

Garage doors and other large access doors

AS/NZS 4505:2013

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The following are represented on Committee BD-014:

Australian Building Codes Board
Australian Garage Door Association
Australian Steel Institute
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This Standard was issued in draft form for comment as DR AS/NZS 4505.

Australian/New Zealand Standard™

Garage doors and other large access doors

Originated in part as AS/NZS 4505:1998 and AS/NZS 4504, Parts 0 to 3 (1998).
Jointly revised, amalgamated and designated as AS/NZS 4505:2013.

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD-014, Metal Cladding, to supersede AS/NZS 4505:1998, *Domestic garage doors* and AS/NZS 4504, Parts 0 to 3 (1998), *Domestic garage doors—Methods of test*.

The objective of this Standard is to provide specifications covering the construction and performance criteria of large access doors including garage doors. It addresses minimum performance requirements for structural loads as well as manufacturing and installation issues.

This Standard now incorporates the test methods that previously comprised the AS/NZS 4504 series.

The Standard specifies information to be provided for designers of buildings on the loads that the doors apply to the buildings.

This Standard is written with reference to the wind classification systems embodied in AS/NZS 1170.2, *Structural design actions*, Part 2: *Wind actions*, AS 4055, *Wind loads for housing* and NZS 3604, *Timber framed buildings*, and it is bound by the limitations of these Standards, as applicable.

For Class 2 to Class 9 buildings as defined in the NCC, doors are rated according to pressures which enable them to be used with buildings designed using AS/NZS 1170.2.

For Class 1 and Class 10 buildings as defined in the NCC, doors are rated according to wind classifications in AS 4055 and are compatible with buildings designed using either AS 4055 or AS/NZS 1170.2.

In New Zealand, doors are rated according to the wind zones in NZS 3604 and are compatible with buildings designed using NZS 3604 or AS/NZS 1170.2.

The terms ‘normative’ and ‘informative’ have been used in the Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of the Standard, whereas an ‘informative’ appendix is only for information and guidance.

This document includes commentary on some of the clauses of the Standard. The commentary directly follows the relevant clause, is designated by ‘C’ preceding the clause number and is printed in italics in a box. The commentary is for information and guidance and does not form part of the Standard.

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Garage doors and other large access doors**

1 SCOPE

This Standard specifies requirements for the design, construction, and installation of garage doors and other large access doors in external walls of buildings. This Standard applies to doors for openings up to three metres in height including types listed in the definitions.

This Standard includes provisions to evaluate actions transferred from the doors to the supporting structure or building.

The Standard includes the following classifications:

- (a) Classification (applicable to all doors) (see Clause 5.1).
- (b) Ultimate wind pressure rating (applicable to all doors).
- (c) Wind-borne debris impact rating (see Clause 5.4).

NOTES:

- 1 For Class 2 to Class 9 buildings, as defined in the NCC ultimate wind pressure ratings for doors, are compatible with pressures from AS/NZS 1170.2.
- 2 For Class 1 and Class 10 buildings as defined in the NCC ultimate wind pressure ratings for doors, are compatible with either AS 4055 or AS/NZS 1170.2.

2 APPLICATION

In order to claim (in any way, be it written, verbal or otherwise) compliance with this Standard, conformance with all the requirements contained herein is mandatory.

3 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard.

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS

4055 Wind loads for housing

AS/NZS

1170 Structural design actions

1170.2 Part 2: Wind actions

NZS

3604 Timber framed buildings

ABCB

NCC National Construction Code

4 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

4.1 Closing edge

The edge(s) of the door that closes up against the surrounding structure or is approximately perpendicular to the main direction of motion. For a rolling curtain or shutter door, this is the lower edge of the door. For a rigid overhead door, this is the lower edge and the side edges. For a sectional overhead door, this is the lower edge of each panel.

4.2 Counterbalance system

Component or set of components that act against the force of gravity to reduce the effort required to operate the door.

4.3 Cycle

A door cycle consists of moving the door from a fully closed position to a fully open position, and back to the fully closed position.

4.4 Extension spring

A spring designed to operate in a counterbalance system to provide a lifting force by the stretching or pulling of the spring developing tension to counterbalance a load applied to it.

