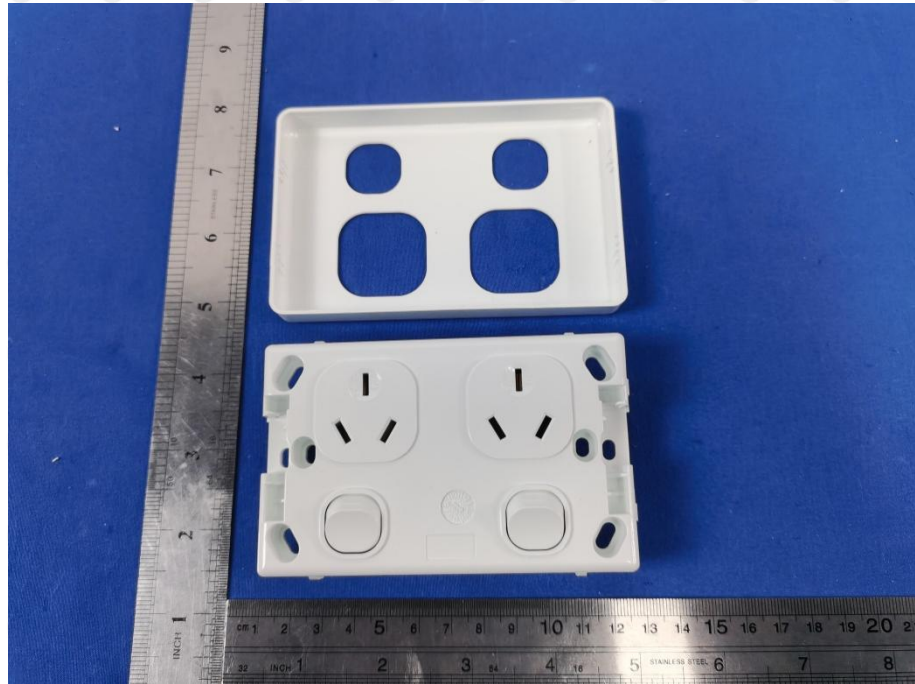


Model: V15/315 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 57

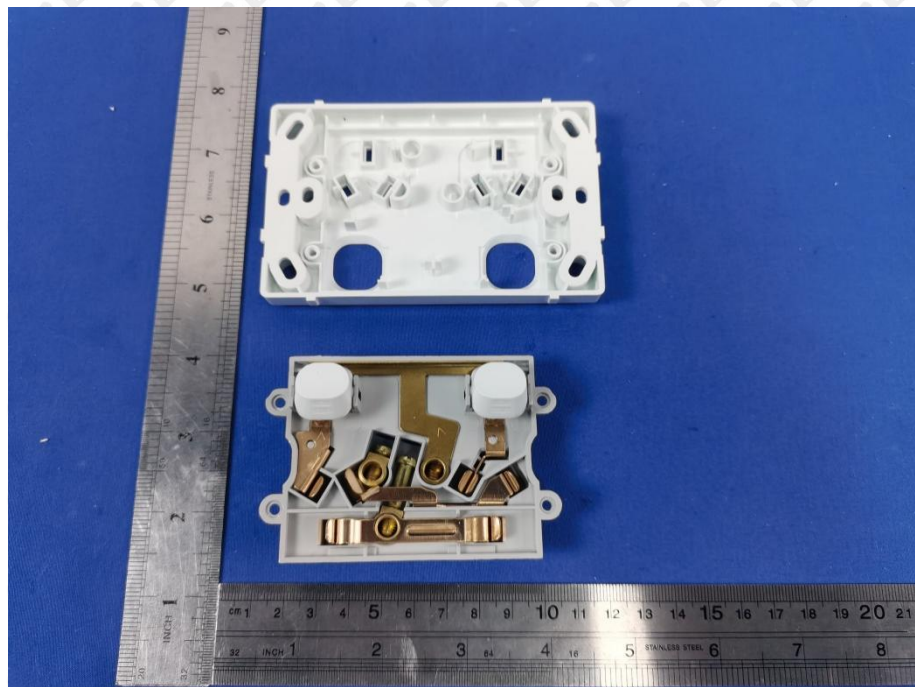
Internal View



Model: V15/315 (Rating: 250Va.c., 10A)

Photo 58

Internal View

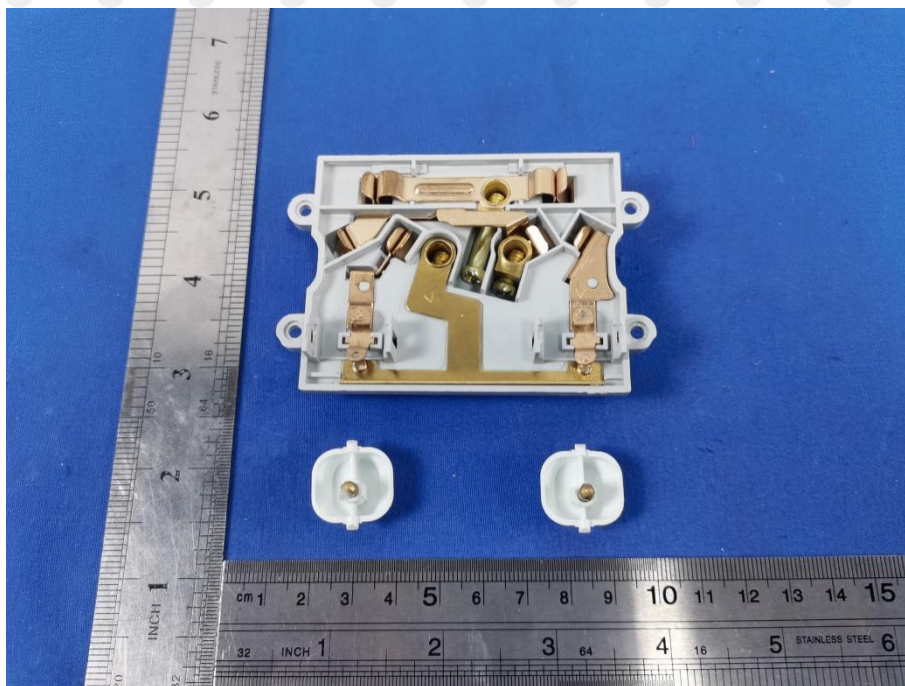


Model: V15/315 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 59

Internal View



Model: V15/315 (Rating: 250Va.c., 10A)

Photo 60

External View

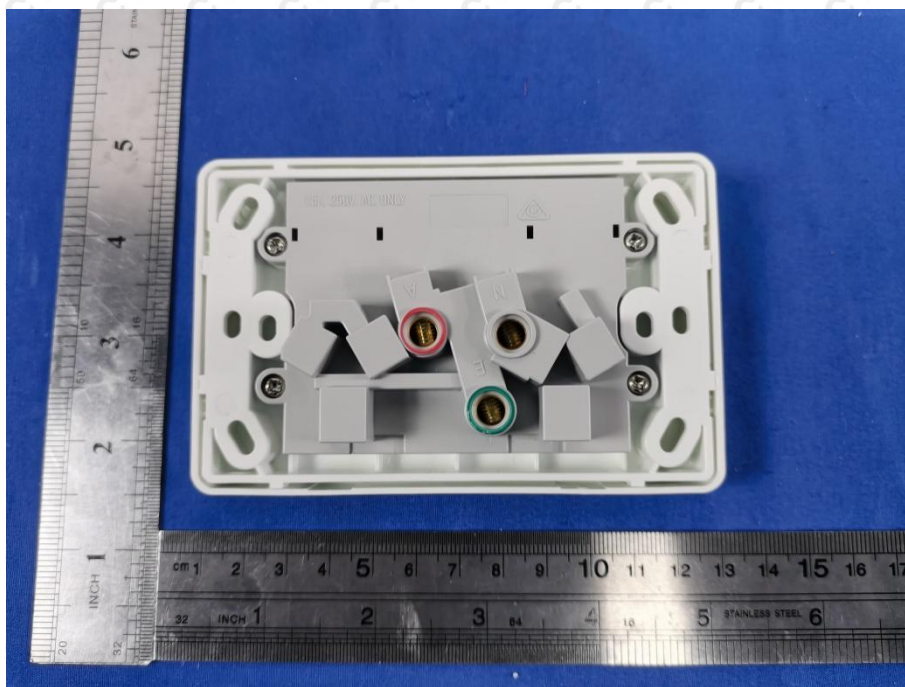


Model: V15/337 (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 61

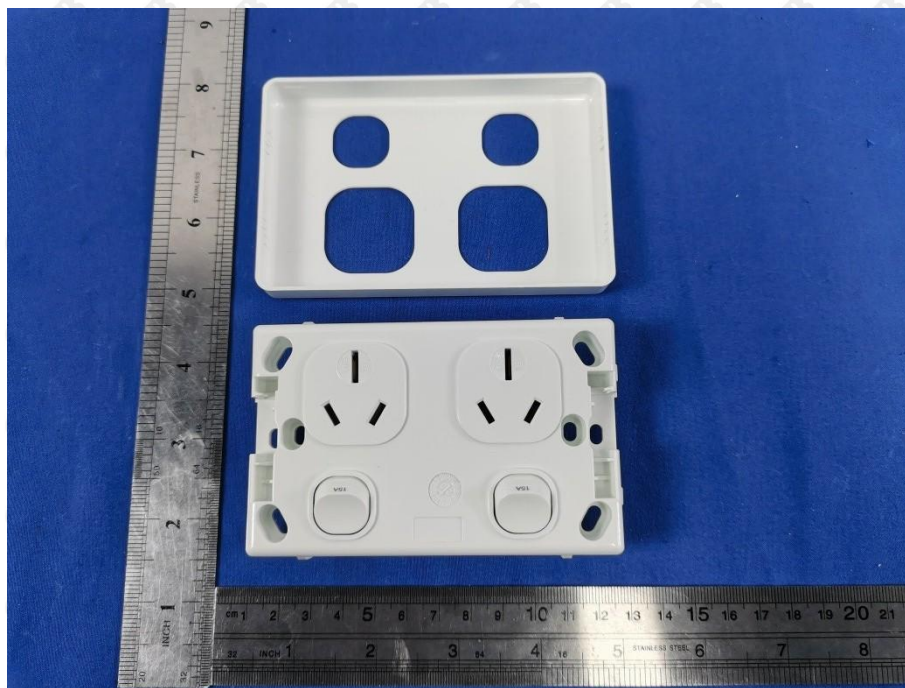
External View



Model: V15/337 (Rating: 250Va.c., 15A)

Photo 62

Internal View

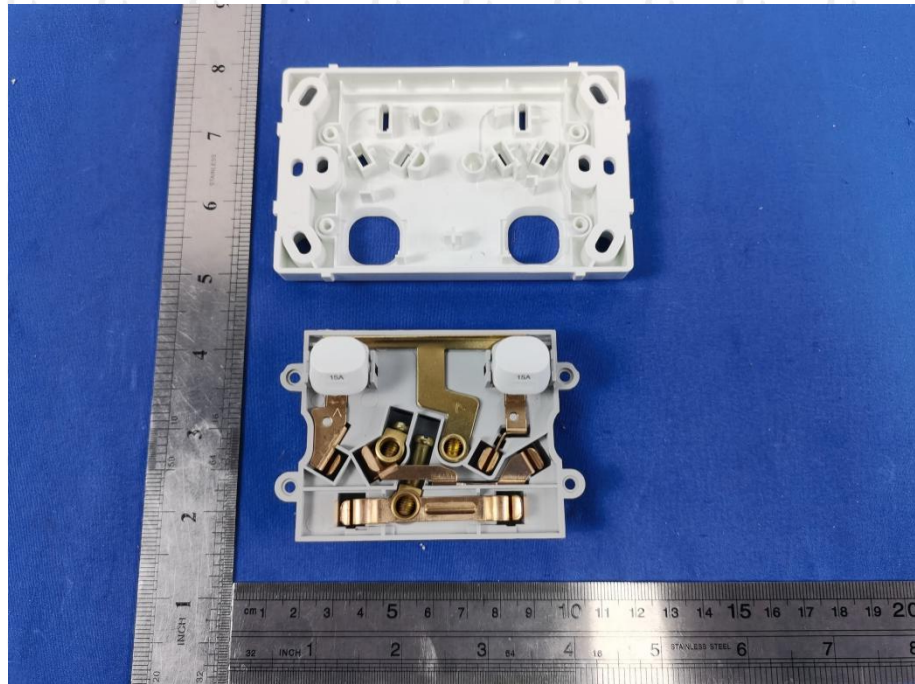


Model: V15/337 (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 63

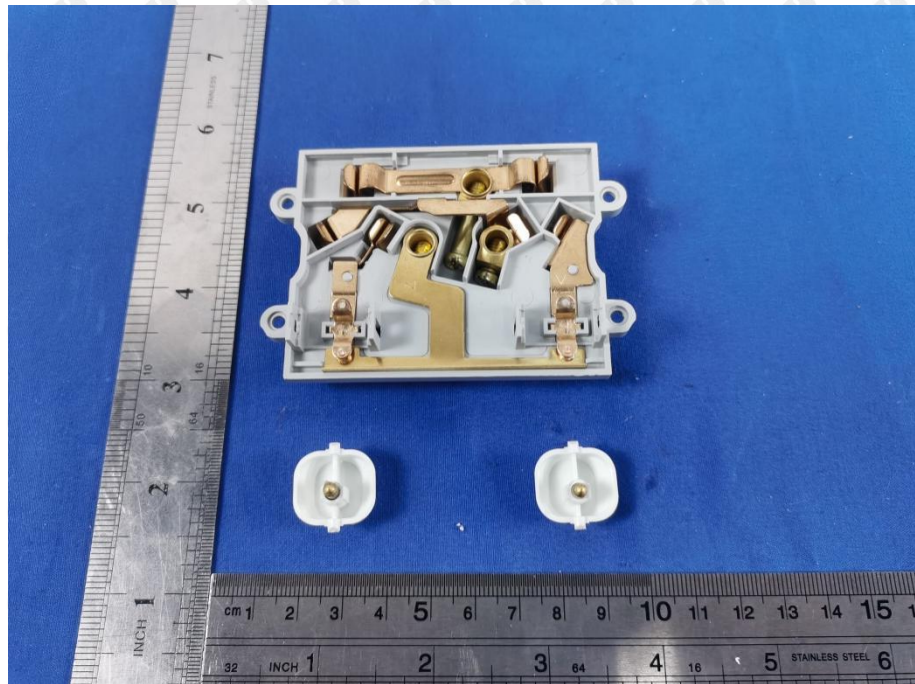
Internal View



Model: V15/337 (Rating: 250Va.c., 15A)

