

SAFETY

Thinking safe with Automatic Garage Doors.

Overview:

Modern residential garage door openers are required by Australian / New Zealand compliance regulations to be designed with safety entrapment protection systems.

The relevant standard is:

AS/NZS 60335-2-95:2012 “Household and similar electrical appliances – Safety – Part 2-95: Particular requirements for drives for vertically moving garage doors for residential use”.

There are basically two types of entrapment protection systems:

- Primary entrapment protection (also called inherent entrapment protection), which is the contact-based force reversal system that is built into the residential door opener;
- Secondary entrapment protection, which consists of additional devices not directly built into the opener, including light barriers (IR-beams), pressure pads in the floor area under the door, or door edge contact sensors.

In order to be able to operate the door without the use of any secondary entrapment devices, i.e. the opener has to rely on the inherent force reversal system alone, the opener must meet the requirements of clause 20.104.1 of AS/NZS 60335-2-95. This sub-clause details the test procedure and pass/fail criteria for the force reversal.

This test specifies a certain type of force gauge that must be used:



This instrument measures and records the force level that the leading edge of the door exerts when in contact with the gauge. The device also records duration of this impact. An average of three readings is taken at each of the following locations:

Measurement height above ground	Force gauge location		
	200 mm from left door edge	door centre	200 mm from right door edge
50 mm			
300 mm			
500 mm			
2,500 mm or 300 mm below max opening height			



AS/NZS 60335-2-95:2012 specifies the maximum forces that can be applied to the obstructing object:

Clause 20.104.1 specifies the permissible values of force level and duration. In short, the following values **must not be exceeded**:

- **max force level: 400 N**
- **max force duration: 0.75 seconds**

If these values are exceeded at any of the measurement locations specified above, additional secondary entrapment protection devices, such as IR-beams, must be used.

With the addition of IR-beams, the permissible values for force level and duration must not exceed:

- **max force level: 800 N**
- **max force duration: 2 seconds**

Clause 20.104.2 describes the test procedure for non-contact secondary entrapment protection devices, such as IR-beam systems, if the closing forces exceed 400 N (and 0.75 s duration). The test specimen in this clause requires that a 100 mm high obstacle can be detected by the IR-beam system. This then requires that the **IR-beam system be installed at a height such that it can detect a 100 mm high object on the floor.**

Door mass and **door size**, and **closing speed**, have significant impact on the closing force levels. For safe operation, the door parameters must be within the specification of the opener intended for the application.

Note: *This bulletin is for information purposes only and does not attempt provide a full or complete outline of the compliance standard quoted. Installers must ensure that they are fully acquainted with the latest revision of the relevant standard as this is subject to change without notice or reference by this document.*

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