

DESIGN MANUAL

BREEZWAY LOUVRE WINDOWS

breezway[®]

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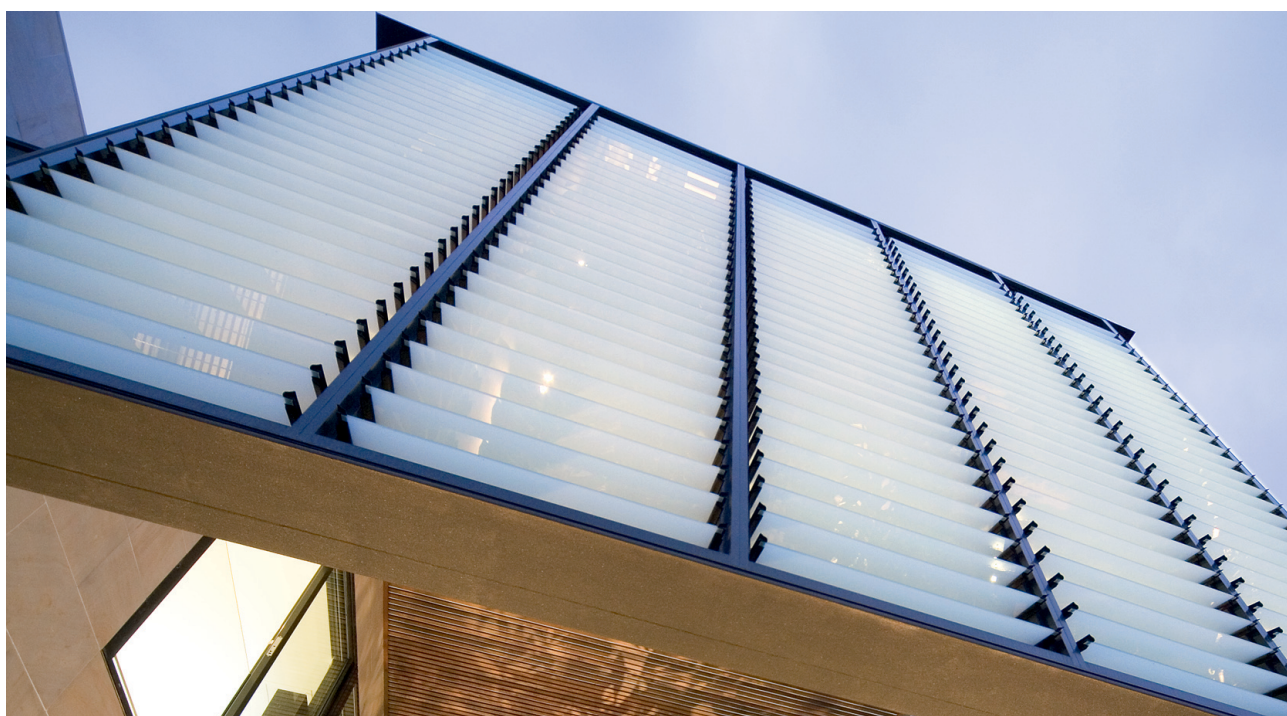
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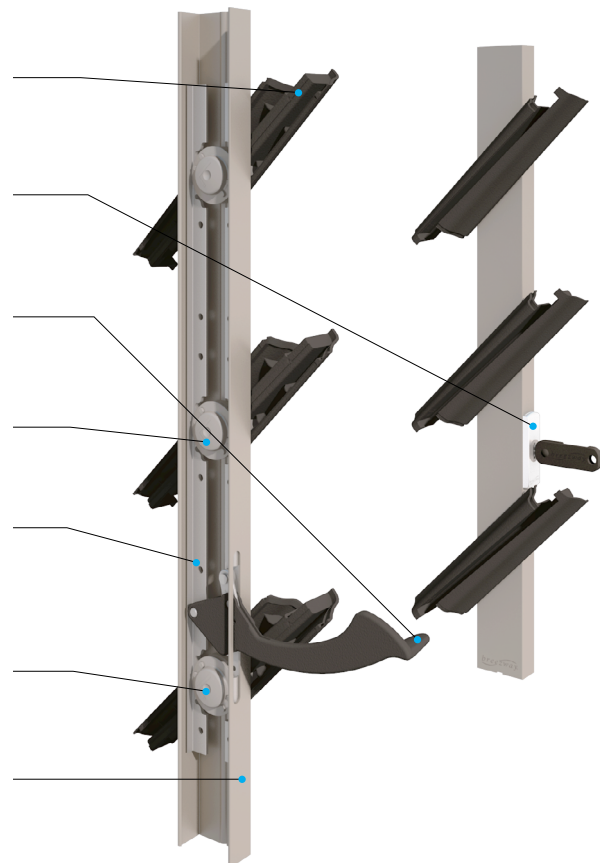
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Altair® Louvre Features

- **Proven cyclone rated performance.** Successfully passed test pressures of 8000Pa (simulating wind speeds in excess of 360km/h). Proven performance during Cyclone Yasi in Queensland, Australia.
- **Widest choice of customising choices.** Virtually every aspect of the Altair Louvre can be customised, including colours, handle types, automation, clip types.
- **Superior design and materials.** Altair clips interlock to form a smooth, continuous surface. The Altair Powerlouvre motors and connectors are fully concealed. Non-corrosive, industrial quality materials used exclusively.
- **Comprehensive testing.** Over 150 official tests conducted in audited test rig, many more tests and trials conducted for research and development purposes. All window sizes are tested, test results of small windows are not attributed to larger windows.
- **Unobstructed views.** Horizontal security bars are optional, not mandatory. Unusually shaped or large windows remain fully functional.
- **Long experience.** Breezway has over 70 years of experience designing and manufacturing louvre windows. An active research and development department allows us to be an innovator, not an imitator.
- **Reputation.** Used by most leading window fabricators. Wide support from architects and building designers.

- Clips are manufactured from UV stabilised polypropylene. The clip colour is solid throughout. Primary and secondary drainage channels within the louvre clips direct the flow of any water to the outside of the building.
- Altair keylocks are zinc cast with a brushed chrome finish. The folding key design allows easy operation when installed in frames with deep jambs or reveals.
- The handle is made entirely from a UV stabilised acetal. This makes it not only non corrosive, but ideal for commercial areas, as it will spring back to position, even when bent severely. For other handle options see the Altair Handles section.
- For long and maintenance free use the operating and over centre locking mechanisms are manufactured from non-corrosive material, including all rivets and fasteners.
- Extruded "T" shaped aluminium operating bars provide a strong, non corrosive, durable and smooth operating mechanism. It also adds extra security as the bars operate to the outside of the channel at all times.
- Injection moulded bearings made of acetal use the living hinge concept to pull the louvre blade against the channel as the window is closed. This results in higher resistance to water and air. Security is now increased by interlocking teeth in the bearing retainer. (Tested to over 40,000 open/close cycles)
- The Altair Louvre channel is made from 6060-T5 extruded aluminium.
- Worldwide patents approved.



Product Performance Warranty

Altair® Louvres are designed to exceed the requirements of NZS 4211-2008 "Windows in Buildings".

The following table outlines the maximum variations that Breezway® will warrant per Rating Category. Exceeding these constraints will void this Warranty. The limitations have been generated through NATA test results. The design constraints below apply to Altair Louvre Components used in New Zealand manufacturer's framing systems.

For commercial applications, please consult Breezway with your specific project requirements, so we can correctly apply the relevant performance warranty constraints.

A window manufacturer will be able to label its Altair Louvre Window products to comply with NZS 4211 when assembling Altair Louvres to Breezway procedures and operating within the following performance warranty constraints.

	Medium Wind Zone		High Wind Zone		Very High Wind Zone		Extra High Wind Zone	
	960Pa ULS 680Pa SLS 204Pa Water Pass		1360Pa ULS 970Pa SLS 291Pa Water Pass		1760Pa ULS 1250Pa SLS 375Pa Water Pass		2130Pa ULS 1515Pa SLS 455Pa Water Pass	
	Max Span (mm)	Max Height	Max Span (mm)	Max Height	Max Span (mm)	Max Height	Max Span (mm)	Max Height
152mm Altair® Louvre								
152mm glass ¹ blade (toughened & annealed)	900	21 blades	700	17 blades	550 ²	15 blades ²	500 ²	9 blades ²
152mm aluminium blade	600	17 blades	450	17 blades	-	-	-	-
152mm Western Red Cedar timber blade	600	17 blades	450	17 blades	-	-	-	-
102mm Altair® Louvre								
102mm glass ¹ blade (toughened & annealed)	750	33 blades	700	27 blades	-	-	-	-
102mm aluminium blade	600	27 blades	450	27 blades	-	-	-	-
102mm Western Red Cedar timber blade	600	27 blades	450	27 blades	-	-	-	-

Notes:

- The Product Performance Warranty only applies to Altair Gallery sets without screw holes.
 - Altair Weatherstrips must be used.
 - Allowable length of blades have been calculated using AS1288.
1. Glass blades must be 6.0mm ±0.1mm thick and must be straight and flat within 0.3mm/m. Glass blades must be 152.00mm ±0.6mm high or 102.00mm ±0.6mm high.
 2. High upstand Altair Weatherstrip required.

