



Test Report No: WTH1709#2-2  
Date: 06/09/2017  
Testing of: Side hung next to side hung casement  
Tested to: Weathertightness test BS 6375: Part 1  
Prepared for: Nico Manufacturing Ltd

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**AUTHORISATION**

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

Report produced by: D.Kury (Principle Test Engineer)

Signature: 

Date: 20/10/2017

For and on behalf of Nico Manufacturing Ltd Test Laboratory

Report authorised by: M. Franklin (Laboratory Technical Manager)

Signature: 

Date: 14/11/2017

For and on behalf of Nico Manufacturing Ltd Test Laboratory

Date of issue of report 14/11/2017

**Nico Manufacturing Ltd. Test Laboratory**

Oxford Road

Clacton-on-Sea

ESSEX

CO15 3TJ

Telephone +44 (0) 1255 422333

Fax +44 (0) 1255 432909



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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.	WTH1709
Dated:	14/08/2017



**DETAILS OF TEST**

Description	Side hung next to side hung
Model / type	Projecting casement window
Make / Brand	Swift System
Date sample received	30/08/2017
Any special requirements	

**Air permeability tests in accordance with BS EN 1026: 2016-** A series of positive and negative pressures was applied to the test sample and the air leakage through the sample was measured at each pressure step. Pressure steps applied are defined on the air permeability test sheets in this report.

**Watertightness test in accordance with BS EN 1027: 2016** - A specified volume of water was constantly sprayed over the external face of the test sample while a positive pressure was applied, the positive pressure was increased at regular intervals. The test pressure, time and location of any water penetration was recorded. Pressure steps applied are defined on the watertightness test sheet in this report.

**Resistance to wind load test in accordance with BS EN 12211: 2016 -** Positive and negative pressures P1, were applied to the test sample and the deflection under load was measured, a series of 50 cycles of positive and negative pressure P2 were applied and any damage caused was noted and a safety test consisting of a single cycle of positive and negative pressures P3 was applied and any damage caused was noted  
P2 = 0.5P1, P3 =1.5P1.  
Values of these loads are defined on the Resistance to wind load test sheet in this report.

Note : The test specimens were kept in the test laboratory for at least 12 hours at environmental conditions of between 10°C to 30°C, and 25% RH to 75% RH before each test was undertaken

The sample was mounted in a timber sub frame (nominal 100mm x 50mm in section) and sealed to the sub frame. The sample was mounted in the test rig without any twists or bends that might influence the test result.



**DETAILS OF SAMPLE**

Sample details	Side hung next to side hung projecting casement window
Fabricator	Swift Frame Ltd
Material:	PVC-U Swift frame part numbers; Outer frame 5101, Mullion 5301 Sash 5206 Reinforcing; Outer frame, fully reinforced part number SS705 Sash reinforcement SS708 Mullion Reinforcement SS702
Finish	White
Lock & keeps	Nico Mk2 shootbolt system. Part nos; Gearbox 93905 Shootbolt extensions 93945 Cast zinc keeps, part nos; espag keep 9023, corner keep K2
Hinges & protectors	Nico 16" standard friction hinge 13mm stack height. Part no 7740 Nico Xtra bolt hinge protector 13mm stack height. Part no 8000
Handle	ERA Maxim 3 handed
Fixings	Lock - SFR 4.8 x 38mm c'sk head pierce point Keeps - 4.8 x 25mm c'sk head drill point into head and top and bottom frame 4.8 x 25mm c'sk head pierce point into mullion Friction hinges - SFR 4.8 x 25mm pan head drill point into sash and frame Hinge protectores - SFR 4.8 x 25mm pan head drill point into sash and frame Run up blocks - 4.8 x 25mm c'sk pierce point
Weather sealing	Co extruded gaskets.
Glass (or infill)	4-20-4mm clear toughened double glazed units
Glazing system	Internally bead glazed GT products Snap-Lok SK001
Sample dimensions	1200mm(w) x 1200mm(h), central mullion
Additional information	