4.5 Garage doors and other large access doors

A door in an external wall not more than 3 m high and wide enough for vehicles or other equipment to access and egress a building including a private garage.

Within the definition of garage doors and other large access doors are particular types of garage doors as indicated below.

4.5.1 *Hinged door*

Single or multi-part door that is attached to the structure by two or more hinges and typically opens and closes by rotation in the vertical plane, similar to a hinged gate. See Figure 4.6.

4.5.2 *Rigid overhead door*

A door made in one rigid piece designed to close an entire opening. This includes tilting doors. Opening and closing is achieved by pivoting the door about a fixed or moving axis. See Figure 4.3.

4.5.3 *Rolling curtain door*

A door made with a flexible one-piece curtain held in horizontal or vertical guides. The door is opened by rolling the door around a cylindrical drum or shaft incorporating a counter balance system and subsequently upon itself. See Figure 4.1.

4.5.4 *Rolling shutter door*

A door made of individual horizontal interlocking slats, held in vertical guides. The door is opened by rolling the door around a drum or shaft and subsequently upon itself. See Figure 4.1.

4.5.5 *Sectional overhead door*

A door made of two or more horizontal sections hinged together so as to provide a door large enough to close the entire opening and which is guided in vertical only, or vertical and horizontal, or inclined tracks by rollers situated at the ends of each panel. See Figure 4.4.

4.5.6 Sliding door

A door made in one rigid piece and designed to close an entire opening. The door is opened by sliding it horizontally to one side and may be constrained by overhead rollers and track with bottom guide, or bottom rollers and track with overhead guide. See Figure 4.5.

4.5.7 Vertical folding door

A door made of two or more sections that are hinged together but fold one against the other when opened. Doors are normally hung from an overhead horizontal track but can be guided at both the top and the bottom. See Figure 4.7.

4.6 Guiding system

Any component or mechanism (other than the counterbalance) that constrains the trajectory of the door during travel and locates the door when it is stationary.

4.7 May

Indicates the existence of an option.

4.8 Mullion

A vertical structural member that fits between two door curtains and generally contains door-curtain guiding devices. See Figure 4.2.

Mullions can be one of the following types:

- (a) Fixed.
- (b) Lift out.
- (c) Hinged.
- (d) Slide aside.

4.9 Shall

Indicates that a statement is mandatory.

4.10 Should

Indicates a recommendation.

4.11 Weatherseal

A flexible weather resistant strip that may be fitted to either the edges of the door or the door opening.

4.12 Wind braces

Additional component used in cyclonic areas to increase the resistance of a door to high wind loads.

NOTE: Wind braces are only acceptable under this Standard where used to resist high wind in cyclonic areas.

4.13 Wind lock

Additional component used to increase the resistance of a door to wind loads, normally used to resist in-plane forces between door curtain and guiding system. (See Figure 4.1 for a typical example.)

