fairview

Fairview Systems Limited
3-6 Timaru Place, Mt Wellington 1060
PO Box 51075, Pakuranga 2140
Auckland, New Zealand
A Fairview Group company
T +64 9 574 2900

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

REFERENCE: Fairview Systems Ltd
P.O. Box 51075,
Pakuranga,
Auckland

TEST REPORT: 15/07

Performance tests on fixed light and awning sash window fitted with Brookvent passive ventilation units in accordance with NZS 4211: 2008 Specification for Performance of Windows.

DATE OF TEST: 16 July, 2015

SUMMARY

Tests on the Brookvent unit for air flow rate variation at differential pressures at 50 Pa increments up to 200 Pa demonstrated a volumetric air flow closely following the expected square root relationship.

The window fitted with the Brookvent passive ventilation unit met the water penetration requirements at the Extra High Wind Zone test pressure of 455 Pa when closed,

These ratings apply to this specific sample, and may be used to claim compliance of the range within the stated limitations of clause 5.2 of NZS 4211: 2008.

DESCRIPTION

Two samples of the 5650 mm^2 Brookvent passive ventilation unit were fitted to the top and bottom rails of a double glazed awning sash and two samples of the Brookvent 7750 mm^2 unit were fitted in series into the sill frame to evaluate air infiltration rates and water penetration resistance.

The Brookvent 5650 mm^2 external hood has an overall length of 630 mm, with the internally mounted vent module having a length of 640 mm. The two vent components are mounted on opposite faces of the sash rails over matching machined slots 585 mm wide x 10 mm high.

The Brookvent 7750 mm^2 external hood has an overall length of 840 mm, with the internally mounted vent module having a length of 850 mm. The two vent components are mounted on opposite faces of the sash rails over matching machined slots 795 mm wide x 10 mm high.

The client provided the following details of the fixed light and awning sash window fitted with Brookvent passive ventilation unit as shown on Fairview Systems Ltd Dwg Nos 0125-15-07–A & B. The drawings identified the following aluminium extrusions being used in the construction of the fixed light and awning sash window and illustrated the internal drainage provisions:

Outer frame – head, sill & jambs	F340
Mullion	A015
Vent rail adapter	K549
Sash frame	F028
Glazing beads	K623

Tested by: _____ Checked by: _____

The drawings showed the following gaskets and seals were installed in the test window unit:

Glazing backing seal	DY221
External glazing wedge	DY440
Sash closing seal	DY221

TESTING

The Brookvent passive ventilation unit was tested generally in accordance with NZS 4211: 2008, Specification for Performance of Windows, with test procedures as detailed in the sections of AS 4420: 1996. As the clients had requested an evaluation of alternative flows over a range of differential pressures instead of the standard 150 Pa pressure, air flow on the Brookvent was undertaken at successive 50 Pa increments up to 200 Pa. Tests were only undertaken in the positive flow direction.

Compliance with the Extra High Wind Zone water penetration test pressure of 455 Pa had been performed by the client prior to the air volumetric tests. Due to limitations of the Meriam laminar flow meter, accurate air volumetric flow was limited to approximately 40 l/s, with approximate flows up to near 50 l/s being indicative only.

No structural tests at Serviceability or Ultimate Limit State pressures were performed on the test window.

RESULTS

AIR INFILTRATION (Test Procedure AS 4420.4)

Test 1 Top Sash ventilator (5650 mm^2 model)

Positive Air Infiltration Test - Vent open	
Net air flow (total - booth) @ 50 Pa	20.2 l/s
Net air flow (total - booth) @ 100 Pa	27.7 l/s
Net air flow (total - booth) @ 150 Pa	33.2 l/s
Net air flow (total - booth) @ 200 Pa	38.4 l/s

Test 2 Bottom Sash ventilator (5650 mm^2 model)