Warranty

Your louvre windows from Breezway® are warranted against defects arising from faulty workmanship or materials for up to seven years from the date of receipt of goods, provided the following conditions are met.

- a. The product is installed in accordance with the manufacturer's Product Performance Warranty, written installation specification and with all relevant New Zealand Standards.
- b. The product has been maintained according to Breezway and industry recommendations.
- c. The product has not been subject to misuse, physical abuse or neglect.
- d. Manufacturing standards and tolerances are not deemed defects, nor are industry variations in colour of aluminium, plastic and timber componentry.
- e. Breezway accepts no responsibility for glass breakage (except for faulty workmanship or materials).
- f. All electrical components are guaranteed for three (3) years.
- g. This Guarantee is limited to the repair or replacement of the faulty product at the company's discretion, but does not extend to the installation or refinishing of a replacement product.
- h. Only repairs carried out by Breezway personnel or authorised agents are covered by this Guarantee.
- i. Claims under this Guarantee should be made within one month of the defect arising in the product. Copies of documentation showing the purchase date of the product should be included with your written claim and forwarded to the nearest Breezway office.

The Guarantee is in addition to all other rights and remedies in respect of this product to which you are entitled under New Zealand law.

Selecting The Right Aluminium Finish

The aluminium components of Altair® Louvre windows are available in three different surface finishes: anodised, standard powder coating and high performance powder coating.

Powder coatings are polyester coatings from leading powder suppliers applied to a thickness of 50 μm and anodised finishes are to a thickness of 25 μm . Over time, weathering of powder coated surfaces should be expected, resulting in a gradual change in appearance. This will be evident in loss of gloss, chalking, colour change and erosion of the powder coatings. Selecting the right powder for the atmospheric conditions of the site and correct maintenance will be critical to the ongoing appearance of the finish.

The application of high durability powder will reduce this deterioration and is essential for severe industrial, coastal or tropical environments.

Note that industry accepted colour variation can occur during the aluminium anodising process.

Care And Maintenance

Maintaining Aluminium Finishes

Regular maintenance of the surface finish will be necessary to reduce the rate of weathering. The frequency of cleaning will depend on the environmental conditions, but as a guide should be done at 3 monthly intervals, or more frequently in aggressive coastal or industrial environments.

- Remove loose deposits by gently brushing or hosing.
- Clean using a sponge or soft brush and warm water with a mild detergent. Avoid cleaning agents with a caustic base, abrasive materials or harsh chemicals.
- Rinse with clean water.
- Dry with a chamois (optional).
- Apply a 'non-abrasive' car polish to maintain the lustre of the finish (optional).

Glass Maintenance

For best results glass blades should be regularly cleaned with mild, non-abrasive detergents. Low e glass blades should be installed with the coated side facing to the inside of the building and should only be cleaned with mild, non-abrasive detergents. Abrasive detergents or cleaning tools will visibly damage the low e coating.

Timber Louvre Blade Finishes

Western Red Cedar blades are a natural material and as such will be susceptible to colour variations and natural movement. Prior to installation or exposure to weather, all timber blade surfaces must be finished with a suitable exterior grade sealant. The finish used should be 'non-tacky' or 'abrasion-resistant' to avoid blades sticking together when closed. Dark colours can cause timber movement. The surface sealant should be re-applied to the sealant manufacturer's instructions to avoid weathering of the timber and minimise timber movement. The product warranty will become void if these actions are not adhered to.

Louvre Maintenance

It is recommended that inspection be carried out at the time of installation and then at yearly intervals. This may be required more frequently depending upon the variation of location, and environmental conditions.

Inspection and checks

- Inspect all fittings and screw fixings for firmness.
- Ensure that all Stronghold System pins (if present) are firmly clicked in place.
- Check the louvre clips for any degradation over time.
- Check that the blade is firmly and safely positioned in the clips.
- Ensure all louvre blades operate freely.
- Ensure that seals are in place and clean.
- The Powerlouvre® Window should be operated at least once per month.

Lubrication

All internal louvre operating mechanisms are pre-lubricated, prior to assembly, with a clear lubricant where required. Under normal conditions this will be satisfactory for the life of the window.

Lock Maintenance

The lock has been designed to be maintenance free. If the lock barrel needs to be replaced, for example to change the key types, or if the lock mechanism suffers damage, please contact the window fabricator that supplied the louvre.

Energy Efficiency and Compliance with Clause H1

Breezway® Altair® Louvre Windows can help to enhance the energy efficiency and comfort of a building by offering:

Maximum ventilation

With no fixed panes and blades that open almost fully horizontally (87°) Altair Louvre Windows welcome fresh, cooling breezes. These cooling breezes reduce the need for power hungry electric air conditioning systems, thereby helping to save our fragile environment.

Tight Sealing

Altair Louvre Windows have an air infiltration rating that is significantly better than the standard required for residential windows. Tight sealing reduces draughts thereby allowing heating and cooling systems to run more efficiently.

Choice of Glazing

A variety of energy efficient glazing options is available to meet specific requirements. For example, toned glass blades or timber blades reduce the amount of hot sunlight that enters a building. In mixed and the improved insulating properties of low e glass blades offer thermal performance comparable to clear double glazing.

Compliance With Clause H1

Compliance with Clause H1 of the New Zealand Building Code is possible in all Climate Zones when Altair Louvre Windows are used.

Compliance Option 1: Schedule Method

Compliance is shown by ensuring that individual building elements exceed specified minimum performance levels. If the combined total area of louvre windows is 3 square metres or less then there are no R-value requirements. If the combined total area of louvre windows exceeds 3 square metres then the R-value of each window must be 0.26 or greater.

Compliance Option 2: Calculation Method

Compliance is shown by ensuring that the calculated overall insulation level of the building envelope exceeds specific minimum values. Minimum R-values are not specified for any individual element of the building envelope.

Compliance Option 3: Modelling Method

Compliance is shown by ensuring that the modelled energy consumption of the building does not exceed specified maximum values. Minimum R-values are not specified for any individual element of the building envelope.

R-Values of Altair Louvre Window Systems

If a window system supplier has not had their Altair Louvre Window System rated according to the New Zealand Window Efficiency Rating System (WERS) then generic window ratings from NZS 4218:2009 must be used.

Airborne Sound Isolation

The Altair® Louvre window system has been field tested for sound transmission loss.

The tests were conducted independently by a member firm of the Association of the Australia Acoustical Consultants.

The tests were carried out on Altair windows 2400 high x 840 wide. The windows comprised of a Breezway® Louvre Windows aluminium surround frame complete with 152 Altair louvres. The 2400 high windows consisted of louvres of 16 operable blades with a fixed extension blade.

The results of these field tests gave the following sound transmission loss.

Size	Sound Transmission Loss	Blade Material
2100 h x 800 w	R' w. 28	Toughened Glass
2400 h x 840 w	R' 45, w. 27	Toughened Glass
2400 h x 840 w	R' 45, w. 25	Aluminium
2400 h x 840 w	R' 45, w. 24	Timber

Windows Safeguarding Against A Fall Of 1 Metre Or More

Restricted Openings

To comply with F4/AS1 2.1.1 or 2.1.2 of the New Zealand Building Code, a 100mm diameter sphere must not be able to pass through the openable window.

Altair Louvre Window Type	Will Prevent A 100mm Diameter Sphere From Passing Through?
Altair Louvre Window with 102mm Clips	Y
Altair Louvre Window with 152mm Clips - unrestricted opening	N
Altair Louvre Window with 152mm Clips - 100mm restricted opening	Y
Altair Louvre Window with 152mm Clips - 80mm restricted opening	Y

Imposed Loads

Altair Louvre Windows have undergone testing to the design loads set out in Clause 3.6 and Table 3.3 AS/NZS 1170.1 "Structural Design Actions" for imposed loads on barrier infills.

In situations where concentrated loads greater than 187N must be withstood Altair Louvres must be specified to include the Stronghold System which mechanically fixes blades into the Altair Stronghold Clips.