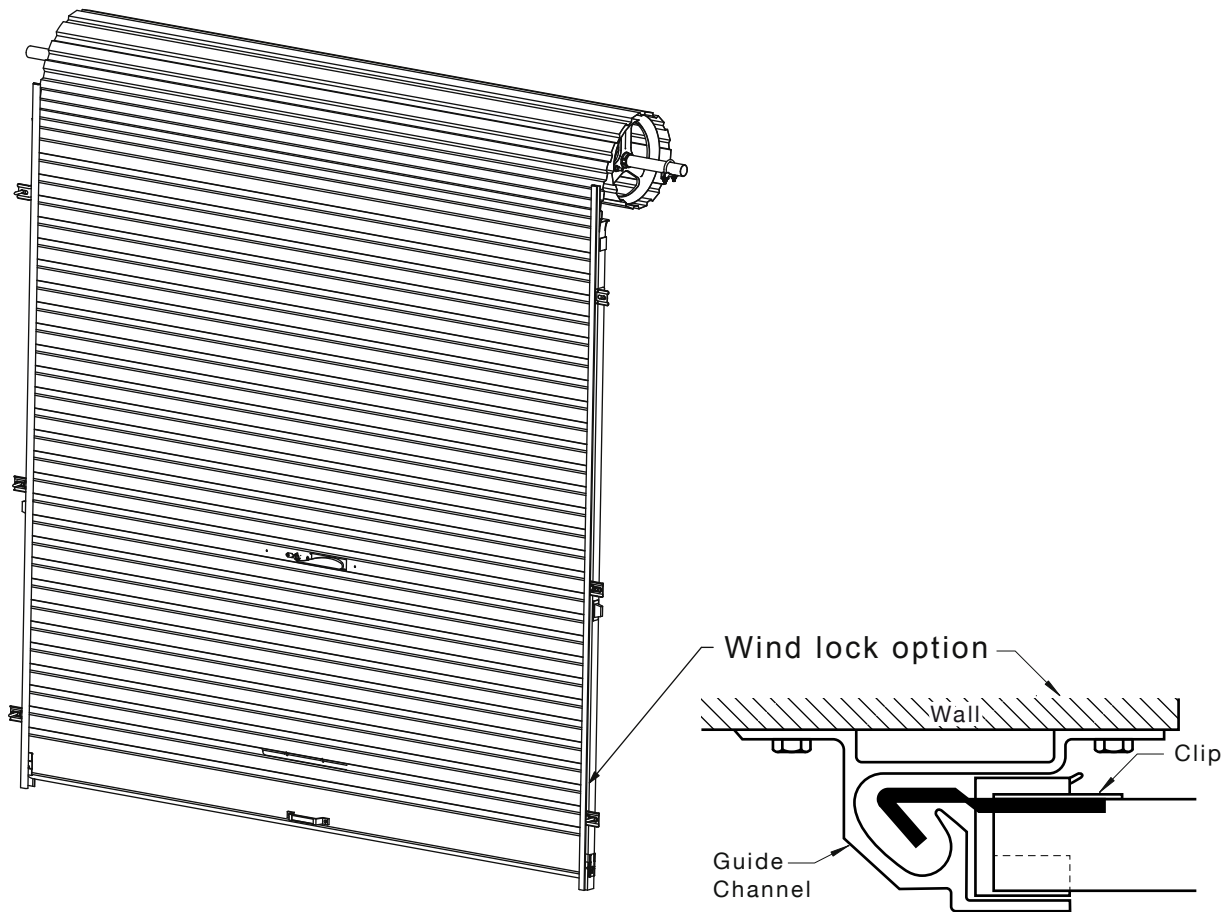


FIGURE 4.1 TYPICAL ROLLING CURTAIN AND ROLLING SHUTTER DOOR

