

# Rangi Windows Ltd

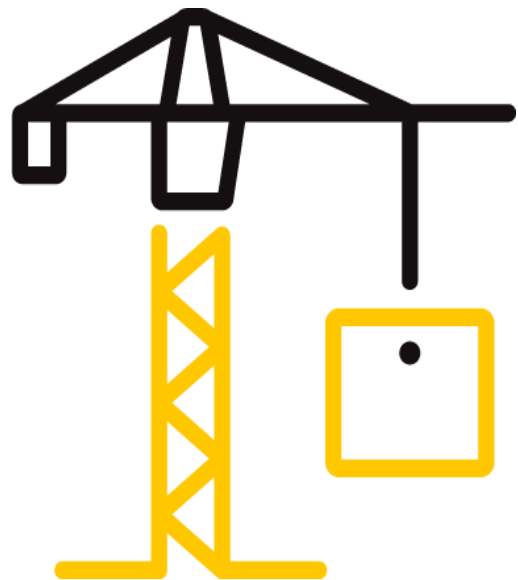
## TEST REPORT

**SCOPE OF WORK**  
WINDOWS AND DOORS

**REPORT NUMBER**  
230726021GZC-001

**ISSUE DATE**  
2023/10/30

**PAGES**  
16



**Intertek Testing Services Shenzhen Ltd. Guangzhou Branch**

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Effective date: 2023-5-15  
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# Test Report

Issue Date: 2023/10/30

Intertek Report No. : 230726021GZC-001

Applicant:	Rangi Windows Ltd
Applicant Address:	25 stock St. New Lynn, Auckland Newzealand
Attn:	jackyzhong@boyingby.com

Manufacturer:	Rangi Windows Ltd
Manufacturer Address:	25 stock St. New Lynn, Auckland Newzealand
Attn:	rangiwindows@gmail.com

**SUBJECT:** Performance testing  
< Awning Window >

Dear Sir,

This test report for represents the results of our evaluation of the above referenced product(s) to the requirements contained in the following standards:

TEST METHODS AND STANDARDS
SNZ TS 4211: 2022 – Specification for the classification of windows

SAMPLE ID	MODEL	SPECIFICATION
S230726021GZU.001	New Zealand System	1138 mm (Width) × 2838 mm (Height) × 63 mm (Thickness)

SAMPLE RECEIVED: 2023/7/20  
TESTED FROM: 2023/8/2 TO 2023/8/2

TEST LOCATION: C2-1 Building Heping Fair, Yongning Street, Zengcheng District, Guangzhou, China

\*\*\*\*\*  
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**Test Items, Method and Results:**

**1 Test Samples**

A full scale of sample was provided by the manufacturer that was not weathered nor conditioned. The description of the samples given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

**Table 1 Product Information**

1	Product Name	63mm Awning Window
2	Model	Australian system
3	Dimension of Window Frame	1138 mm (Width) × 2838 mm (Height) × 63 mm (Thickness)
4	Dimension of Window Sash	Operable sash: 1062mm (Width) × 1472 mm (Height) × 63 mm (Thickness)
5	Aluminum Profile	Model: SPEC63 Manufacturer: Guangdong Yonglijian
6	Frame Corner Construction Details	Mitre-cut, assembly with corners keys
7	Reinforcement	Not applicable
8	Glazing	Operable sash: 956 mm (Width) × 1366 mm (Height) Fixed panel: 1032 mm (Width) × 1242 mm (Height) Structure: 5mm+12A+5mm tempered double glazing Supplier: Guangdong JUNFA
9	Hardware	Handle model: LCZS3319 Friction stay model: HCC60 Supplier: Kinlong
10	Weather-strip	Not applicable
11	Thermal Break	Model: 14I(14.8mm) Material: PA66GF25 Supplier: Keyuan
12	Drainage	Sizes: 40 mm × 5 mm (Width × Height) quantity: 3
13	Gasket (between sash and frame)	Material: EPDM Supplier: WINGKAY
14	Sealant of Glass	Model: T171 Neutral silicone sealant Material: Silicone sealant Supplier: Antas
15	Installation	The rough opening allowed for a 10mm shim space. The exterior perimeter of the test specimen was sealed with silicone sealant.

