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# ULTIMATE PULL TEST

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A Z U M A  
Design



YINTEC

BI-FOLD LOUVRE

TESTED BY  
AZUMA DESIGN PTY LTD

AZT0008.16

# 1 Aim

To apply an ultimate force in a direction specified until total failure or breakage of the product.

## 2 Test Sample Information

<b>Product Name/Number</b>	Bi-Fold Louvre
<b>Customer</b>	Yintec
<b>Azuma Test Number</b>	AZT 0008.16
<b>Date</b>	09/02/2016
<b>Overall Door Dimension</b>	2450 mm (H) x 1800 mm (W)
<b>Sash Size</b>	2285 mm (H) x 864 mm (W)
<b>Louvres per Sash</b>	11
<b>Hardware</b>	Kin Long Construction Hardware - rollers, hinges, lock bar
<b>Test Force Direction #1</b>	Across the span of the meeting stile where the locking points are located
<b>Test Force Direction #2</b>	Sashes in open position pulled across the span of the meeting stiles

### 3 Testing

#### 3.1 Procedure #1

The following method is applied to the test specimen:

1. The test specimen was set up in the cannon test rig and clamped securely to the frame
2. The product was closed and locked
3. A strap was wrapped from top on the bottom of the meeting stile and joined to the load cell in line with the center of the sash
4. The force was increased until breakage occurred
5. The force is recorded and the damage to the test specimen noted

#### 3.2 Results

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Force Reached Before Breakage	1057.9 N ± 0.1 N
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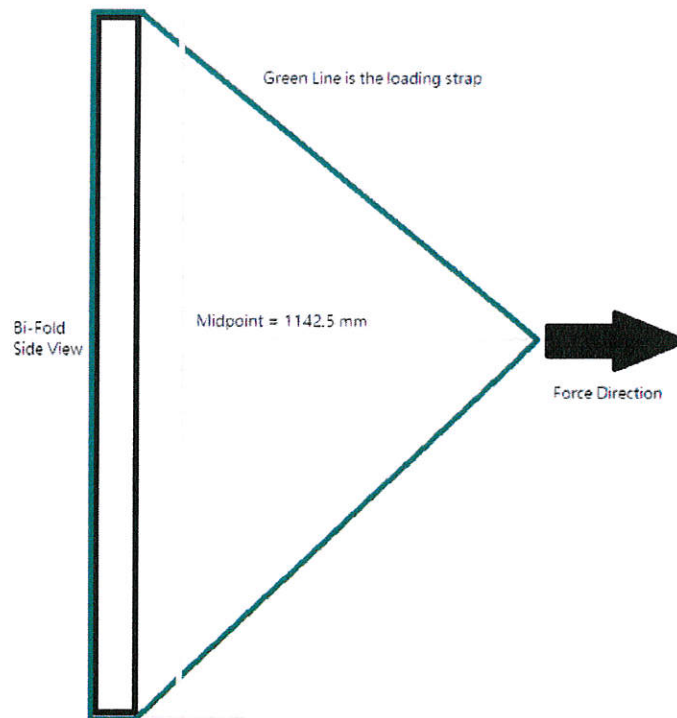