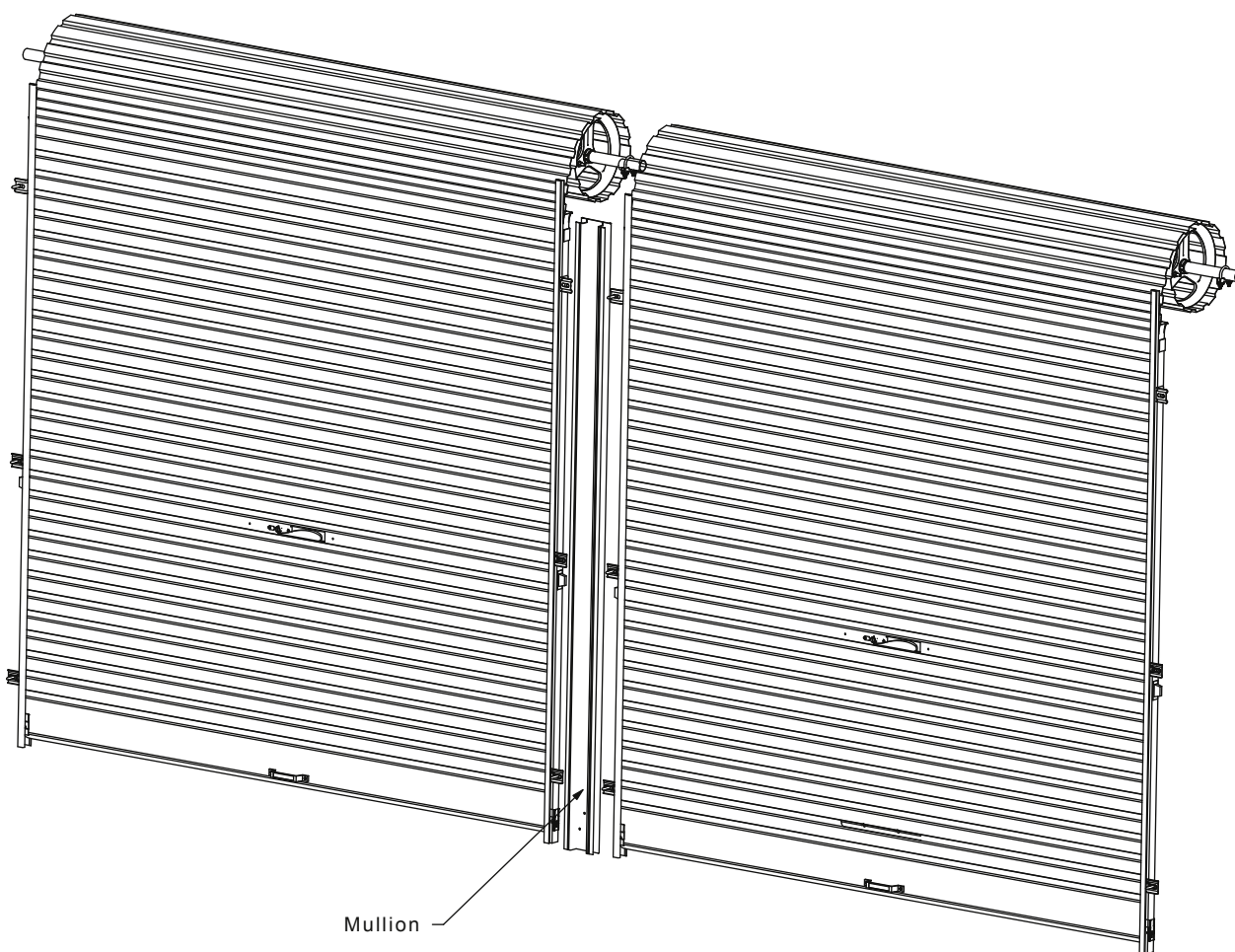


FIGURE 4.2 TYPICAL MULLION

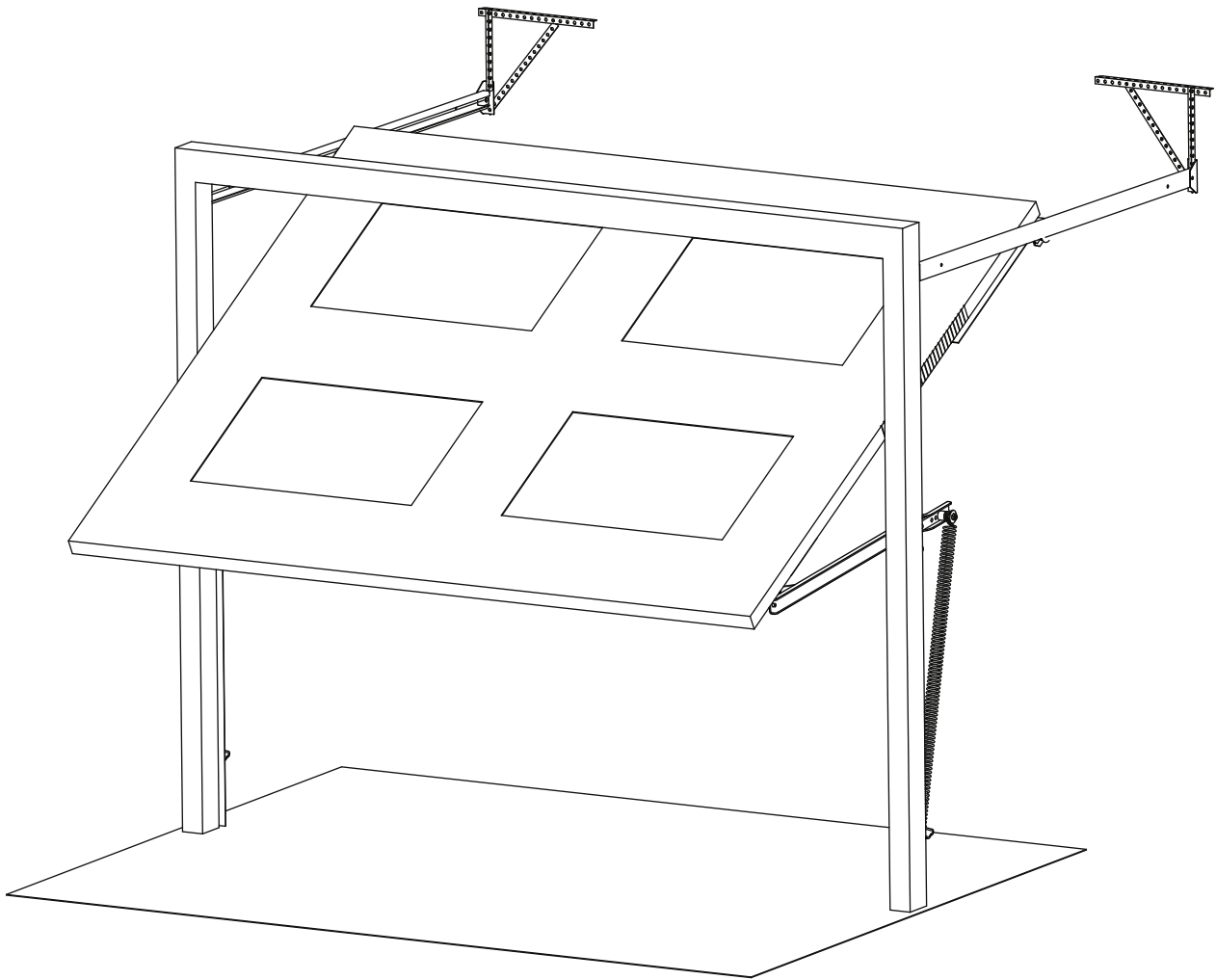


FIGURE 4.3 TYPICAL