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## Test Items, Method and Results:

### 2 Test Result

**Table 2 Test Results**

Test Description	Test Result		Rating	Verdict	
Serviceability deflection test	Serviceability limit state (SLS) wind pressure	± 1515 Pa	EH	Pass	
	Structural member #1: <i>Operable sash stile</i>	1/2014			
	Structural member #2: <i>Operable sash bottom rail</i>	1/1275			
	Structural member #3: <i>Transom</i>	1/927			
Operating of opening sashes test	Initiate Movement Requirement: No greater than 100N	Fully Closed	36 N	NA	Pass
		1/3 Open	20 N		
		2/3 Open	18 N		
		1/3 Closed	18 N		
		2/3 Closed	21 N		
	Sustain Movement Requirement: No greater than 100N	Fully Closed	17 N		
		1/3 Open	10 N		
		2/3 Open	11 N		
		1/3 Closed	10 N		
		2/3 Closed	12 N		
Air infiltration test	Total area: 3.23 m <sup>2</sup>	at +75Pa:	0.05 L/s·m <sup>2</sup>	Class 3	Pass
			0.04 L/s·m		
	Opening joint length: 4.87 m	at -75Pa:	0.15 L/s·m <sup>2</sup>		
			0.10 L/s·m		
		at +150Pa:	0.08 L/s·m <sup>2</sup>		
			0.05 L/s·m		
		at -150Pa:	0.51 L/s·m <sup>2</sup>		
			0.34 L/s·m		

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**Table 2 Test Results(Cont.)**

Test Description	Test Result			Rating	Verdict
Water penetration test	No water penetration at:	375	Pa	VH	Pass
	Description: Water penetration occurred at lower right corner joint between operable sash and window frame when tested at 455Pa for 1 minute.				
Ultimate strength test	±	2130	Pa with no collapse	EH	Pass
	Description: No significant breakage, permanent deformation or operational malfunction after ultimate strength was released.				
Torsional strength test	Maximum limited deflection: 25.6 mm	Maximum deflection measurement: 2.57 mm		NA	Pass

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### Appendix A: Test Data and Sample Drawings:

#### A.1 Serviceability Deflection Test – Test method AS/NZS 4420.1-2016

Test Pressure (Serviceability limit state wind pressure),  $P = 1515 \text{ Pa}$ , rating " EH ".

Note: Unless a smaller value of allowable deflection is separately specified for windows that are subject to specific design, in buildings requiring specific design, the maximum deflection due to bending of any structural member, including the outer window frame, measured relative to the end of the member at the serviceability limit state shall not exceed  $\text{span}/200^{\text{th}}$  of the span.

**Table 3 Test Data of Deflection Test**

Member (mm)		Test Pressure (Pa)	Displacement(mm)			Actual Deflection	Deflection/Span Ratio
Item	Span Length		1	2	3		
Operable sash stile	1410	+P/4=379	0.0	0.1	0.0	0.1	/
		+2P/4=758	0.1	0.3	0.2	0.2	/
		+3P/4=1136	0.2	0.6	0.4	0.3	/
		+4P/4=1515	0.3	0.9	0.7	0.4	1:3525
		0	0.2	0.2	0.2	<0.1	/
Operable sash stile	1410	-P/4=-379	0.0	0.0	0.0	<0.1	/
		-2P/4=-758	0.3	0.2	0.1	0.1	/
		-3P/4=-1136	0.9	0.5	0.2	0.4	/
		-4P/4=-1515	1.7	1.0	0.4	0.7	1:2014
		0	0.1	0.1	0.1	<0.1	/

**Table 4 Test Data of Deflection Test**

Member (mm)		Test Pressure (Pa)	Displacement(mm)			Actual Deflection	Deflection/Span Ratio
Item	Span Length		3	4	5		
Operable sash bottom rail	1020	+P/4=379	0.0	0.1	0.0	0.1	/
		+2P/4=758	0.2	0.4	0.0	0.3	/
		+3P/4=1136	0.4	0.8	0.2	0.5	/
		+4P/4=1515	0.7	1.3	0.5	0.7	1:1457
		0	0.2	0.2	0.2	<0.1	/
Operable sash bottom rail	1020	-P/4=-379	0.0	0.1	0.0	0.1	/
		-2P/4=-758	0.1	0.4	0.0	0.4	/
		-3P/4=-1136	0.2	0.7	0.1	0.6	/
		-4P/4=-1515	0.4	1.1	0.2	0.8	1:1275
		0	0.1	0.1	0.2	0.1	/

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### A.1 Serviceability Deflection Test – Test method AS/NZS 4420.1-2016(Cont.)

**Table 5 Test Data of Deflection Test**

Member (mm)		Test Pressure (Pa)	Displacement(mm)			Actual Deflection	Deflection/Span Ratio
Item	Span Length		6	7	8		
Transom	1020	+P/4=379	0.1	0.2	0.1	0.1	/
		+2P/4=758	0.1	0.4	0.2	0.3	/
		+3P/4=1136	0.2	0.9	0.2	0.7	/
		+4P/4=1515	0.2	1.3	0.3	1.1	1:927
		0	0.2	0.2	0.1	0.1	/
Transom	1020	-P/4=-379	0.1	0.2	0.0	0.2	/
		-2P/4=-758	0.1	0.5	0.1	0.4	/
		-3P/4=-1136	0.2	0.9	0.2	0.7	/
		-4P/4=-1515	0.2	1.3	0.4	1.0	1:1020
		0	0.2	0.1	0.1	0.1	/