Figure 1: Drawing of Test 1 Layout



## 4 Pictures



Figure 2: Test 1 Setup

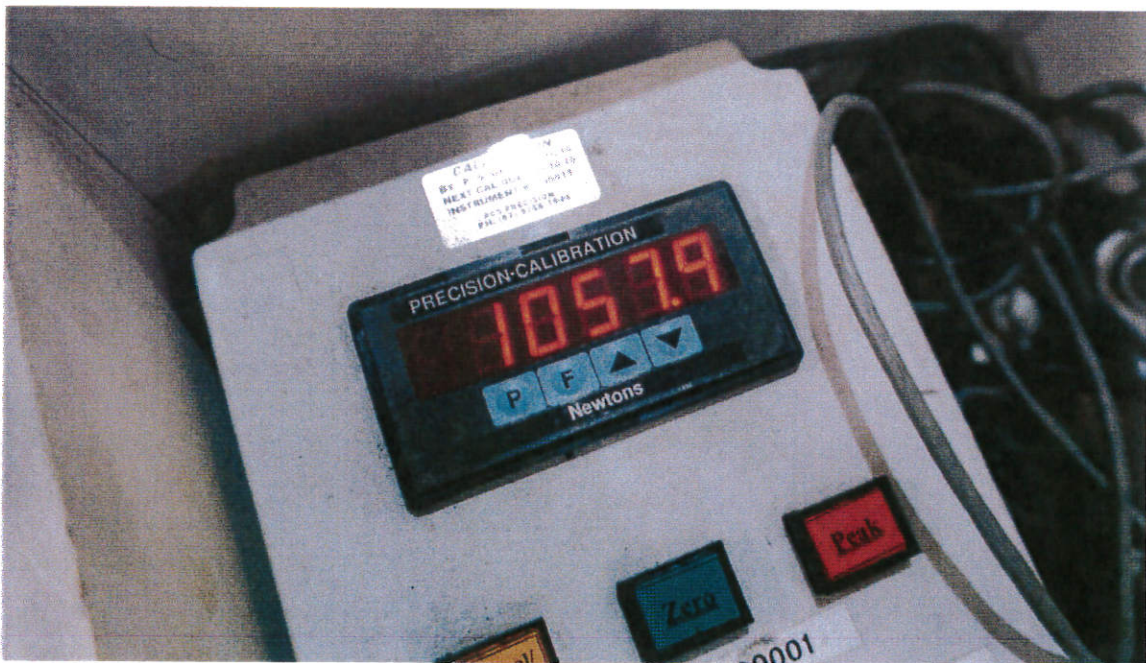


Figure 3: Force Reading after Test

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Figure 4: Damage observed on Lock Bar



## 5 Testing

### 5.1 Procedure #2

The following method is applied to the test specimen:

1. The test specimen was set up in the security door testing rig and clamped securely to the frame
2. The product was opened to its full extent
3. A strap was wrapped from top on the bottom of the meeting stile and joined to the load cell in line with the center of the sash
4. The force was increased until breakage occurred
5. The force is recorded and the damage to the test specimen noted

### 5.2 Results

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Force Reached Before Breakage	752.6 N ± 0.1 N
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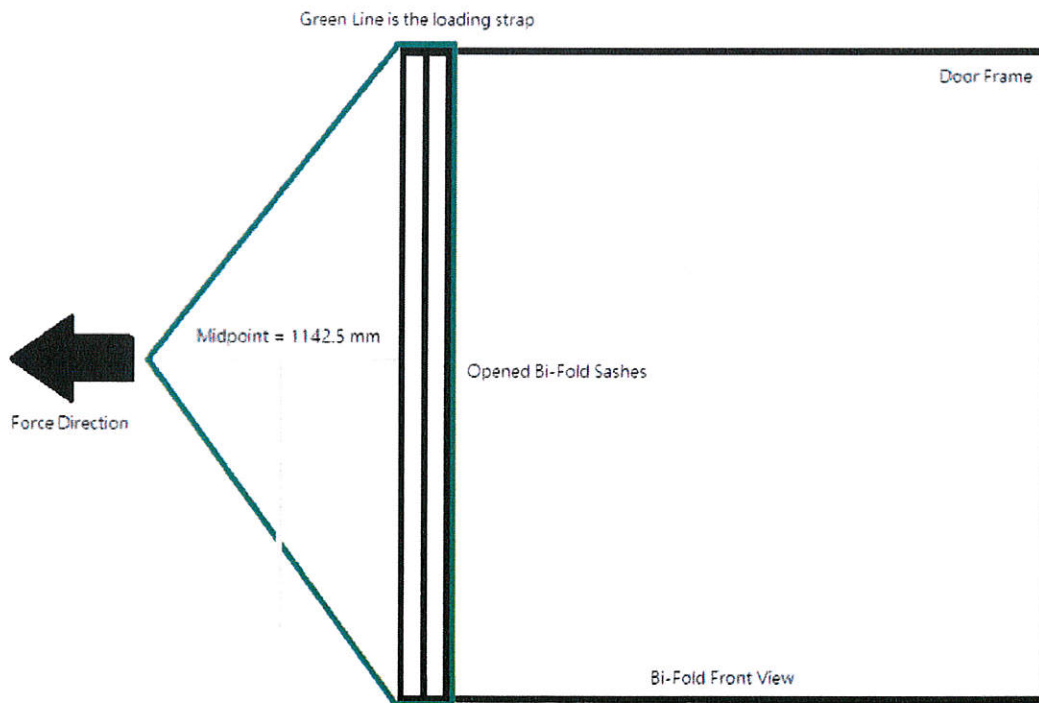


