Test Report No:	WTH1702#2-1
Date:	13/06/2017
Testing of:	Single side hung flush casement timber window
Tested to:	PAS 24 : 2016
Prepared for:	Nico Manufacturing Ltd

CONTENTS

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Date: 18/06/2018

For and on behalf of Nico Manufacturing Ltd Test Laboratory

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Date: 18/06/2018

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TEST REQUESTED BY

Origin of test request

Company Name	Nico Manufacturing Ltd
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Quotation Details

Quotation No.	WTH1702
Dated:	11/04/2017

DETAILS OF TEST

Description	Single side hung
Model / type	Timber flush casement
Make / Brand	Pronto Joinery
Date sample received	28/04/2017
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

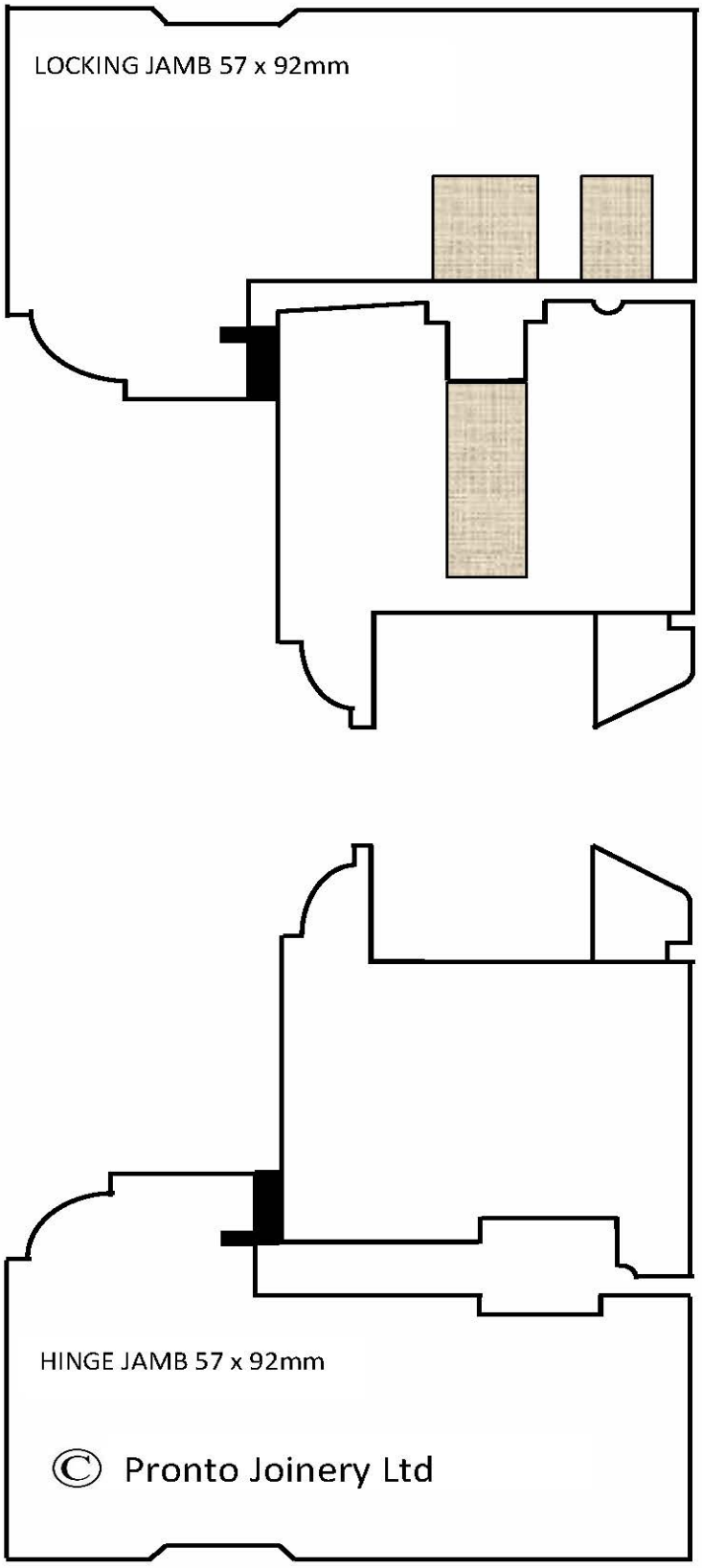
C.4.7 Additional mechanical loading test. - Carry out load test in accordance with C.4.5 using the loading configuration defined in C.4.6.

