WINDSTRONG® WINDLOCKED ROLLER DOORS

REGION C TO MEET AS/NZ 4505:2012

Protection in high force wind conditions
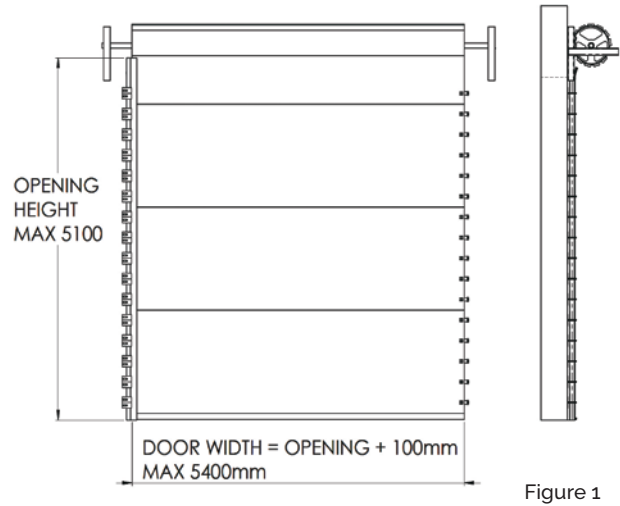
taureands.com.au

Figure 1

OPENING
HEIGHT
MAX 5100

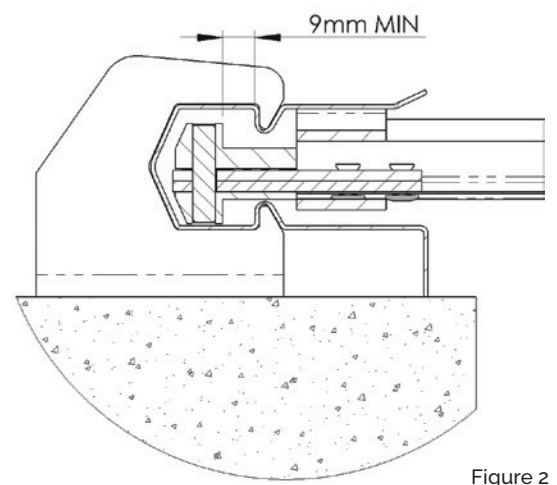DOOR WIDTH = OPENING + 100mm
MAX 5400mm

9mm MIN

Figure 2

Windstrong®
Windlocked Roller Door

In May 2013 the National Construction Code was changed to include reference to AS/NZS 4505:2012 Garage doors and other large access doors (up to 3m high) with specific focus on new construction in Region C. The relevant wind pressure for doors higher than 3m can still be computed by referring to AS/NZS 1170.2 or AS 4055.

This update covers possible door solutions for using the Taurean Windstrong® Windlocked Roller Door. The ultimate wind pressure capacities and the magnitude of the design forces transferred to the supporting structure are given, which both vary with the door width.

The information is based on static and cyclic testing conducted according to AS/NZS 4505:2012.

Taurean® Door Systems comply with all requirements contained in AS/NZS 4505:2012.

Note: Data subject to change because of ongoing testing. See www.taureands.com.au/windratings for latest information.

The Windstrong® Windlock Roller Door has a riveted wind-clip at every second flat, at a spacing of 7 clips/m each side. Every wind-clip is supported by two steel track brackets. It is classified for use both as a Domestic door in Class 1 and 10 buildings to 20,000 cycles, and as a General Purpose – Medium Cycle door in Class 1 to 10 buildings to 20,000 cycles.
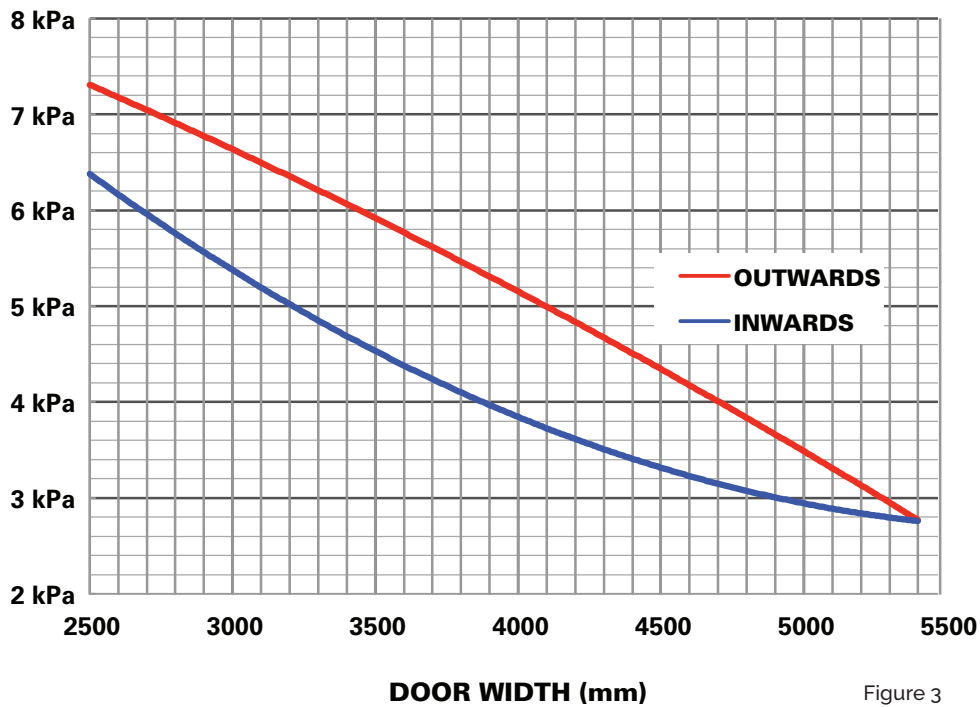
MAX ULTIMATE DESIGN WIND PRESSURE

Figure 3

Design capacity of Windstrong® Doors

Windstrong® doors are rated to the pressures in Figure 3 when installed as per instructions published by Taurean® Door Systems. For Ultimate Design Pressure Rating the lower pressure curve (usually inwards) is used. Maximum width doors for a given Domestic Cyclonic Wind Classification are in Table 1.