AS/NZS 1170 Occupancy	A		A (other), C3, B & E		C1/C2, C5 & D	
Concentrated Design Load (kN)	0.25		0.5		1.5	
Window Position above internal floor	>1200mm	<1200mm	>1200mm	<1200mm	>1200mm	<1200mm
Concentrated Ultimate Load (kN)	0.187	0.375	0.375	0.75	1.125	2.25
Altair Louvre with 6mm toughened glass or Breezway aluminium blade to max blade length 700mm	Y	N	N	N	N	N
Altair Louvre with the Stronghold System with 6mm toughened glass or Breezway aluminium blade to max blade length 700mm	Y	Y	Y	Y	N	N

Louvre Gallery Features

Gallery Type Options

- Single Operating Mechanism
- Powerlouvre
- Key Lock Gallery — not available with: variable keylock positions, additional keylocks or Powerlouvre® options.
- Fixed Louvre Gallery

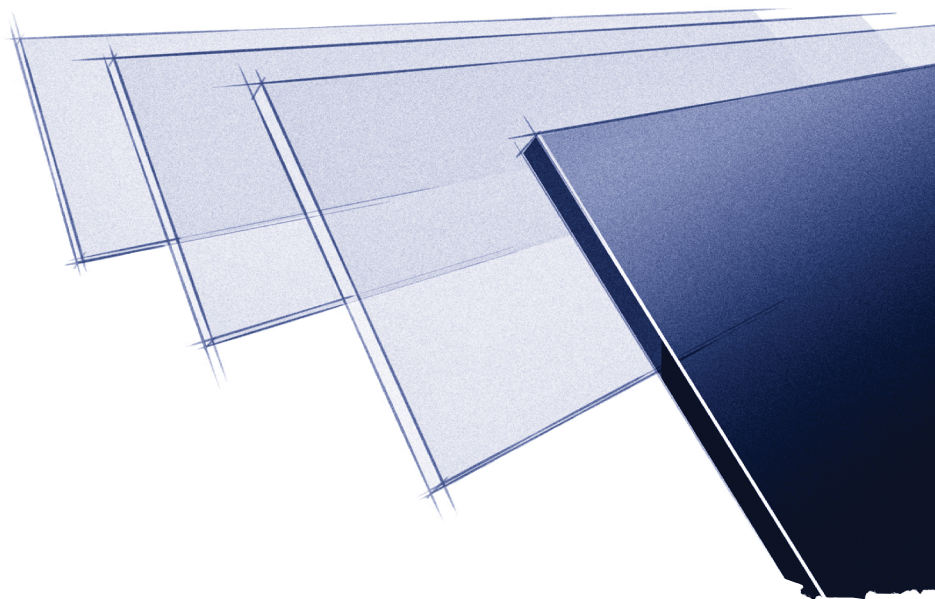
“Standard” Inclusions

- Extruded channel with or without screw holes;
- Single operating mechanism with single left hand control handle (viewed from inside);
- Black handles and clips for all finishes, except white handles and clips for region specific Standard White finishes;
- Standard louvre gallery heights.
- Choice of clips to suit 6mm or 14mm blades.

“Off Standard” Features Available

(No change to manufacturing lead time)

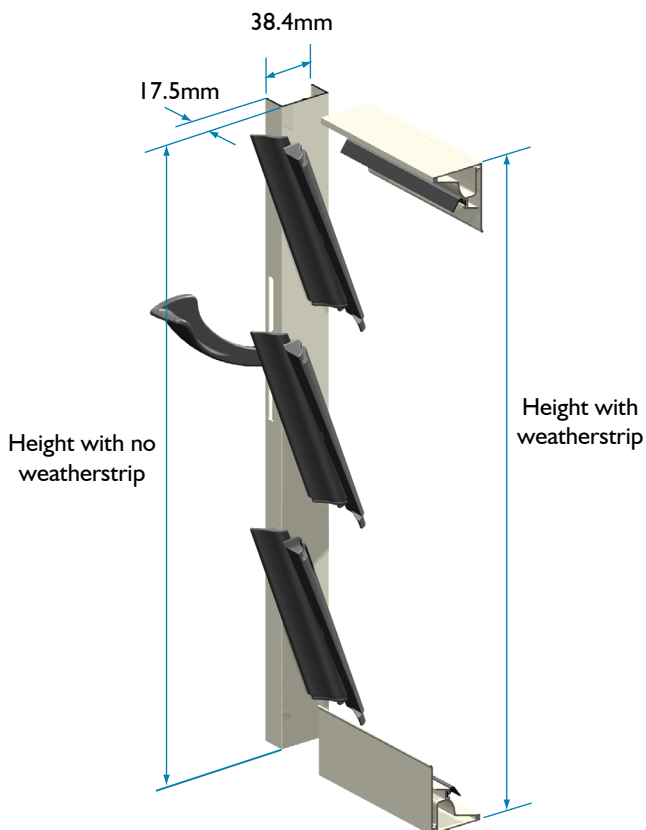
- Right hand control (viewed from inside);
- Top Extended channel to next standard clip size, or cut to length channel for off standard heights;
- Colour matched handles and clips;
- Optional handle Low Profile Handle, Ring Handle (A13);
- 80mm or 100mm restricted opening;
- Variable or additional handle position.



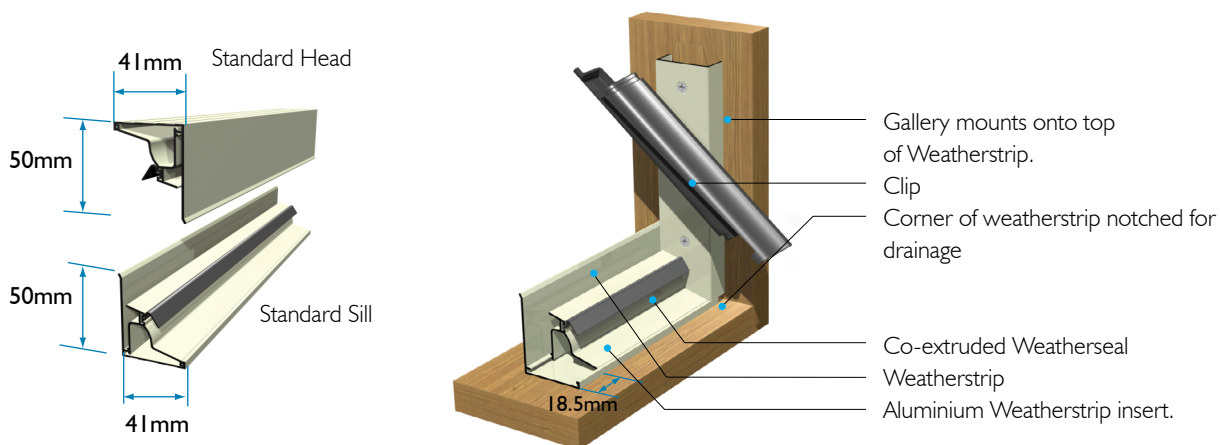
Standard Heights

Heights for 152mm Blade Louvre Gallery		
No. of Blades	Height (mm) No Weatherstrip	Height (mm) With Weatherstrip
2	320	330
3	460	470
4	600	610
5	740	750
6	880	890
7	1020	1030
8	1160	1170
9	1300	1310
10	1440	1450
11	1580	1590
12	1720	1730
13	1860	1870
14	2000	2010
15	2140	2150
16	2280	2290
17	2420	2430
18	2560	2570
19	2700	2710
20	2840	2850
21	2980	2990