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### A.2 Sample Drawings

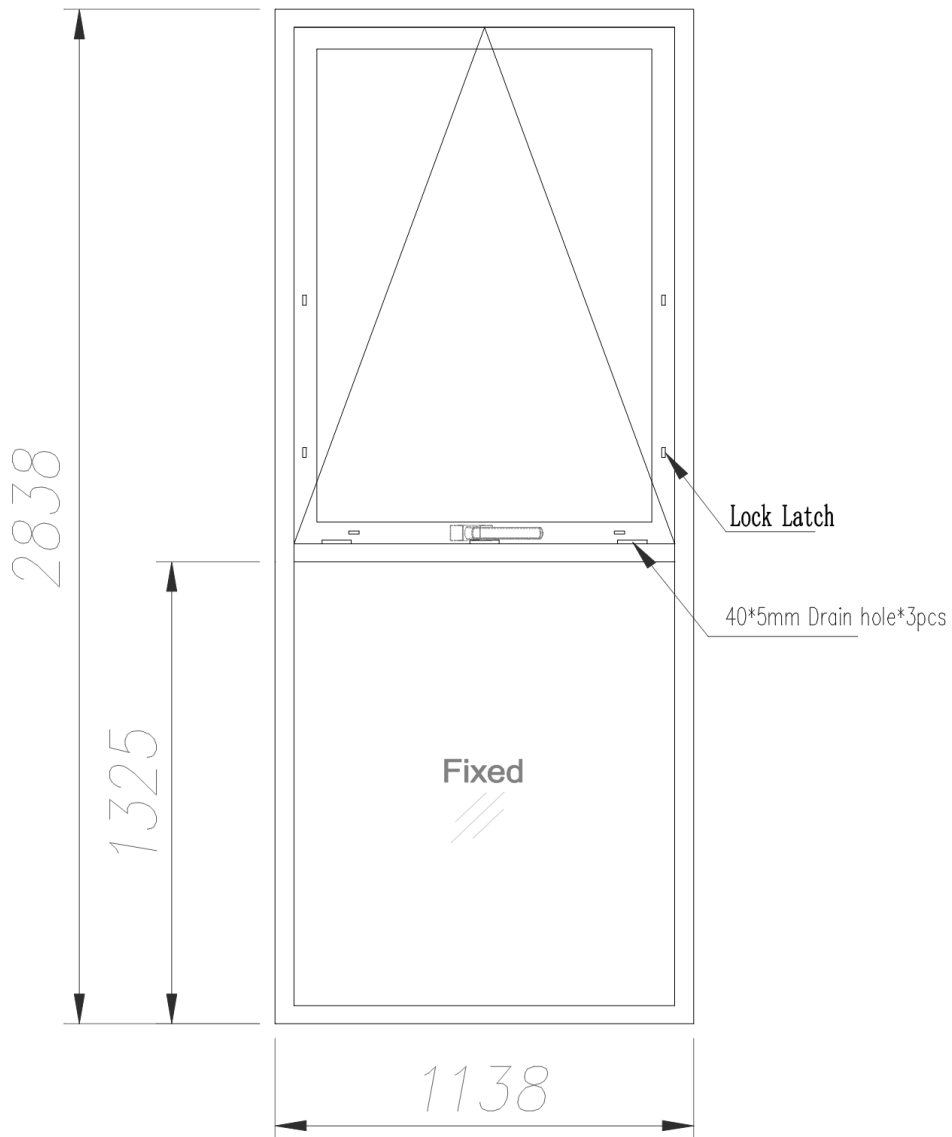


Fig.1 Drawing of Representative Sample (View from interior)

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## A.2 Sample Drawings(Cont.)