RIGID OVERHEAD DOOR

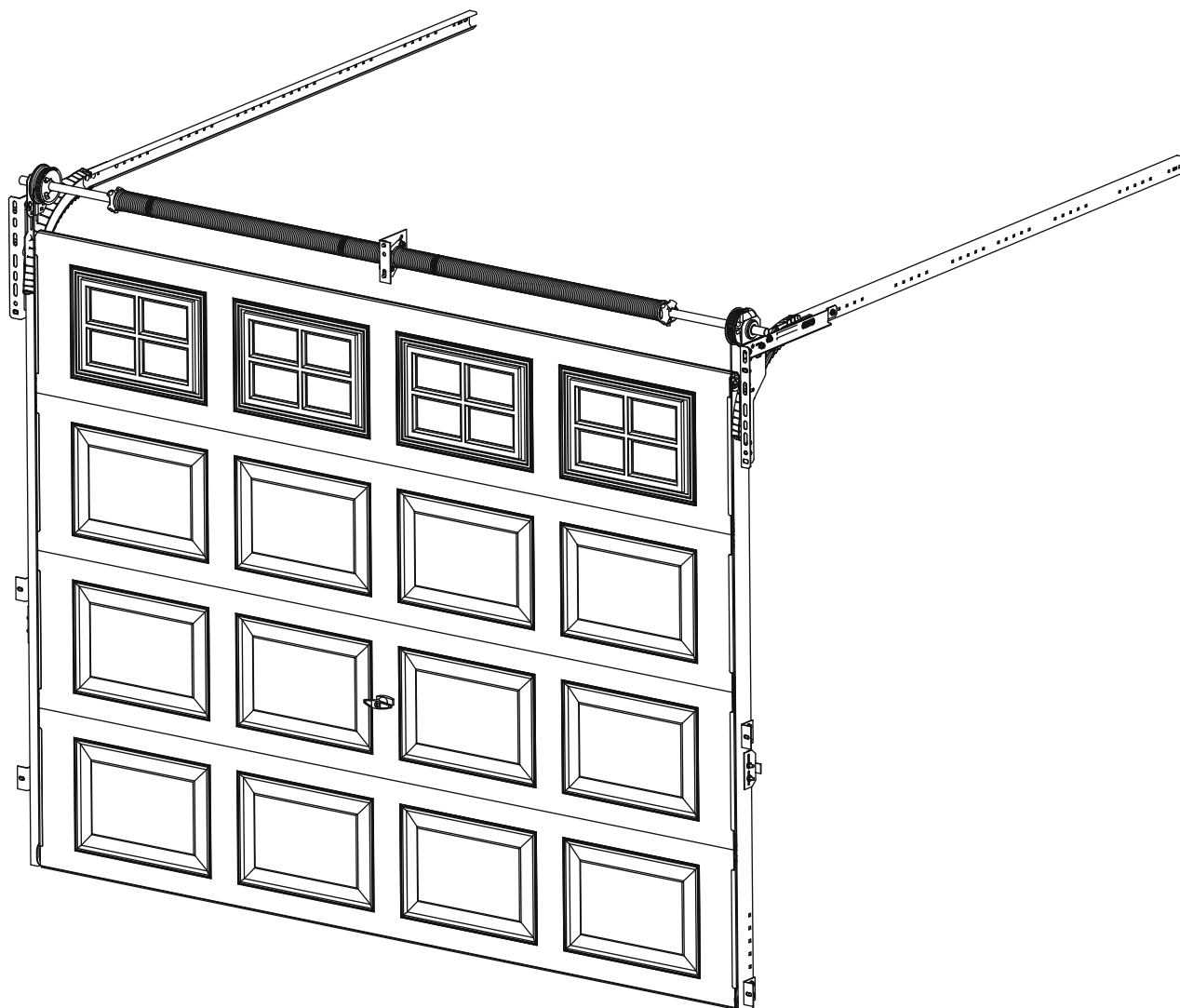


FIGURE 4.4 TYPICAL SECTIONAL OVERHEAD DOOR