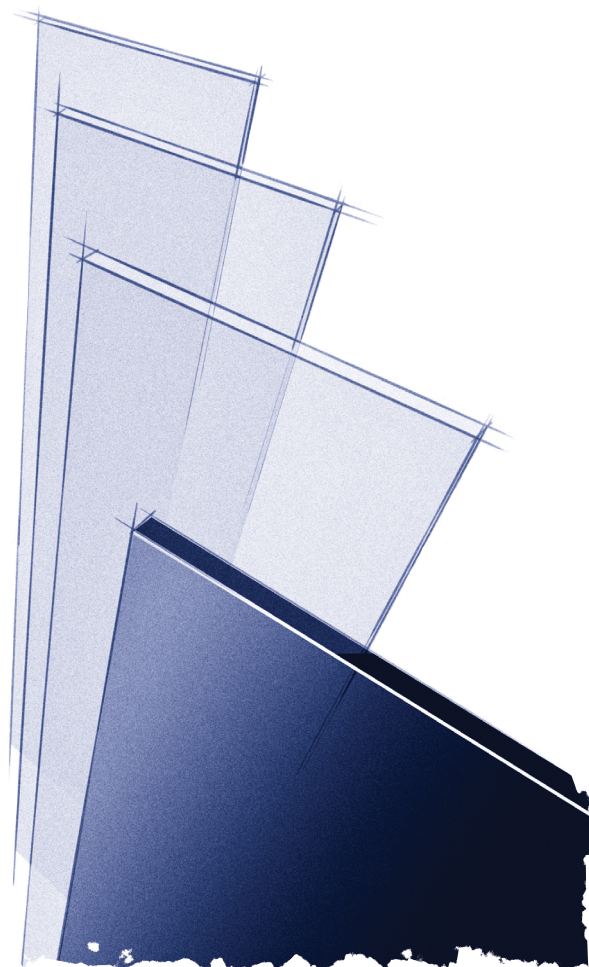
Heights for 102mm Blade Louvre Gallery		
No. of Blades	Height (mm) No Weatherstrip	Height (mm) With Weatherstrip
3	310	320
4	400	410
5	490	500
6	580	590
7	670	680
8	760	770
9	850	860
10	940	950
11	1030	1040
12	1120	1130
13	1210	1220
14	1300	1310
15	1390	1400
16	1480	1490
17	1570	1580
18	1660	1670
19	1750	1760
20	1840	1850
21	1930	1940
22	2020	2030
23	2110	2120
24	2200	2210
25	2290	2300
26	2380	2390
27	2470	2480
28	2560	2570
29	2650	2660
30	2740	2750
31	2830	2840
32	2920	2930
33	3010	3020



Weatherstrip: Standard Height

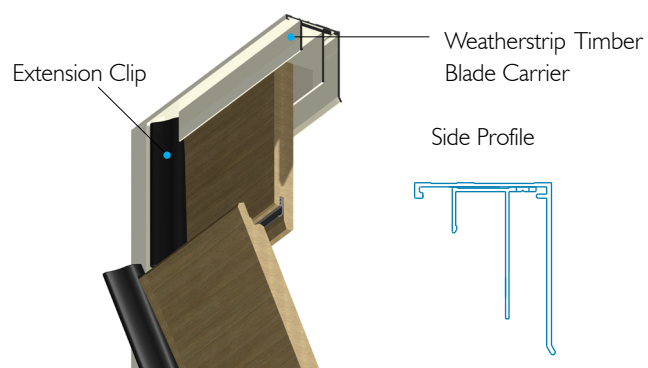
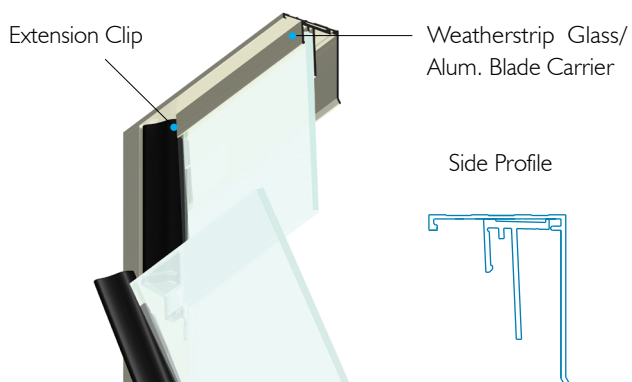


- The same Weatherstrip is used on both the head and sill for standard glass, aluminium and timber louvres.
- When water pass pressures greater than 300Pa are required, High Profile Sill Weatherstrips must be used. The High Profile Sill weatherstrip has an upstand 66.5mm high.
- Weatherstrip, complete with seal, must be used to gain manufacturer's performance warranty.
- Weatherstrips to head and sill add 10mm to overall gallery height.
- Off Standard Height Galleries that are within 5mm of a Standard Height Gallery will not have a top fixed blade and will therefore require Standard Height Weatherstrip sets.



Weatherstrip: Off Standard Height

Used in Conjunction with Extended Louvre Channel.

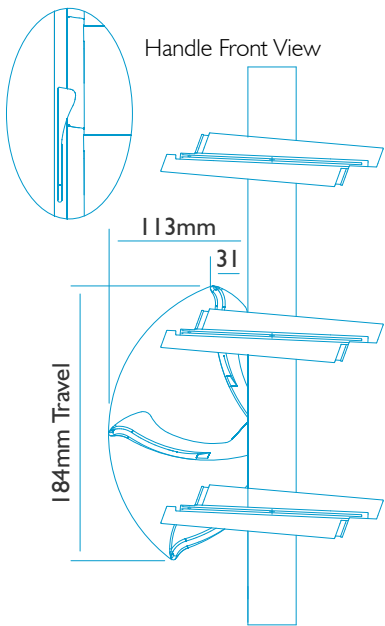


Off Standard Height Head for Glass or Aluminium Blades

Off Standard Height Head for timber blades

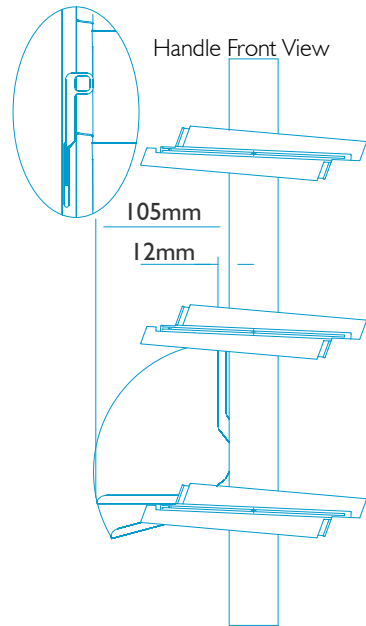
- Off Standard Height Galleries that are within 5mm of a Standard Height Gallery will not have a top fixed blade and will therefore require Standard Height Weatherstrip sets.
- Off Standard Height Galleries that are more than 5mm greater than or less than a Standard Height Gallery will have a top fixed blade and will therefore require Off Standard Height Weatherstrip sets.

Handles



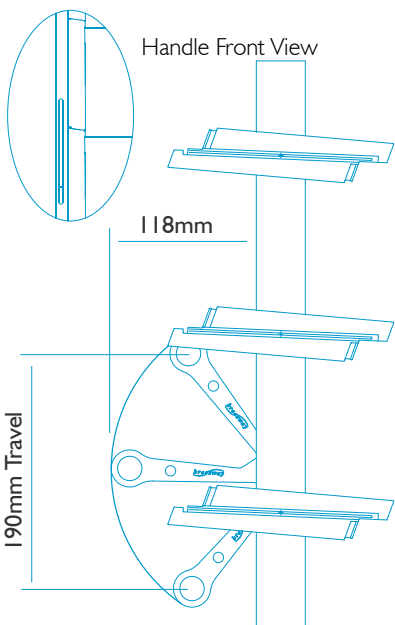
Standard Handle

- Acetal handle
- Ergonomic design for comfortable use



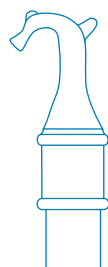
Low Profile Handle

- Stainless steel handle
- Substitute for Standard Handle when inserting into bi-folding & sliding door panels

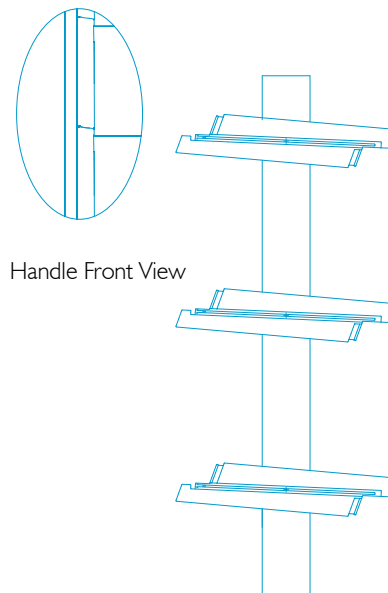


Ring Handle (P13)

- Acetal handle for manual operation
- To operate Ring Handle when installed out of arm's reach
- 2m, 3m and 4m set lengths
- 1.8m - 3.6m telescopic length



Map Rod



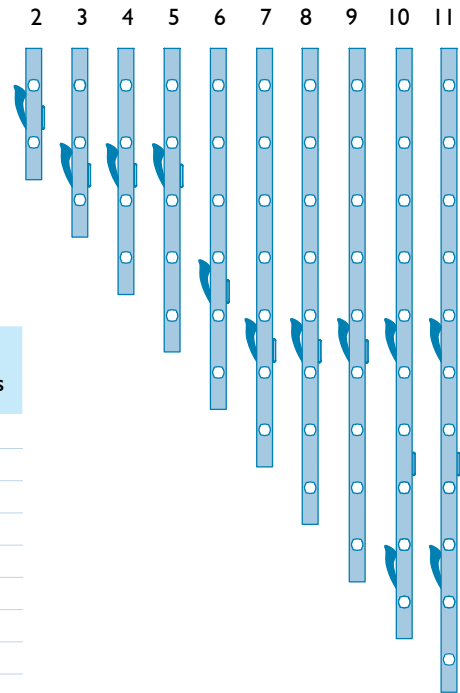
Powerlouvre® Gallery*

- Concealed motors and connectors for use with Remote Window Control Systems
- *Keylock not available with Powerlouvre galleries.

