



Test Report No: WTH1910#2-1

Date: 20/01/2020

Testing of: Side hung next to top hung projecting casement window

Tested to: PAS 24 : 2016

Prepared for: Nico Manufacturing Ltd

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AUTHORISATION

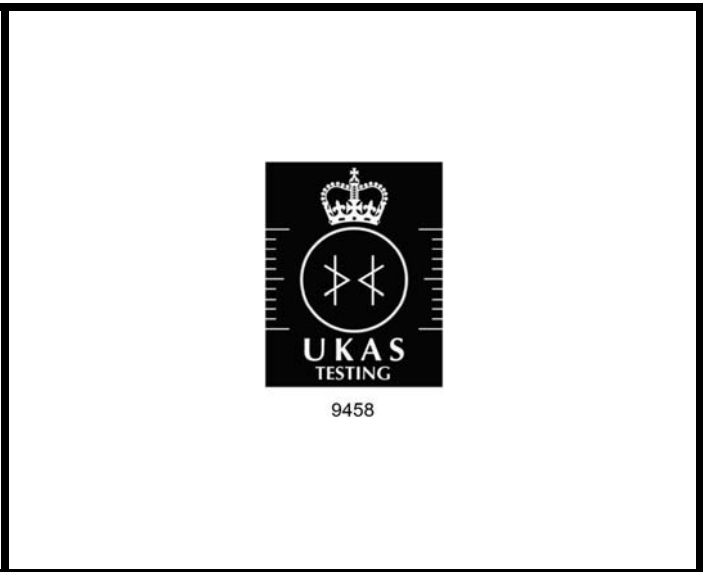
Test completed by: D.Kury
 Assisted by: M.Currie
 Test witnessed by:

Report produced by: D.Kury Position: Senior Test Engineer
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 Date: 24/01/2020
 For and on behalf of Nico Manufacturing Ltd Test Laboratory

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Date of issue of report 24/01/2020

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TEST REQUESTED BY

Origin of test request

Company Name	Nico Manufacturing Ltd
Company Address	109 Oxford Road Clacton on Sea Essex CO15 3TJ
Contact	Ian Harrison
Contact position	Sales Director

Quotation Details

Quotation No.	WTH1910
Dated:	01/10/2019

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DETAILS OF TEST

Description	Side hung next to top hung
Model / type	Projecting casement window
Make / Brand	Liniar
Any special requirements	

Test Specification	PAS24:2016 Enhanced security performance requirements for doorsets and windows in the UK
Date sample received	31/10/2019
Date testing started	20/01/2020
Date testing finished	21/01/2020
Job No.	WTH1910
Any special requirements	

C.4.3 Manipulation test. - Using a variety of tools as detailed in Annex A of PAS24:2016 attempts are made to gain entry by such methods as removal of trim, insertion of tools to slide latches or bolts, undoing threaded fasteners and blows by hand to dislodge locking devices. Test a) takes place prior to infill removal test and test b) after the mechanical loading test.

Test a) Duration 15 minutes with no single technique being used for more than 3 minutes

Test b) Duration 3 minutes with the primary intention of releasing threaded fasteners exposed as a result of the mechanical loading test.

C.4.4.2 Infill medium removal test, Manual. - Using a variety of tools as detailed in Annex A of PAS24:2016 attempts are made to remove gaskets, beads, security devices and then infill medium.

Test duration is 3 minutes.

C.4.4.3 Infill medium removal test, Mechanical. - A load of 2000N is applied to each corner of the infill medium via a 150mm x 150mm wooden block and each load is held for 10 seconds. If failure is exhibited at the corners loading is continued along each section in an attempt to deglaze the window.

C.4.5 Mechanical loading test. - Loading consists of the application of a 1000N parallel to plane load which is held until a 3000N perpendicular to plane load has been applied and removed. Loads are applied to each corner and at each locking and hinge point of each opening sash. Loading cases (table C.1) and sequence of loading (figure C.14) are shown in PAS 24:2016.

C.4.6 Manual check test. - Using the tools specified in PAS 24:2016 B.4.6.2 attempts are made to gain entry by levering at any location and in any direction such that the combined location and direction of the force applied does not replicated the standard mechanical loading cases.

If entry is gained the new location and the direction of applied loads shall be noted and an additional mechanical loading test shall be performed.

Test duration 15 minutes with no single technique being used for more than 3 minutes

C.4.7 Additional mechanical loading test. - Carry out load test in accordance with C.4.5 using the loading configuration defined in C.4.6.