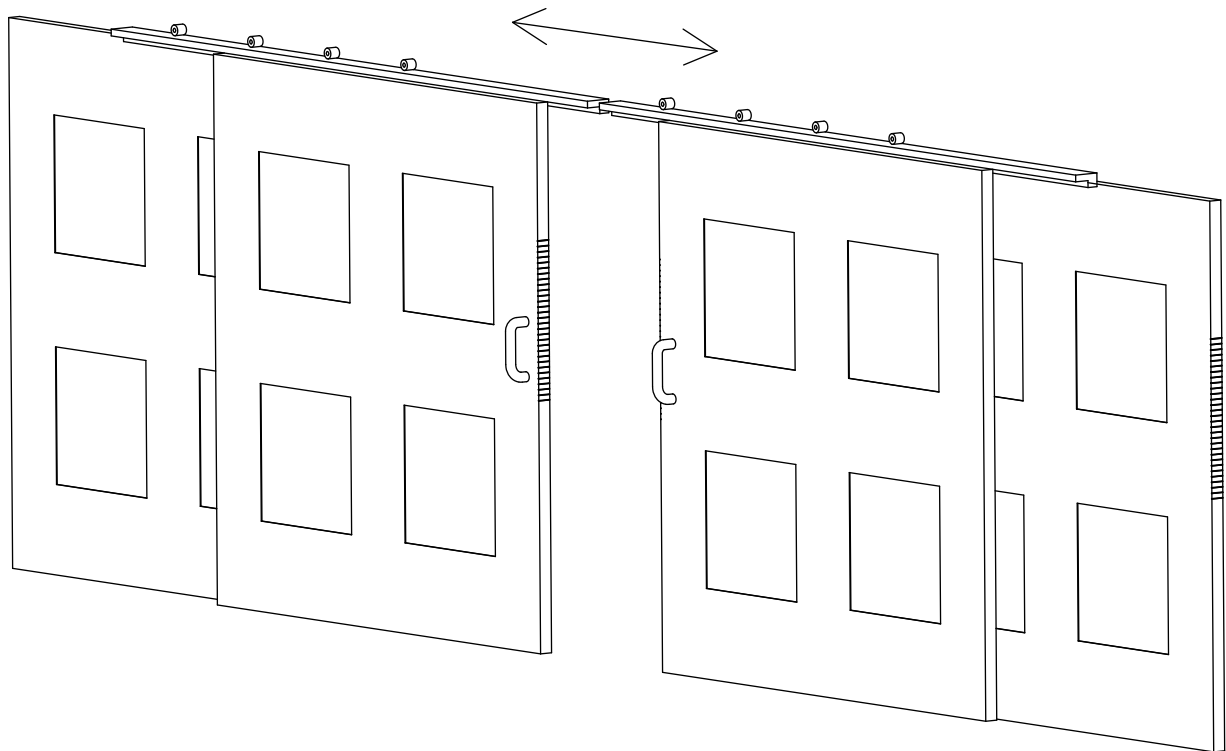


FIGURE 4.5 TYPICAL SLIDING DOOR

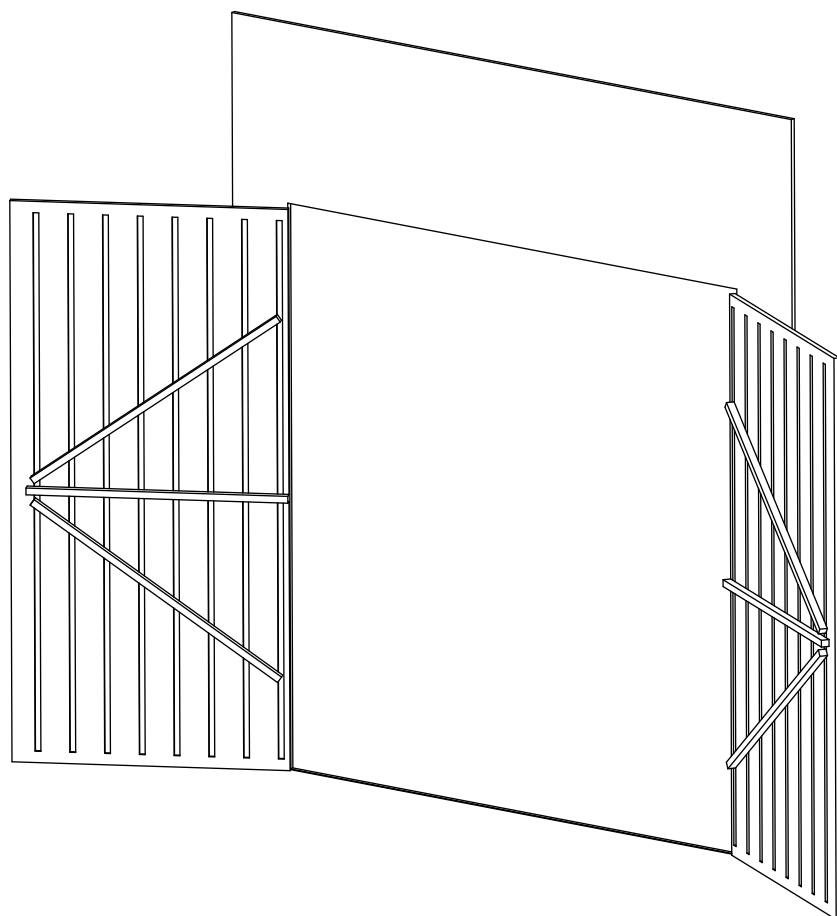