Photo 64

Internal View



Model: V15/337 (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 65

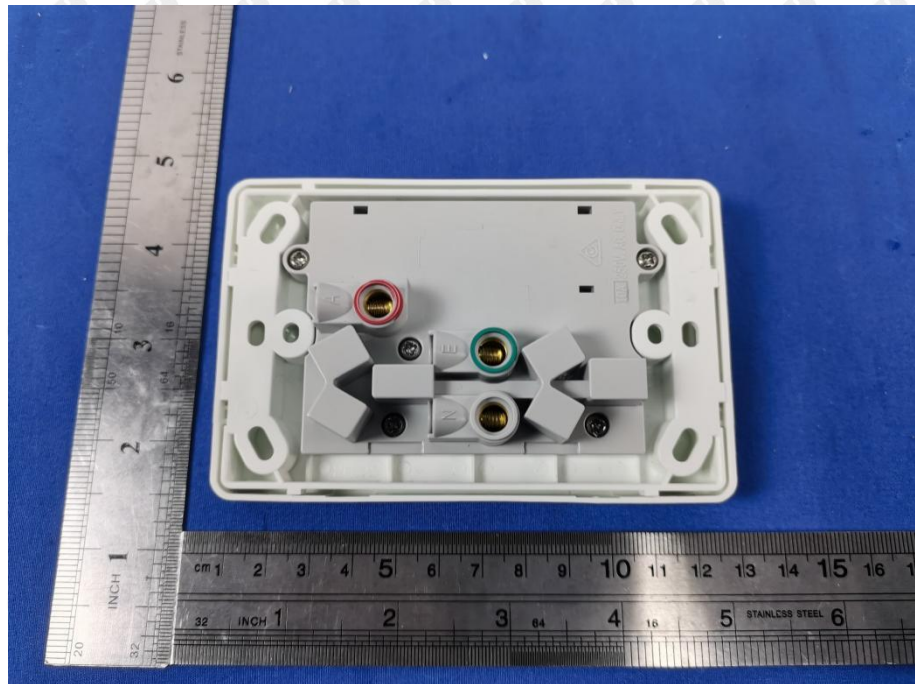
External View



Model: V15/315-V (Rating: 250Va.c., 10A)

Photo 66

External View

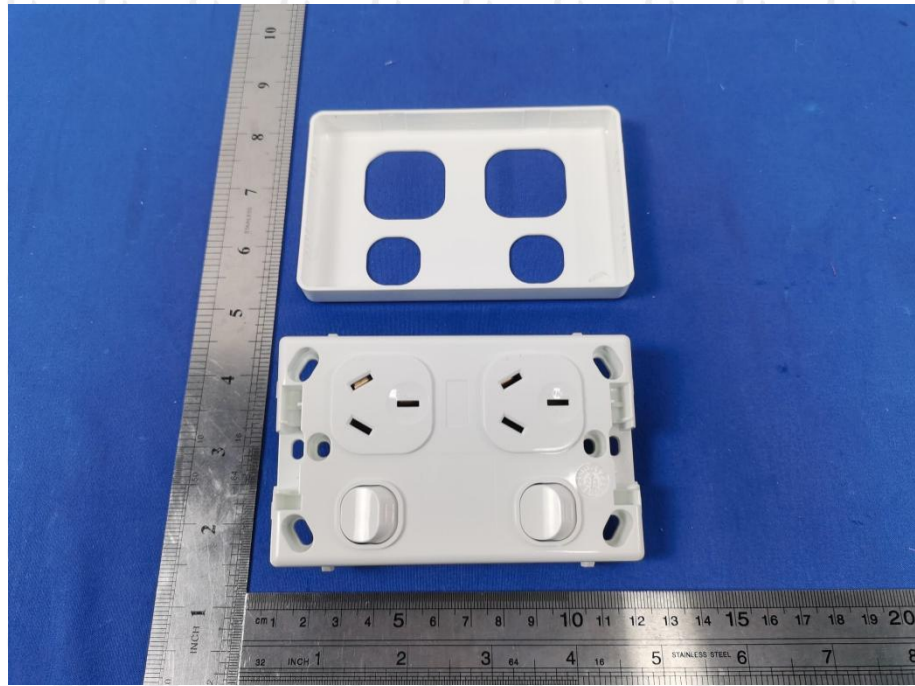


Model: V15/315-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 67

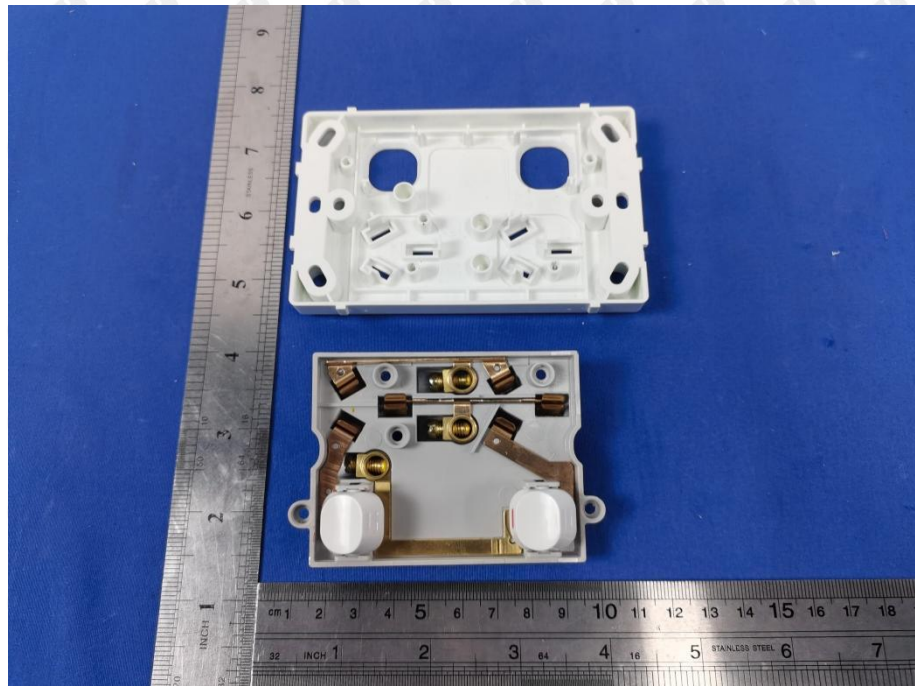
Internal View



Model: V15/315-V (Rating: 250Va.c., 10A)

Photo 68

Internal View

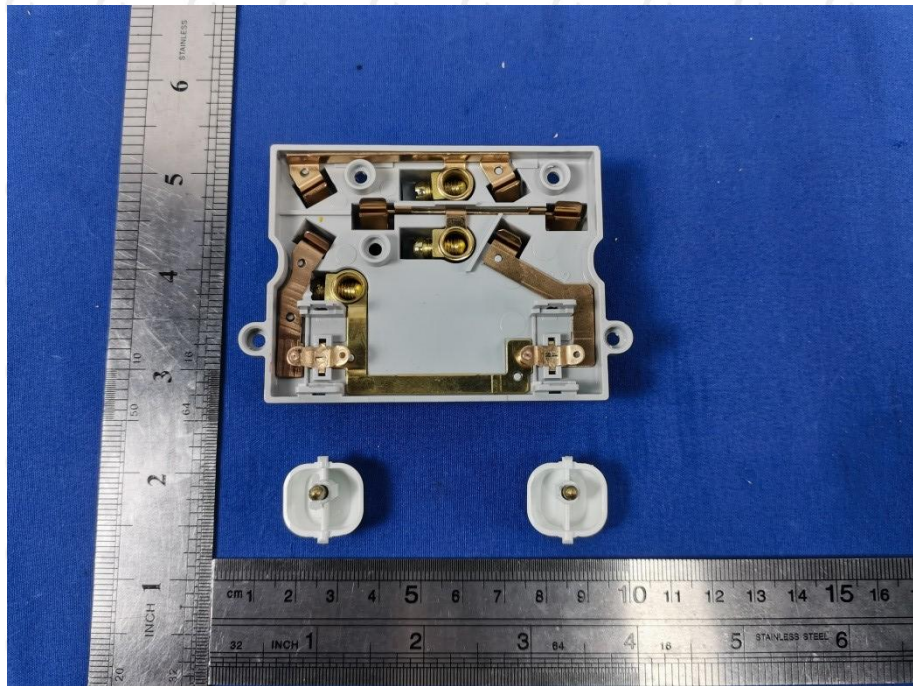


Model: V15/315-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 69

Internal View



Model: V15/315-V (Rating: 250Va.c., 10A)

Photo 70

External View

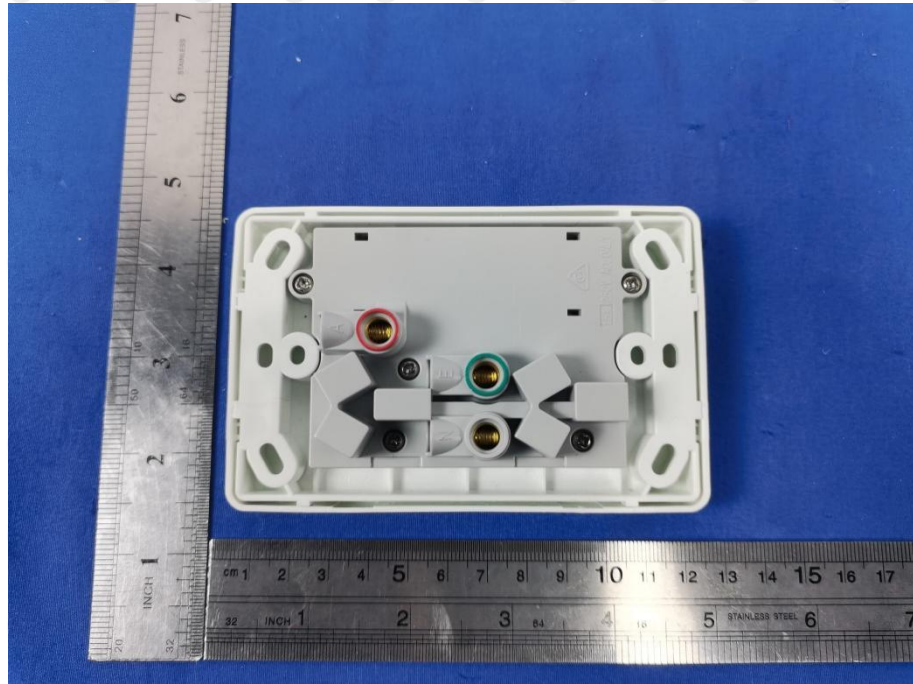


Model: V15/337-V (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 71

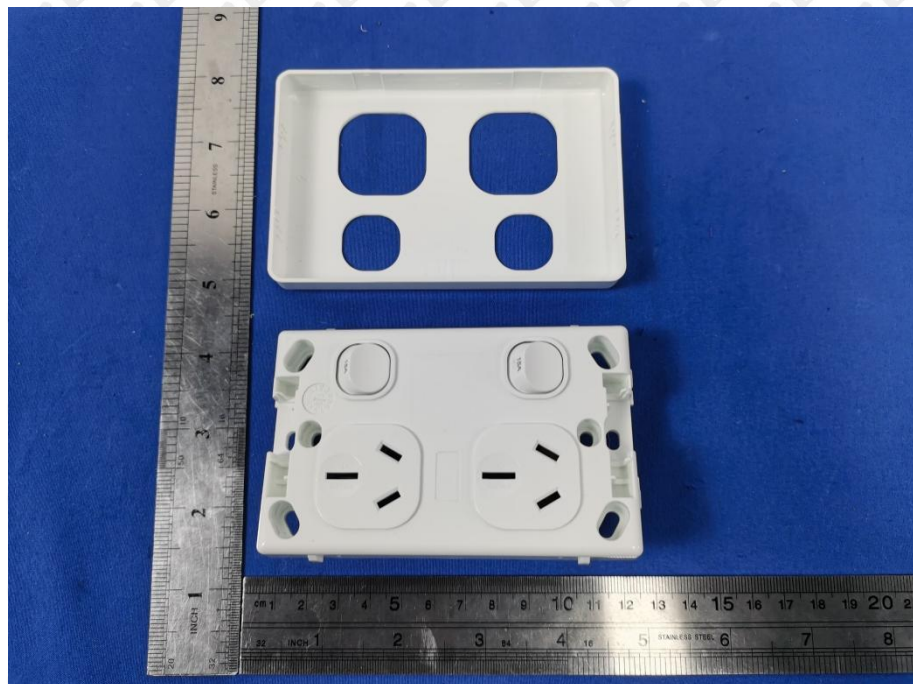
External View



Model: V15/337-V (Rating: 250Va.c., 15A)