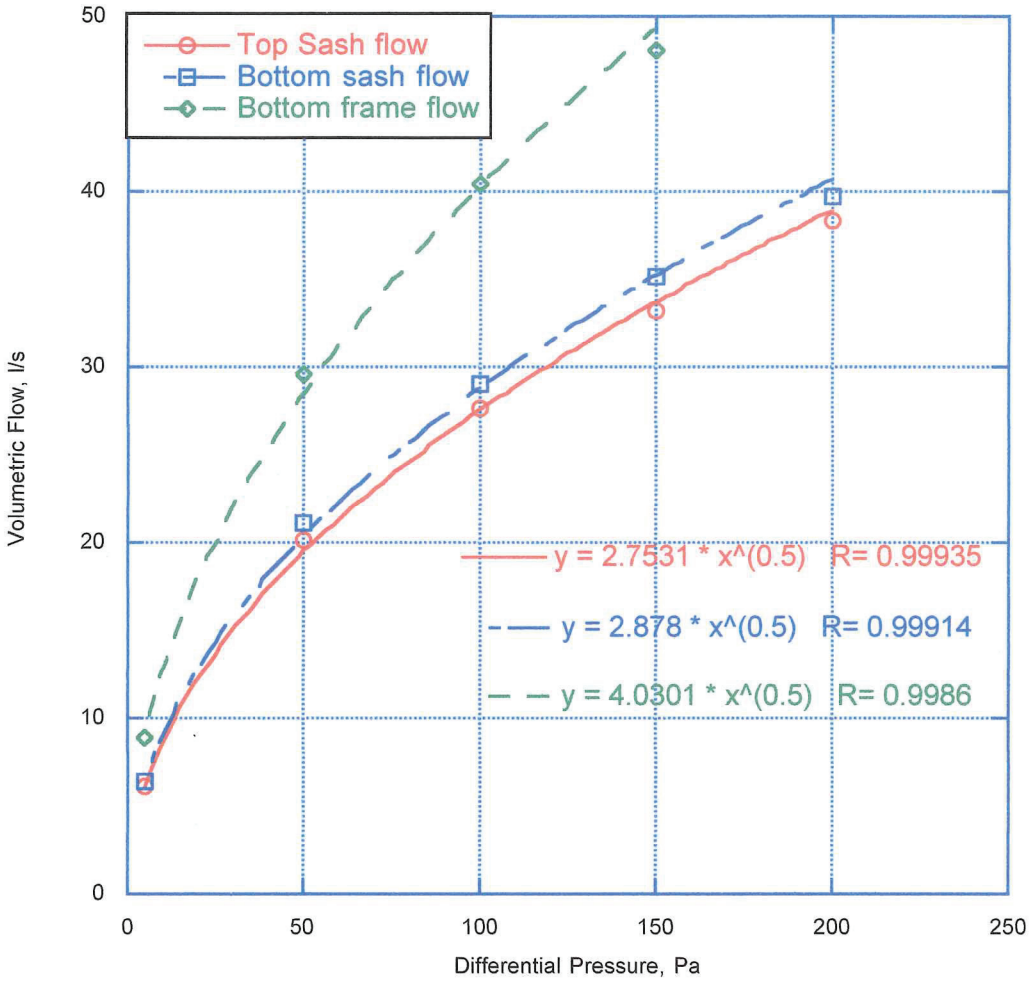
Positive Air Infiltration Test - Vent open	
Net air flow (total - booth) @ 50 Pa	21.1 l/s
Net air flow (total - booth) @ 100 Pa	29.0 l/s
Net air flow (total - booth) @ 150 Pa	35.1 l/s
Net air flow (total - booth) @ 200 Pa	39.7 l/s

Test 3 Bottom Frame ventilator (7750 mm^2 model)

Positive Air Infiltration Test - Vent open	
Net air flow (total - booth) @ 50 Pa	29.6 l/s
Net air flow (total - booth) @ 100 Pa	40.4 l/s
Net air flow (total - booth) @ 150 Pa	48.0 l/s

Tested by: _____ Checked by: _____

Brookvent Test 15-07



Note: The points on the above graph at the 5 l/s air flow are dummy points to achieve the theoretical 0.5 power on the graphing software equation.

Clause 9 WATER PENETRATION (Test Procedure AS 4420.5)

Wind Zone:	Low	Medium	High	Very High	Extra High
Maximum Test Pressure:	153 Pa	204 Pa	291 Pa	375 Pa	455 Pa

The awning sash window fitted with the Brookvent passive ventilation units generally met the water penetration requirements at the Extra High Wind Zone test pressure of 455 Pa when closed, except that the upper unit on the sash allowed small droplets to appear on the underside, some of which ran down the glass or dripped onto the lower ventilator.