**CONCLUSIONS OF TEST**

Standard	Test Description	Test result
BS EN 1026: 2016	Air permeability of test chamber	Class 4
BS EN 1026: 2016	Air permeability of test sample (first test)	Class 4
BS EN 1027: 2016	Watertightness test	Class 9A
BS EN 12211: 2016	7.2 Deflection test	Class C
BS EN 12211: 2016	7.3 Repeated pressure test	Pass
BS EN 1026: 2016	Air permeability of test sample (second test)	Class 4
BS EN 12211: 2016	Safety test	Class C4

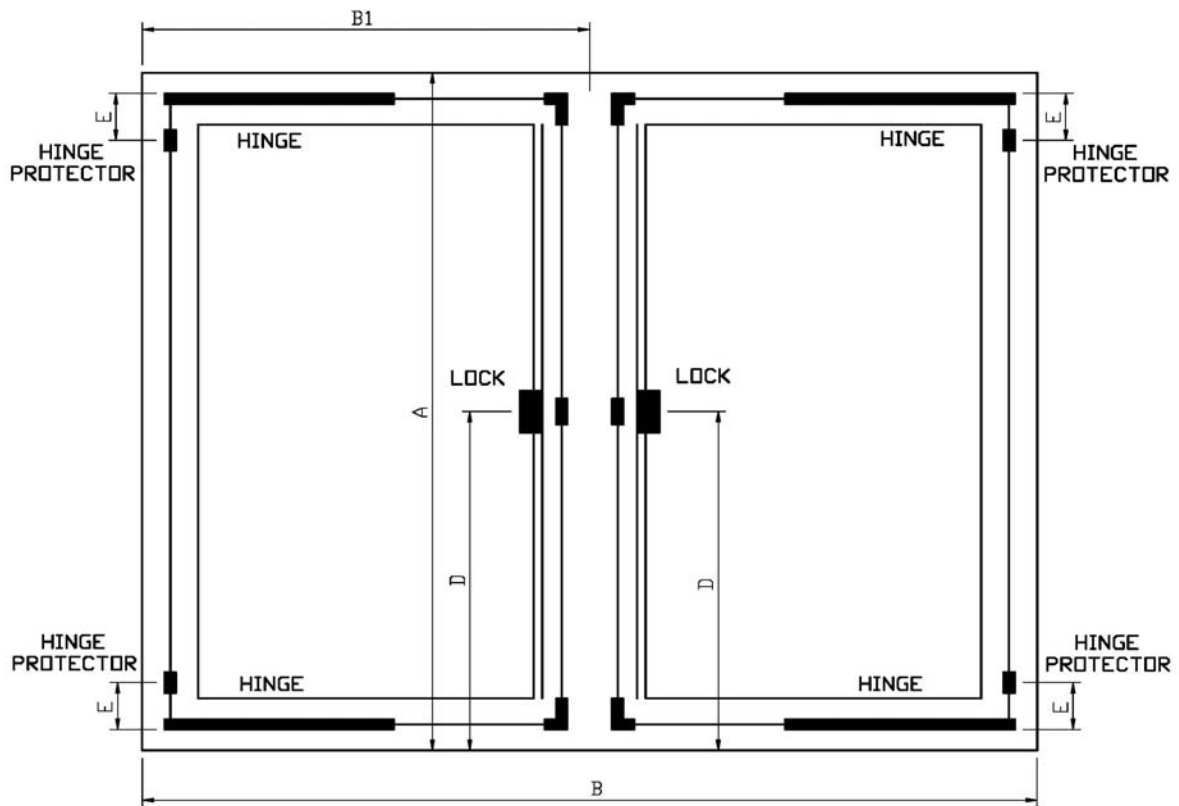
Exposure category classification in accordance with BS 6375-1 2015 (clauses 6, 7 & 8)

**Classification achieved:**

UK exposure category	Air permeability		Watertightness		Resistance to wind load			
	Class	Maximum test pressure	Class	Maximum test pressure	Class	P1	P2	P3
1600	4	600 Pa	9A	600 Pa	C4	1600	800	2400



**TEST WINDOW DRAWING**



- A = mm
- A1 = mm
- B = mm
- B1 = mm
- C = mm
- D = mm
- E = mm





**AIR PERMEABILITY: BS EN 1206: 2016**

The window was tested with the opening sashes in the closed and locked position

Window opened and closed before applying pressure pulses	Yes
Three positive pressure pulses applied	Yes