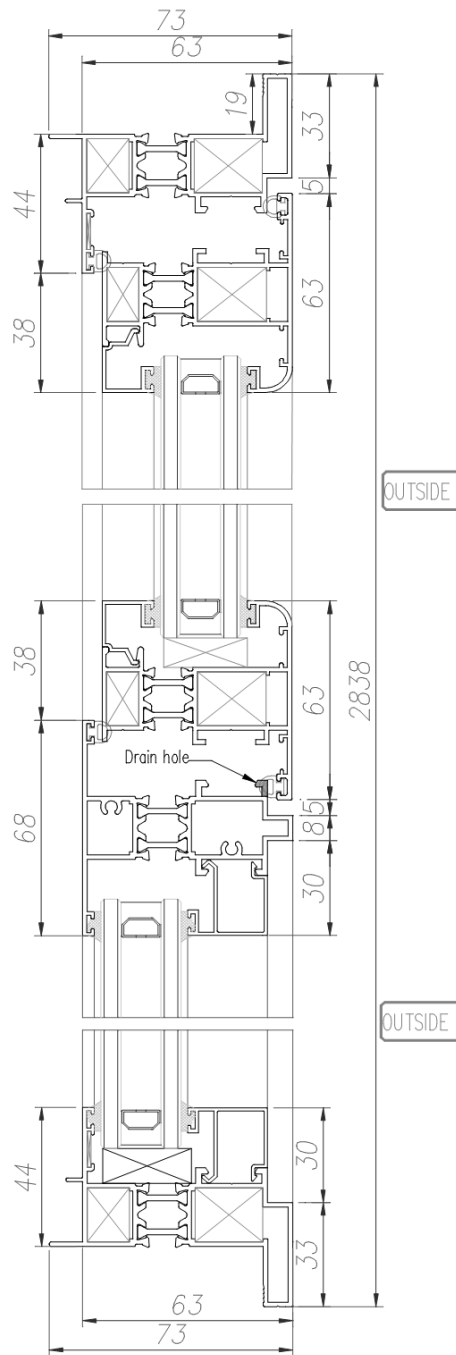


Fig.2 Drawing of Representative Sample

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### A.2 Sample Drawings(Cont.)

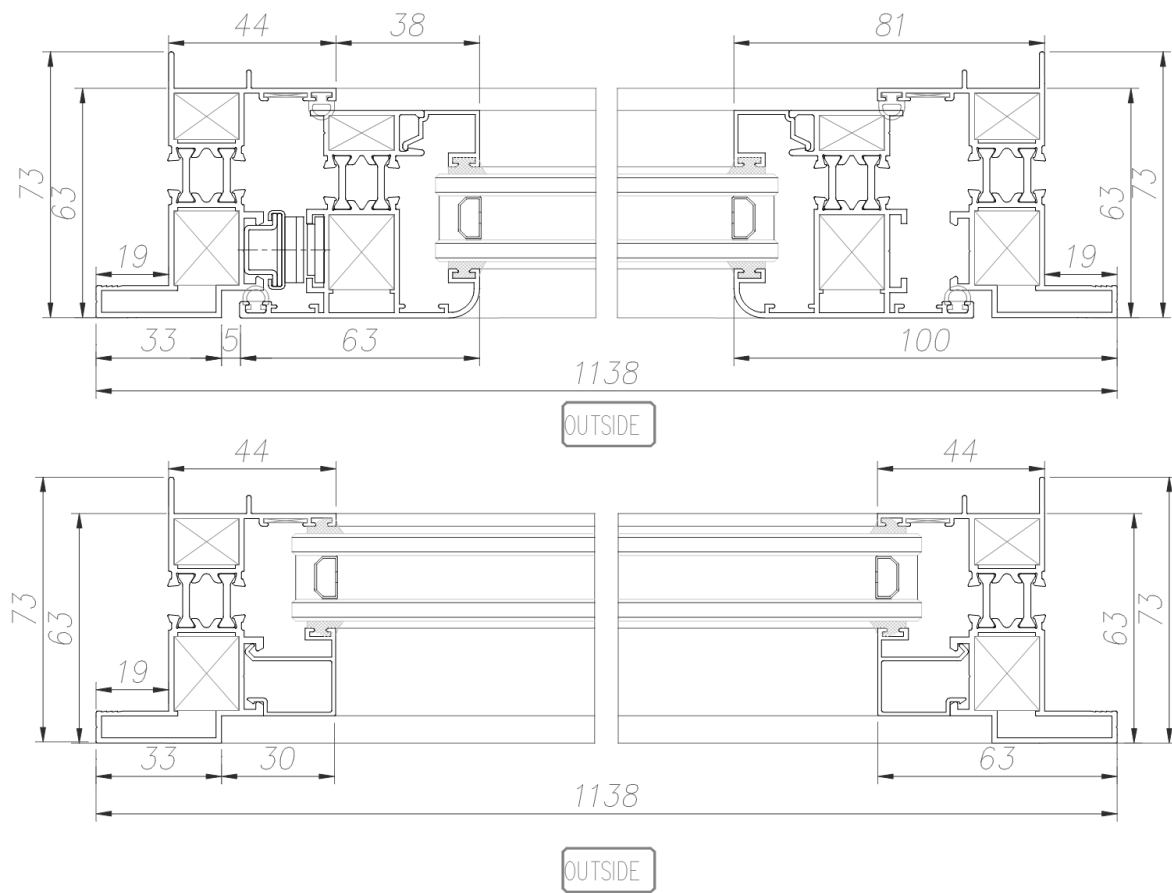


Fig.3 Drawing of Representative Sample

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### A.2 Sample Drawings(Cont.)