Photo 72

Internal View

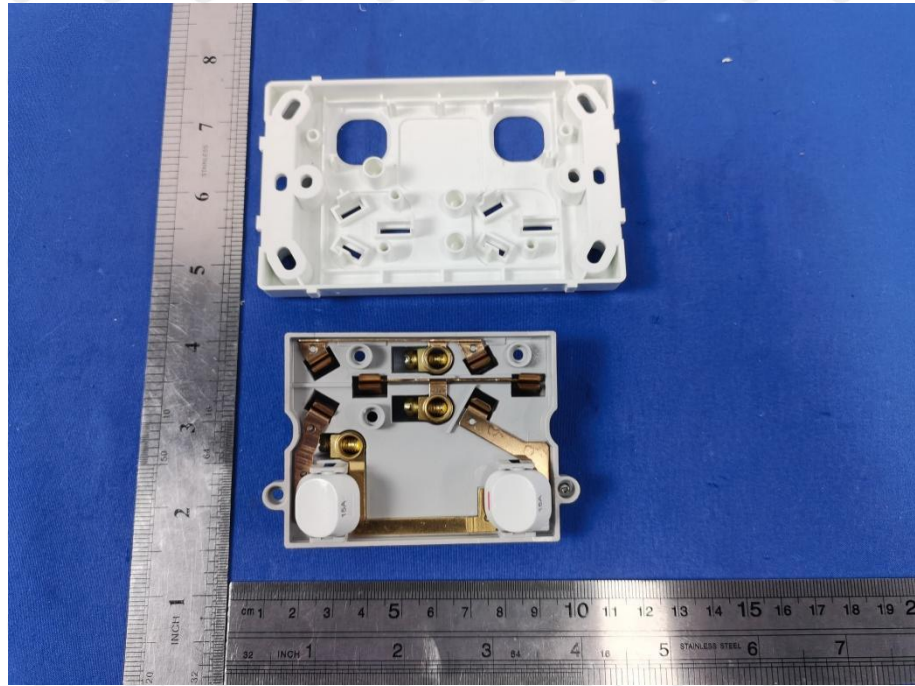


Model: V15/337-V (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 73

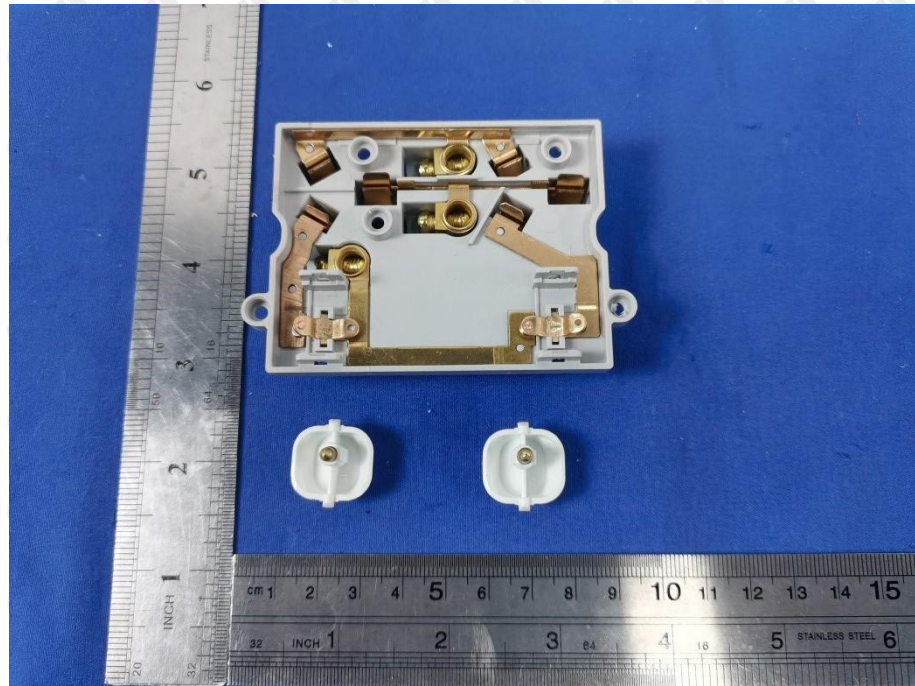
Internal View



Model: V15/337-V (Rating: 250Va.c., 15A)

Photo 74

Internal View



Model: V15/337-V (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 75

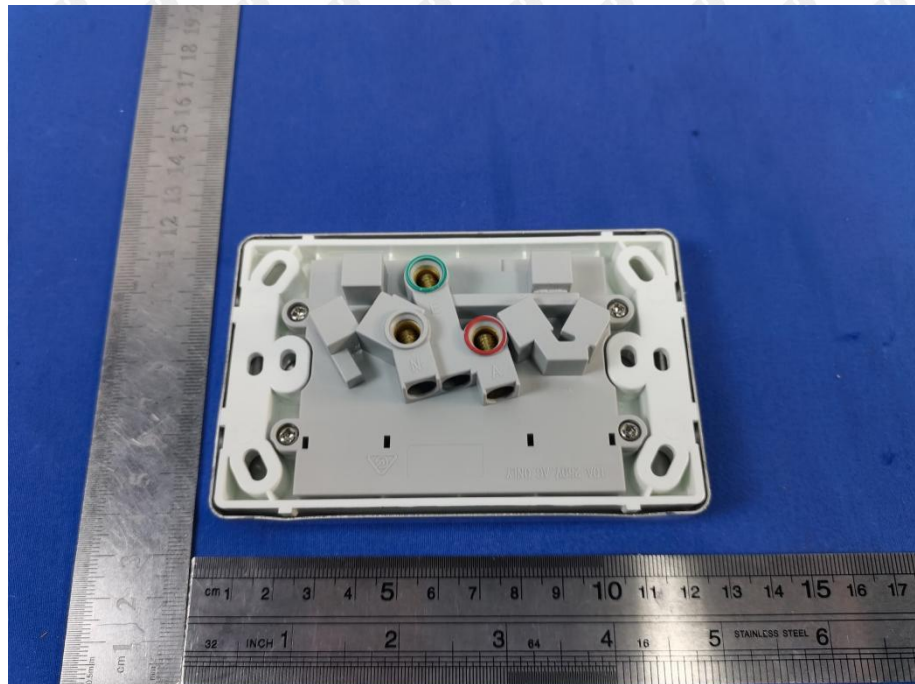
External View



Model: V16/315 (Rating: 250Va.c., 10A)

Photo 76

External View



Model: V16/315 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 77

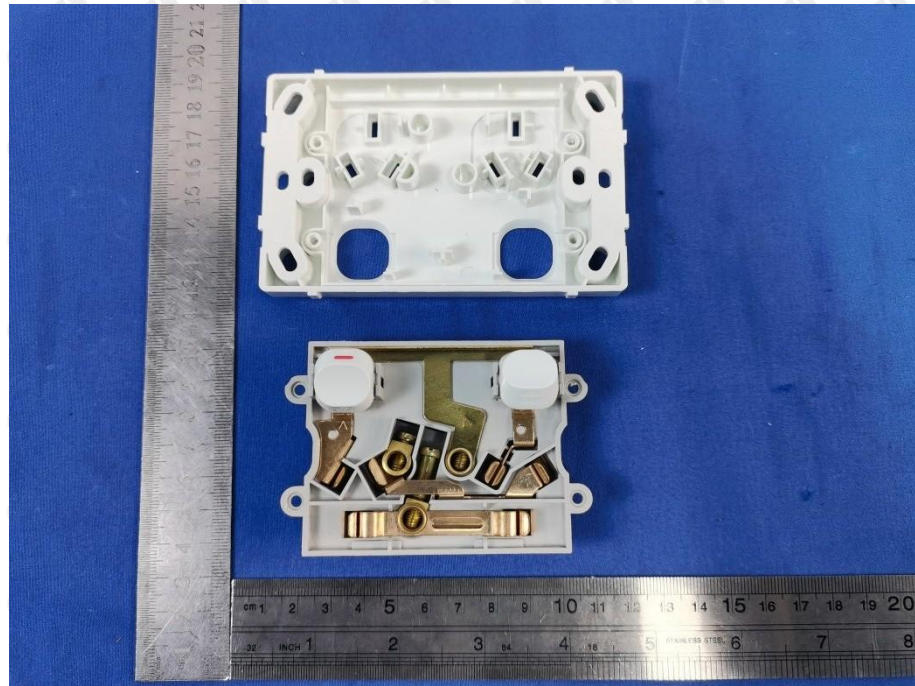
Internal View



Model: V16/315 (Rating: 250Va.c., 10A)

Photo 78

Internal View

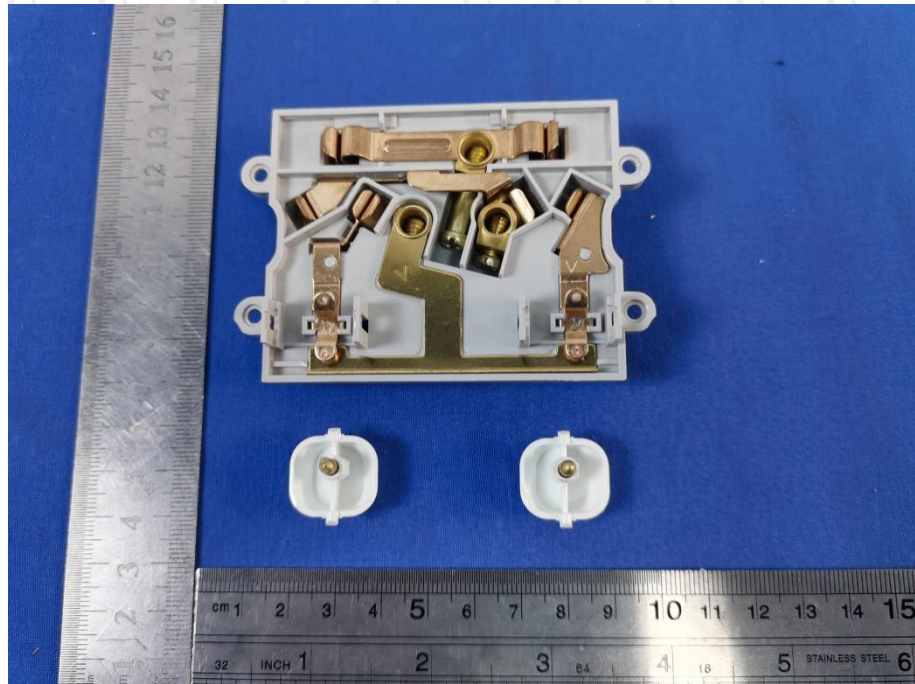


Model: V16/315 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 79

Internal View



Model: V16/315 (Rating: 250Va.c., 10A)

Photo 80

External View

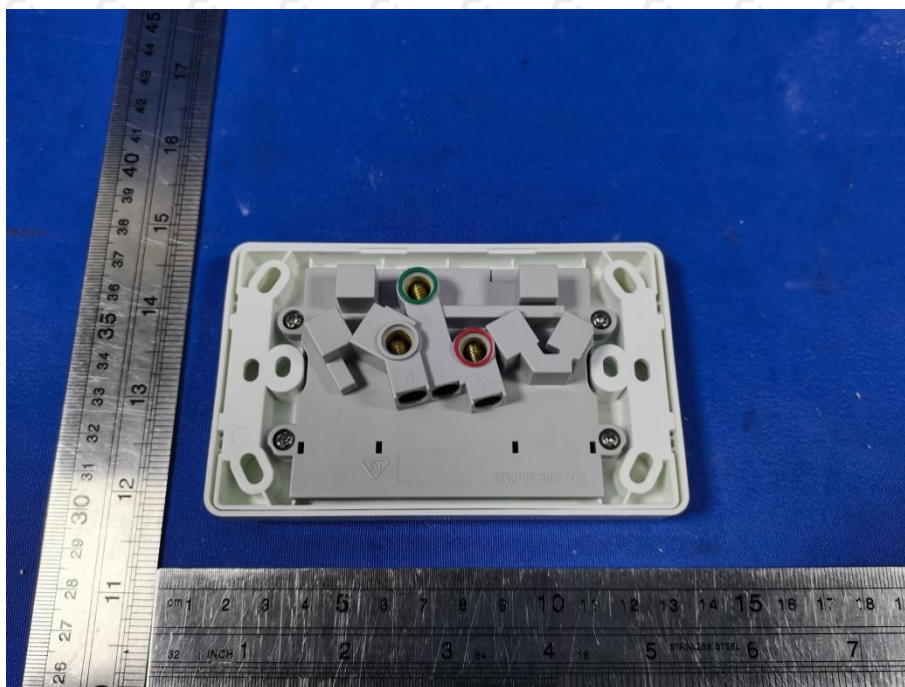


Model: V19/315 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 81

External View



Model: V19/315 (Rating: 250Va.c., 10A)

Photo 82

Internal View

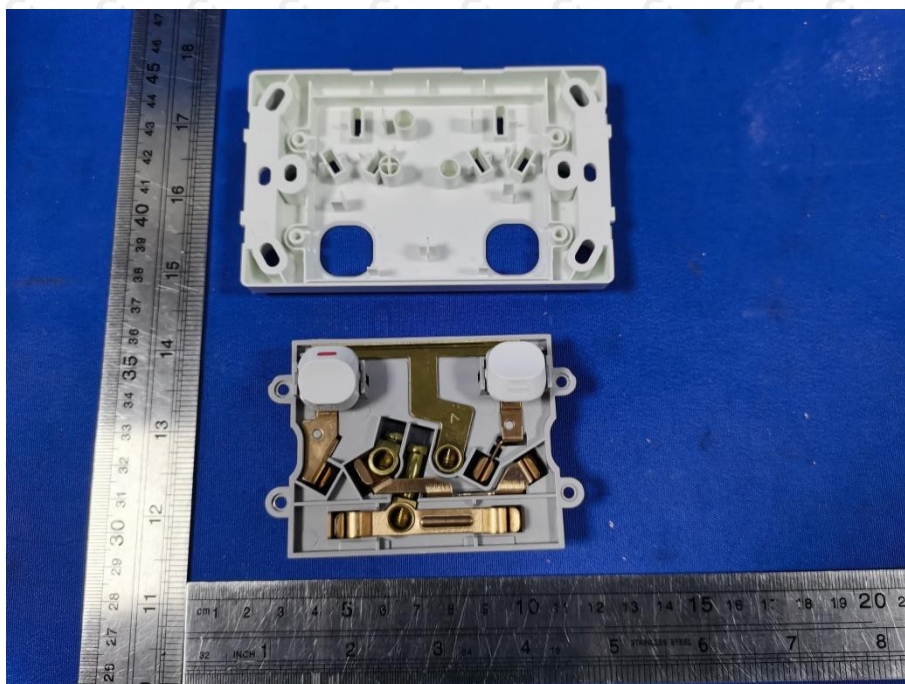


Model: V19/315 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 83

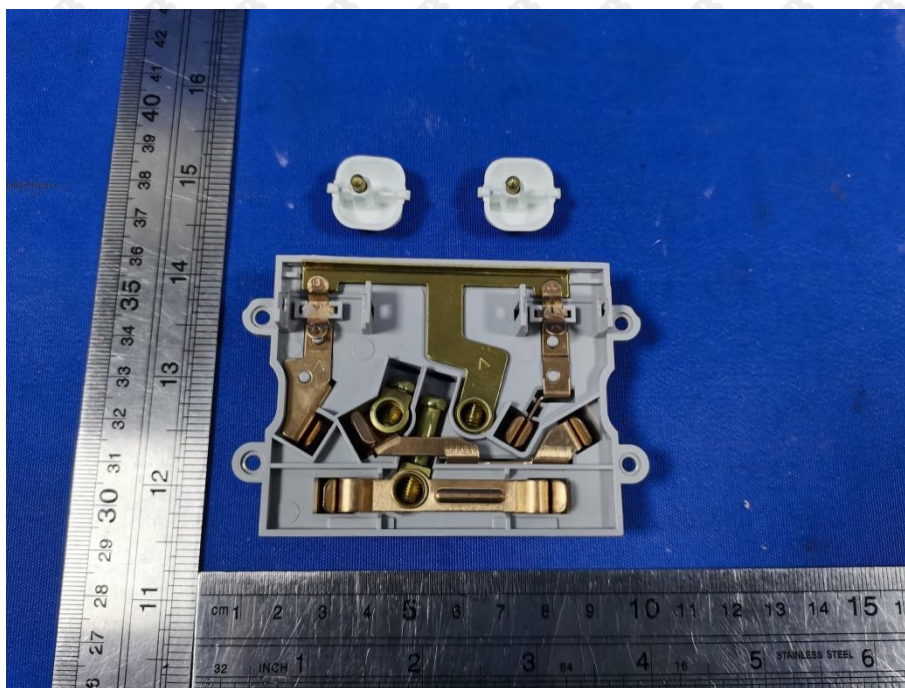
Internal View



Model: V19/315 (Rating: 250Va.c., 10A)

