

General

Various electrical equipment with doors or draws, retractable parts or the like may have those features using motor driven controls to open or close (a 'driven part'). These driven parts may operate automatically or semi automatically or via push button control or remote control at the start of a cycle of the equipment or simply to close the door/draw etc. These doors, draws, retractable parts or the like may create an entrapment or other injury risk due to the nature of their operation.

It has been identified some equipment (microwave ovens for example) have design that include types with driven doors for opening and closing. These driven doors or other driven parts of a microwave oven may have an entrapment risk to be addressed that AS/NZS 60335.2.25 may not fully address. Similarity the standards for equipment that have not traditionally had driven doors may not have criteria to fully address the risk of entrapment of an automatic or semi-automatic moving part.

Requirement

Where a relevant standard may not address all the risks related to the particular equipment or particular design additional tests from other standards may need to be applied.

Microwave ovens

As an example, for Microwave ovens certification requirements, in addition to full compliance with AS/NZS 60335.2.25, microwave ovens with driven doors or other driven parts that open or close automatically, and that are accessible to the end user during normal operation, are required have evidence the driven function is assessed to not be a risk of entrapment or other injury.

AS/NZS 60335.2.25 does not currently have a clear assessment requirement for driven doors. Until AS/NZS 60335.2.25 is amended to include a requirement, a method to assess this risk could be to apply requirements no less than the requirements of AS/NZS 60335.2.31 clause 20.101 (note the TEST CRITERIA of following page is that clause amended to be a general requirement for all equipment).

Other Equipment

For other equipment a method to apply requirements no less than the requirements of AS/NZS 60335.2.31 clause 20.101 could apply where the specific equipment safety standard does not have its own tests to assess entrapment or other injury from a driven part. See TEST CRITERIA for application to any equipment.

For EESS certification the test report to this TEST CRITERIA requirement does not need to be a formal accredited report but must come from a test facility which has accreditation that includes AS/NZS 60335.2.31 (or IEC 60335.2.31) (and not be CTF3 or CTF4 if an IECCE CB report).

Background

The relevant standard for a type is applied to in-scope electrical equipment, however additional requirements from other standards may need to be applied to address risks not always identified in the relevant standard.

TEST CRITERIA

(to assess entrapment or other injury from driven parts of an appliance accessible to the user during normal operation - as amended from AS/NZS 60335.2.31)

If a part of an appliance can be moved automatically (a driven part), and that are accessible to the end user during normal operation, there shall be no risk of entrapment or injury.

Compliance is checked by the following test.

The appliance is operated at rated voltage and is operated to open and close the driven part.

The driven part shall

- a) decelerate to a speed lower than 15 mm/s in the last 50 mm of the movement, as it approaches any position in which entrapment can occur; or
- b) when IEC 61032 probe 32 is placed at any potential entrapment point across the width and height of the opening:
 - stop and reverse direction before contacting the probe; or
 - if the probe is touched by the driven part:
 - not exert a force on the probe exceeding a value of:
 - 25 N, for more than 5 s;
 - 100 N, for more than 0,5 s

If compliance relies on the operation of an electronic circuit, the test is repeated under the following conditions applied separately:

- the fault conditions in a) to g) of 19.11.2, are applied one at a time to the electronic circuit;
- the electromagnetic phenomena tests of 19.11.4.2 and 19.11.4.5 are applied in turn to the appliance. The tests are carried out with surge protective devices disconnected, unless they incorporate spark gaps.

The driven part shall

- a) decelerate to a speed lower than 15 mm/s in the last 50 mm of the movement, as it approaches any position in which entrapment can occur; or
- b) when IEC 61032 probe 32 is placed at any potential entrapment point across the width and height of the opening:
 - stop and reverse direction before contacting the probe; or
 - if the probe is touched by the driven part:
 - not exert a force on the probe exceeding a value of 100 N; or
 - not subject the probe to a shear force.

(Alternate)

- not exert a force on the probe exceeding a value of:
 - 25 N, for more than 5 s;
 - 100 N, for more than 0,5 s