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.

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

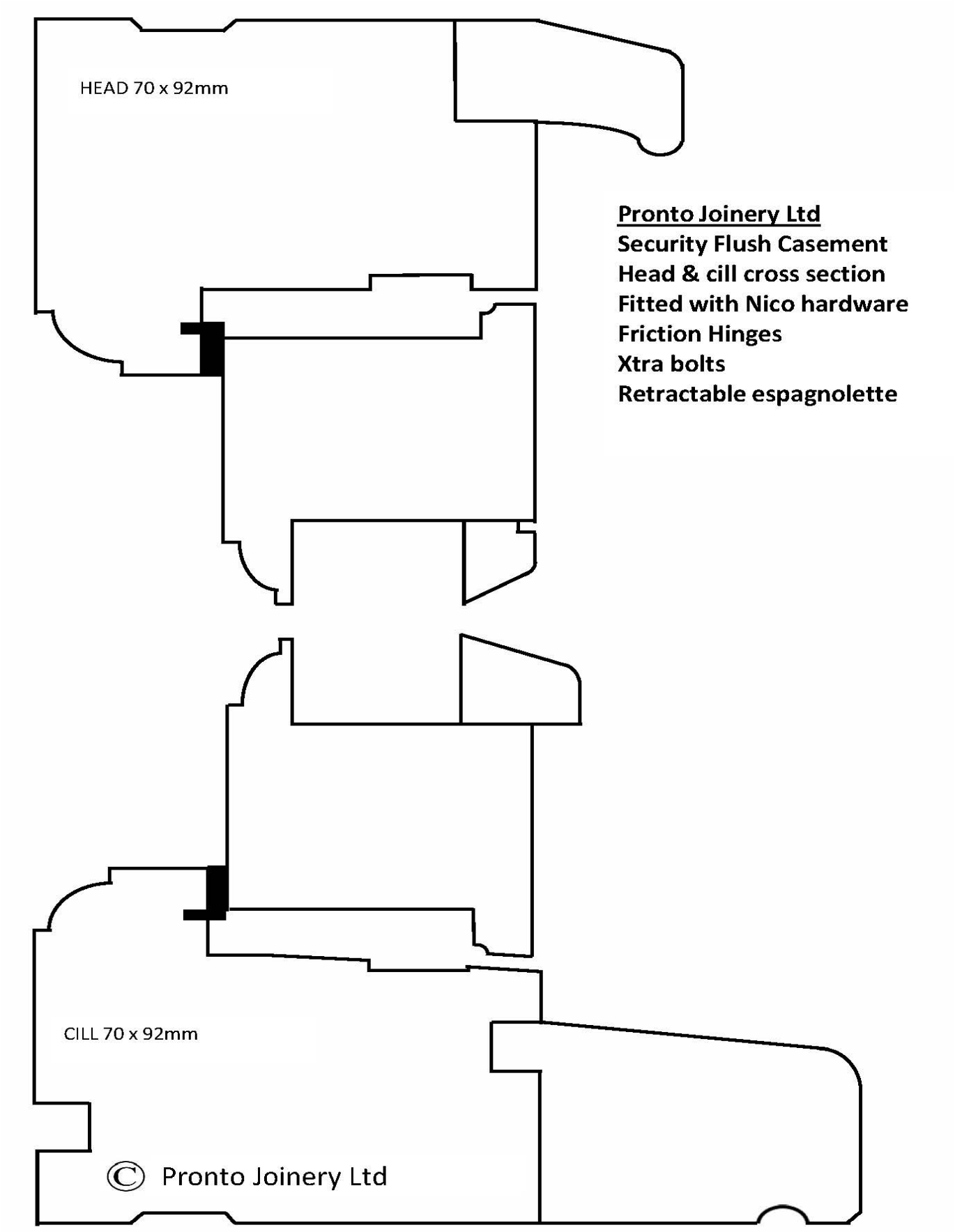
DETAILS OF SAMPLE

Sample details	Single side hung flush casement window
Fabricator	Pronto Joinery Ltd
Material:	Timber
Finish	Unpainted
Lock & keeps	Lock - Nico Retractable, part no 969530 Keep - Nico steel keep, part no 9640-K
Hinges & protectors	Hinge - Nico 12" Restricted egress, part no 8431 Hinge protector - Nico Xtra bolt 13mm, part no 8000
Handle	Mila Prolinea Espag handle Part no 581394
Fixings	Hinge - No 7 x 1 1/4" c'sk head into frame, No 7 x 1" c'sk head into sash Lock - No 6 x 1 1/4" c'sk head Keeps - No 7 x 1 1/4" c'sk head Hinge protectors - 5mm x 30mm