Figure 5: Drawing of Test 2 Layout

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## 6 Pictures

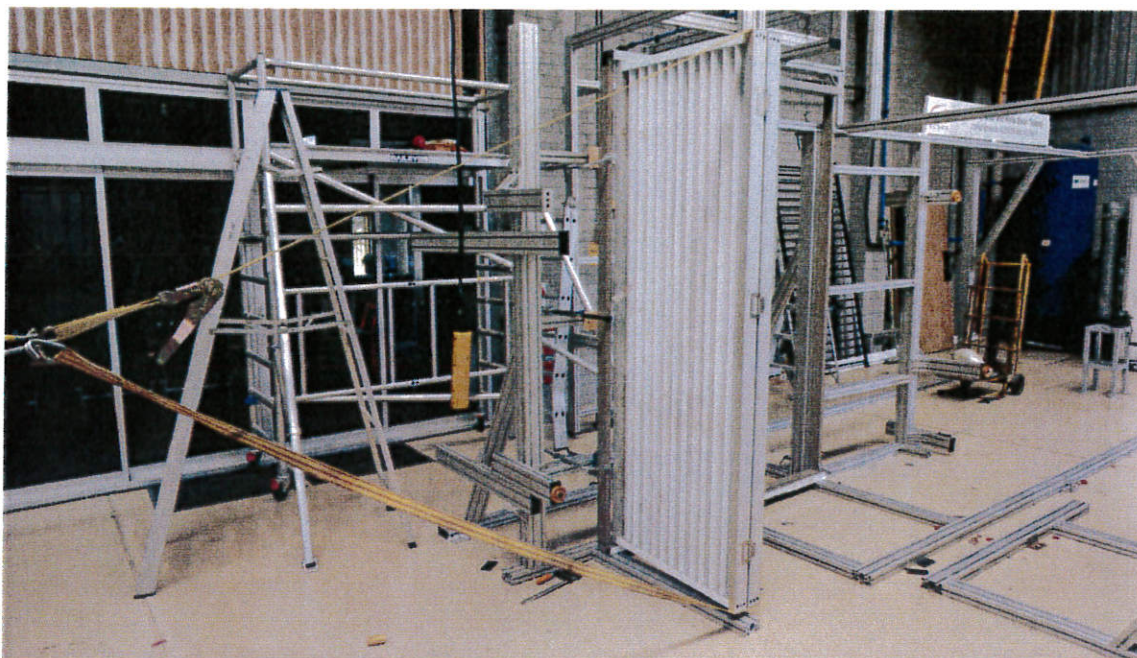


Figure 6: Test 2 Setup