Handle Positions: 152mm

Formulas for Other Handle Positions

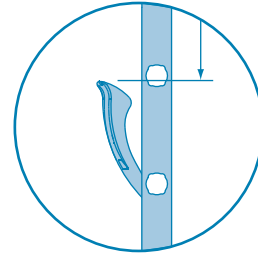
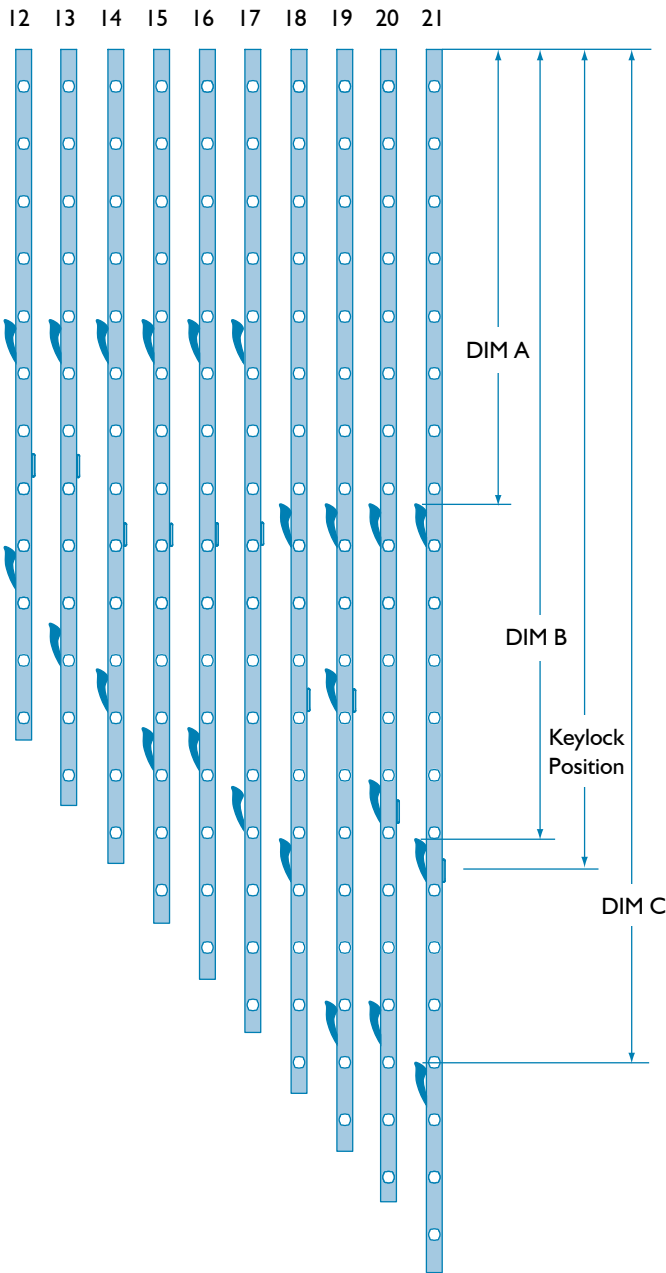
1. Low Profile Handle Position = Standard Handle Position – 3mm
2. Ring Handle Position = Standard Handle Position + 22mm



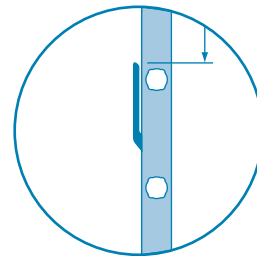
No. of Blades	Banks of Blades Controlled from Head Downwards	Channel Length	Dim A	Dim B	Dim C	Keylock Positions
2	2	320	73			128
3	3	460	213			268
4	4	600	213			268
5	5	740	213			268
6	6	880	493			548
7	7	1020	633			688
8	8	1160	633			688
9	9	1300	633			688
10	7 3	1440	633	1193		968
11	7 4	1580	633	1193		968
12	7 5	1720	633	1193		968
13	8 5	1860	633	1333		968
14	9 5	2000	633	1473		1108
15	7 8	2140	633	1613		1108
16	7 9	2280	633	1613		1108
17	8 9	2420	633	1753		1108
18	9 9	2560	1053	1893		1528
19	9 4 6	2700	1053	1473	2313	1528
20	9 6 5	2840	1053	1753	2313	1808
21	9 7 5	2980	1053	1893	2453	1948

Note:

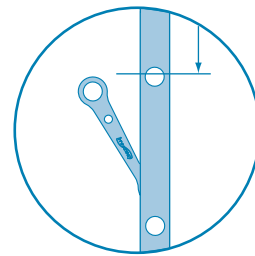
- Additional handles can be specified or relocated to another position. Each handle can operate a maximum of nine clips including at least one clip directly below the handle.
- Relocated keylocks are not available.



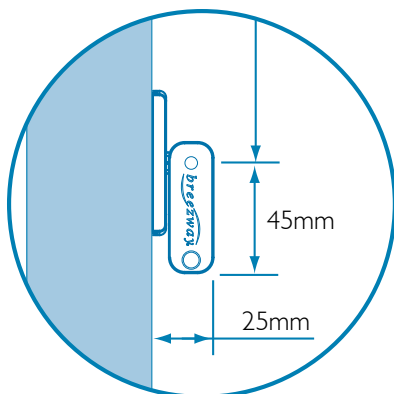
Standard Handle



Low Profile Handle



Ring Pull Handle (A13)

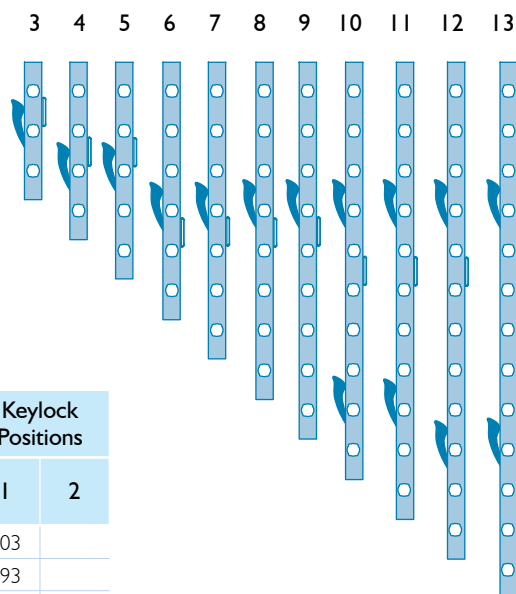


Handle Positions: 102mm

Formulas for Other Handle Positions

1. Low Profile Handle Position = Standard Handle Position – 8mm
2. Ring Handle Position = Standard Handle Position + 19mm*

