

REQUEST A QUOTE

Anvil Industrial Doors
 85 Christable Way, Landsdale,
 Western Australia, 6065
 PO Box 1767, Wangara WA 6947
 Phone: (08) 9302 3355
 Fax: (08) 9302 3399

105 Cyclonic Steel Door System

Constructed to cyclonic region specifications (AS/NZS 1170.2 - 2002)

SOUND AND SECURE

Roller Shutters are a proven versatile style of door, ideal for cyclonic areas. They are available with smooth manual or power operation in either galvanised or the full colour range of powder coated finishes. They can be sized to suit openings up to a large 49m².

Roller shutters are ideal for both external and internal installations in most building projects including warehouses, factories, shopping centres, recreation and sporting centres, mining and heavy industry workshop facilities.

CURTAIN

The curtain is manufactured from interlocking, roll-formed, steel slats. The ends of each alternate slat are fitted with hardened cast iron end clips, designed to stop lateral movement and provide a smooth, operation. Curtain as standard is windlocked every slat.

BOTTOM RAIL

The bottom rail of the shutter is extruded aluminium section. A weather seal is fitted as standard to minimise the entry of dust or dirt.

DRUM

The drum is manufactured from mild steel tube. The drum houses bearings counter balancing helical torsion springs, capable of producing sufficient torque to ensure ease of operation of the curtain from any position. With 1.0mm or 1.2mm steel slats with cast windlock clips every slat. Optional powder coat colours.

HEAVY DUTY GUIDE ASSEMBLY

90mm deep with wall thickness of 2.95mm with formed lock rail running full length of guide to secure wind lock clips with patent pending (AU2012261562) cyclonic guide clamp.

Cyclone Testing Station
School of Engineering and Physical Sciences
James Cook University
Townsville Qld 4811 Australia

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TEST SUMMARY SHEET – TS880

Reappraisal Date of Summary of Test Results Sheet: 31 December 2018 (See Note 3 below)

Simulated wind driven debris impact testing was conducted on roller shutter door assemblies. The testing was performed with the use of new materials provided by **Anvil Industrial Doors Pty Ltd.**

Description of Roller Shutter Door Assemblies and Set-Up Tested

Product Name: Anvil Roller Shutter Door
Door Assembly: Door curtain formed by interlocking slats supported in a Guide Assembly with Wind Locks. Guide supported by Guide Bracing System with Cyclone Clamps to a 200PFC jamb.
Door Slats: 0.95 mm Base Metal Thickness (BMT) steel slats with an overall height of about 123 mm and a cover height of 110 mm.
Wind Locks: Long-tailed locks, 123 x 123 overall, and Short tailed locks, 75x50 overall, fitted alternatively. Long tailed locks have 4 rivets per Slat, Short tailed locks have 2 rivets per Slat. Locks are cast steel. Wind Locks to all Slats.
Door Guide Assembly: 90 x 45 x 3.0 mm U shaped with a 20 mm lip to engage Wind Locks, welded to a 75x59x4.0 RHS. Assembly bolted to the web of a 200PFC jamb at 250 centres.
Guide Brace System: 50x25x3.0 RHS held against the inside face of the door guide with Cyclone Clamps.
Cyclone Clamps: C shaped clamps welded to the Guide Brace and bolted to the web of the 200 PFC jamb. Clamps of 5 mm steel approximately 330 mm long and 170 mm deep.
Overall Door Size: 1800 mm high and 2710 mm clear opening.

Client's Details

Name of Client: Anvil Industrial Doors Pty Ltd.
Address of Client: 19 Excellence Drive, Wangara, Western Australia, 6065.

Report and Test Details


Report Details: Cyclone Testing Station Report No. TS880, dated 11 February, 2013.
Report Title: Simulated Windborne Debris Impact Testing of Roller Shutter Door Assemblies
Impact Testing: Testing to Clause 2.5.7 of AS/NZS1170.2:2011

Impact location	Missile	Measured Velocity (m/s)	Result
Adjacent Short-Tailed Wind Clip at Cyclone Clamp with two Short Braces	4 kg, 100 x 50 mm cross-section timber	35.7	Pass
Mid-span of Door		35.5	Pass
Adjacent Short-tailed Wind Clip at Cyclone Clamp with one Long Brace		36.0	Pass
Mid-span of Door	2 g steel spheres 5 shots	45.0, 47.6, 46.3, 43.0, 43.1	Pass

Conditions of Use


1. Test results are only applicable for materials and test geometries used;
2. Refer to Report No. TS880, (contact Anvil Industrial Doors Pty Ltd) for full details of the specimen, test methods, test criteria and results;
3. These test results are based on legislation and standards that are current at the time of issue and may be subject to change. Therefore this Test Summary Sheet should be reappraised by the date noted.