Weather sealing	Q-lon gasket, part number AQ4846
Glass (or infill)	4-16-4mm Clear toughened glass unit
Glazing system	Glass unit siliconed in place, Externally beaded, beads pinned Reddiseals security tape SGT122 used each side of glass unit.
Sample dimensions	600mm(w) x 1080mm(h)
Additional information	



Pronto Joinery Ltd
Security Flush Casement
Jamb cross section

Fitted with Nico hardware
Friction Hinges
Xtra bolts
Retractable espagnolette

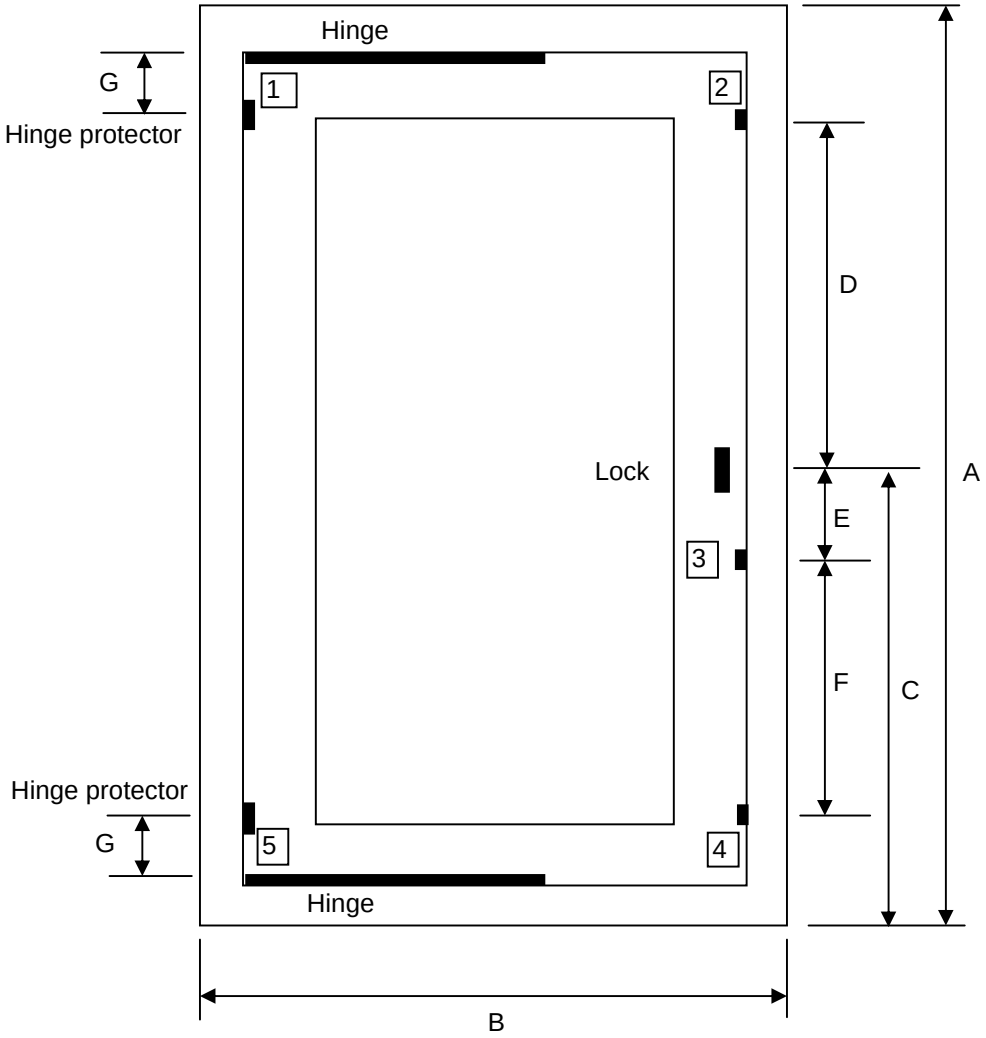

HEAD 70 x 92mm
Pronto Joinery Ltd
Security Flush Casement
Head & cill cross section
Fitted with Nico hardware
Friction Hinges
Xtra bolts
Retractable espagnolette
CILL 70 x 92mm
© Pronto Joinery Ltd