Table 1 - Air permeability with positive pressure (adjusted for laboratory conditions)

Pressure differential Pa	Air flow through test sample m <sup>3</sup> /h	Air flow per unit area of test sample m <sup>3</sup> /h/m <sup>2</sup>	Air flow per metre of opening joints m <sup>3</sup> /h/m
50	0.00	0.00	0.00
100	0.30	0.21	0.04
150	0.35	0.24	0.05
200	0.26	0.18	0.04
250	0.23	0.16	0.03
300	0.15	0.10	0.02
450	0.18	0.13	0.03
600	0.19	0.13	0.03

Window opened and closed before applying pressure pulses	Yes
Three negative pressure pulses applied	Yes

Table 2 - Air permeability with negative pressure (adjusted for laboratory conditions)

Pressure differential Pa	Air flow through test sample m <sup>3</sup> /h	Air flow per unit area of test sample m <sup>3</sup> /h/m <sup>2</sup>	Air flow per metre of opening joints m <sup>3</sup> /h/m
50	0.00	0.00	0.00
100	-0.10	-0.07	-0.01
150	0.09	0.06	0.01
200	0.09	0.06	0.01
250	0.08	0.06	0.01
300	-0.04	-0.03	-0.01
450	0.13	0.09	0.02
600	1.33	0.93	0.20

