



Test Report No: WTH1901#1-3

Date: 03/04/2019

Testing of: Single top hung & single side hung flush casement windows

Tested to: BS 6375-2:2009

Prepared for: Nico Manufacturing Ltd

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**CONTENTS**

	Page No.
Authorisation	3
Test requested by	4
Details of test	5
Details of samples	6 to 8
Conclusion of tests	9
Test window drawing	10 & 11
Operating forces, results (test 1)	12 to 14
Resistance to static torsion, results (test 2)	12 to 14
Racking, results (test 3)	12 to 14
Resistance to repeated opening and closing, results	15 & 16
Picture of test window	17 to 19

Test Report No. WTH1901#1-3 Page 3 of 19

Testing of Single top hung & single side hung flush casement windows

Testing to BS 6375-2:2009



**AUTHORISATION**

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Assisted by:  
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Report produced by: D.Kury Position: Senior Test Engineer

Signature: 

Date: 03/05/2019

For and on behalf of Nico Manufacturing Ltd Test Laboratory

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Date: 03/05/2019

For and on behalf of Nico Manufacturing Ltd Test Laboratory

Date of issue of report 03/05/2019

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Test Report No. WTH1901#1-3	Page 4 of 19
Testing of Single top hung & single side hung flush casement windows	
Testing to BS 6375-2:2009	



**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.	WTH1901
Dated:	25/03/2019

Test Report No. WTH1901#1-3	Page 5 of 19
Testing of	Single top hung & single side hung flush casement windows
Testing to	BS 6375-2:2009



### DETAILS OF TEST

Description	Flush casement windows
Model / type	Top hung & side hung
Make / Brand	Eurocell logic flush
Date samples received	03/04/2019
Any special requirements	

Test Specification	BS 6375-2:2009 Performance of windows & doors. Classification for operation and strength characteristics
Date sample received	03/04/2019
Date testing started	03/04/2019
Date testing finished	12/04/2019
Job No.	WTH1901
Any special requirements	

#### **BS 6375-2: 2009 Table A.1 Summary of classification for windows**

Characteristics	Test method	Classification Standard	Class for all windows
Operating forces for windows	BS EN 12046-1	BS EN 13115	Class 1
Resistance to static torsion	BS EN 14609	BS EN 13115	Class 3
Racking	BS EN 14608	BS EN 13115	Class 3
Load-bearing capacity of safety devices	BS EN 14609	BS EN 14351	350 N
Resistance to repeated opening and closing	BS EN 1191	BS EN 12400	Class 3

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.

Test Report No. WTH1901#1-3	Page 6 of 19
Testing of Single top hung & single side hung flush casement windows	
Testing to BS 6375-2:2009	

**DETAILS OF SAMPLE**

Sample number	WTH1901A
Sample details	Side hung flush casement window
Fabricator	Eurocell Building Plastics Ltd
Material:	PVC-U Eurocell profile numbers; Frame - EWS7021/7721 Sash - EWS7015 Reinforcement - Frame & sash, none
Finish	Gloss white
Lock & keeps	Lock - Nico Security espag, part no 921351 Keeps - Nico steel security keep, part number 9209
Hinges & protectors	Hinges - Nico Atlas 12" Egress easy Clean S/H sash part no 8561 Hinge protectors - Nico Xtra bolt, part no 8100
Handle	White Inline locking handle, part number LSF1704
Fixings	Lock - TIMco 4.30 x 30mm c'sk head gimlet point Keeps - TIMco 4.3 x 30mm c'sk head gimlet point Friction hinges - TIMco 4.3 x 20mm pan head gimlet point to frame TIMco 4.3 x 25mm pan head gimlet point to sash Hinge protectors - 4.8 x 30mm Pan head gimlet point to frame & sash
Weather sealing	Co extruded gaskets
Glass (or infill)	4-12-4-12-4mm Toughened glass triple glazed unit
Glazing system	Internally bead glazed with co extruded gaskets
Sample dimensions	1350mm (H) x 1200mm (W)

Test Report No. WTH1901#1-3	Page 7 of 19
Testing of Single top hung & single side hung flush casement windows	
Testing to BS 6375-2:2009	