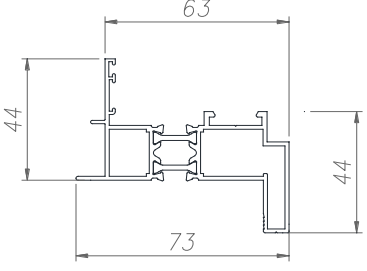
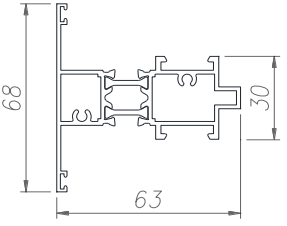
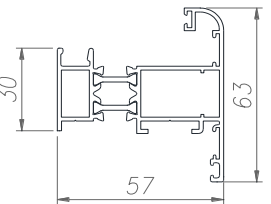
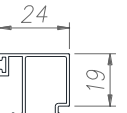
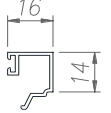
		
<p>DIE NAME : ALUM. AWNING WINDOW FRAME</p>	<p>DIE NAME : ALUM.AWNING SASH Transom</p>	<p>DIE NAME : ALUM.AWNING SASH</p>
		
<p>DIE NAME : FIXED WINDOW GLASS SASH</p>	<p>DIE NAME : AWNING SASH GLASS BEAD</p>	

Fig.4 Drawing of profile

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### A.2 Sample Drawings(Cont.)

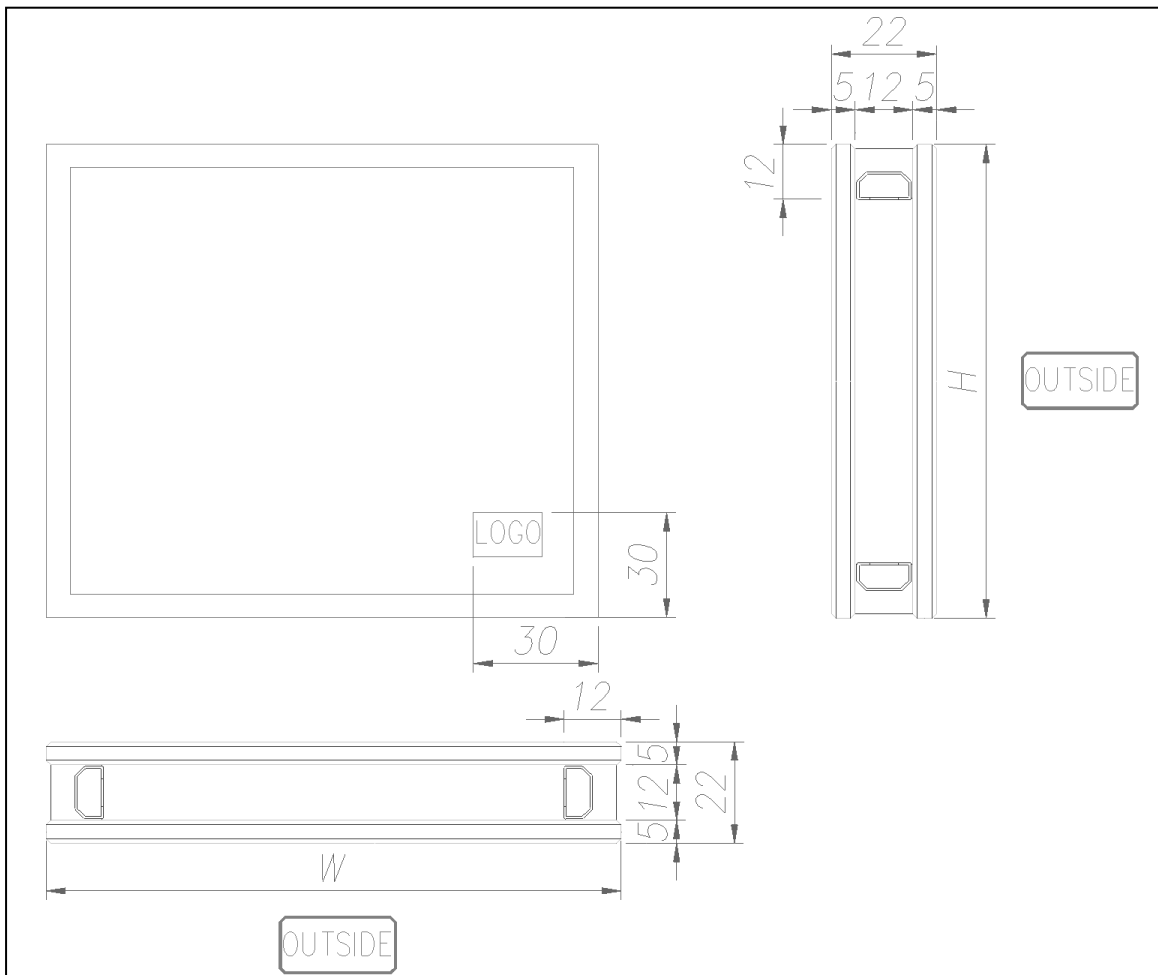


Fig.5 Drawing of glazing

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## A.2 Sample Drawings(Cont.)