Table 3 - Air permeability averages with positive and negative pressures

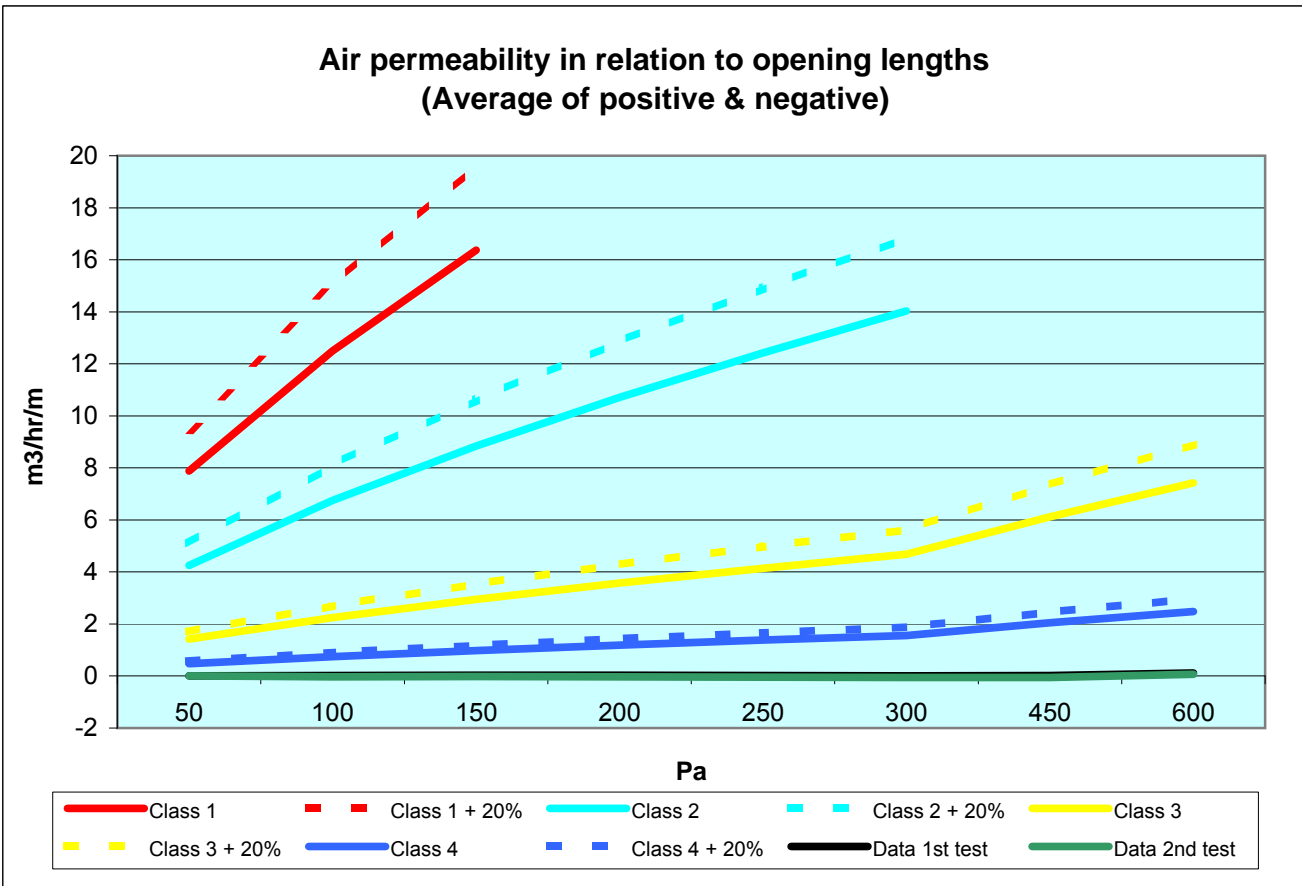
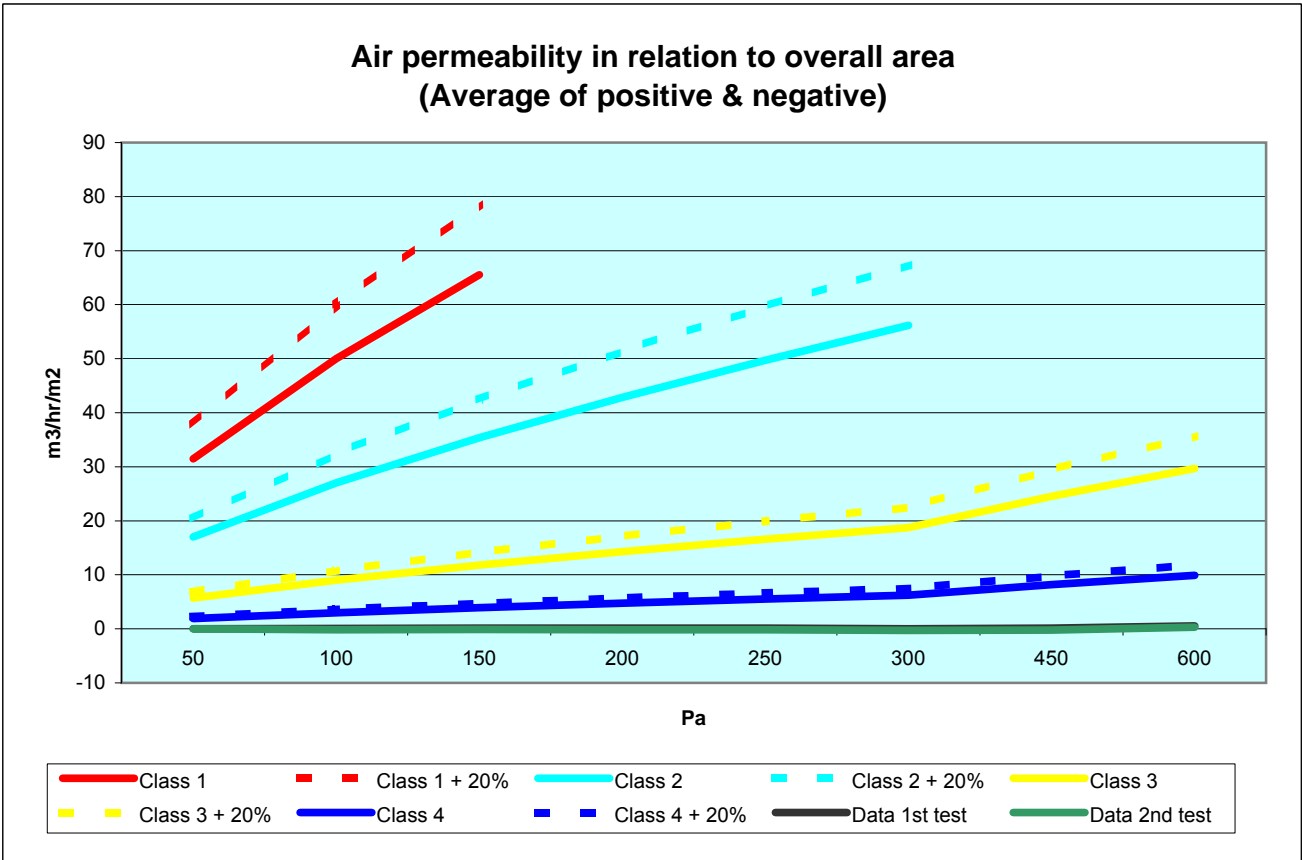
Pressure differential Pa	Air flow per average unit area of test sample m <sup>3</sup> /h/m <sup>2</sup>	Air flow average per metre of opening joints m <sup>3</sup> /h/m
50	0.00	0.00
100	0.07	0.01
150	0.15	0.03
200	0.12	0.03
250	0.11	0.02
300	0.04	0.01
450	0.11	0.02
600	0.53	0.11