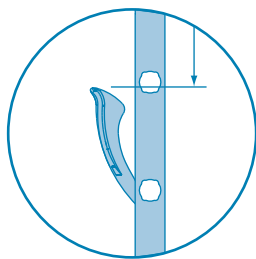
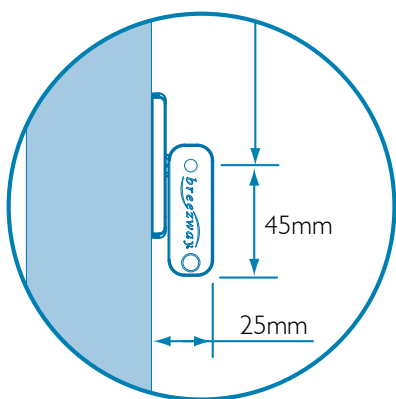
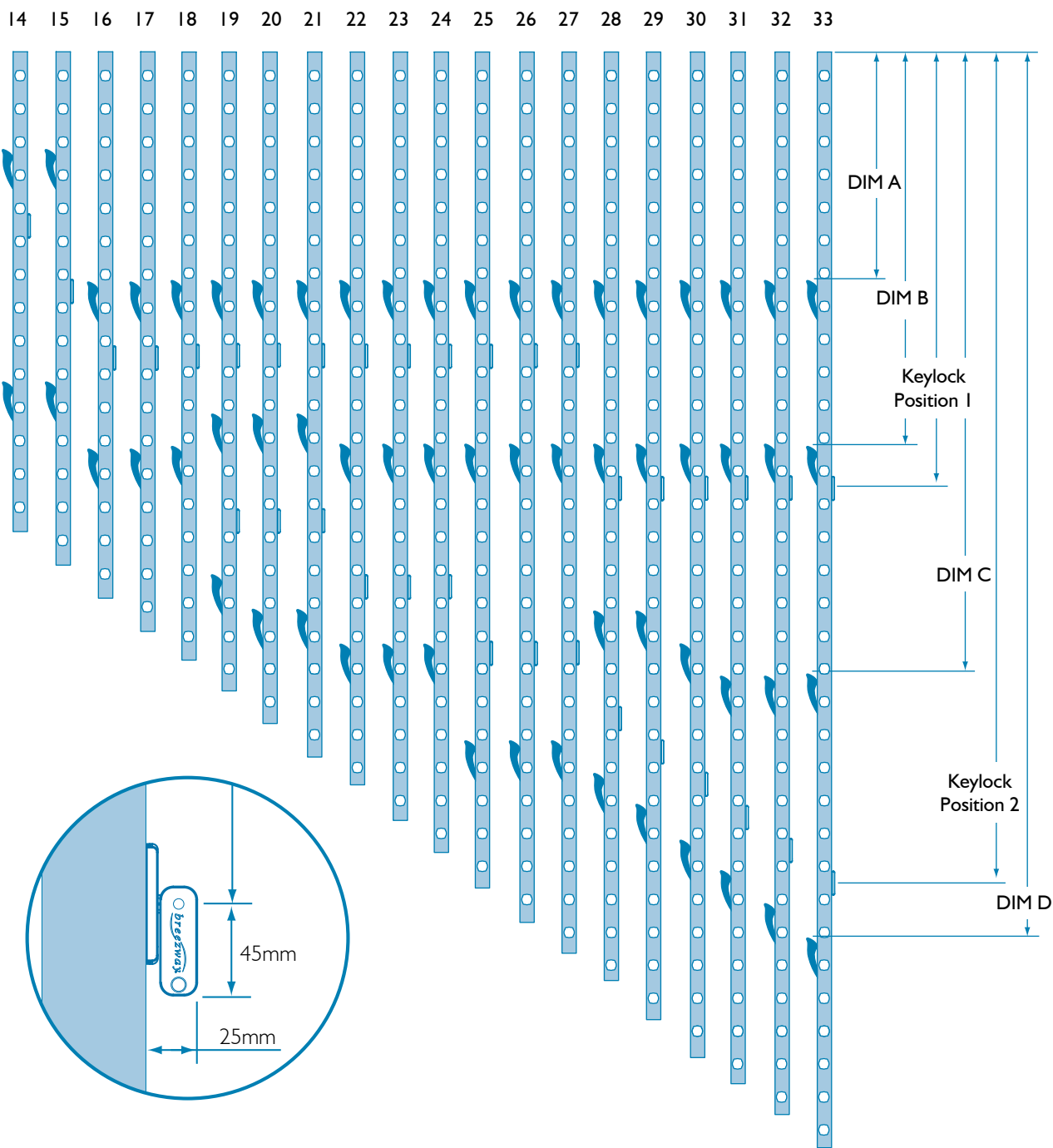
* For 3 and 4 blade galleries: Ring Pull Handle position = Standard Handle Position – 71mm



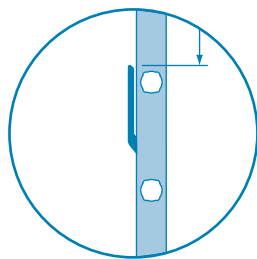
No. of Blades	Banks of Blades Controlled from Head Downwards		Channel Length	Dim A	Dim B	Dim C	Dim D	Keylock Positions			
								1	2		
3	3		310	88				103			
4	4		400	178				193			
5	5		490	178				193			
6	6		580	268				373			
7	7		670	268				373			
8	8		760	268				373			
9	9		850	268				373			
10	6	4	940	268	718			463			
11	6	5	1030	268	718			463			
12	6	6	1120	268	808			463			
13	6	7	1210	268	808			463			
14	7	7	1300	268	898			643			
15	7	8	1390	268	898			643			
16	9	7	1480	628	1078			823			
17	9	8	1570	628	1078			823			
18	9	9	1660	628	1078			823			
19	9	5	5	1750	628	988	1438	823	1273		
20	9	5	6	1840	628	988	1528	823	1273		
21	9	5	7	1930	628	988	1528	823	1273		
22	9	6	7	2020	628	1078	1618	823	1453		
23	9	6	8	2110	628	1078	1618	823	1453		
24	9	6	9	2200	628	1078	1618	823	1453		
25	9	9	7	2290	628	1078	1888	823	1633		
26	9	9	8	2380	628	1078	1888	823	1633		
27	9	9	9	2470	628	1078	1888	823	1633		
28	9	6	4	9	2560	628	1078	1528	1978	1183	1813
29	9	6	5	9	2650	628	1078	1528	2068	1183	1903
30	9	7	5	9	2740	628	1078	1618	2158	1183	1993
31	9	7	6	9	2830	628	1078	1708	2248	1183	2083
32	9	7	7	9	2920	628	1078	1708	2338	1183	2173
33	9	7	8	9	3010	628	1078	1708	2428	1183	2263

Note:

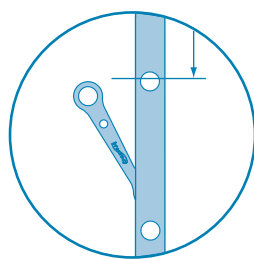
- Additional handles can be specified or relocated to another position. Each handle can operate a maximum of nine clips including at least one clip directly below the handle.
- Relocated keylocks are not available.



Standard Handle

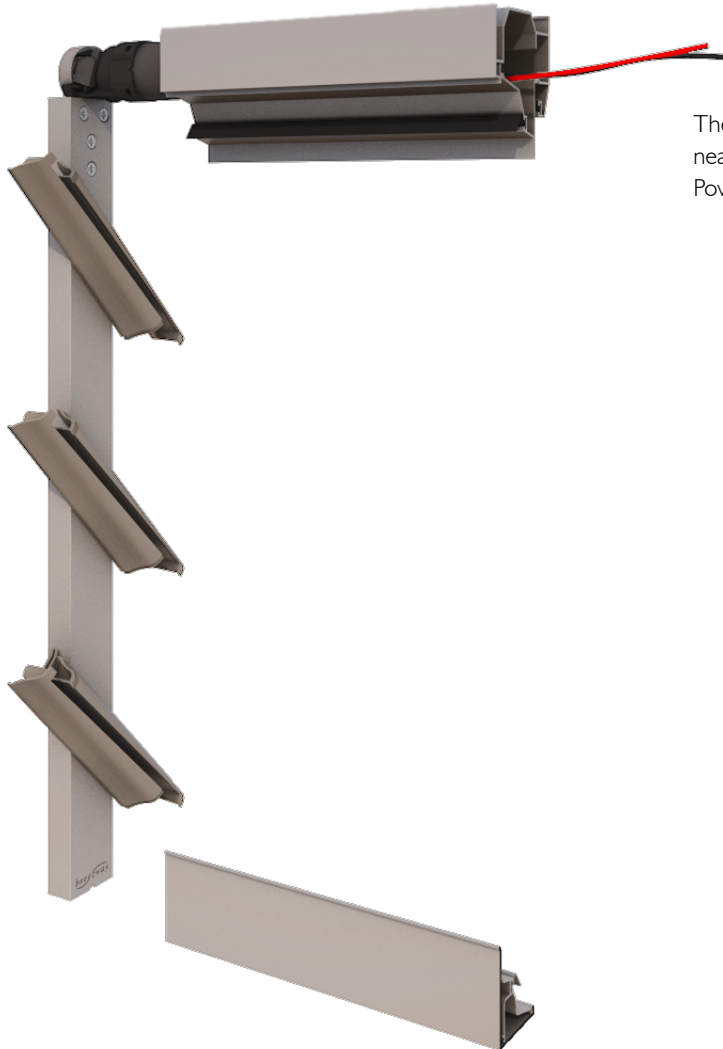


Low Profile Handle



Ring Pull Handle (A13)

Powerlouvre® Window



The Powerlouvre Window motor is neatly concealed within the Component Powerlouvre Head Section.