MAXIMUM DOOR WIDTH FOR EACH CYCLONIC WIND CLASSIFICATION FOR DOMESTIC (CLASS 1 and 10) BUILDINGS

Wind classification	Ultimate design wind pressure (kPa)		Max door width	Max Force F$_X$*
	Inward	Outward		
C1	1.96	2.04	5400 mm	28.0 kN/m
C2	2.92	3.04	5050 mm	32.8 kN/m
C3	4.30	4.95	3660 mm	34.4 kN/m
C4	5.81	6.69	2770 mm	34.1 kN/m

Table 1

MAXIMUM ULTIMATE WIND PRESSURE AND CORRESPONDING FORCES FOR GENERAL PURPOSE (CLASS 1 to 10) BUILDINGS

Door width (mm)	Maximum ultimate wind pressure (kPa)		Maximum ultimate forces on door frame (kN/m)
	Inward	Outward	Fx*
2550	6.27	7.24	33.8
2800	5.76	6.91	34.9
3100	5.20	6.50	36.2
3430	4.64	6.02	37.1
3750	4.17	5.54	37.7
4350	3.46	4.59	37.0
5100	2.89	3.31	33.6
5400	2.76	2.77	33.9

Table 2

Alternatively, interpolate between lines of Table 2 to find maximum ultimate design wind pressures and maximum abutment forces of other sizes and General Purpose doors.

Table 2 gives the forces and ratings of the upper size of the widths from the Taurean® Door Systems price list.

Note: Ultimate Wind Pressures in Table 2 may be higher than Wind Classification Pressures available in Table 1 for a particular width.

Weather protection

Flexible sealing strip along the bottom rail prevents entry of dust and leaves.

In windy regions the doors can be manufactured with an extra protection, windlock system that gives the door even more security.
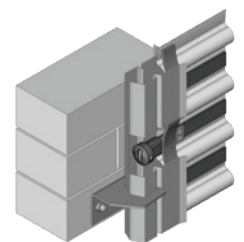
Windlock System

Forces Transmitted To Structure

MAXIMUM CATENARY FORCES ON FOOR FRAME
GENERAL PURPOSE (CLASS 1 to 10) BUILDINGS

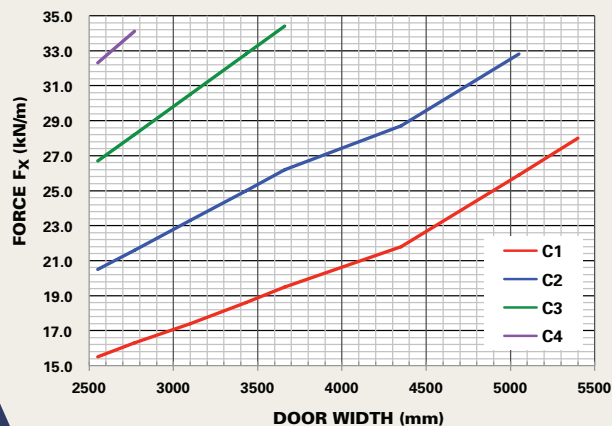| Ultimate Presure (kPa)	Forces (kN/m) for Door width (mm)							
	2550	2800	3100	3430	3750	4350	5100	5400
2.0	14.3	15.3	16.4	17.7	18.9	22.1	26.6	28.3
2.4	16.4	17.5	18.8	20.3	21.8	25.2	29.7	31.5
2.8	18.3	20.0	21.2	22.9	24.5	28.0	32.4	
3.2	20.2	21.6	23.4	25.3	27.2	30.5		
3.6	21.9	23.5	25.5	27.6	29.7			
4.0	23.5	25.3	27.5	29.8	32.1			
4.4	25.1	27.0	29.3	31.9				
4.8	26.5	28.6	31.1					
5.2	27.8	30.1	32.8					
5.6	29.0	31.4						
6.0	30.2							

Table 3

Designers must allow for the forces that a Windstrong® door transmits to the supporting structure when subject to a wind pressure. The forces have two components, one aligned with the wind direction F_Y and another parallel with the door plane due to catenary tension in the door curtain F_X.

The designer can calculate the force F_Y using: $F_Y = \dfrac{wL}{2}$

Where:
- F_Y = force per vertical meter (kN/m)
- w = ultimate wind pressure (kPa)
- L = door width (m)

Figure 4

The maximum catenary force F_X can then found by referencing Figure 5 for Domestic, or Table 3 for General Purpose doors.

Figure 5 gives the maximum catenary F_X forces at various pressures. For pressures lower than the ultimate design wind pressure the forces will be lower. Interpolate from Table 3 for general solutions. Maximum pressure (usually outwards) is used to determine the force. Note: Interpolation (but not extrapolation) is allowed for all tables and graphs presented here. For doors <2550mm wide assume values for wind pressure capacity and abutment forces to be as per an equivalent 2550mm door application.

MAX CATENARY FORCES for C1-C4 DOMESTIC BUILDINGS CLASS 1 and 10

Figure 5

Warranty

For domestic installations only, a 12 month warranty on the door excluding any corrosion due to the proximity of any salt water or if the door is not installed in accordance with the installation instructions. For more details please refer to the Taurean® Door Systems website taureands.com.au.