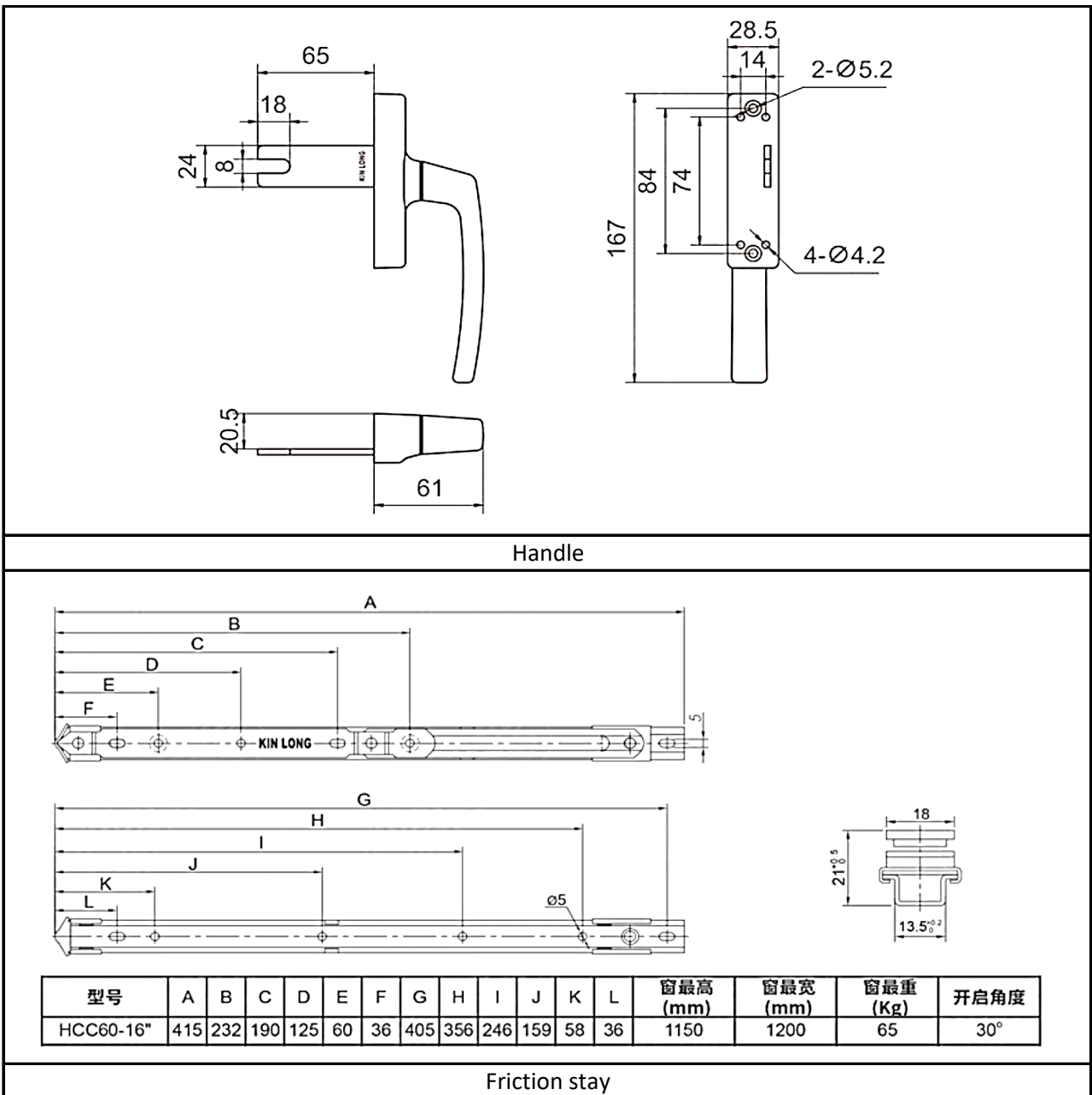


Fig.6 Drawing of Hardware

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### A.2 Sample Drawings(Cont.)