**DETAILS OF SAMPLE**

Sample number	WTH1901D
Sample details	Top hung flush casement window
Fabricator	Eurocell Building Plastics Ltd
Material:	PVC-U Eurocell profile numbers; Frame - EWS7021/7721 Sash - EWS7015 Reinforcement; Frame - EWS821P Sash - EWS7615S
Finish	Gloss white
Lock & keeps	Lock - Nico Security espag, part no 92951 Keeps - Nico steel security keep, part number 9209
Hinges & protectors	Hinges - Nico 24" Heavy Duty part no 8260HD Hinge protectors - Nico Xtra bolt, part no 8100
Handle	White Inline locking handle, part number LSF1704
Fixings	Lock - TIMco 4.30 x 30mm c'sk head gimlet point Keeps - TIMco 4.3 x 30mm c'sk head gimlet point Friction hinges - TIMco 4.3 x 20mm pan head gimlet point to frame TIMco 4.3 x 25mm pan head gimlet point to sash Hinge protectors - 4.8 x 30mm Pan head gimlet point to frame & sash
Weather sealing	Co extruded gaskets
Glass (or infill)	4-20-4mm Toughened glass double glazed unit
Glazing system	Internally bead glazed with co extruded gaskets
Sample dimensions	1350mm (H) x 1200mm (W)



**DETAILS OF SAMPLE**

Sample number	WTH1901B & WTH1901G
Sample details	Top hung flush casement window
Fabricator	Eurocell Building Plastics Ltd
Material:	PVC-U Eurocell profile numbers; Frame - EWS7021/7721 Sash - EWS7015 Reinforcement; Frame & sash - none
Finish	Gloss white
Lock & keeps	Lock - Nico Security espag, part no 92951 Keeps - Nico steel security keep, part number 9209
Hinges & protectors	Hinges - Nico 24" Heavy Duty part no 8260HD Hinge protectors - Nico Xtra bolt, part no 8100
Handle	White Inline locking handle, part number LSF1704
Fixings	Lock - TIMco 4.30 x 30mm c'sk head gimlet point Keeps - TIMco 4.3 x 30mm c'sk head gimlet point Friction hinges - TIMco 4.3 x 20mm pan head gimlet point to frame TIMco 4.3 x 25mm pan head gimlet point to sash Hinge protectors - 4.8 x 30mm Pan head gimlet point to frame & sash
Weather sealing	Co extruded gaskets
Glass (or infill)	4-20-4mm Toughened glass double glazed unit
Glazing system	Internally bead glazed with co extruded gaskets
Sample dimensions	1350mm (H) x 1200mm (W)





**CONCLUSIONS OF TEST**

Clause No.	Test Description	Sample No	Test result
C.5.1 (Test 1)	<b>Operating forces</b>  (BS 6375-2 Max force to operate lever handle 100N or 10Nm) (BS 6375-2 Max force to move casement of sash 100N)	WTH1901A WTH1901B WTH1901D WTH1901G	Pass Pass Pass Pass
C.5.2.1 (Test 2)	<b>Mechanical strength - Resistance to static torsion</b>  (BS EN 14609 Force 300N for 5 minutes - deflection and operating forces measured and recorded)	WTH1901A WTH1901D WTH1901G	Pass Pass Pass
C.5.2.2 (Test 3)	<b>Mechanical strength - racking</b>  (BS EN 14608 Force 600N for 5 minutes - deflection and operating forces measured and recorded)	WTH1901A WTH1901D WTH1901G	Pass Pass Pass
C.5.3 (Test 4)	<b>Load-bearing capacity of safety devices</b>  (BS EN 14351 & Documented in house test method WTH-LBCSD-SOP Resist force of 350N for 60 seconds)		N/A
C.5.5 (Test 5)	<b>Resistance to repeated opening and closing</b>  (BS EN 1191 Window opened and closed minimum of 10,000 cycles for Class 2 (BS EN 12400) or 20,000 for Class 3 with operating forces measured at start and finish of test)	WTH1901B	Pass Class 3

*Please Note: No impact resistance test was completed as currently the requirement in the UK is Class 0 with zero drop height of the impactor.*

The results contained in this report apply only to the samples tested and to the specific tests carried out within this report.