FIGURE 4.6 TYPICAL HINGED DOOR

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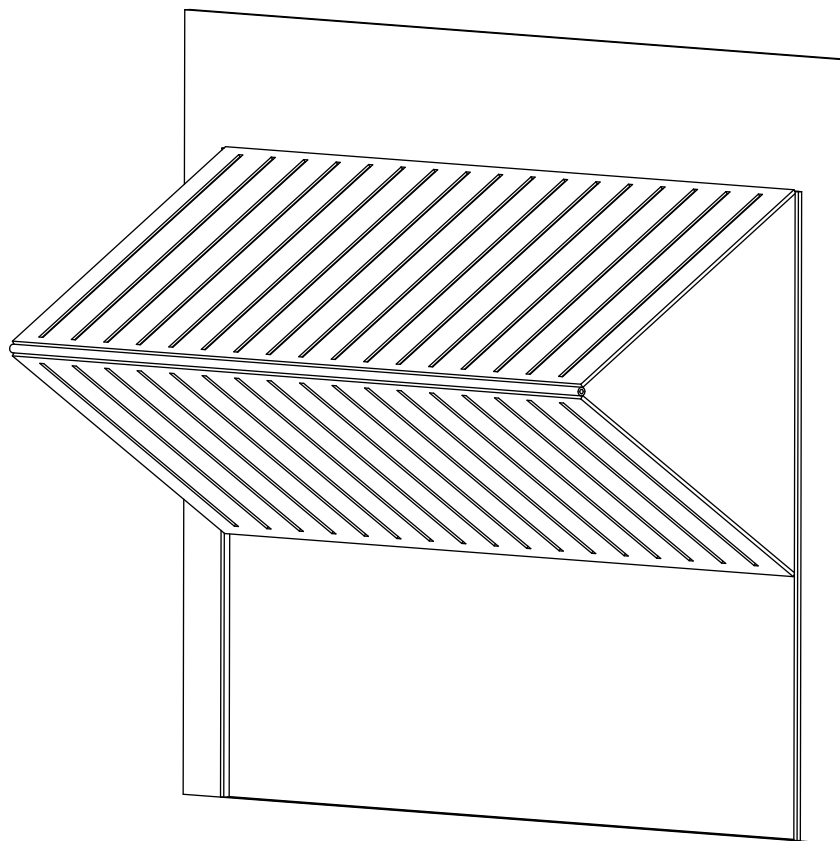