Signed


Mr. A.P. Hatfield
Testing Engineer

Date

11 FEB 13


Mr. C. J. Leitch
Senior Consulting Engineer

11-2-2013

Cyclone Testing Station
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TEST SUMMARY SHEET – TS893

Reappraisal Date of Summary of Test Results Sheet: 30 June 2017 (See Note 2 below)

Simulated wind driven debris impact testing was conducted on roller shutter door assemblies. The testing was performed with the use of new materials provided by **Anvil Industrial Doors Pty Ltd.**

Description of Roller Shutter Door Assemblies and Set-Up Tested

Product Name: Anvil Roller Shutter Door
 Door Assembly: Door curtain formed by interlocking slats supported in a Guide Assembly with Wind Locks. Guide supported by Guide Bracing System with Cyclone Clamps to a 200PFC jamb.
 Door Slats: 1.15 mm Base Metal Thickness (BMT) steel slats with an overall height of about 123 mm and a cover height of 110 mm.
 Wind Locks: Long-tailed locks, 123 x 123 overall, and Short tailed locks, 75x50 overall, fitted alternatively. Long tailed locks have 4 rivets per Slat, Short tailed locks have 2 rivets per Slat. Locks are cast steel. Wind Locks to all Slats.
 Door Guide Assembly: 90 x 45 x 3.0 mm U shaped with a 20 mm lip to engage Wind Locks, welded to a 75x59x4.0 RHS. Assembly bolted to the web of a 200PFC jamb.
 Guide Brace System: 50x25x3.0 RHS held against the inside face of the door guide with Cyclone Clamps.
 Cyclone Clamps: C shaped clamps welded to the Guide Brace and bolted to the web of the 200 PFC jamb. Clamps of 5 mm steel approximately 330 mm long and 170 mm deep.
 Overall Door Opening: 2710 mm clear opening.

Client's Details

Name of Client: Anvil Industrial Doors Pty Ltd.
 Address of Client: 19 Excellence Drive, Wangara, Western Australia, 6065.

Report and Test Details

Report Details: Cyclone Testing Station Report No. TS893, dated 24 April, 2013.
 Report Title: Simulated Windborne Debris Impact Testing of Roller Shutter Door Assemblies
 Impact Testing: Testing to Clause 2.5.7 of AS/NZS 1170.2:2011

Impact location	Missile Type	Measured Velocity (m/s)	Result
Adjacent the "G" Clamp of the Cyclonic Clamp. On slat next to wind locks with only two rivets	4 kg, 100 x 50 mm cross-section timber	40.0	Pass
Midspan of the door, on the interface between two slats		39.7	Pass
Adjacent the "G" Clamp of the Cyclonic Clamp. On slat next to wind locks with only two rivets		39.7	Pass
Grouped near mid-span of door	2 g steel spheres; 5 shots	44.2; 46.7; 43.9; 43.5; 43.5	Pass

Conditions of Use

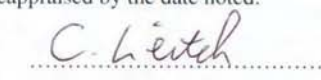
- Refer to Report No. TS893, (contact Anvil Industrial Doors Pty Ltd) for full details of the specimen, test methods, test criteria and results;
- These test results are based on legislation and standards that are current at the time of issue and may be subject to change. Therefore this Test Summary Sheet should be reappraised by the date noted.

Signed


 Mr. T. Walther
 Senior Engineer

Date

24/4/2013


 Mr. C. J. Leitch
 Senior Consulting Engineer

24-4-2013

Correspondence file: XXXX



28 February 2013

Anvil Industrial Doors
19 Excellence Drive
WANGARA WA 6165

Dear Paul,

SAMPLE PROJECT TBC
FINAL STRUCTURAL ENGINEERING ROLLER SHUTTER DOOR CERTIFICATION

We confirm that we have completed the structural assessment of the roller shutter doors listed hereunder. We confirm that the roller doors as specified below comply with the relevant wind loads as stated in AS1170.2:2011 for the required wind region D, Terrain Category 2 and Importance level 2. The impact criteria test results by others relating to clause 2.5.7 have been attained.

Certified roller doors are as follows:

Roller Shutter Door Size	Slat Component Number
7000h x 7000w (Maximum Height & Width)	G22275 GALVABOND1-105

All doors require a 1 Hole Cast Iron Wind-lock Clip on every second slat and a 2 Hole Cast Iron Wingless Wind-lock Clip on every Alternate Slat. All wind-lock clips fixed to slat with 4-1/4" rivets.

Cyclonic Clamps are required at a maximum spacing of 800 mm.

Design calculations for each roller door are attached.

Should you have any further queries relating to the above matters, or require any further information, please do not hesitate to contact our office on the details provided.