The samples were mounted in timber sub frames (nominal 100mm x 50mm in section).

The samples were mounted in the test rig without any twists or bends that might influence the test result.

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DETAILS OF SAMPLE

Sample details	Side hung next to top hung projecting casement window
Fabricator	Britannia Windows (UK) Ltd
Material:	PVCU Liniar profile part numbers; Frame - LCW011, Sash - LCW031, Mullion - LCW021 Liniar reinforcing part numbers; Frame & sash LAN101, Mullion - LSR021
Finish	Gloss white
Lock & keeps	Nico MK2 shootbolt comprising; Gearbox - part no 93905, Shoot extension 4 - part no 93945 Nico cast zinc keeps, part no 9304 (each end) 9022 in centre
Hinges & protectors	Nico 24" Standard top hung hinge on top hung sash, part no 8260 Nico 12" Egress easy clean hinge on side hung sash, part no 8536 Nico Xtra bolt hinge protectors, part no
Handle	VBH Alpha cranked handles, part nos 2QEH1101E (LH) & 2QEH1102 (RH)
Fixings	Lock & keeps - 4.3 x 25mm c'sk head gimlet point Hinges - 4.3 x 25mm pan head gimlet point to sash and frame 3.9 x 25mm pan head drill point into mullion Xtra bolts - 4.3 x 25mm pan head gimlet point to sash and frame Sash compressor - 4.3 x 30mm c'sk head gimlet point to sash & outer frame 3.9 x 25mm c'sk head drill point into mullion Interlocking wedges - 4.3 x 25mm pan head gimlet point into sash & frame
Weather sealing	Co extruded gaskets Liniar interlocking wedges LMO302 Nico Sash compressor part nos - Catch 6100, 17mm keep 6117
Glass (or infill)	4-20-4mm toughened double glazed units
Glazing system	Internally bead glazed with co extruded gaskets
Sample dimensions	1400mm (h) x 2050mm (w), mullion 750mm.
Additional information	Run up blocks, Liniar LMO303

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CONCLUSIONS OF TEST

Clause No.	Test Description	Test result
C.4.3	Manipulation test a)	Pass
C.4.3	Manipulation test b)	Pass
C.4.4.2	Infill removal test - manual	Pass
C.4.4.3	Infill removal test - mechanical	Pass
C.4.5	Mechanical loading test	Pass
C.4.6	Manual check test	No entry gained
C.4.7	Additional mechanical loading test	N/A

Classification (As per clause 4.4)	W
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The results contained in this report apply only to the samples tested as received and to the specific tests carried out within this report.