Photo 84

Internal View



Model: V19/315 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 85

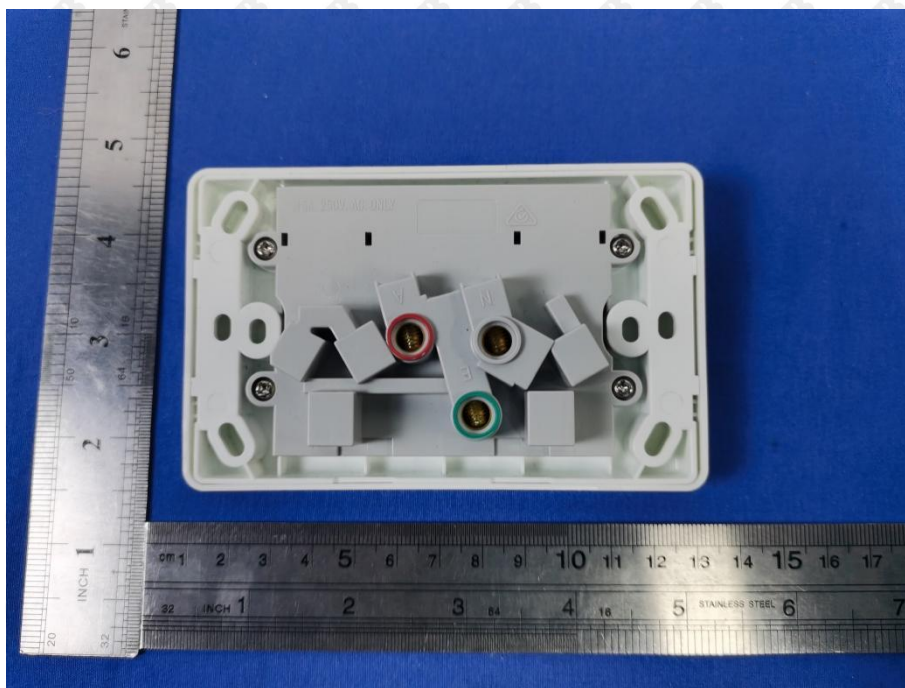
External View



Model: V19/337 (Rating: 250Va.c., 15A)

Photo 86

External View

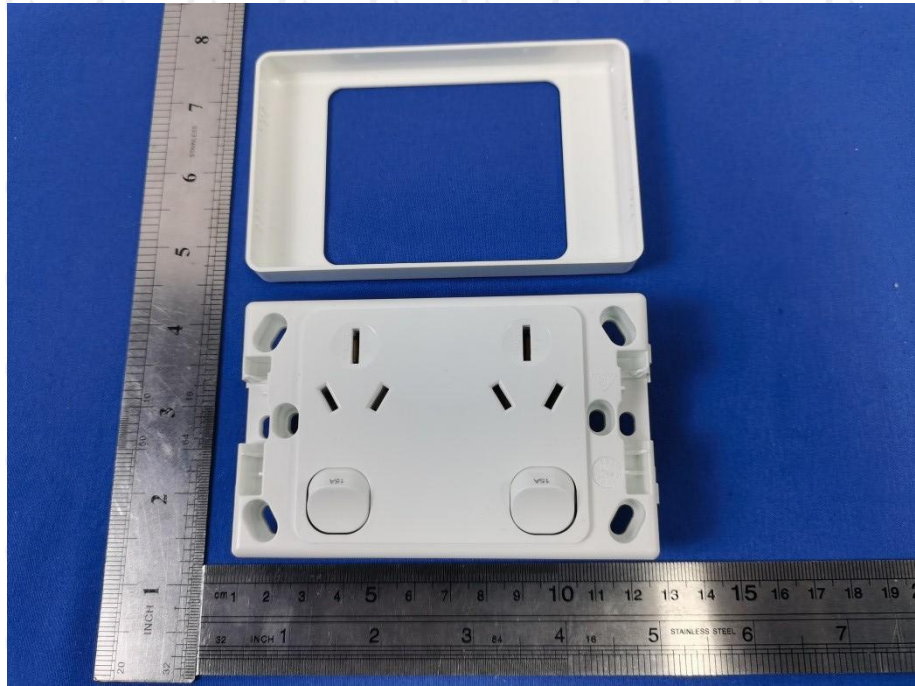


Model: V19/337 (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 87

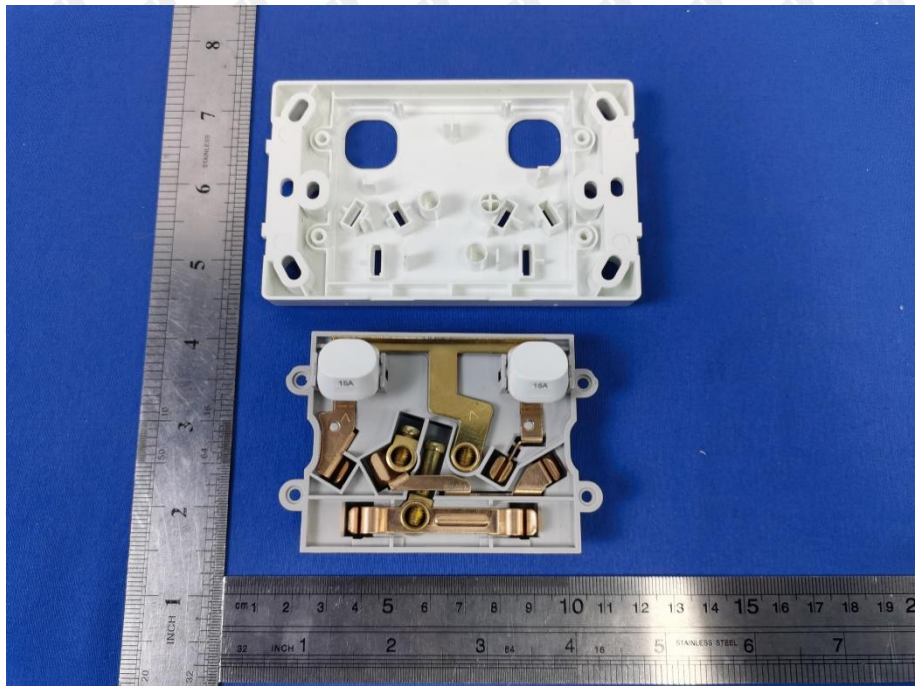
Internal View



Model: V19/337 (Rating: 250Va.c., 15A)

Photo 88

Internal View

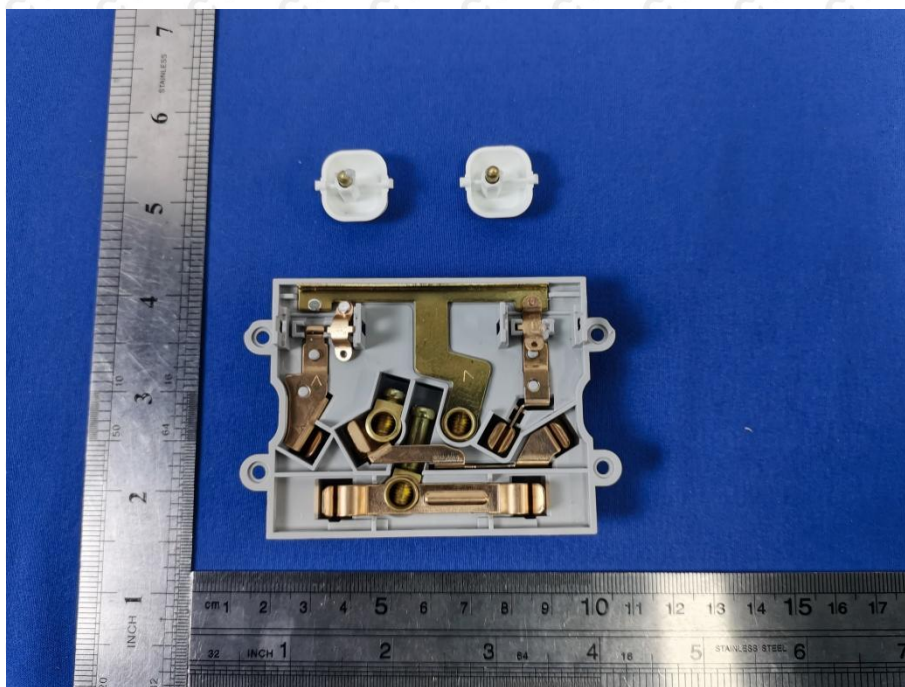


Model: V19/337 (Rating: 250Va.c., 15A)

Attachment No. 4: Photo documentation

Photo 89

Internal View



Model: V19/337 (Rating: 250Va.c., 15A)

Photo 90

External View

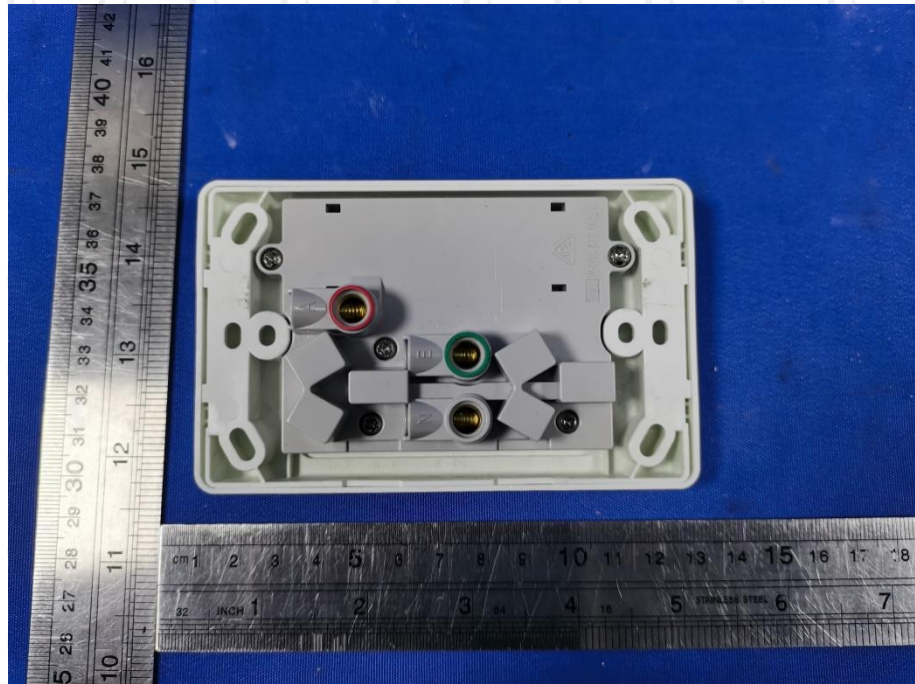


Model: V19/315-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 91

External View



Model: V19/315-V (Rating: 250Va.c., 10A)