Yours sincerely,


John Smith
B.E (Hons), MIF Aust, RPEQ
Senior Structural Engineer

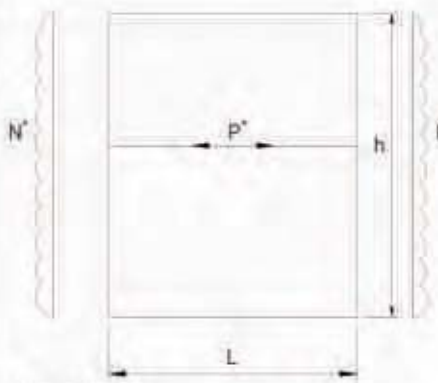
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Paul - Anvil Doors

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	Designed by	CB	Date	
	Checked by	AVDM	Date	
Project	Sample			
Subject	7000h x 7000w Anvil Roller Door Certification			



Roller Door Properties

Roller Door Height - h = 7000 mm

Roller Door Width - L = 7000 mm

Windlock Take Up - ws = 68 mm

Note: Windlock take up supplied by Anvil

Wind Loading

Wind Region - Terrain Category - Importance Level -

Pressure Coefficients

Windward Wall - $C_{pe} = 0.7$

Internal - $C_{pi} = -0.2$

Combination Factor - $K_{cb} = 0.8$ Local Pressure Factor - $Kf = 1.5$

Ultimate Wind Pressure - $p^* = 5.28$ kPa

Catenary Deflection

$$\delta = \sqrt{\frac{3 + L + ws}{8}}$$

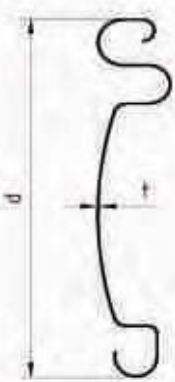
Max Deflection $\delta = 422$ mm

Catenary Force

$$Nc^* = \frac{\rho^* \cdot L^2}{8 + \delta}$$

Catenary Force $Nc^* = 76.56$ kN/m

Slat Axial Capacity Check



Slat Part No. -

Slat Depth - d = 120 mm

Slat Thickness - t = 0.8 mm

Cross-Sectional Area - $A_g = 157$ mm²

Axial Load Per Slat - $N_s^* = 9.19$ kN

Yield Strength - $F_{sy} = 300$ MPa

Ultimate Tensile Strength - $F_u = 350$ MPa

Slat Axial Capacity - $\phi N_t = 42.39$ kN > N_s^* OK



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Designed by	CB	Date	
Checked by	AVDM	Date	

Project: Sample
 Subject: 7000h x 7000w Anvil Roller Door Certification

Rivet Check

Rivet Size -		1/4"	
Rivet Shear Capacity -	ϕV_r	5.5	kN
Number of Rivets Per Slat	n	4	
Shear Force Per Rivet -	V_r^*	2.30	kN < ϕV_r OK!
Every second slat	4 Hole cast iron windlock clip		
Alternate slats:	2 Hole cast iron wingless windlock clip		