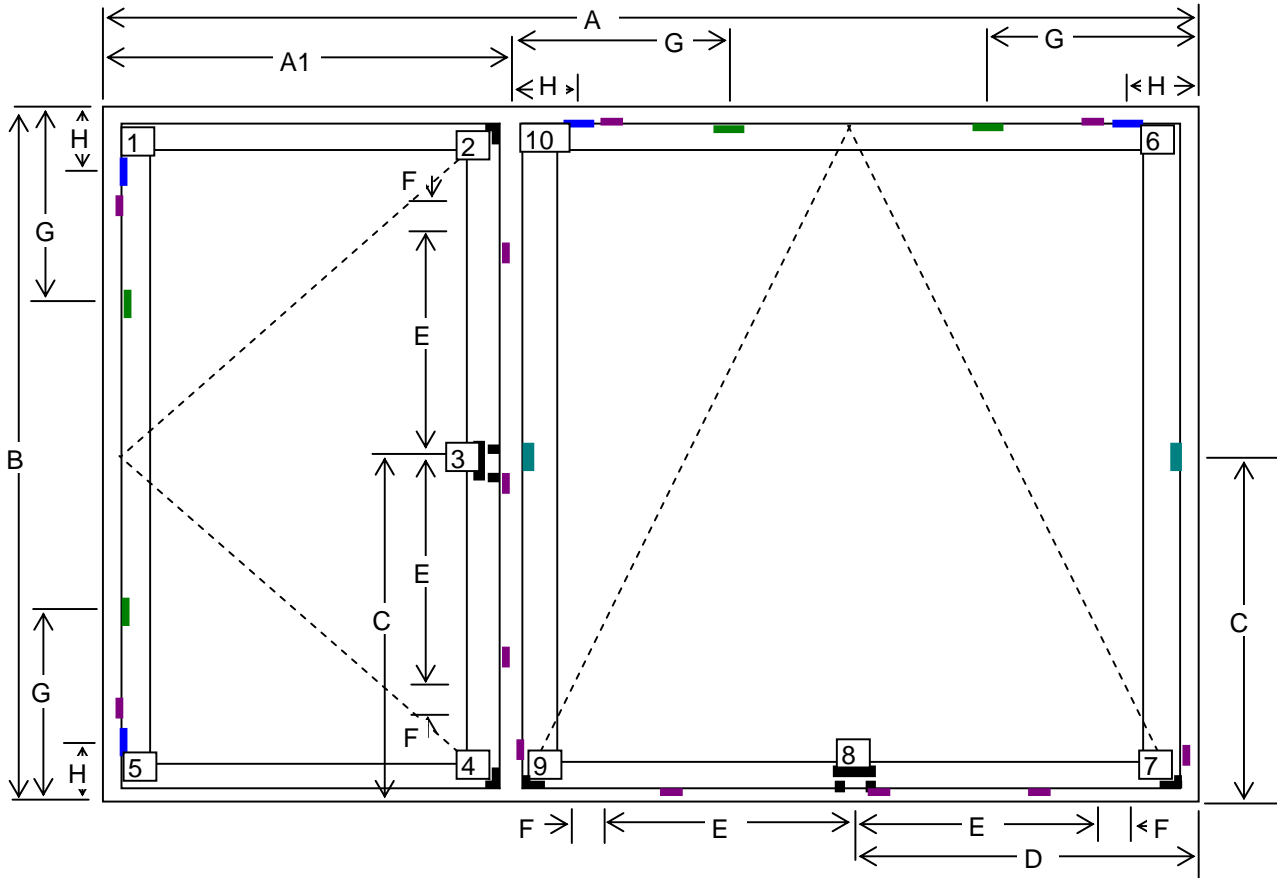
Test specimen details

Details of the samples construction and hardware components is based on information supplied by the test client, while these details have been checked and verified where possible WTH accepts no responsibility for the accuracy of details supplied.

Note : The test specimens were kept in the test laboratory for a minimum of 12 hours at environmental conditions of between 15°C to 30°C, and 25% to 75% RH before each test was undertaken as specified in PAS 24:2016 Clause C.4.1



TEST WINDOW DRAWING



- Sash compressor
- Interlocking wedge
- Hinge protector
- Run up block

A	=	2050	mm
A1	=	750	mm
B	=	1400	mm
C	=	700	mm
D	=	650	mm
E	=	465	mm
F	=	70	mm
G	=	400	mm
H	=	120	mm

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MANIPULATION TEST

Sample No	WTH1910B	Temperature	18°C	Humidity	37%RH	Date	21/01/2020
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Clause 4.3 Manipulation test a)

Craft knife used to cut away sash profile adjacent to centre lock point on S/H sash, 3mm flat blade screwdriver used to bend gearbox cover plate and disengage bottom shoot bar. 3mm flat blade screwdriver used to break off front edge of centre keep (night vent). 3mm flat blade screwdriver used in attempt to disengage top shoot bar. - No entry gained

3mm flat blade screwdriver and paint scraper used to disengage top shoot bar on S/H sash, paint scraper used with hand blows in attempt to disengage centre cams from keep. 3mm flat blade screwdriver used in attempt to break keep legs. - No entry gained

Craft knife used to cut away sash profile adjacent to bottom hinge protector on S/H sash, 3mm flat blade screwdriver used in attempt to remove hinge protector. - No entry gained

Craft knife used to cut away mullion profile adjacent to centre keep on S/H sash in attempt to remove keep. No entry gained

Craft knife used to cut away sash profile adjacent to L/H hinge on T/H sash, 3mm flat blade screwdriver used in attempt to remove fixing screws and lever hinge - No entry gained

INFILL MEDIUM REMOVAL TEST

Sample No	WTH1910B	Temperature	18°C	Humidity	37%RH	Date	21/01/2020
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Clause 4.4.2 Infill manual test

Craft knife used to cut a vee notch at bottom of T/H sash profile, 6mm chisel and 6mm flat blade screwdriver used in attempts to disengage glazing bead.