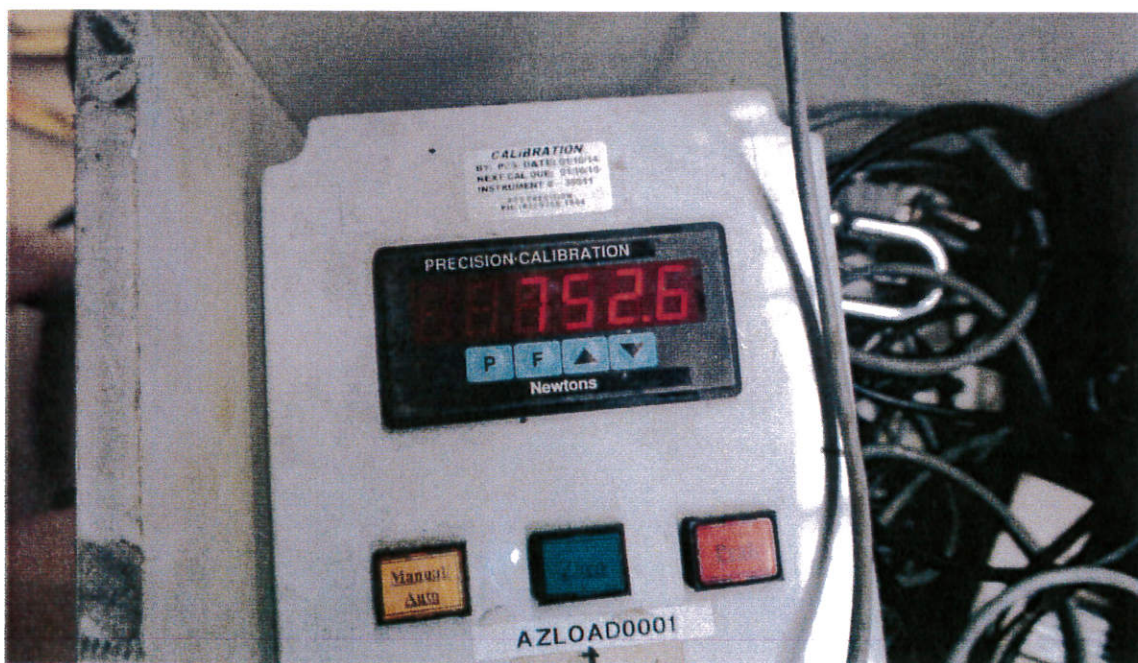


Figure 7: Force Reading after Test

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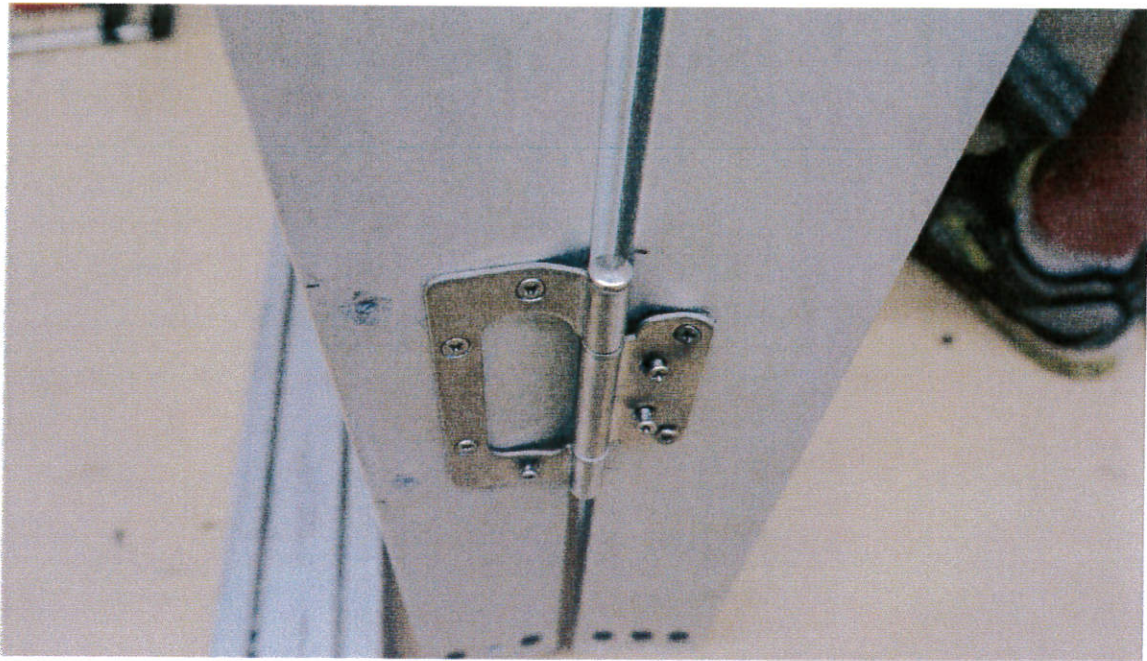