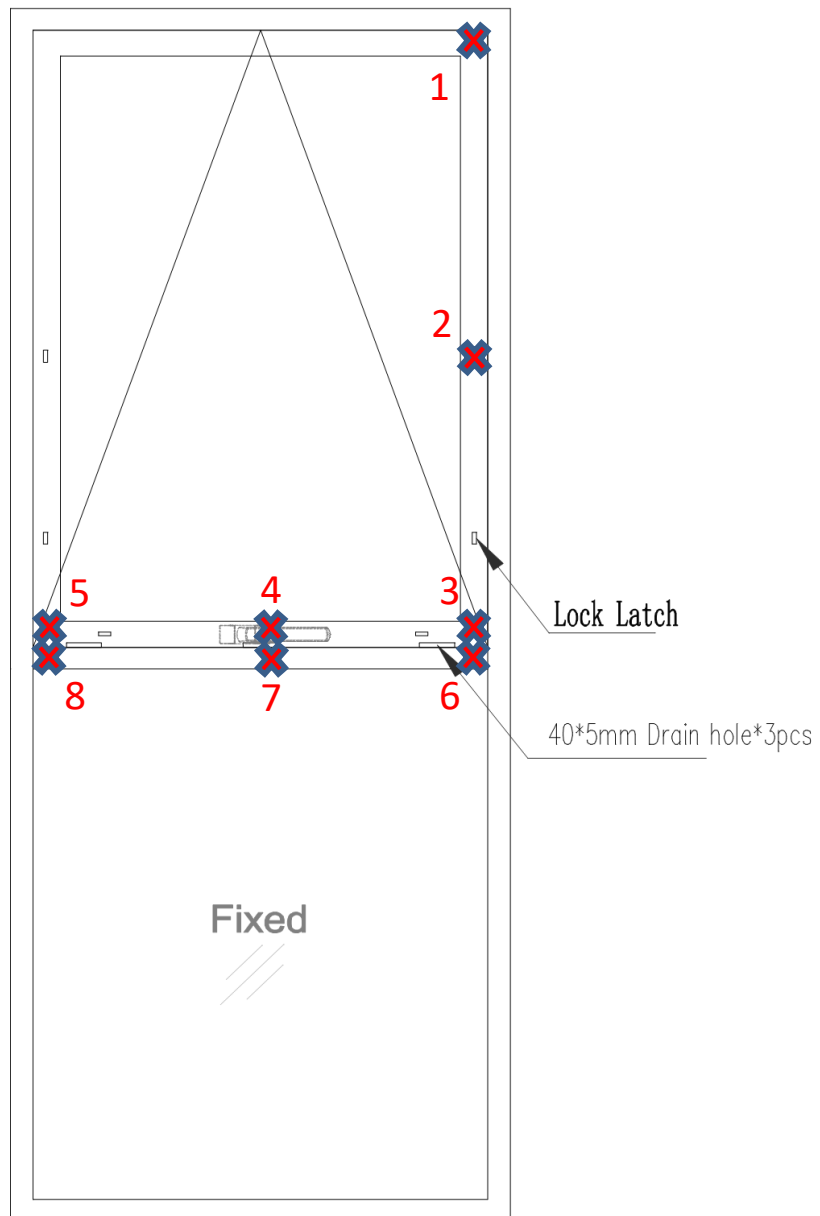


Fig.7 Locations of Displacement Measuring Devices

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### A.2 Sample Drawings(Cont.)