Total surface area of test sample (m <sup>2</sup> )
1.4352

Total length of opening joints (m)
6.772



**AIR PERMEABILITY GRAPHS**



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**WATERTIGHTNESS: BS EN 1027: 2016**

The window was tested with the opening sashes in the closed and locked position

**Watertightness data** (Test method 1A)

Maximum test pressure	600
Pressure pulses	660

(Pressure pulses should be maximum test pressure + 10% or 500Pa whichever is the greater)

Window opened and closed before applying pressure pulses	Yes
Three positive pressure pulses applied	Yes

Air pressure (Pa)	Spray duration (minutes)	Water Leaks	Position of leak (See also leakage diagram)	Time of leak min:sec
0	15 +1/-0	None		
50 +/-5%	5 +1/-0	None		
100 +/-5%	5 +1/-0	None		
150 +/-5%	5 +1/-0	None		
200 +/-5%	5 +1/-0	None		
250 +/-5%	5 +1/-0	None		
300 +/-5%	5 +1/-0	None		
450 +/-5%	5 +1/-0	None		
600 +/-5%	5 +1/-0	None		

**Laboratory Conditions**

Air pressure (mbar)	1016
Laboratory air temp. (°C)	21.3
Relative humidity (%)	63.8

Number of spray nozzles	3
Total flow rate	6

**Classification**

Test pressure (Pa)	Classification		Spec.
	Test method A	Test method B	
0	1A	1B	15 min
50	2A	2B	C1+5 min
100	3A	3B	C2+5 min
150	4A	4B	C3+5 min
200	5A	5B	C4+5 min
250	6A	6B	C5+5 min
300	7A	7B	C6+5 min
450	8A	8B	C7+5 min
600	9A	9B	C8+5 min



**RESISTANCE TO WIND LOAD: BS EN 12211: 2016**

<b>Deflection test: Positive pressure</b>				P1=	1600	Pa	
Section being measured: Hinge side of sash		Deflection gauge readings (mm)				Length	Relative deflection
3 pulses of	1760	Top end	Centre	Bottom End	Net deflection		
Pre-test reading		10	10	10	0.75	1060	1/ 1410
Max reading		10.6	11.2	10.3			
Net deflection under load		0.6	1.2	0.3			
Residual reading		10	10	10			

<b>Deflection test: Negative pressure</b>				P1=	1600	Pa	
Section being measured: Hinge side of sash		Deflection gauge readings (mm)				Length	Relative deflection
3 pulses of	1760	Top end	Centre	Bottom End	Net deflection		
Pre-test reading		10	10	10	-1.4	1060	1/ -760
Max reading		9	7.8	9.4			
Net deflection under load		-1	-2.2	-0.6			
Residual reading		10	10	10			

**Test conclusion:** Worst case deflection 1/ -760 Classification C

<b>Cyclic repeated pressure test</b>		P2=	800	Pa
50 cycles +/- at 800 Pa	No damage			Pass

<b>Safety test</b>		P3=	2400	Pa
1 cycle +/- at 2400 Pa	Window remained closed and intact			Pass