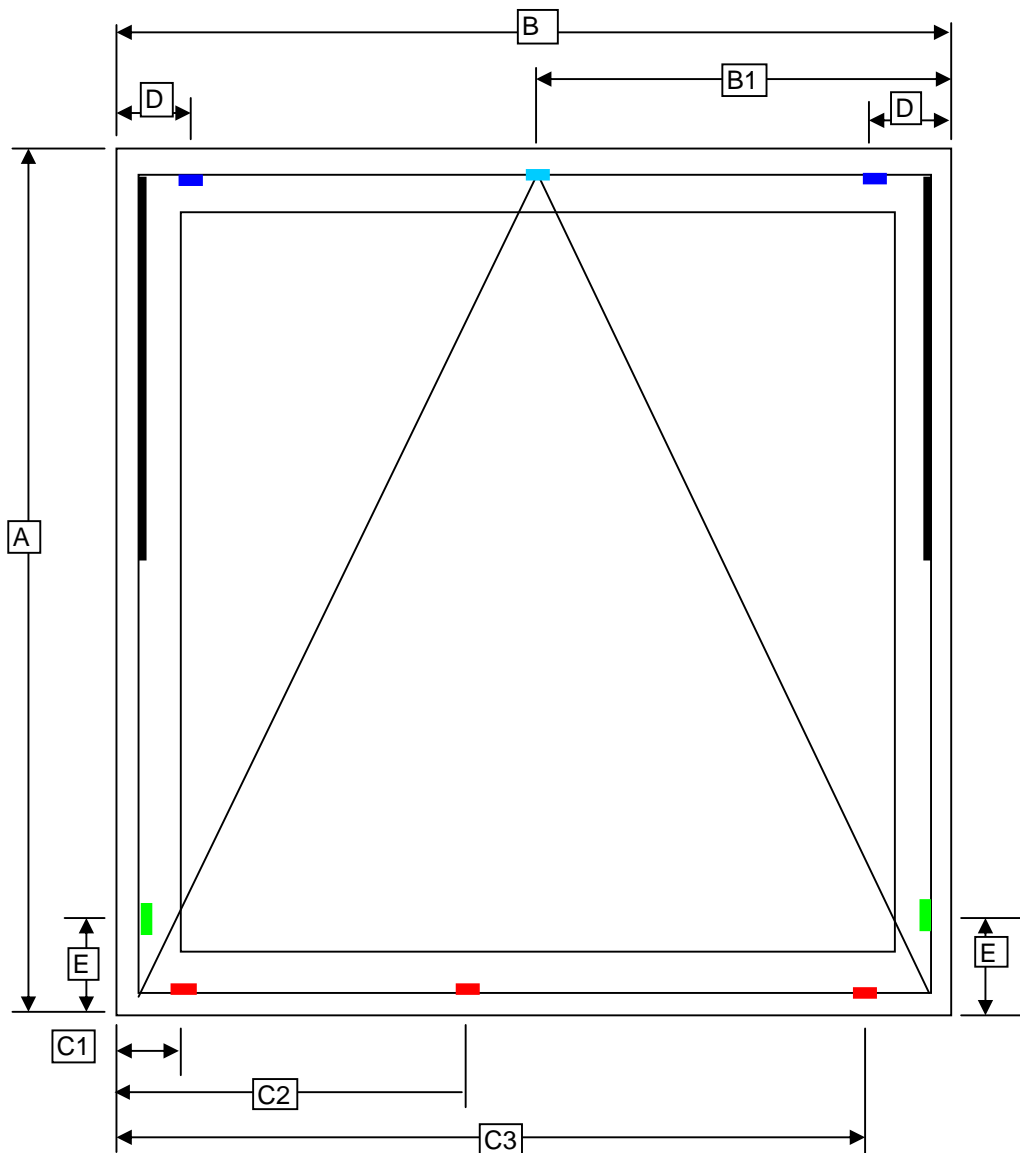
**Test specimen details**

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 at the required temperature and humidity for a minimum of 12 hours before testing was undertaken as specified in BS EN 14608:2004, BS EN 14609:2004 & BS EN 1191:2012.