John Yolland
Authorised Signatory

17 July 2015

Tested by: _____ Checked by: _____

WINDOW ASSOCIATION OF NEW ZEALAND MEMBER

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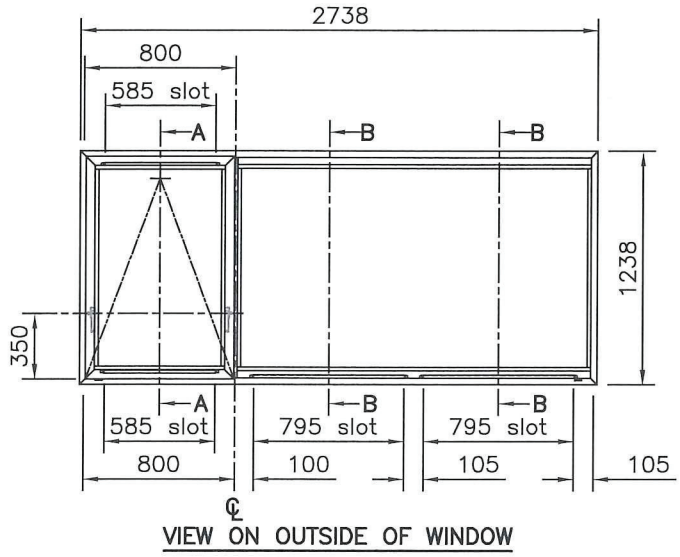
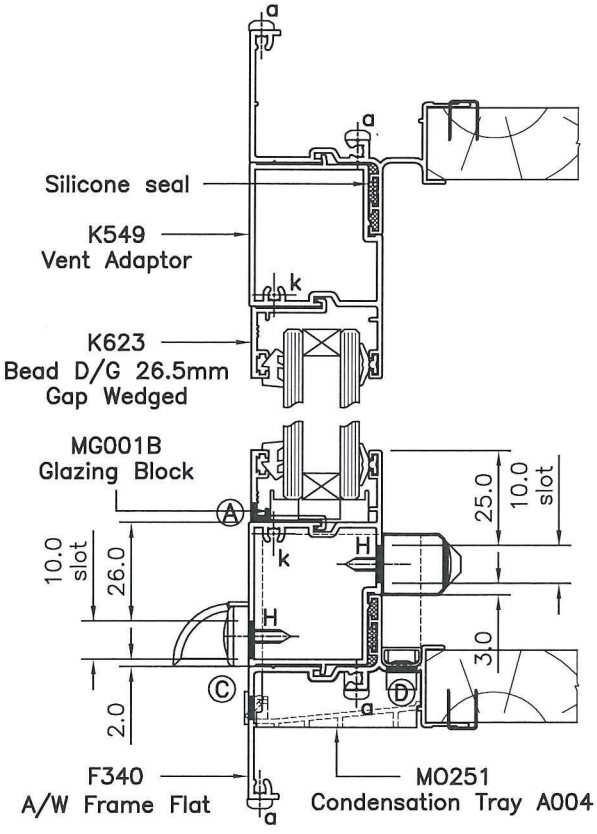
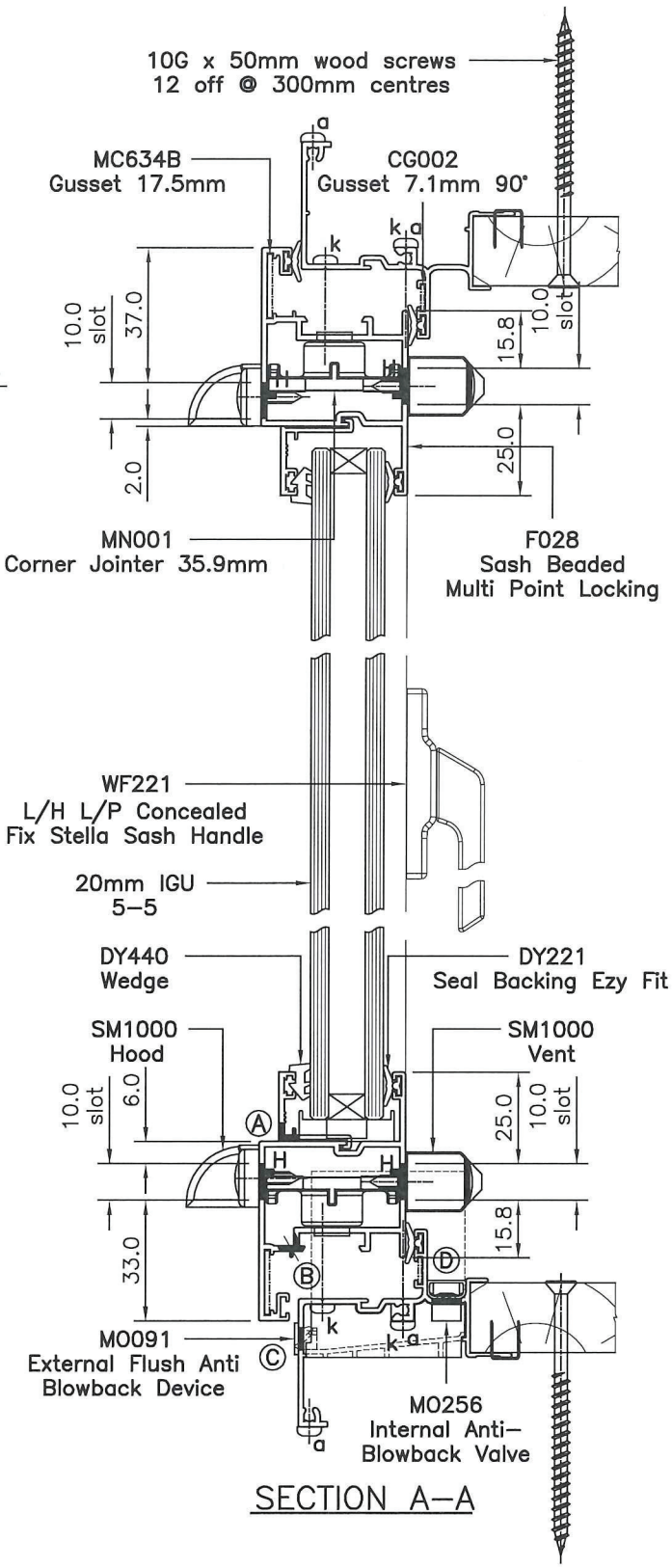