Photo 92

Internal View

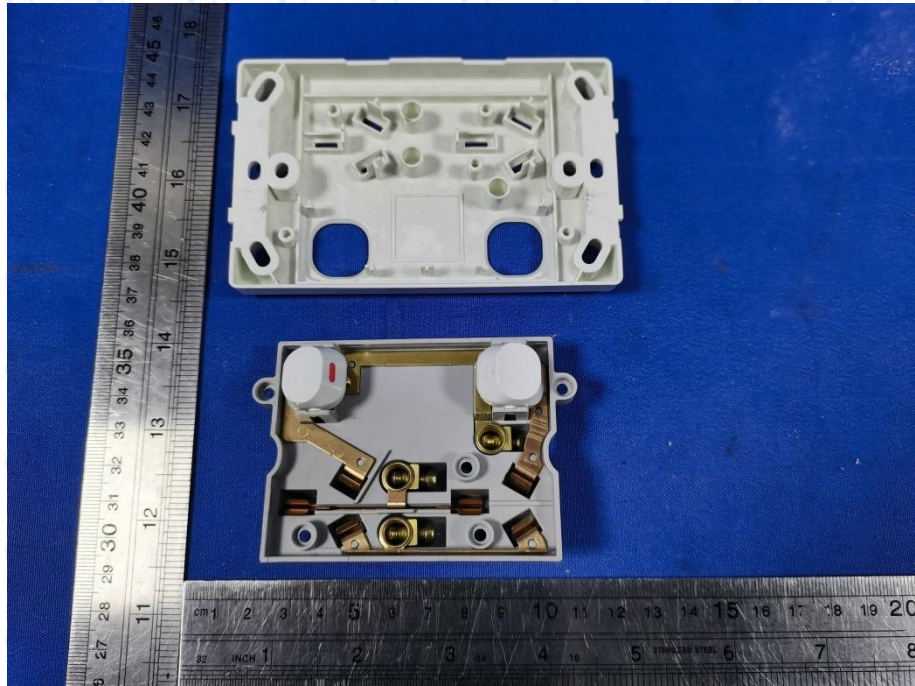


Model: V19/315-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 93

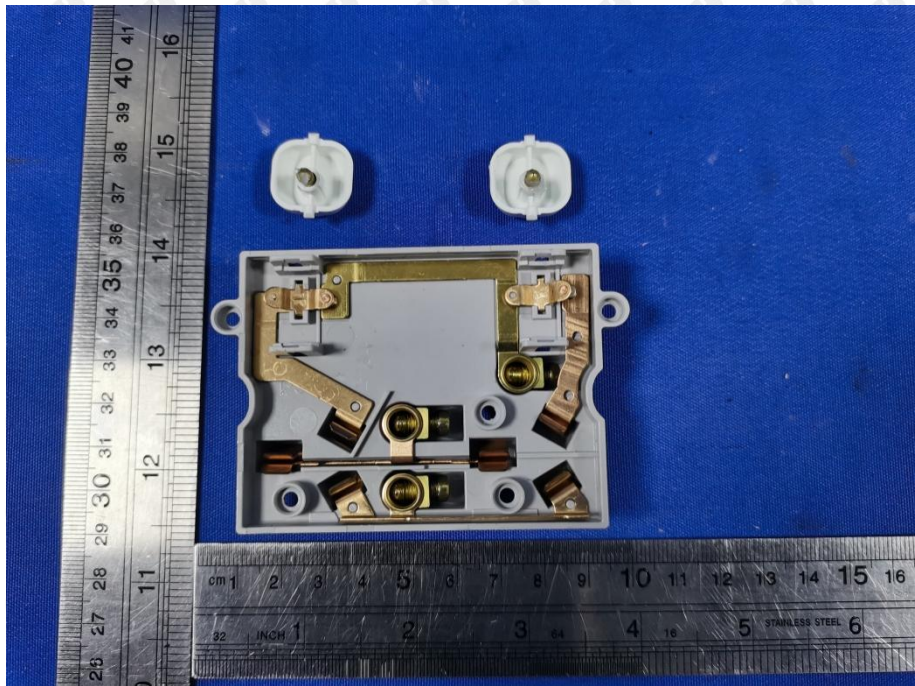
Internal View



Model: V19/315-V (Rating: 250Va.c., 10A)

Photo 94

Internal View



Model: V19/315-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 95

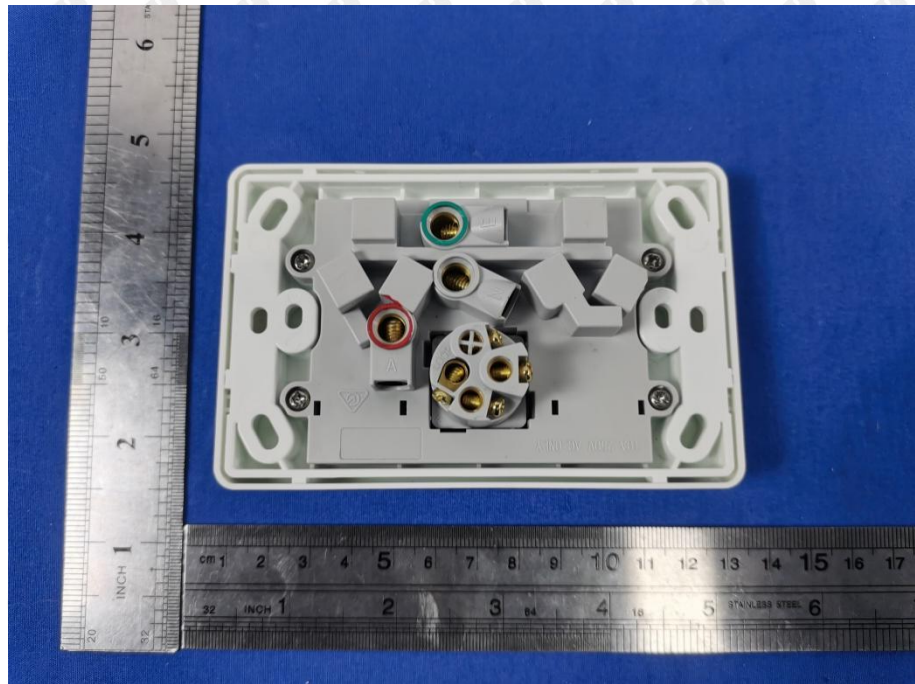
External View



Model: V15/316 (Rating: 250Va.c., 10A)

Photo 96

External View

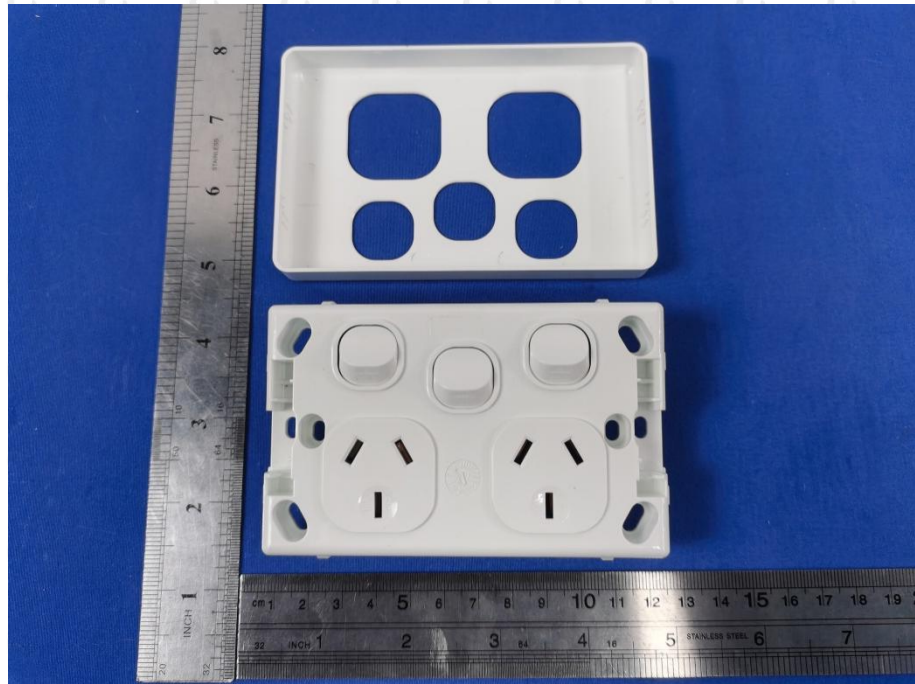


Model: V15/316 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 97

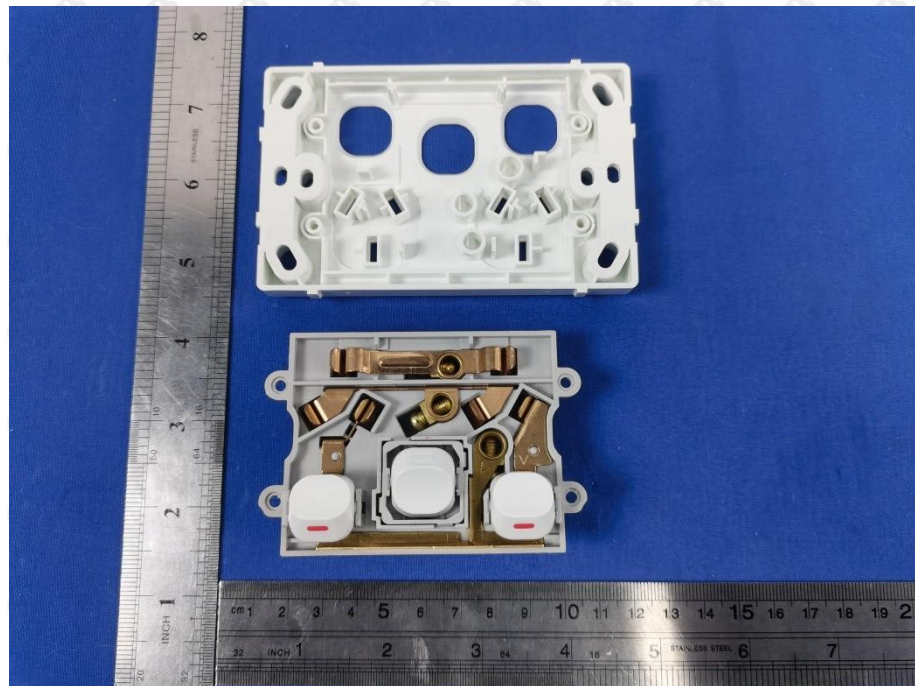
Internal View



Model: V15/316 (Rating: 250Va.c., 10A)

Photo 98

Internal View



Model: V15/316 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 99

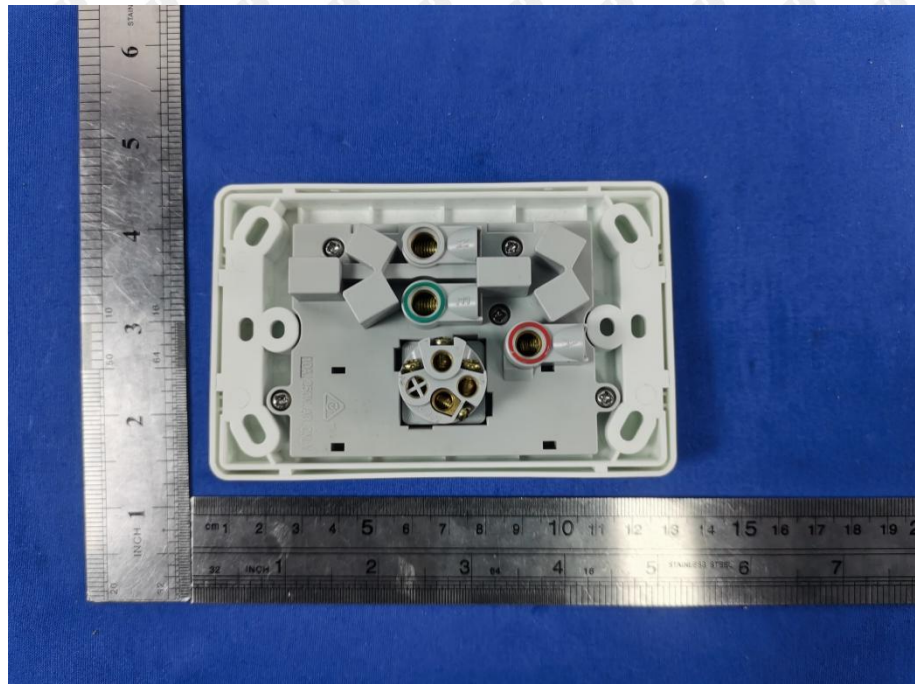
External View



Model: V15/316-V (Rating: 250Va.c., 10A)

Photo 100.....

External View



Model: V15/316-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 101.....

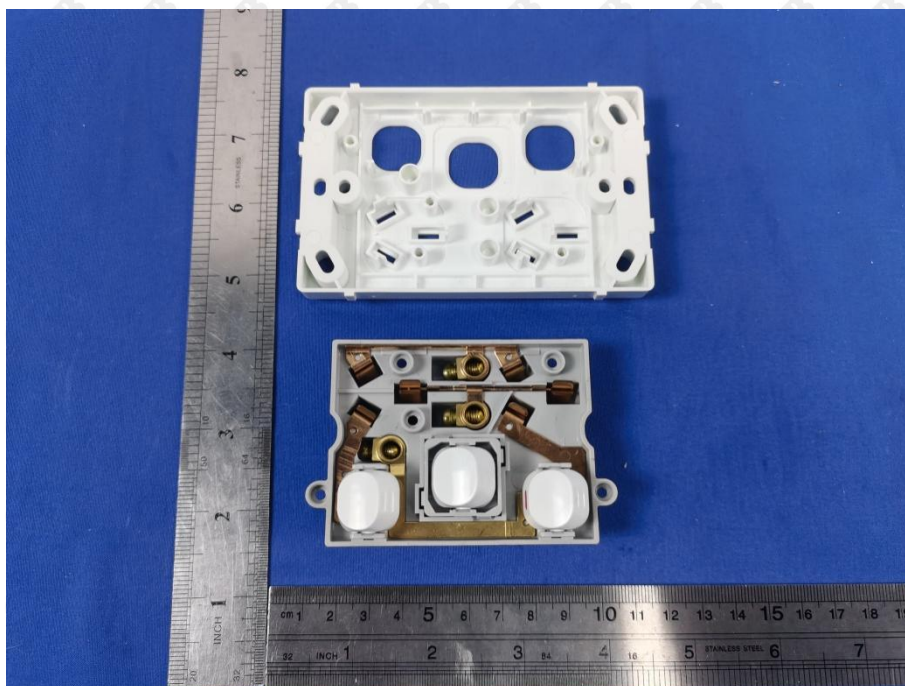
Internal View



Model: V15/316-V (Rating: 250Va.c., 10A)

Photo 102.....