**TEST WINDOW DRAWING**

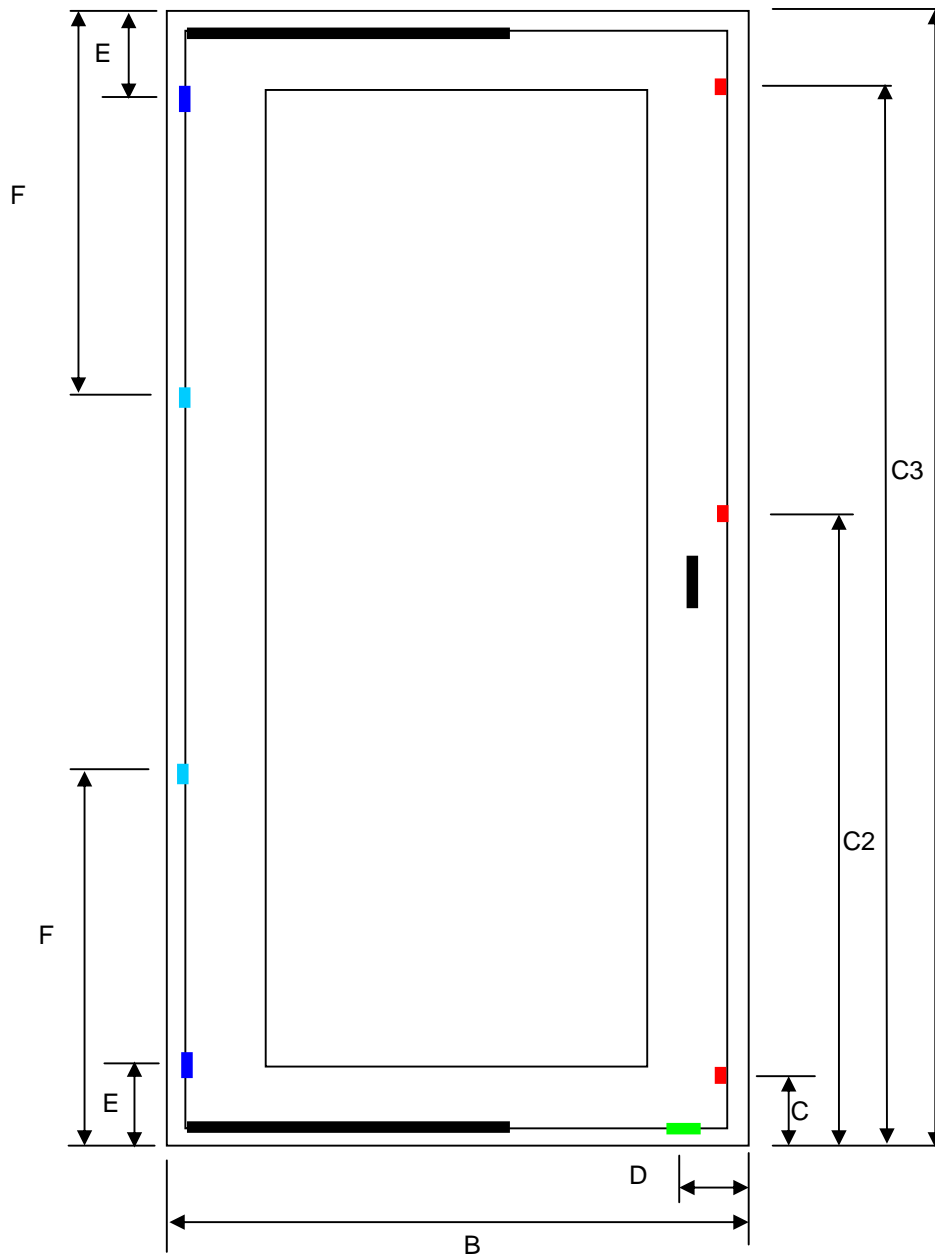


- Weather wedge
- Hinge protector
- Locking cam
- Run up block

A	=	1350	mm
B	=	1200	mm
B1	=	600	mm
C1	=	150	mm
C2	=	480	mm
C3	=	1020	mm
D	=	120	mm
E	=	130	mm