VIEW ON OUTSIDE OF WINDOW

Drainage
- Ⓐ R5 x 10mm bead drainage. 2 off 65mm from ends
- Ⓑ ø6mm drainage holes. 2 off
- Ⓒ 36.0 x 6.0mm slots. 2 off 100mm from ends
- Ⓓ ø8mm condensation holes. 2 off



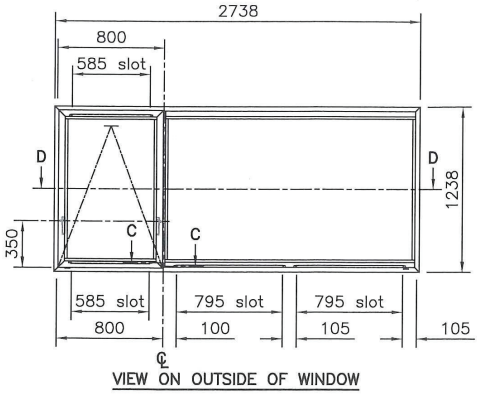
SECTION B–B



SECTION A–A

Fasteners
- a: JI812 6 x 3/4 Pan Head SS
- k: JI801 6 x 1 Pan Head SS
- H: JI804 6 x 1/2 Pan Head SS

TITLE	RESIDENTIAL AWNING WINDOW WITH BROOKVENT PASSIVE VENTILATOR VERTICAL SECTIONS THROUGH SASH AND FIXED LIGHT WINDOW						
DRAWN BY	DATE	REV. BY	REV. DATE	APP'D. BY	SCALE	DRG No.	REV.
B.C.D.	15–07–15				1:2	0125–15–07–A	



VIEW ON OUTSIDE OF WINDOW

Equivalent aerodynamic area	Geometric open area	Slot height	Overall slot length	Overall vent length	Overall hood length	Vent extrusion length	Hood extrusion length
X − 20 x H x 0.39	X − 20 x H	H	X	X + 55	X + 45	X + 49	X + 8
2200mm²	5650mm²	10mm	585mm*	640mm	630mm	634mm	593mm
3000mm²	7750mm²	10mm	795mm*	850mm	840mm	844mm	803mm

* Slot length allows for a 20mm bridge or 2 x 10mm bridges

Equivalent aerodynamic area
= Geometric open area x Discharge coefficient C

Geometric open area
= Slot length − bridge length x slot height

Discharge coefficient C = 0.39
(A3 Brookvent Airflow Rate & Unit Size)