Anticipation of needs

■ When paired with intelligent control systems, automated Powerlouvre Windows can be opened and closed in anticipation of the building occupant's needs. Unlike manually operated windows which are normally opened and closed only once the building occupant has become uncomfortable.

More frequent use

■ With operation as simple and easy as the push of a button, Altair Powerlouvre windows will be opened and closed more frequently than windows which require more effort to operate, and therefore the benefits of the windows will be enjoyed more frequently.

Integrated Motor and Gearbox

■ The Altair Powerlouvre Window incorporates a motor and gearbox concealed within the Component Powerlouvre Head Section, resulting in an automated louvre window with no visible motors, rods or arms.

Variety of Control Options

■ Control is possible via wall switches, remote control systems or integration into building management systems.

Ease of use

■ Altair Powerlouvre Windows can easily be operated by young, aged or infirm building occupants.

Operating Conditions

Tests Passed	
Cyclical open / closed	30,000 cycles
Salt mist	1,000 hours
Extreme humidity	90% humidity at 35 °C
Extreme heat	60 °C
Extreme cold	0 °C
Electromagnetic Compatibility	Complies with the requirements of EN61000-6-3 and AS/NZS 4251.1

Powerlouvre Window Maintenance

Breezway Powerlouvre Windows should be operated at monthly intervals. Frames should be cleaned periodically as per Breezway care and maintenance recommendations.

Powerlouvre Window Opening Configurations

Powerlouvre Windows that are 2-9 blades high contain one motor per bay and are wired such that the entire window opens and closes simultaneously.

Powerlouvre Windows that are 10-18 blades high contain 2 motors per bay, one motor drives the blades in the top half of the bay and the other motor drives the blades in the bottom half of the bay.

Breezway® Altair® Powerlouvre Window Opening Configurations		
No. of Blades	Motors per bay	Banks of Blades Controlled from Head Downwards
2	1	2
3	1	3
4	1	4
5	1	5
6	1	6
7	1	7
8	1	8
9	1	9
10	2	5 5
11	2	5 6
12	2	6 6
13	2	6 7
14	2	7 7
15	2	7 8
16	2	8 8
17	2	8 9
18	2	9 9

Electrical Requirements & Wiring

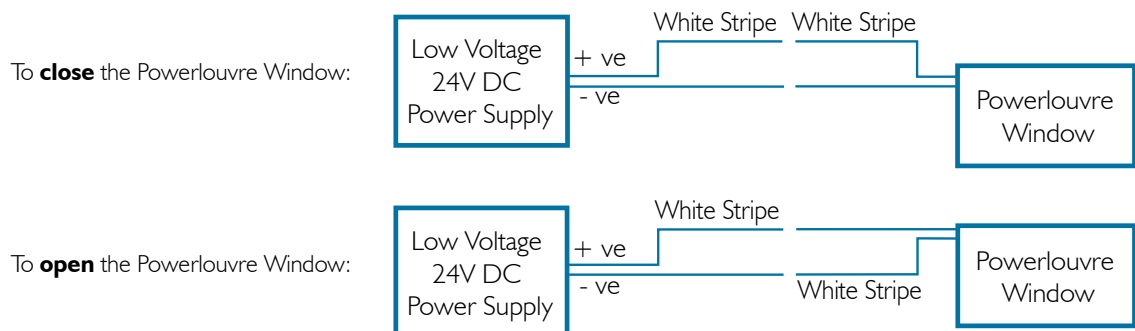
- Operating voltage: 24V DC
- Maximum constant current: 0.25A per motor
- Maximum startup current: 0.5A per motor
- Opening time: Approx 14 seconds
- Working temperature: -20 to +60 degrees Celsius

Note: In extreme cold conditions the windows will not operate if there is excessive ice build up or if the louvre blades are frozen together.

Maximum Constant Current Requirements

Powerlouvre Window Type	Motors per bay	Maximum Constant Current Required
2-9 Blades High	1	0.25 amps per bay
10-18 Blades High	2	0.5 amps per bay

The direction in which the Powerlouvre Window moves is determined by the polarity of the low voltage current supplied. Once the Powerlouvre Window has fully opened or fully closed, an electronic circuit stops power being delivered to the motors to prevent the motor being damaged should power be supplied continuously.



Transformers

Breezway supplies transformers (as optional extras) that have been specified to meet the particular requirements of Powerlouvre Windows.

- 240V AC input current.
- 24v DC output.
- Sufficient amps to power up to 6 Powerlouvre Motors.
- Built-in overload protection to prevent accidental short circuits from damaging the transformer.

Transformers should be installed in an easily accessible location.

It is recommended that transformers are located in a position that enables easy power cycling.

Controlling Powerlouvre Windows

Control options include:

- Breezway Powerlouvre Apptivate® Control Units, which allow control via a touch sensitive wall plate, remote control via a smartphone application, or automatic operation in response to temperature or timer events.
- Building management systems, which allow control along with other automated building products and automatic operation in response to various sensors and inputs.

Powerlouvre™ Apptivate® Control Unit

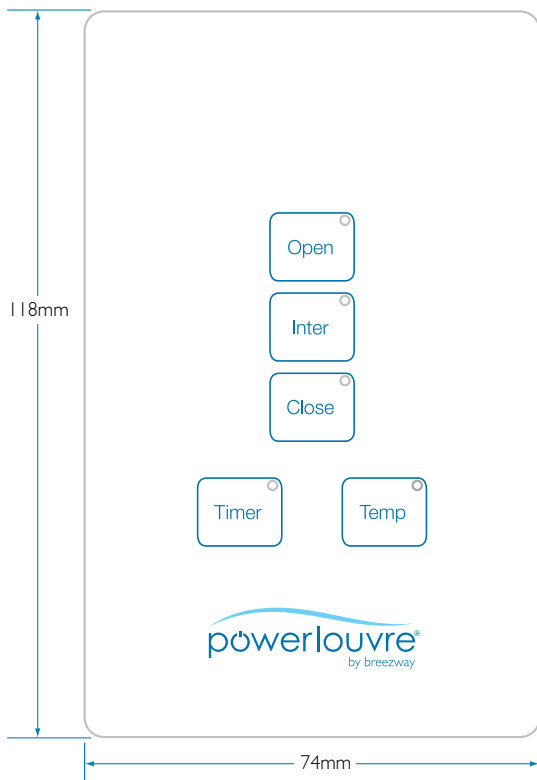
The Powerlouvre Apptivate Control Unit is a plastic, touch-sensitive wall switch.

Features include:

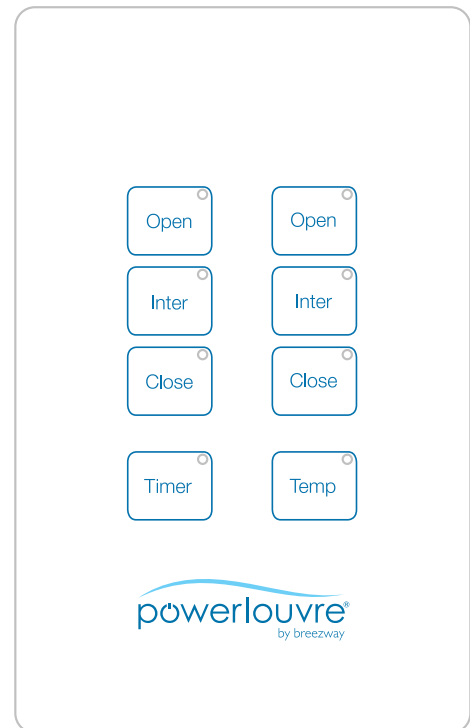
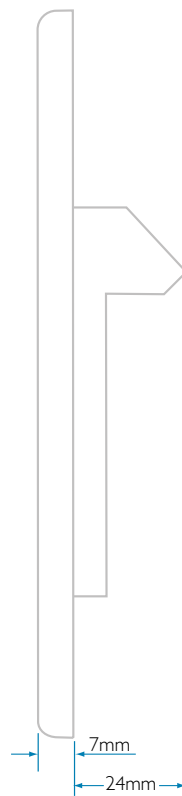
- White, standard sized wall switch.
- Single channel and dual channel models.
- Control of up to 6 Powerlouvre Motors per channel.
- Fully open, fully close or open to an intermediate (half-open) position at a single touch.
- Precise control of opening angle by touching and then releasing when the window is in the desired position, or by touching another button to stop the window in the desired position.
- Automatic operation in response to an in-built temperature sensor.
- Bluetooth® module to allow control by and communication with compatible smartphones and tablets.