**TEST WINDOW DRAWING**



- Weather wedges
- Run up block
- Locking points
- Hinge protectors

- A = 1500 mm
- B = 750 mm
- C1 = 110 mm
- C2 = 850 mm
- C3 = 1380 mm
- D = 100 mm
- E = 120 mm
- F = 550 mm



**RESULTS TEST 1-3**

Sample No	WTH1901A	Temperature	19°C	Humidity	33%RH	Date	10/04/2019
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BS 6375-2 test	Requirement	Test results
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<b>Operating forces</b>  (Test 1)	BS EN 13115: 2001 Class 1  Lever handle operation, max 10Nm Movement of casement or sash Movement of casement or sash Lever handle operation, max 10Nm	Disengage = 1.6 Nm Open = 42.4 N Close = 56.6 N Engage = 2.8 Nm
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<b>Resistance to static torsion</b>  (Test 2)	Class 3. No damage or permanent deformation and remain operational  BS EN 13115: 2001 Class 1  Lever handle operation, max 10Nm Movement of casement or sash Movement of casement or sash Lever handle operation, max 10Nm	Load applied and removed, operational forces still within allowable limits  Disengage = 1.6 Nm Open = 42.0 N Close = 60.9 N Engage = 3.4 Nm
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<b>Resistance to racking</b>  (Test 3)	Class 3. No damage or permanent deformation and remain operational  BS EN 13115: 2001 Class 1  Lever handle operation, max 10Nm Movement of casement or sash Movement of casement or sash Lever handle operation, max 10Nm	Load applied and removed, operational forces still within allowable limits  Disengage = 1.5 Nm Open = 31.3 N Close = 75.1 N Engage = 3.3 Nm
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**RESULTS TEST 1-3**

Sample No	WTH1901D	Temperature	19°C	Humidity	38%RH	Date	12/04/2019
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BS 6375-2 test	Requirement	Test results
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<b>Operating forces</b>  (Test 1)	BS EN 13115: 2001 Class 1  Lever handle operation, max 10Nm Movement of casement or sash Movement of casement or sash Lever handle operation, max 10Nm	Disengage = 1.6 Nm Open = 20.2 N Close = 51.8 N Engage = 2.0 Nm
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<b>Resistance to static torsion</b>  (Test 2)	Class 3. No damage or permanent deformation and remain operational  BS EN 13115: 2001 Class 1  Lever handle operation, max 10Nm Movement of casement or sash Movement of casement or sash Lever handle operation, max 10Nm	Load applied and removed, operational forces still within allowable limits  Disengage = 1.5 Nm Open = 20.1 N Close = 60.7 N Engage = 2.7 Nm
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<b>Resistance to racking</b>  (Test 3)	Class 3. No damage or permanent deformation and remain operational  BS EN 13115: 2001 Class 1  Lever handle operation, max 10Nm Movement of casement or sash Movement of casement or sash Lever handle operation, max 10Nm	Load applied and removed, operational forces still within allowable limits  Disengage = 1.6 Nm Open = 36.1 N Close = 75.4 N Engage = 2.3 Nm
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Test Report No. WTH1901#1-3	Page 14 of 19
Testing of Single top hung & single side hung flush casement windows	
Testing to BS 6375-2:2009	

**RESULTS TEST 1-3**

Sample No	WTH1901G	Temperature	20°C	Humidity	38%RH	Date	12/04/2019
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BS 6375-2 test	Requirement	Test results
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<b>Operating forces</b>  (Test 1)	BS EN 13115: 2001 Class 1  Lever handle operation, max 10Nm Movement of casement or sash Movement of casement or sash Lever handle operation, max 10Nm	Disengage = 1.3 Nm Open = 62.2 N Close = 74.9 N Engage = 1.1 Nm
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<b>Resistance to static torsion</b>  (Test 2)	Class 3. No damage or permanent deformation and remain operational  BS EN 13115: 2001 Class 1  Lever handle operation, max 10Nm Movement of casement or sash Movement of casement or sash Lever handle operation, max 10Nm	Load applied and removed, operational forces still within allowable limits   Disengage = 1.1 Nm Open = 63.4 N Close = 64.0 N Engage = 1.2 Nm
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<b>Resistance to racking</b>  (Test 3)	Class 3. No damage or permanent deformation and remain operational  BS EN 13115: 2001 Class 1  Lever handle operation, max 10Nm Movement of casement or sash Movement of casement or sash Lever handle operation, max 10Nm	Load applied and removed, operational forces still within allowable limits   Disengage = 1.3 Nm Open = 72.3 N Close = 81.8 N Engage = 2.3 Nm
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**TEST RESULTS 4-5**