No entry gained

MANUAL CHECK TEST

Sample No	WTH1910B	Temperature	18°C	Humidity	37%RH	Date	21/01/2020
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Clause 4.6 Manual check test (note tools used and time taken)

2 x Nail bars used to lever between T/H sash and mullion at mid point of sash - No entry gained

2 x Nail bars used to lever between centre locking point and outside corner of sash on T/H sash

No entry gained

2 x Nail bars used to lever between T/H sash and outer frame at mid point of sash - No entry gained

2 x Nail bars used to lever between S/H sash and mullion between centre and bottom lock points no entry gained

2 x nail bars used to lever between S/H sash and outer frame at mid point of sash - No entry gained

As no further potentially vulnerable attack points could be identified the test was halted

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IINFILL MEDIUM REMOVAL TEST

Sample No	WTH1910B	Temperature	20°C	Humidity	43%RH	Date	20/01/2020
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Clause 4.4.3 Infill mechanical test

All four corners of top hung sash loaded in turn to 2000N and held for 10 seconds.
No entry gained

ADDITIONAL MECHANICAL LOADING TEST

Sample No		Temperature	°C	Humidity	%RH	Date	
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Clause 4.7 Additional mechanical loading test

MANIPULATION TEST

Sample No	WTH1910B	Temperature	18°C	Humidity	37%RH	Date	21/01/2020
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Clause 4.3 Manipulation test b)

Crosspoint screwdriver used to remove screws fixing both hinge protectors to S/H sash however sash could not be deflected enough to give a 50mm gap.
No entry gained

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MECHANICAL LOAD TEST

Clause 4.5 Mechanical Load test

Sample No	WTH1910B	Temperature	20°C	Humidity	43%RH	Date	20/01/2020
Load location	Parallel to plain load	Perpendicular to plain load	Observations / Assessment				
1 Top hinge corner, hinge & hinge protector S/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
1 Top hinge corner, hinge & hinge protector S/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
2 Top lock corner & top lock point, S/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
2 Top lock corner & top lock point, S/H sash Horizontal + mullion pull	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
3 Centre lock point S/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
3 Centre lock point S/H sash Horizontal + mullion pull	1000 N (10 sec)	3000 N (10 sec)	As load reached 3000 locking cams disengaged, sash deflected 63mm No entry gained New loading sequence started.				
4 Bottom lock corner & bottom lock point, S/H sash Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
4 Bottom lock corner & bottom lock point, S/H sash Horizontal + mullion pull	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
5 Bottom hinge corner, hinge & hinge protector S/H sash Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
5 Bottom hinge corner, hinge & hinge protector S/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
1 Top hinge corner, hinge & hinge protector S/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				

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MECHANICAL LOAD TEST CONT.

Clause 4.5 Mechanical Load test

Sample No	WTH1910B	Temperature	20°C	Humidity	43%RH	Date	20/01/2020
Load location	Parallel to plain load	Perpendicular to plain load	Observations / Assessment				
1 Top hinge corner, hinge & hinge protector S/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	held for 10 seconds				
2 Top lock corner & top lock point, S/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
2 Top lock corner & top lock point, S/H sash Horizontal + mullion pull	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
6 R/H hinge corner, hinge & hinge protector T/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
6 R/H hinge corner, hinge & hinge protector T/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
7 R/H Lock corner & R/H lock point, T/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
7 R/H Lock corner & R/H lock point, T/H sash Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
8 Centre lock point T/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
8 Centre lock point T/H sash Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
9 L/H Lock corner & L/H lock point, T/H sash Horizontal + mullion pull	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
9 L/H Lock corner & L/H lock point, T/H sash Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				



MECHANICAL LOAD TEST

Clause 4.5 Mechanical Load test

Sample No	WTTH1910B	Temperature	20°C	Humidity	43%RH	Date	20/01/2020
Load location	Parallel to plain load	Perpendicular to plain load	Observations / Assessment				
10 L/H hinge corner, hinge & hinge protector T/H sash Horizontal	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
10 L/H hinge corner, hinge & hinge protector T/H sash Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 seconds				
	1000 N (10 sec)	3000 N (10 sec)					
	1000 N (10 sec)	3000 N (10 sec)					
	1000 N (10 sec)	3000 N (10 sec)					
	1000 N (10 sec)	3000 N (10 sec)					
	1000 N (10 sec)	3000 N (10 sec)					
	1000 N (10 sec)	3000 N (10 sec)					
	1000 N (10 sec)	3000 N (10 sec)					
	1000 N (10 sec)	3000 N (10 sec)					
	1000 N (10 sec)	3000 N (10 sec)					



PICTURE OF TEST WINDOW



END OF REPORT