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	Pass
C.4.7	Additional mechanical loading test	N/A

Classification (As per clause 4.4)	W

TEST WINDOW DRAWING



A	=	1080 mm
B	=	600 mm
C	=	535 mm
D	=	415 mm
E	=	100 mm
F	=	395 mm
G	=	75 mm

MANIPULATION TEST

Laboratory conditions	Temperature	24°C	Humidity	51%RH	Date	13/06/2017

Clause 4.3 Manipulation test a)

Craft knife used to cut away sash profile around top lock point exposing lock case, 3mm flat blade screwdriver used in attempt by manipulation and hand blows to disengage lock. - No entry gained

Paint scraper used to break away part of sash profile to partially expose lock case, paint scraper and 3mm flat blade screwdriver used in attempt to disengage lock by manipulation and hand blows. No entry gained

Craft knife and paint scraper used to cut away sash and frame profile around centre lock point in attempt attempt to remove keep. - No entry gained

Craft knife used to cut away sash profile around bottom hinge protector, 3mm flat blade screwdriver used in attempt to lever hinge protetor from sash. - No entry gained

Craft knife used to cut away sash profile around bottom hinge, 3mm flat blade screwdriver used in attempt to lever hinge apart. - No entry gained

INFILL MEDIUM REMOVAL TEST

Laboratory conditions	Temperature	24°C	Humidity	52%RH	Date	13/06/2017

Clause 4.4.2 Infill manual test

6mm flat blade screwdriver and 25mm chisel used to remove side and bottom glazing beads, craft knife used to cut silicon around glass unit. - No entry gained

MANUAL CHECK TEST

Laboratory conditions	Temperature	24°C	Humidity	52%RH	Date	13/06/2017

Clause 4.6 Manual check test (note tools used and time taken)

2 off nail bars used to lever between centre and top lock points - No entry gained

Nail bar and 8mm flat blade screwdriver used to lever between centre and top lock points - No entry gained

2 off nail bars used to lever at centre of hinge side of sash - No entry gained

2 off nail bar used to lever at centre of bottom sash rail. - No entry gained

As no other potentially vulnerable points could be identified the test was halted.

IINFILL MEDIUM REMOVAL TEST

Laboratory conditions	Temperature	22°C	Humidity	51%RH	Date	13/06/2017

Clause 4.4.3 Infill mechanical test

Each corner of glass loaded to 2000N and held for 10 seconds in turn

No entry gained

ADDITIONAL MECHANICAL LOADING TEST

Laboratory conditions	Temperature	°C	Humidity	%RH	Date	

Clause 4.7 Additional mechanical loading test

N/A

MANIPULATION TEST

Laboratory conditions	Temperature	23°C	Humidity	52%RH	Date	13/06/2017

Clause 4.3 Manipulation test b)

3mm flat blade screwdriver used to partially remove screws holding hinge protector to sash.

No entry gained

MECHANICAL LOAD TEST

Clause 4.5 Mechanical Load test

Laboratory conditions	Temperature	22°C	Humidity	51%RH	Date	13/06/2017

Load location	Parallel to plain load	Perpendicular to plain load	Observations / Assessment
1 Top hinge corner of sash & hinge protector Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 sec
1 Top hinge corner of sash & hinge protector Horizontally	1000 N (10 sec)	3000 N (10 sec)	Held for 10 sec
2 Top lock corner & lock point Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 sec
2 Top lock corner & lock point Horizontally	1000 N (10 sec)	3000 N (10 sec)	Held for 10 sec
3 Centre lock point Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 sec
3 Centre lock point Horizontally	1000 N (10 sec)	3000 N (10 sec)	Held for 10 sec
4 Bottom lock corner & lock point Vertically down	1000 N (10 sec)	3000 N (10 sec)	Held for 10 sec
4 Bottom lock corner & lock point Horizontally	1000 N (10 sec)	3000 N (10 sec)	Held for 10 sec
5 Bottom hinge corner of sash & hinge protector Vertically up	1000 N (10 sec)	3000 N (10 sec)	Held for 10 sec
5 Bottom hinge corner of sash & hinge protector Horizontally	1000 N (10 sec)	3000 N (10 sec)	Held for 10 sec
	1000 N (10 sec)	3000 N (10 sec)	

PICTURE OF TEST WINDOW