Internal View

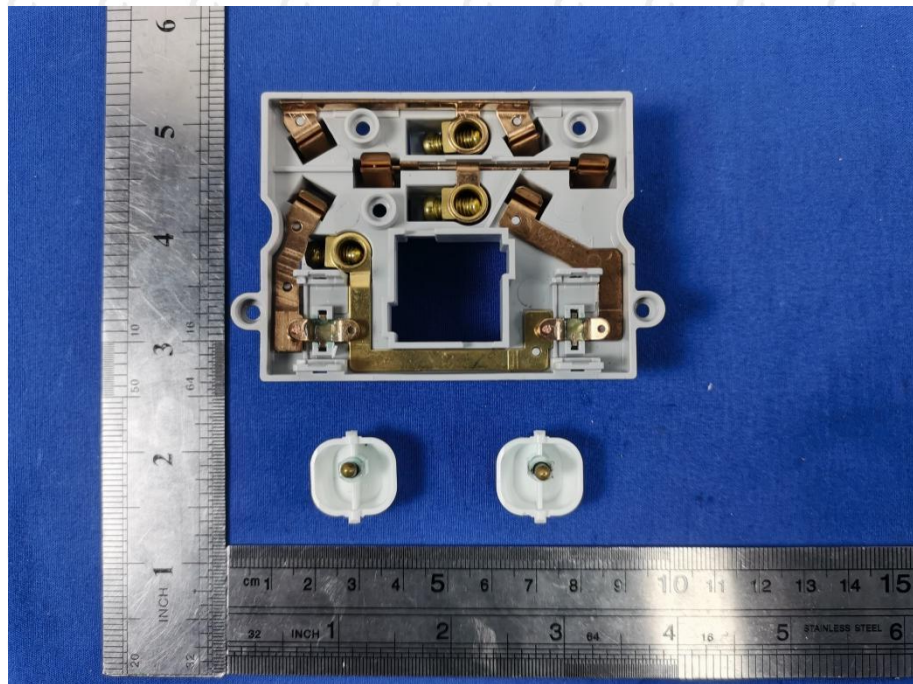


Model: V15/316-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 103.....

Internal View



Model: V15/316-V (Rating: 250Va.c., 10A)

Photo 104.....

External View

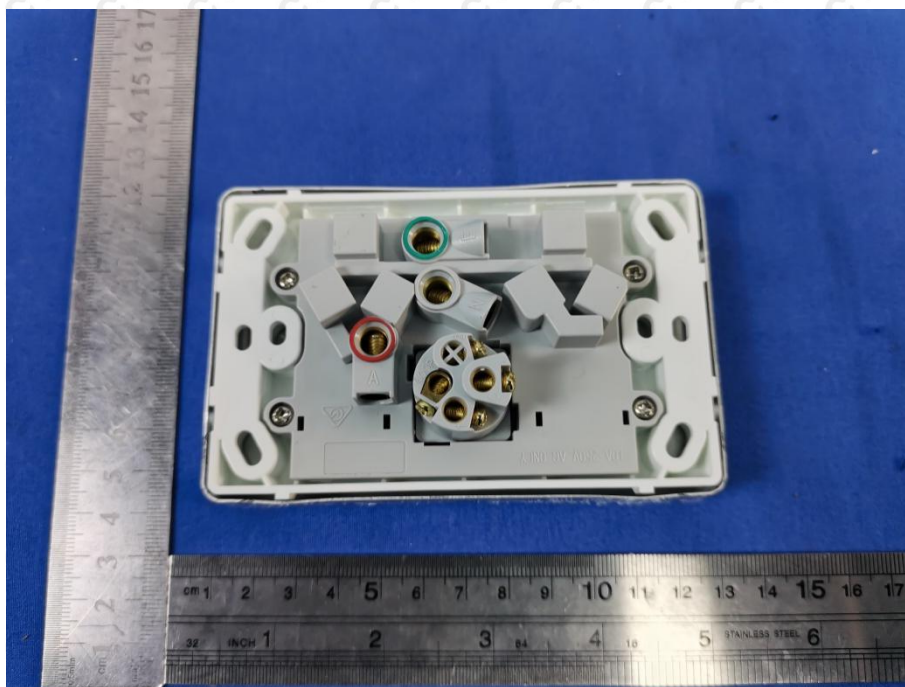


Model: V16/316A (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 105.....

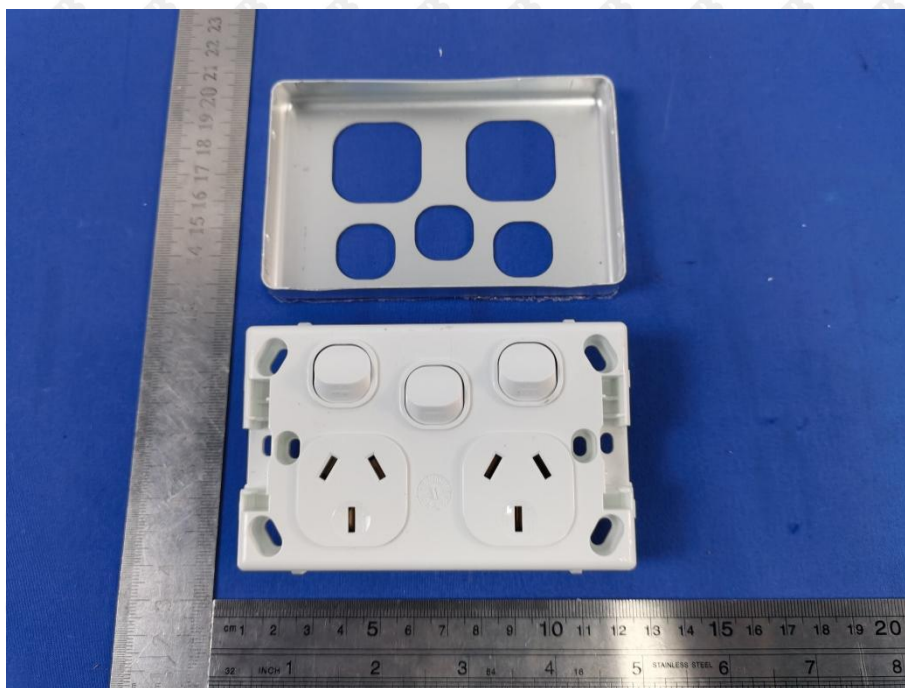
External View



Model: V16/316A (Rating: 250Va.c., 10A)

Photo 106.....

Internal View

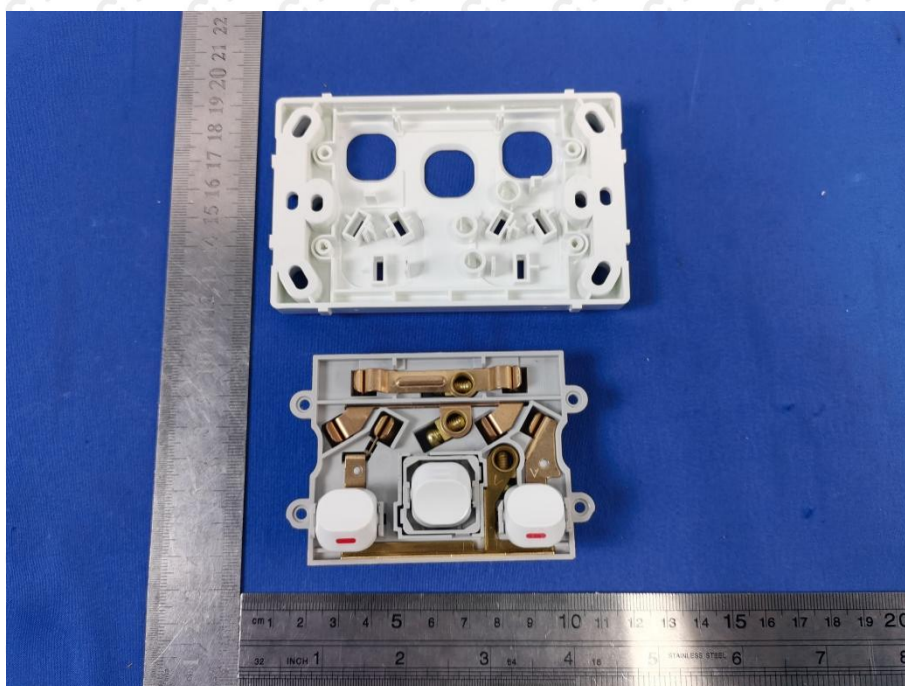


Model: V16/316A (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 107.....

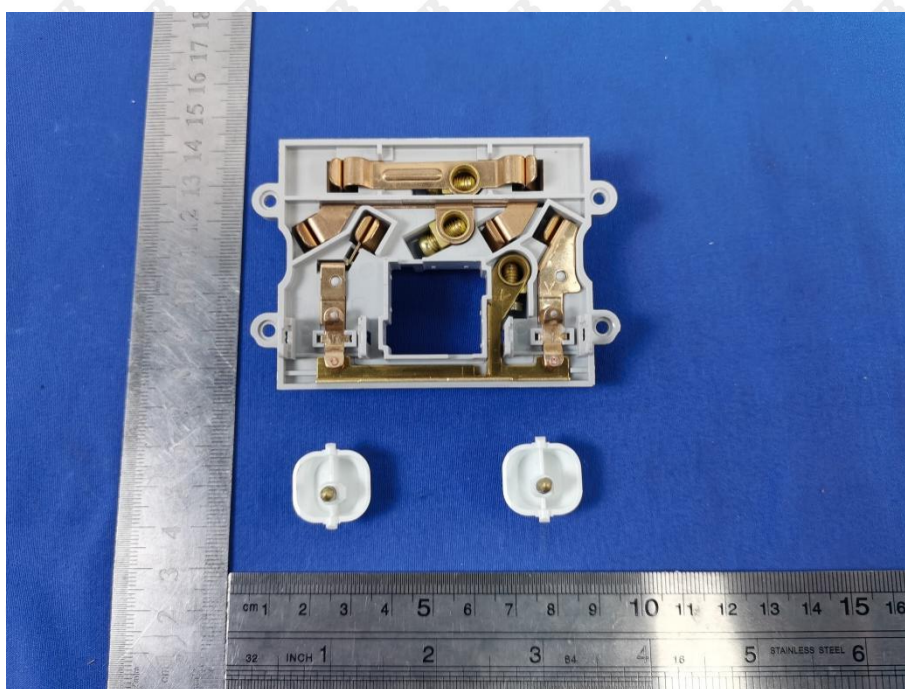
Internal View



Model: V16/316A (Rating: 250Va.c., 10A)

Photo 108.....

Internal View



Model: V16/316A (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 109.....

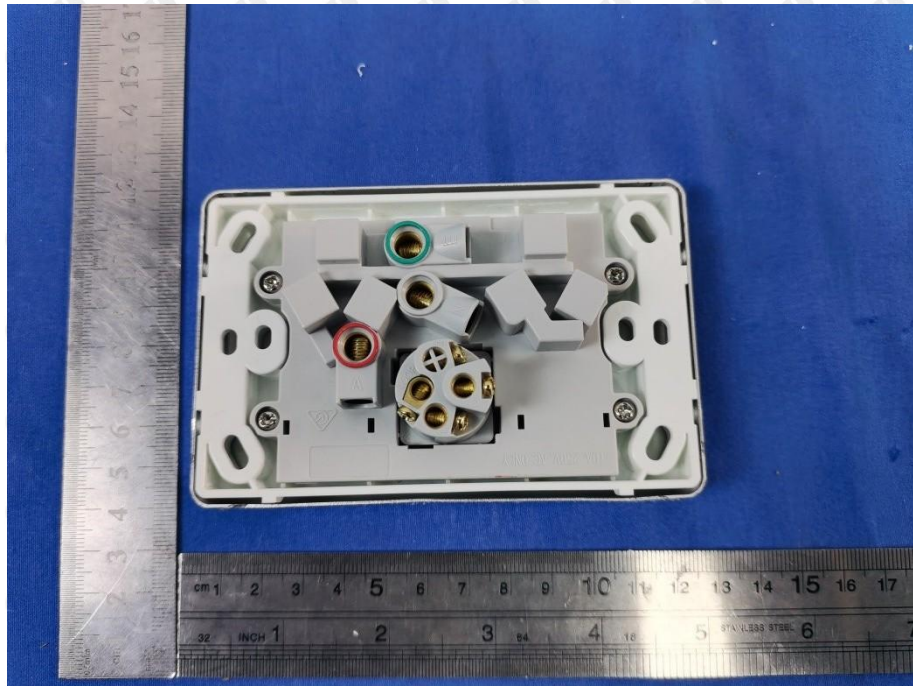
External View



Model: V16/316B (Rating: 250Va.c., 10A)

Photo 110.....

External View

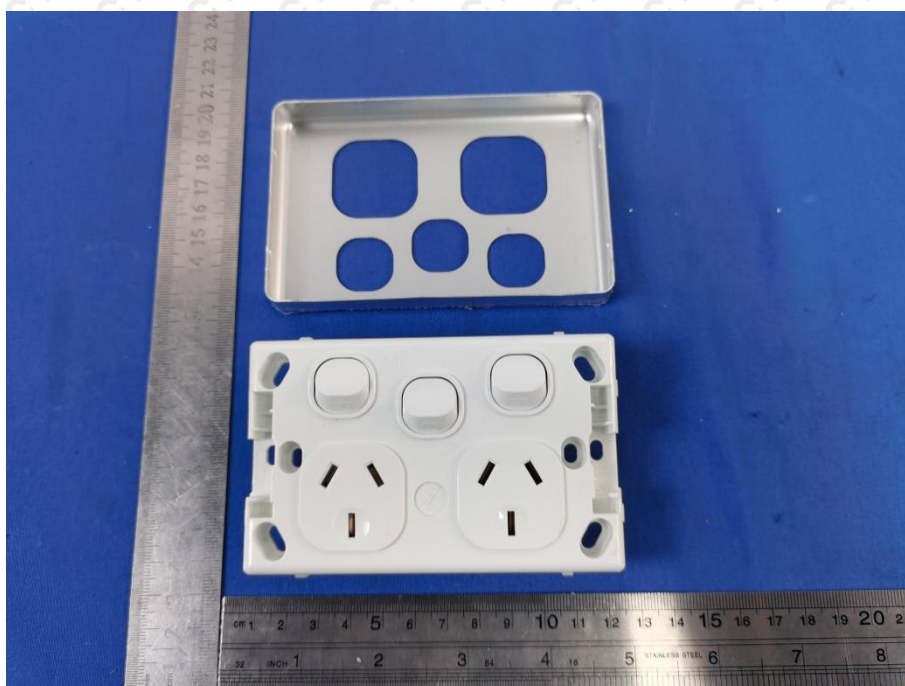


Model: V16/316B (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 111.....