Sample No	WTH1901B	Temperature	19°C	Humidity	36%RH	Date	03/04/2019
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BS 6375-2 test	Requirement	Test results
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<b>Resistance to repeated opening and closing</b>  (Test 5)	Class 3 Heavy duty as classified by BS EN 12400:2002  The window is to remain operation and functional within accepted forces	Window remained fully functional on completion of test and was considered to be fit for purpose
	<b>Operating forces before test</b> BS EN 13115: 2001 Class 1 Lever handle operation, max 10Nm Movement of casement or sash, max 100N	Disengage = 1.2 Nm Open = 18.5 N Close = 68.8 N Engage = 1.7 Nm
	<b>Operating forces after 2500 cycles</b> BS EN 13115: 2001 Class 1 Lever handle operation, max 10Nm Movement of casement or sash, max 100N	Disengage = 1.3 Nm Open = 19.2 N Close = 53.4 N Engage = 1.8 Nm
	<b>Operating forces after 5000 cycles</b> BS EN 13115: 2001 Class 1 Lever handle operation, max 10Nm Movement of casement or sash, max 100N	Disengage = 1.4 Nm Open = 17.1 N Close = 60.9 N Engage = 2.0 Nm
	<b>Operating forces after 7500 cycles</b> BS EN 13115: 2001 Class 1 Lever handle operation, max 10Nm Movement of casement or sash, max 100N	Disengage = 1.4 Nm Open = 17.0 N Close = 61.5 N Engage = 2.2 Nm
	<b>Operating forces after 10000 cycles</b> BS EN 13115: 2001 Class 1 Lever handle operation, max 10Nm Movement of casement or sash, max 100N	Disengage = 1.2 Nm Open = 16.5 N Close = 68.9 N Engage = 1.8 Nm
	<b>Operating forces after 12500 cycles</b> BS EN 13115: 2001 Class 1 Lever handle operation, max 10Nm Movement of casement or sash, max 100N	Disengage = 1.3 Nm Open = 15.8 N Close = 61.9 N Engage = 2.1 Nm



**TEST RESULTS 4-5**

Sample No	WTH1901B	Temperature	20°C	Humidity	48%RH	Date	09/04/2019
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BS 6375-2 test	Requirement	Test results
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Resistance to repeated opening and closing  (Test 5)	<b>Operating forces after 15000 cycles</b> BS EN 13115: 2001 Class 1 Lever handle operation, max 10Nm Movement of casement or sash, max 100N	Disengage = 1.3 Nm Open = 12.9 N Close = 78.6 N Engage = 1.9 Nm
	<b>Operating forces after 17500 cycles</b> BS EN 13115: 2001 Class 1 Lever handle operation, max 10Nm Movement of casement or sash, max 100N	Disengage = 1.4 Nm Open = 14.8 N Close = 59.8 N Engage = 1.9 Nm
	<b>Operating forces after 20000 cycles</b> BS EN 13115: 2001 Class 1 Lever handle operation, max 10Nm Movement of casement or sash, max 100N	Disengage = 1.3 Nm Open = 15.3 N Close = 80.0 N Engage = 1.9 Nm
<b>Cleaning and maintenance mode of operation</b>	<b>Operating forces after 200 cycles</b> BS EN 1191:2012 G.4.2.4 Lever handle operation, max 10Nm Movement of casement or sash, max 100N	Disengage = Nm Open = N Close = N Engage = Nm





**PICTURE OF TEST WINDOW**





**PICTURE OF TEST WINDOW**



Test Report No. WTH1901#1-3	Page 19 of 19
Testing of Single top hung & single side hung flush casement windows	
Testing to BS 6375-2:2009	



**PICTURE OF TEST WINDOW**



**END OF REPORT**