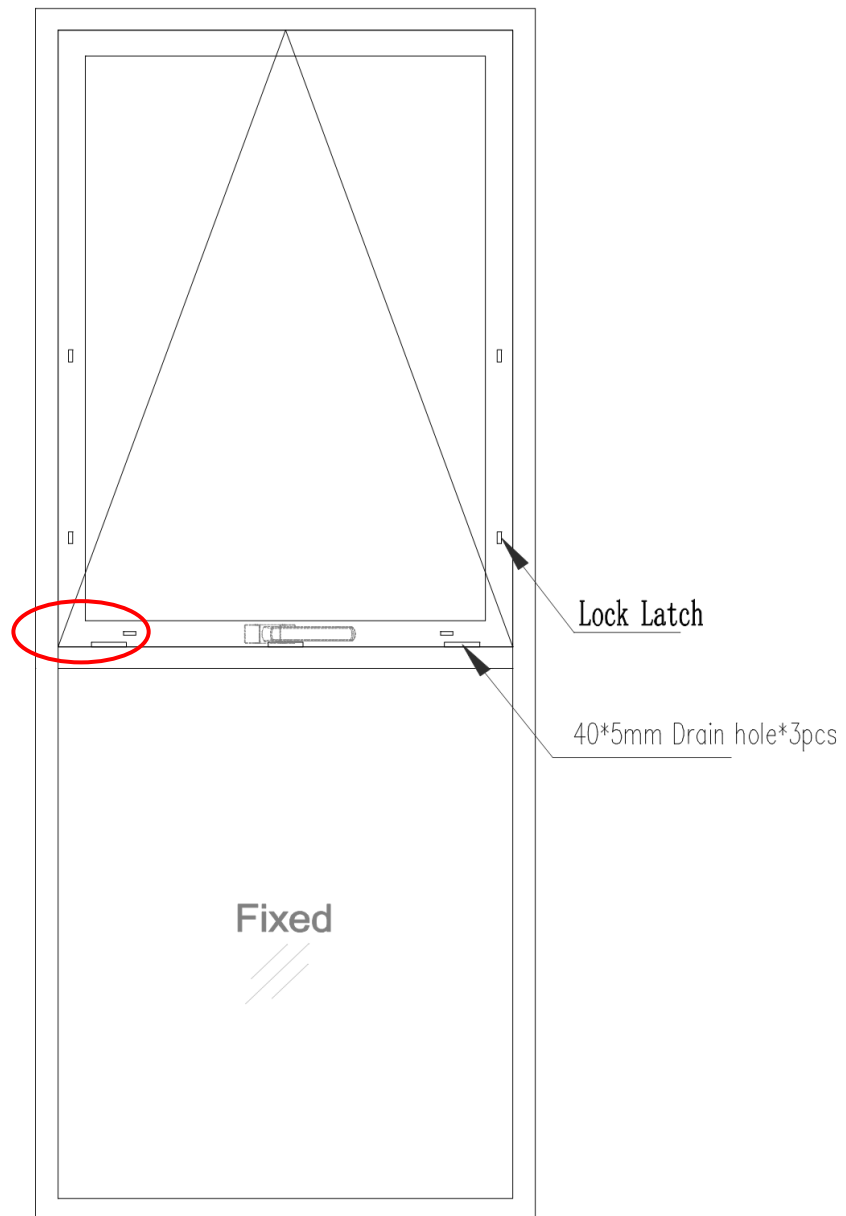


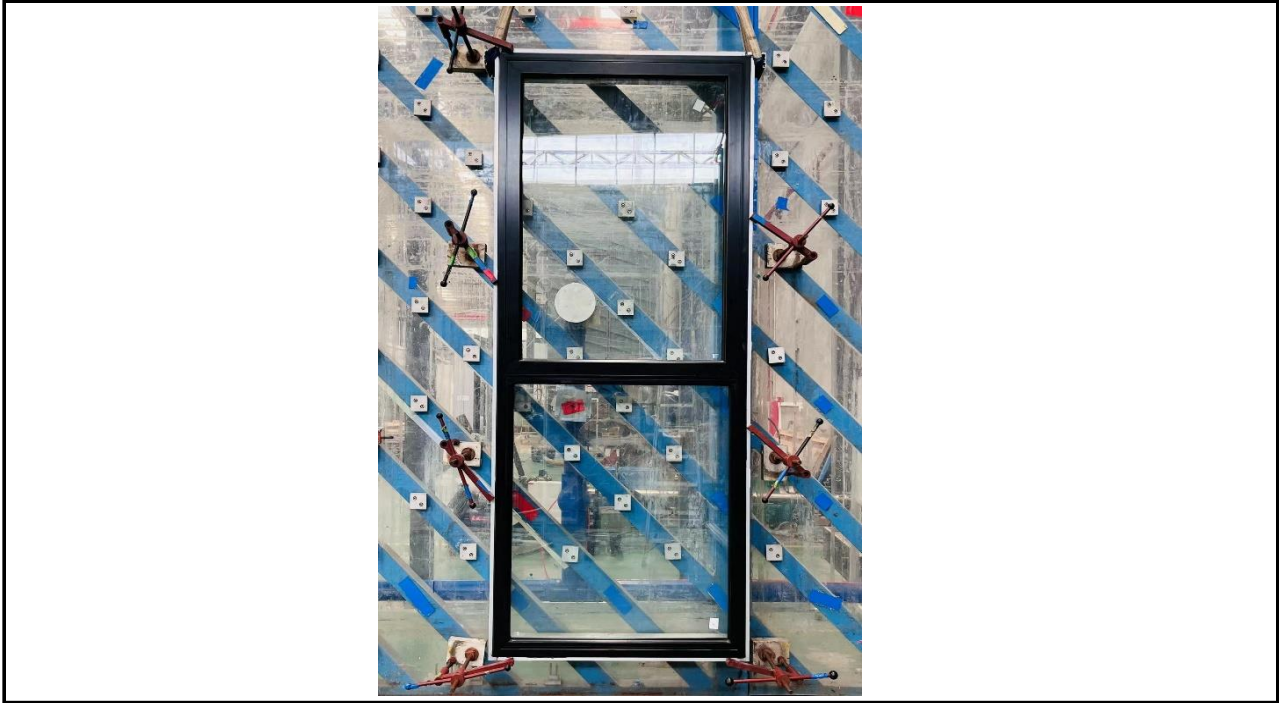
Fig.8 Locations of water penetration(View from interior)

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## APPENDIX B: Sample Received Photo



### REPORT AUTHORIZED

When signed with physical or electronic signature, the contents of this report have been prepared and approved per Intertek's quality process in accordance with ISO 17025.

**Approved by:**

**Prepared by:**

*Ziqing Chen*

*Oliver Zhu*

Name: Ziqing Chen

Name: Oliver Zhu

Title: Reviewer

Title: Project Engineer

### Revision:

Revision No.	Date	Revision Reason	Revision Summary	Author	Reviewer
R0	/	/	Original Report Issue		

**End of Test Report**