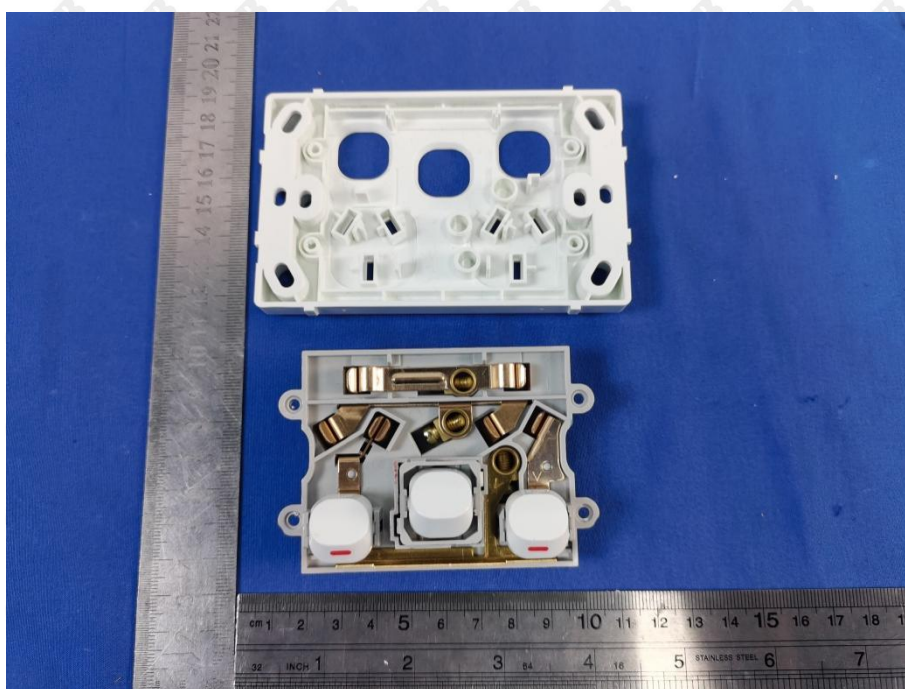
Internal View



Model: V16/316B (Rating: 250Va.c., 10A)

Photo 112.....

Internal View

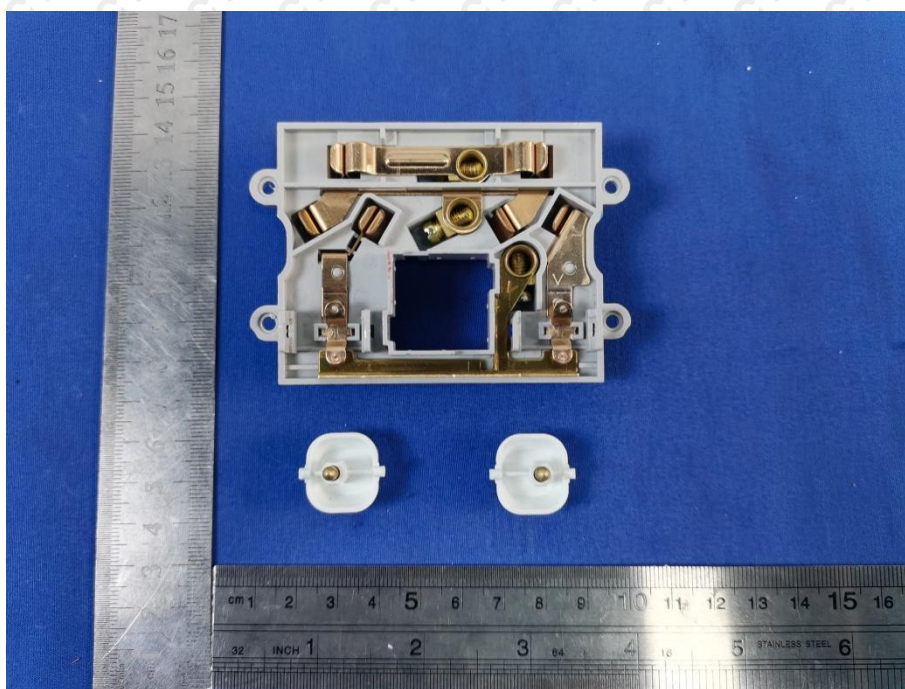


Model: V16/316B (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 113.....

Internal View



Model: V16/316B (Rating: 250Va.c., 10A)

Photo 114.....

External View

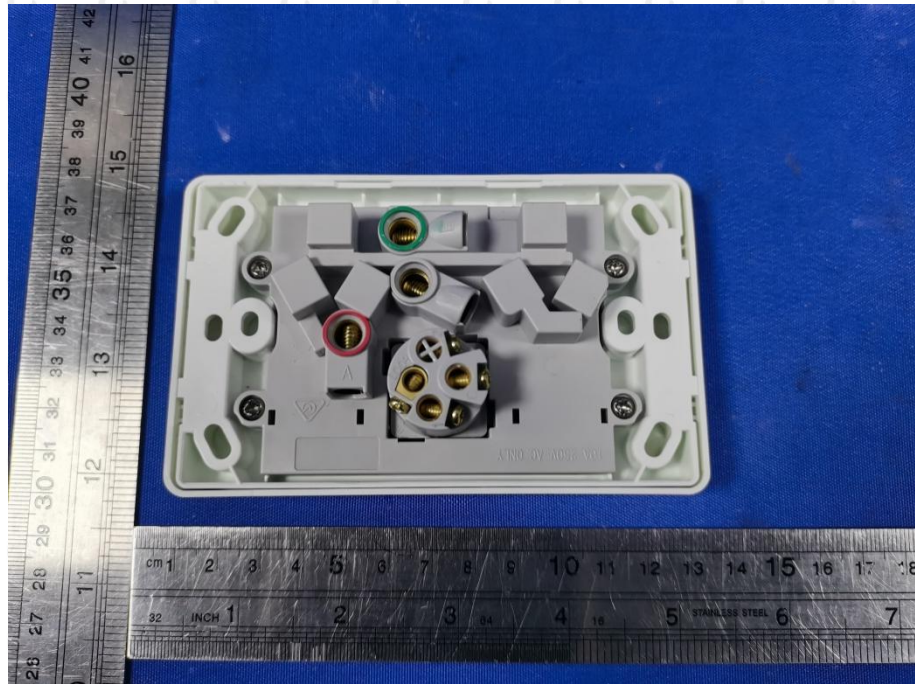


Model: V19/316 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 115.....

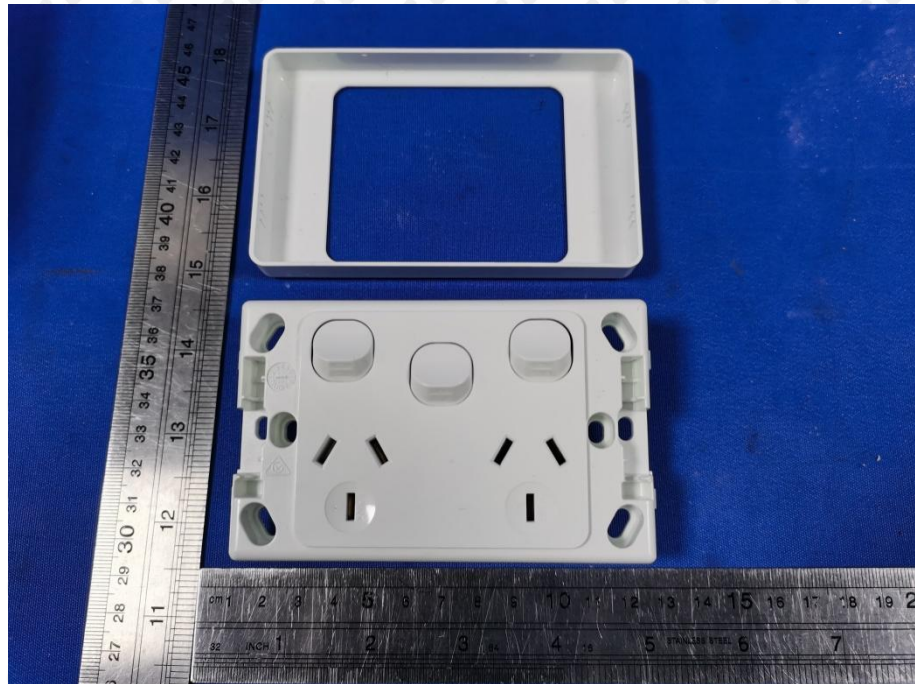
External View



Model: V19/316 (Rating: 250Va.c., 10A)

Photo 116.....

Internal View

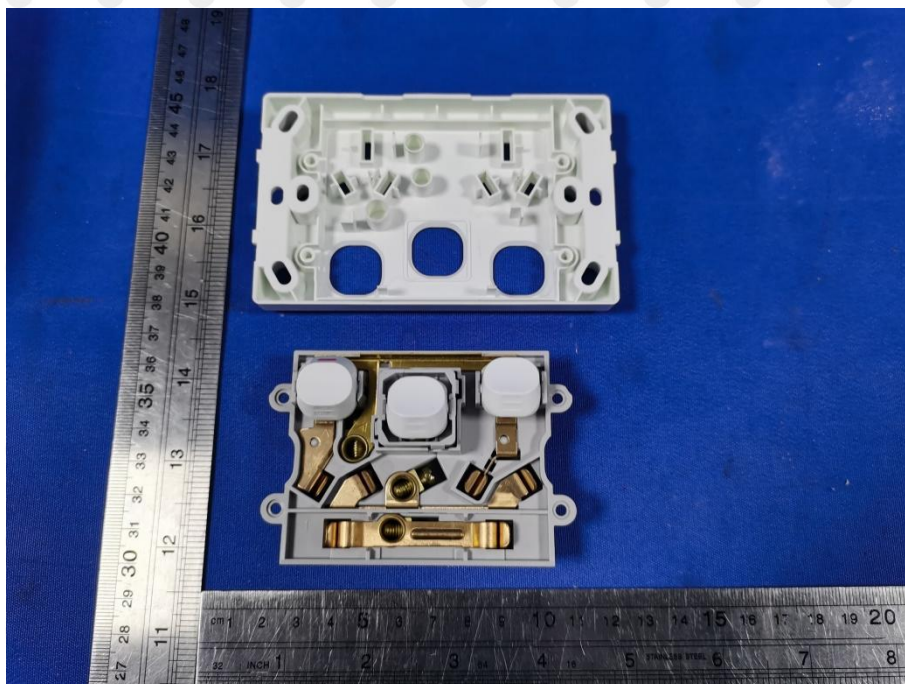


Model: V19/316 (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

Photo 117.....

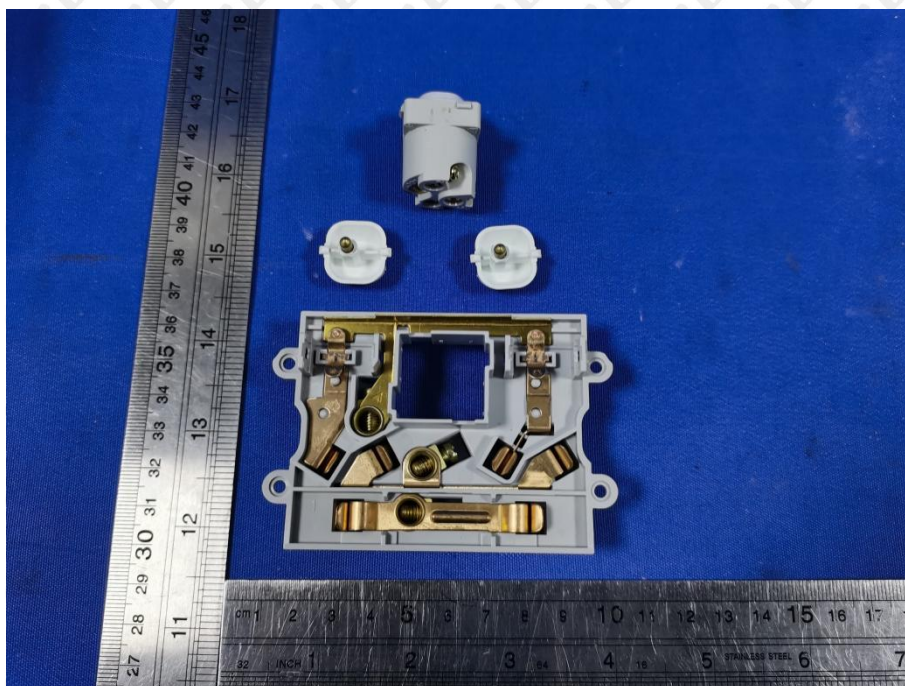
Internal View



Model: V19/316 (Rating: 250Va.c., 10A)

Photo 118.....

Internal View



Model: V19/316 (Rating: 250Va.c., 10A)

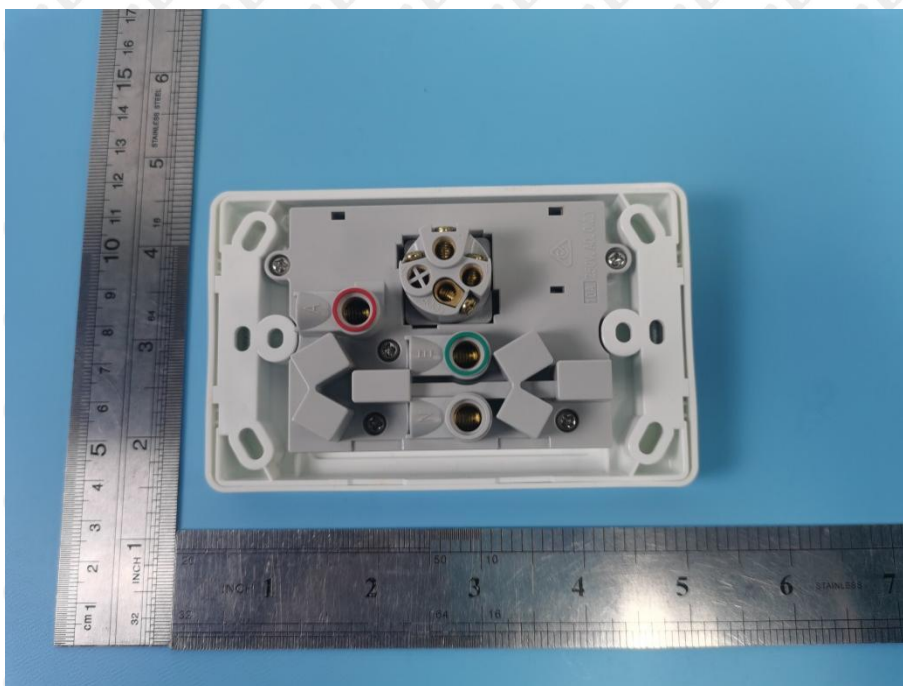
Attachment No. 4: Photo documentation

Photo 119.....