**Laboratory Conditions**

Air pressure	1016	mbar
Air temperature	22.6	°C

Relative humidity	68.1	%
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**Classifications**

Wind load			
Class	P1	P2	P3
0	Not tested		
1	400	200	600
2	800	400	1200
3	1200	600	1800
4	1600	800	2400
5	2000	1000	3000

Deflection	
Class	Relative frontal deflection
A	≤ 1/150
B	≤ 1/200
C	≤ 1/300

Resistance to wind load			
Wind load class	Relative frontal deflection		
	A	B	C
1	A1	B1	C1
2	A2	B2	C2
3	A3	B3	C3
4	A4	B4	C4
5	A5	B5	C5



**AIR PERMEABILITY: BS EN 1206: 2016**

The window was tested with the opening sashes in the closed and locked position

Window opened and closed before applying pressure pulses	Yes
Three positive pressure pulses applied	Yes

Table 1 - Air permeability with positive pressure (adjusted for laboratory conditions)

Pressure differential Pa	Air flow through test sample m <sup>3</sup> /h	Air flow per unit area of test sample m <sup>3</sup> /h/m <sup>2</sup>	Air flow per metre of opening joints m <sup>3</sup> /h/m
50	0.00	0.00	0.00
100	-0.03	-0.02	0.00
150	-0.06	-0.04	-0.01
200	-0.15	-0.10	-0.02
250	-0.27	-0.19	-0.04
300	-0.39	-0.27	-0.06
450	-0.54	-0.37	-0.08
600	-0.45	-0.31	-0.07

Window opened and closed before applying pressure pulses	Yes
Three negative pressure pulses applied	Yes

Table 2 - Air permeability with negative pressure (adjusted for laboratory conditions)

Pressure differential Pa	Air flow through test sample m <sup>3</sup> /h	Air flow per unit area of test sample m <sup>3</sup> /h/m <sup>2</sup>	Air flow per metre of opening joints m <sup>3</sup> /h/m
50	0.00	0.00	0.00
100	-0.43	-0.30	-0.06
150	-0.17	-0.12	-0.02
200	-0.26	-0.18	-0.04
250	-0.29	-0.20	-0.04
300	-0.37	-0.26	-0.05
450	-0.15	-0.10	-0.02
600	1.37	0.95	0.20

Table 3 - Air permeability averages with positive and negative pressures

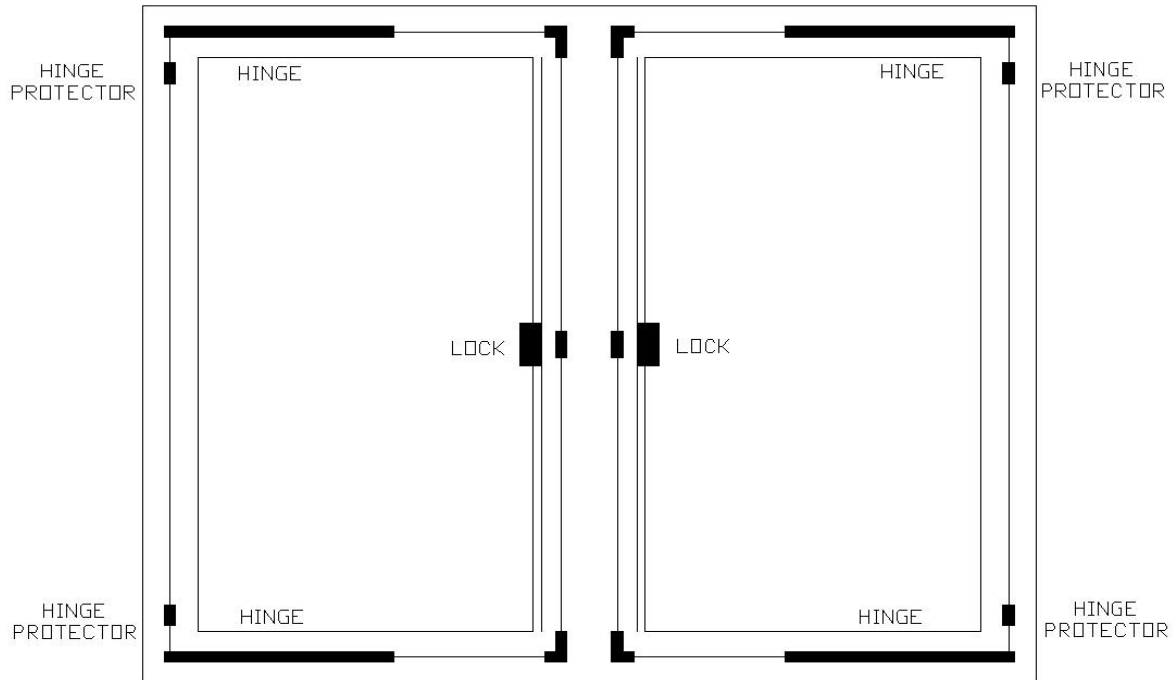
Pressure differential Pa	Air flow per average unit area of test sample m <sup>3</sup> /h/m <sup>2</sup>	Air flow average per metre of opening joints m <sup>3</sup> /h/m
50	0.00	0.00
100	-0.16	-0.03
150	-0.08	-0.02
200	-0.14	-0.03
250	-0.19	-0.04
300	-0.26	-0.06
450	-0.24	-0.05
600	0.32	0.07