FIGURE 4.7 TYPICAL VERTICAL FOLDING DOOR (HORIZONTAL FOLD)

5 CLASSIFICATION AND RATING

5.1 Classification

Doors shall be classified as detailed in Table 5.1.

Classifications shall be verified by testing to Clause 7.

TABLE 5.1
DOOR CLASSIFICATION

Classification	Application		Number of cycles
	Australia	New Zealand	
Domestic	Class 1 and Class 10 buildings	Household units and garages	20 000
General purpose	Classes 1 to 10 buildings	All buildings	See Appendix C

For doors classified as ‘General purpose’ doors, a sub-classification shall be used to indicate whether it has been classified as ‘General purpose—low cycle’, ‘General purpose—medium cycle’ or ‘General purpose—high cycle’, as described in Table C1.

5.2 Ultimate wind pressure rating

5.2.1 General

Each door shall be classified with an ultimate wind pressure rating as follows:

- (a) Domestic doors in New Zealand—a wind zone as defined in NZS 3604 and summarized in Table 5.3.

- (b) Domestic doors in Australia—a wind classification as defined in AS 4055 and summarized in Table 5.2.
- (c) General purpose doors in Australia and New Zealand—an ultimate wind pressure inwards and an ultimate wind pressure outwards are to be related to building envelope pressures derived from AS/NZS 1170.2. Where general purpose doors have one ultimate wind pressure rating, the rating shall be interpreted as the same value inwards and outwards. This ultimate wind pressure rating shall indicate whether verification used cyclonic or non-cyclonic tests (see Appendix A).

NOTE: Where the ultimate wind pressure rating was verified using cyclonic testing, the door is appropriate for use in both cyclonic and non-cyclonic regions. However, doors verified against non-cyclonic tests are not rated for use in cyclonic regions.

5.2.2 Ratings

5.2.2.1 General

All components of doors (including wind locks, mullions, tracks, and guides, if fitted) shall be designed, constructed and installed to resist pressures corresponding to the ultimate wind pressure rating.

Ultimate wind pressure ratings shall be verified by testing to Clause 7.

5.2.2.2 Domestic doors

Wind pressures corresponding to the ultimate wind pressure ratings for domestic doors shall be taken from Table 5.2 for doors used in Australia, and Table 5.3 for doors used in New Zealand.

TABLE 5.2
PRESSURES FOR ULTIMATE WIND PRESSURE RATINGS
DERIVED FROM AS 4055 (AUSTRALIA ONLY)

Wind classification	Door width			
	<4 m		≥4 m	
	Ultimate wind pressure, kPa			
	Inward	Outward	Inward	Outward
N1	0.69	−0.73	0.69	−0.63
N2	0.95	−1.02	0.95	−0.87
N3	1.49	−1.59	1.49	−1.37
N4	2.22	−2.36	2.22	−2.03
N5	3.27	−3.47	3.27	−2.99
N6	4.41	−4.69	4.41	−4.04
C1	1.96	−2.26	1.96	−2.04
C2	2.92	−3.37	2.92	−3.04
C3	4.30	−4.95	4.30	−4.47
C4	5.81	−6.69	5.81	−6.04

NOTES:

- 1 Ultimate wind pressures in this table incorporate appropriate local pressure factors.
- 2 Ultimate wind pressures must be factored up in accordance with Table A2 to obtain test pressures.