Model: V19/316-V (Rating: 250Va.c., 10A)

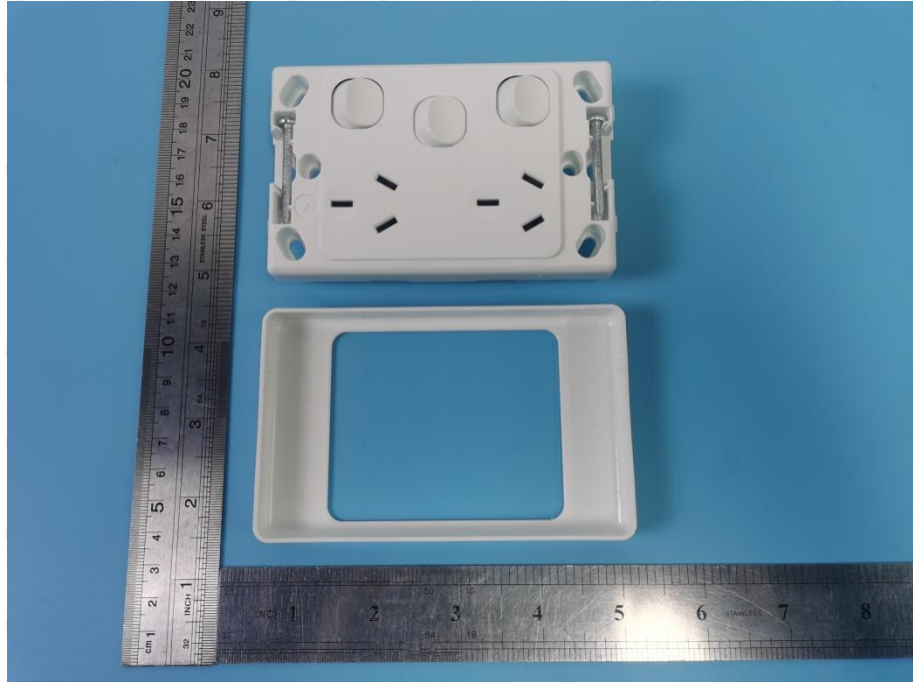
Photo 120.....



Model: V19/316-V (Rating: 250Va.c., 10A)

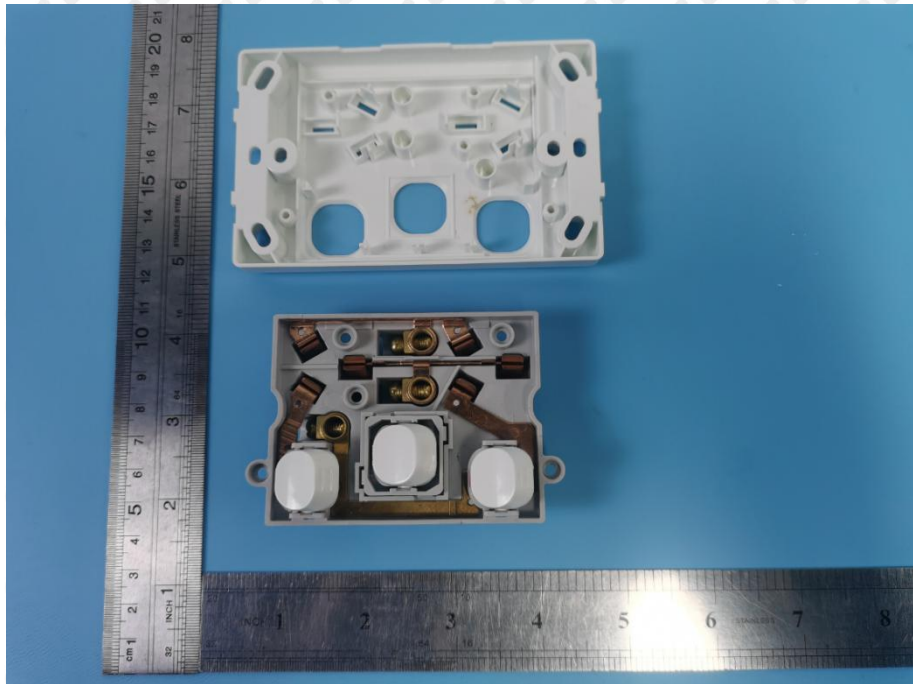
Attachment No. 4: Photo documentation

Photo 121.....



Model: V19/316-V (Rating: 250Va.c., 10A)

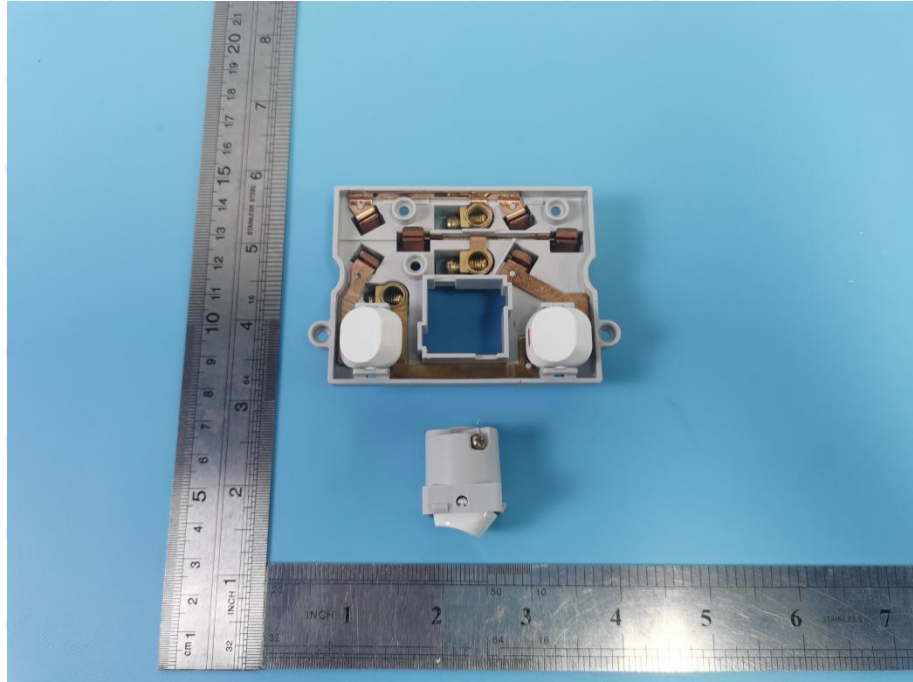
Photo 122.....



Model: V19/316-V (Rating: 250Va.c., 10A)

Attachment No. 4: Photo documentation

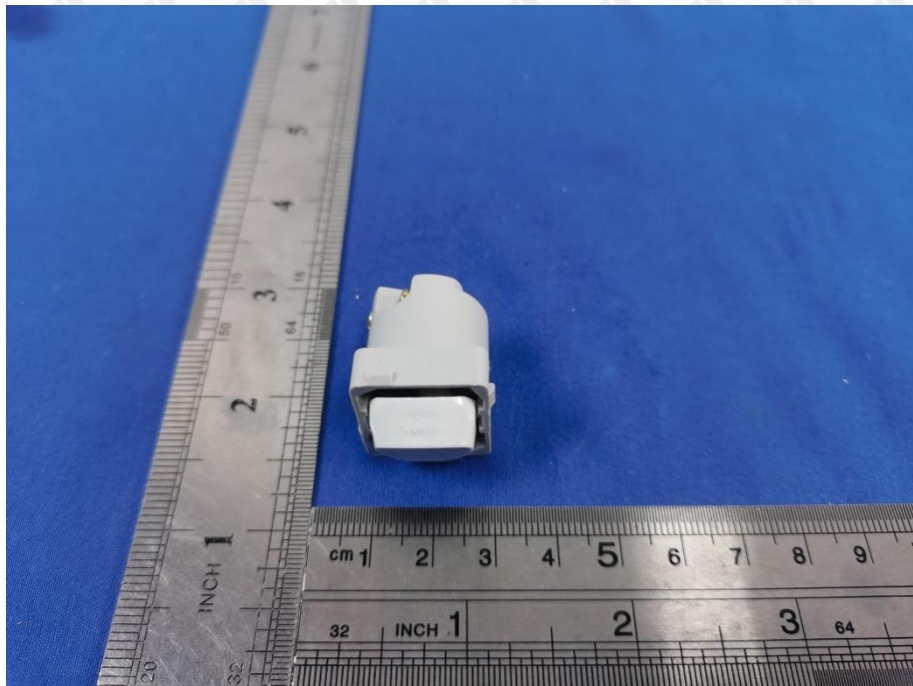
Photo 123.....



Model: V19/316-V (Rating: 250Va.c., 10A)

Photo 124.....

Internal View

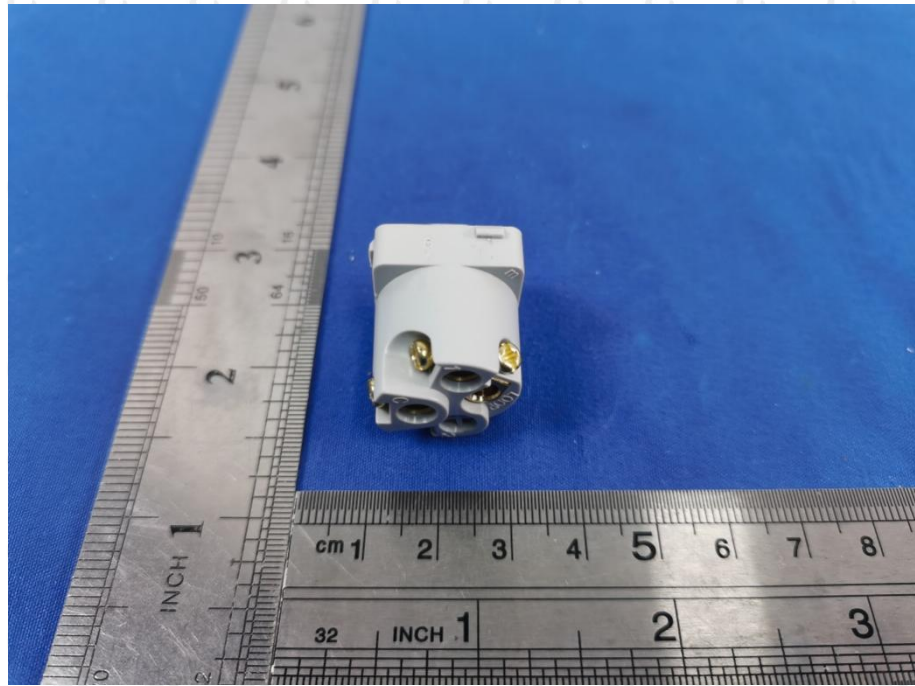


Switches Assemblies incorporated in product
(Rating: 250Va.c., 10AX, or 250Va.c., 16AX)

Attachment No. 4: Photo documentation

Photo 125.....

Internal View



Switches Assemblies incorporated in product
(Rating: 250Va.c., 10AX, or 250Va.c., 16AX)

Photo 126.....

Internal View

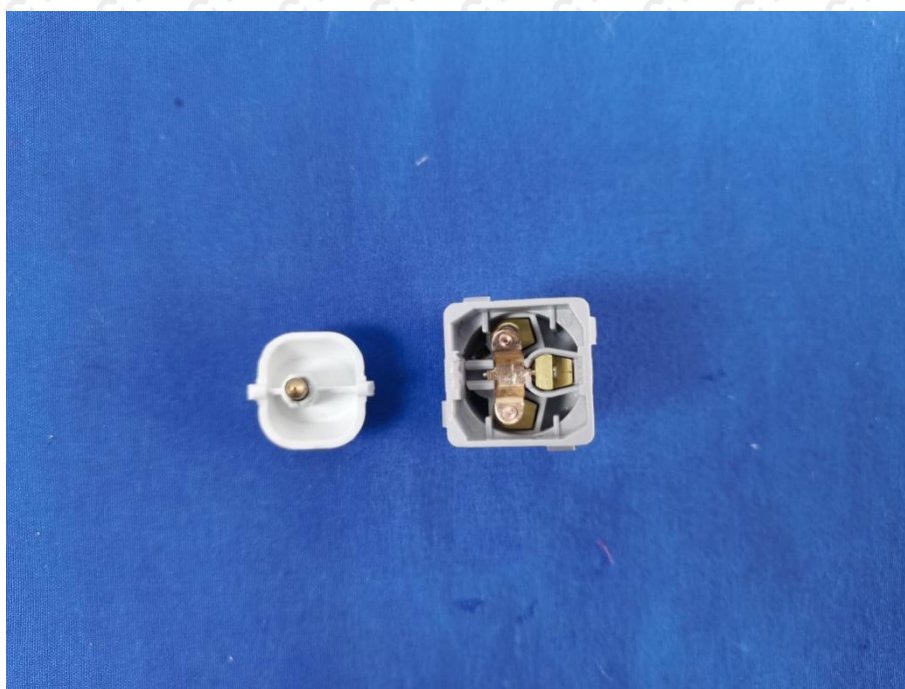


Switches Assemblies incorporated in product
(Rating: 250Va.c., 10AX, or 250Va.c., 16AX)

Attachment No. 4: Photo documentation

Photo 127.....

Internal View



Switches Assemblies incorporated in product
(Rating: 250Va.c., 10AX, or 250Va.c., 16AX)

Photo 128.....

Internal View



Switches Assemblies incorporated in product
(Rating: 250Va.c., 10AX, or 250Va.c., 16AX)

*****End of the report*****