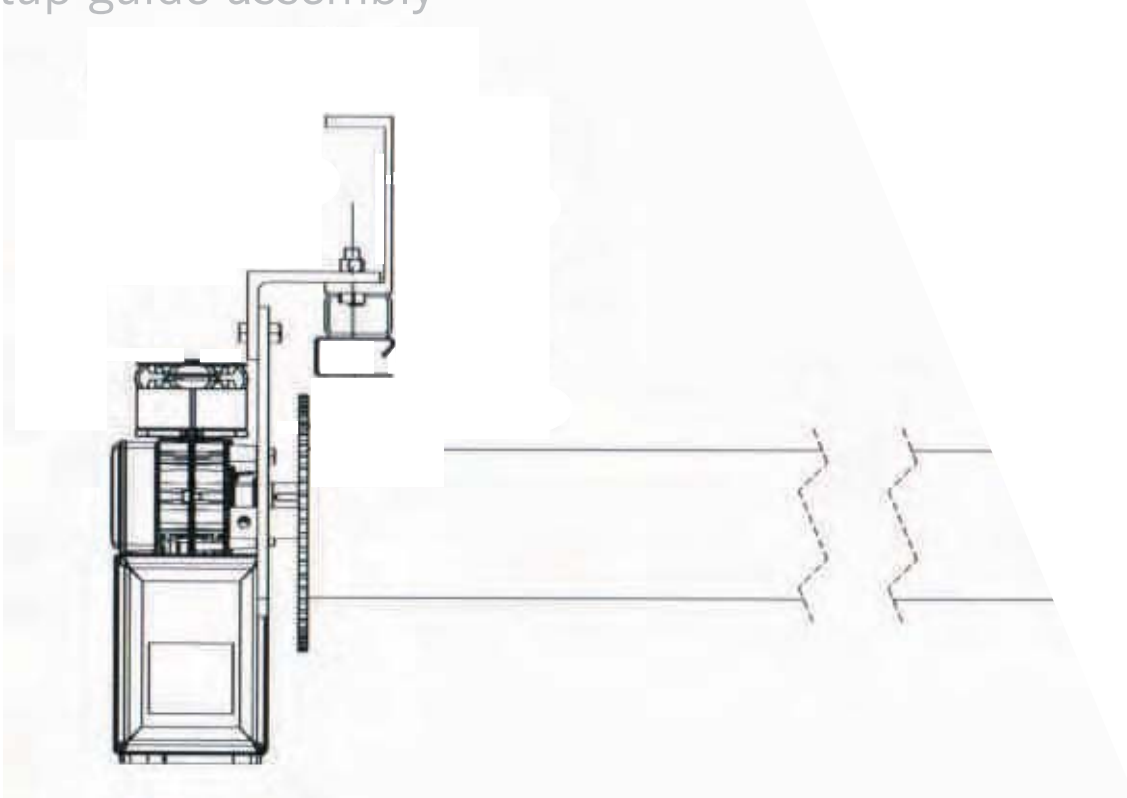
Support Track Check

Shear Force Per Rafter -	V_r^*	18.48	kN/m
Stiffener Spacing -	s	800	mm
Moment In RHS -	M_r^*	1.48	kN.m
RHS Size -		50 x 25 RHS 2.5	
Section Capacity -	ϕM_s	16.1	kN.m > M_r^* OK!

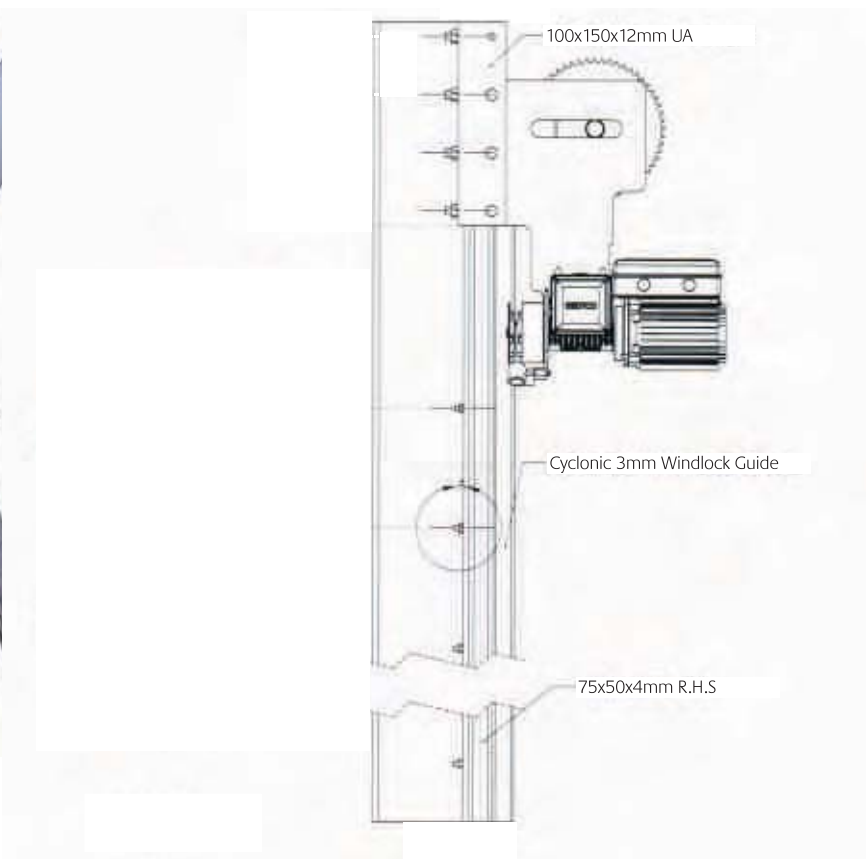
The Roller Door is found to satisfy the necessary wind loads under the following properties

- Roller Door Size - 7000 h x 7000 w
- Wind Region - Region D
- Slat Part Number - G22275 GALVABOND 1-105
- Rivet Size And Number - 4 - 1/4" Per Windlock Clip
- Windlock Clip Every Second Slat - 4 Hole cast iron windlock clip
- Windlock Clip Every Alternate Slat - 2 Hole cast iron wingless windlock clip
- Support Track RHS - 50 x 25 RHS 2.5
- Support Track Max Stiffener Spacing - 800 mm

Boltup guide assembly



Boltup guide assembly top view



Please call our technical representatives regarding individual project design and layout



NOTES

A series of horizontal dotted lines for writing notes, spanning the width of the page.