Drainage
- Ⓐ R5 x 10mm bead drainage. 2 off 65mm from ends
- Ⓑ ø6mm drainage holes. 2 off
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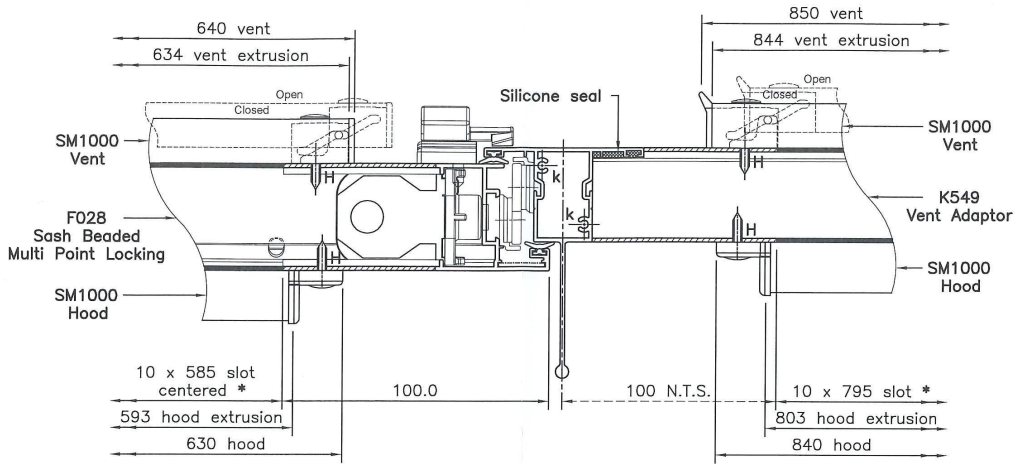
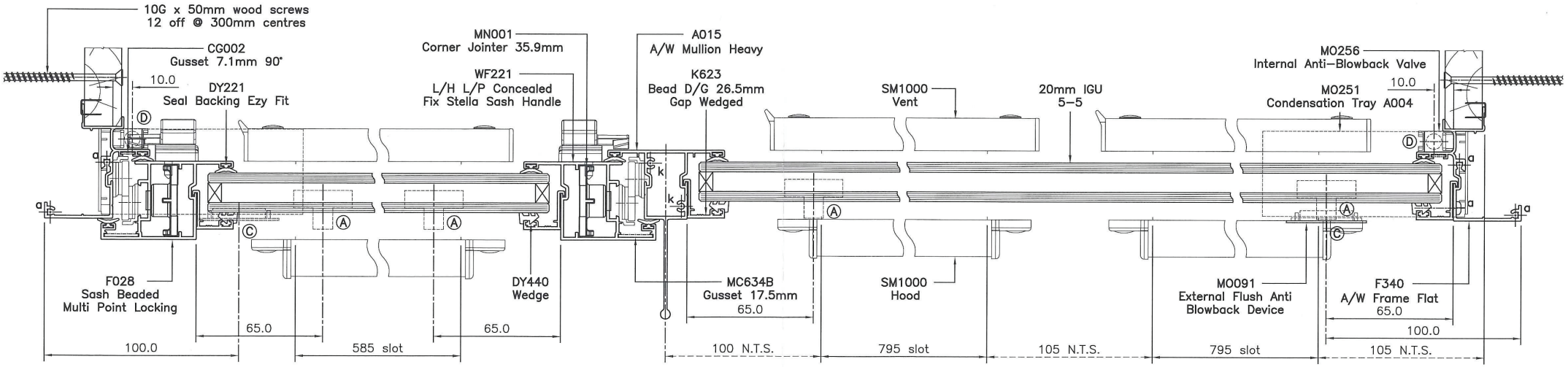


SECTION C−C



SECTION D−D

MEMBER

Fairview Systems Limited 3-6 Timaru Place, Mt Wellington, PO Box 51075, Pakuranga, Auckland. P +64 9 574 2900 F +64 9 574 2901

TITLE RESIDENTIAL AWNING WINDOW WITH BROOKVENT PASSIVE VENTILATOR
HORIZONTAL SECTIONS THROUGH SASH AND FIXED LIGHT WINDOW

DRAWN BY	DATE	REV. BY	REV. DATE	APP'D. BY	SCALE	DRG No.	REV.
B.C.D.	15−07−15				1:2	0125−15−07−B	