Total surface area of test sample (m <sup>2</sup> )
1.4352

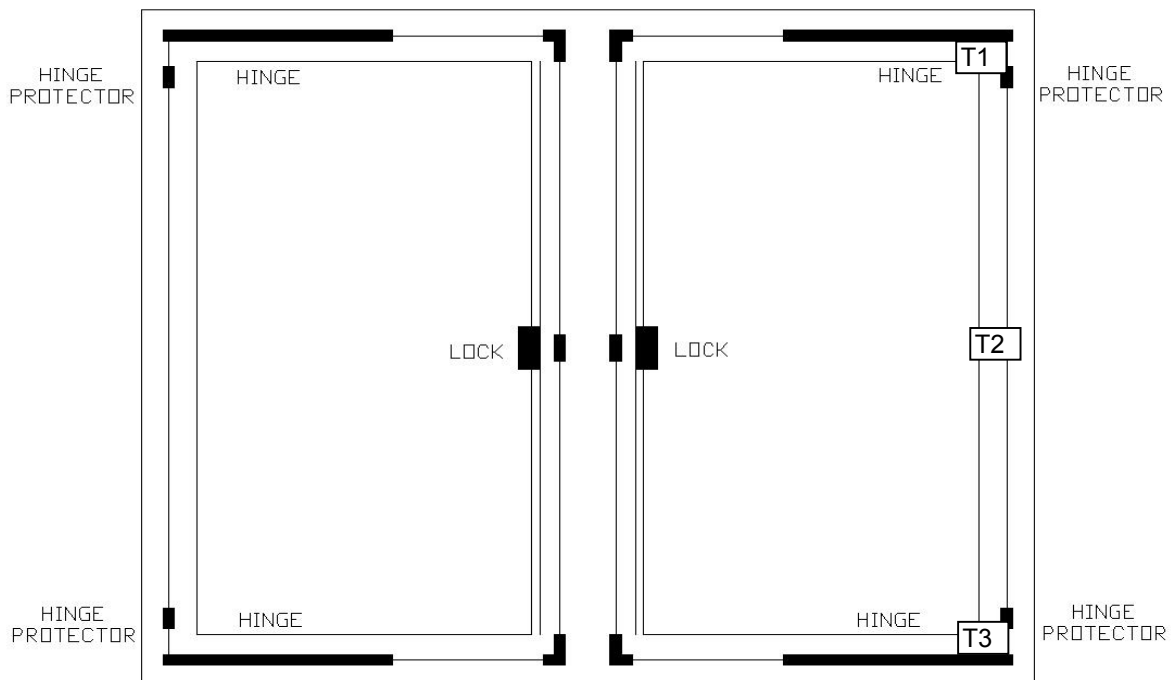
Total length of opening joints (m)
6.772



**Positions of water leakage and significant air leakage**



**Position of deflection measurement**



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**PICTURE OF TEST WINDOW**



**END OF REPORT**