Figure 8: Bottom Hinge



Figure 9: Top Hinge



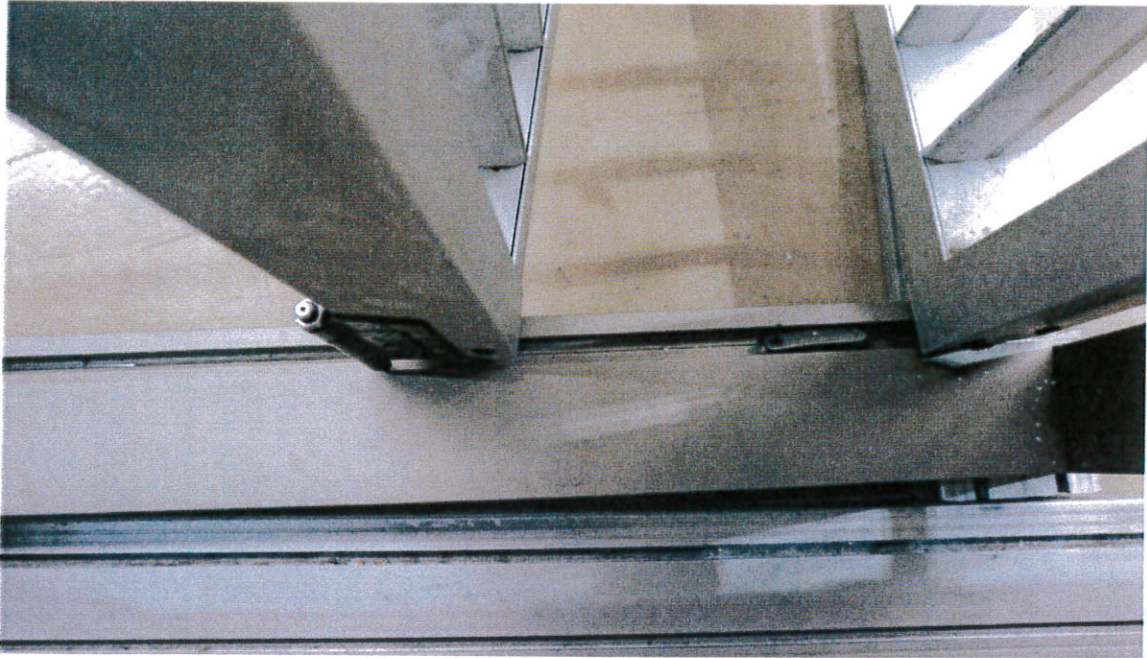


Figure 10: Bottom Roller



Figure 11: Top Roller

## 7 Conclusion and Signatories

### 7.1 Conclusion


The results from test 1 showed that the product could withstand 1057.9 N of force before damage occurred. The door was able to open due to the snapping of the locking leg cap, once this had snapped the door was able to open freely. No other damage was observed.

The results from test 2 showed that the product could withstand 752.6 N of force before damage occurred. The door was pulled out of position as the bottom track roller had snapped off, hinge screws were pushed out as the hinge material became bent. The sash furthest from the pull direction began to pull apart the sections of extrusion. The sashes however remained attached to the frame as the top roller had not dislodged and remained functional.

### 7.2 Signatories

Tested By: Ash Horne

Signatory Name: Ash Horne

Signature: 

Date: 9/2/16