Additional features accessible through the Powerlouvre™ App:

- Remote control.
- Automatic operation in response to an in-built temperature sensor.
- Automatic operation in response to pre-set timers.
- 'Night mode' which adjusts the brightness of LED lights overnight to minimise potential sleep disruptions.



**Apptivate® Control Unit
Single Channel**



**Apptivate® Control Unit
Dual Channel**

Powerlouvre™ App

The Apptivate® Control Unit includes a Bluetooth® Smart™ modules which allows wireless communication between a compatible device running the Powerlouvre App and the Apptivate Control Unit.

Remote control.

The Powerlouvre app enables:

- Remote opening and closing of each Apptivate Control Unit. The range of the Bluetooth signal is approximately 10m - 20m. (The range will be maximised by maintaining a clear line of sight between the device running the Powerlouvre App and the Apptivate Control Unit.)
- Naming of Apptivate Control Units, and channels of Apptivate Control Units for easy identification.
- An indication of the open/close position of the Powerlouvre Windows connected to each Apptivate Control Unit.

Compatible devices.

Compatible devices will have Bluetooth® Smart™ modules installed and have an iOS or Android operating system. Devices include:

Apple products running iOS 7 or newer:

- iPhone 4s and newer
- iPad 3 and newer
- iPad Mini and newer
- iPod Touch 5

Devices running Android 4.3 and newer, including:

- Samsung Galaxy Range
- HTC One, MAX
- Sony Experia Range
- Droid RAZR, Ultra, Maxx, Mini
- Google Nexus 4, Nexus 5, Nexus 7 and Nexus 10

Security.

Establishing associations between the Powerlouvre App and Apptivate Control Units requires:

- Close physical proximity between the Powerlouvre App and the Apptivate Control Unit, and
- An access code (defined by the first Powerlouvre App to be associated to the Apptivate Control Unit).

If the Access Code is forgotten, a factory reset button can be activated by snapping off the front cover plate of the Apptivate Control Unit and pushing a paperclip through a small hole to hold a button down for a brief period. Security will be maximised by positioning the Apptivate Control Unit in a location that restricts unauthorised access.

If restricting access to the Apptivate Control Unit is not practical then users can seal the hole to block access to the factory reset button from the front panel necessitating the unscrewing of the Apptivate Control Unit from the wall in order to carry out a factory reset.

Automatic operation in response to temperature.

Temperatures can be set at which the Apptivate Control Unit will:

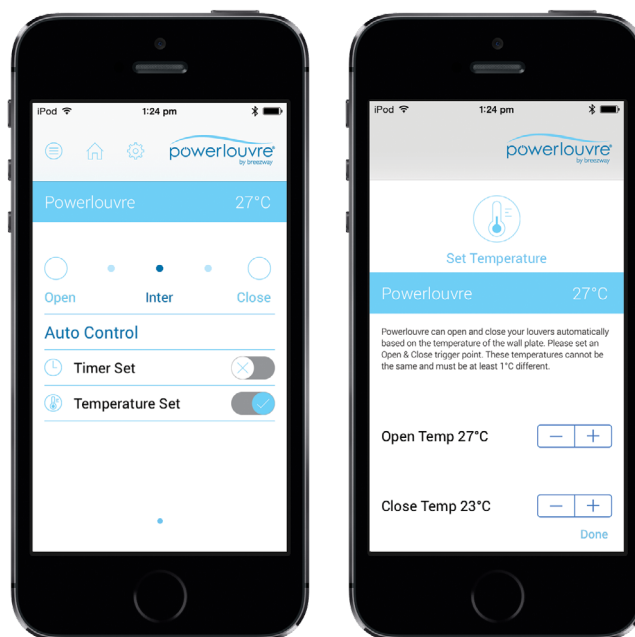
- Automatically open the windows to naturally cool the room, or
- Automatically close the windows to retain warmth within the room.

Automatic response to temperature can be enabled or disabled:

- Remotely from the Powerlouvre App, or
- Directly on the Apptivate Control Unit.

Notes:

- As the temperature sensor will be located within the wall cavity it may be susceptible to environmental conditions so the temperature readings will be indicative of the air temperature within the room, but will not exactly reflect the air temperature within the room.
- When responding to temperatures both channels of Dual Channel Apptivate Control Units will respond simultaneously to the temperature sensor.



Automatic operation in response to timers.

Timer events (time of day and day of week) can be set to:

- Open the windows
- Move the window to an intermediate position
- Close the windows
- Begin responding automatically to temperatures.

This allows the windows to be set to operate in anticipation of the building occupant's daily routine. For example, opening before employees arrive to pre-cool the building, or responding to temperatures from when a homeowner goes to bed so that the windows close when the temperature drops in the early hours of the morning.

Timer events can be enabled or disabled:

- Remotely from the Powerlouvre™ App, or
- Directly on the Apptivate® Control Unit.

This allows timer events to easily be disabled as the homeowner leaves the house or enabled as they arrive home.

Note:

- When responding to timer events both channels of Dual Channel Apptivate Control Units will respond simultaneously.



Control of multiple Apptivate® Control Units.

Up to 6 Apptivate Control Units can be associated to each Powerlouvre App allowing building occupants to control windows around their home from their Powerlouvre App.

For ease of identification:

- Each of the Apptivate Control Units can be given a customised name.
- Each of the channels of a Dual Channel Apptivate Control Unit can be given a customised name.
- The Powerlouvre App will indicate any Apptivate Control Units which are out of range, or with which a Bluetooth® Smart connection cannot be made.

For maximum control and ease of use, all the Apptivate Control Units associated to a Powerlouvre App can be operated simultaneously or independently.



Control by multiple Powerlouvre™ Apps.

Associations can be established between multiple Powerlouvre Apps and each Apptivate Control Unit, to allow all family members to control the windows from their smartphones.

Note:

- Only one Powerlouvre App will be able to maintain an active Bluetooth® Smart connection with an Apptivate Control Unit at any given time.

For example: Both John and Mary's Powerlouvre Apps are associated to the Apptivate Control Unit operating the Powerlouvre Windows in their living room. If John opens the windows using his Powerlouvre App, Mary will not be able to close the windows using her Powerlouvre App until John minimises the Powerlouvre App on his smartphone or his smartphone enters 'sleep' mode.

Apptivate® Control Unit Standard Wiring

Powerlouvre™ Motors and Apptivate Control Units require 24v DC power. For ease of wiring the Apptivate Control Unit senses the polarity of the current provided from the transformer and automatically adjusts accordingly.

Up to 6 Powerlouvre Motors can be wired in parallel to each Apptivate Control Unit motor group.

It is recommended that transformers are located in a position that enables easy power cycling.

Building Management System Compatibility

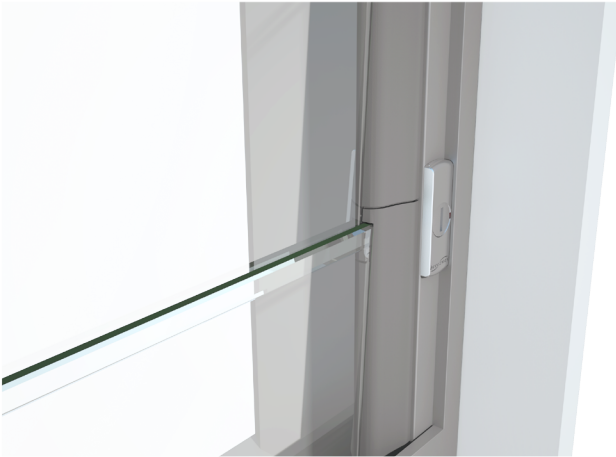
The Altair® Powerlouvre Window System has been reviewed for compatibility by the leading suppliers of building management systems. When considering integration into a building management system, the following should be considered:

- Breezway does not supply the various sensors which could be used to instigate opening or closing of the windows (eg temperature or rain sensors).
- Transformer requirements may differ from the requirements of Powerlouvre Windows controlled by Apptivate Control Units.
- The Powerlouvre Window System does not include an inbuilt electronic mechanism to inform the building management system of its current open or close position.
- Powerlouvre Motors include limit switches which prevent the motors from continuing to attempt to open or close the window once the window is fully open or fully closed, thereby preventing damage to the motors and electronics.

Apptivate Control Units are not compatible with building management systems.

Altair® Louvre Keylock

The Altair Keylock has been designed to be inconspicuous, strong and durable.



Improved aesthetics

■ Housing the lock mechanisms internally results in a low profile design. The brushed chrome finish suits all aluminium finishes.

Strong and durable

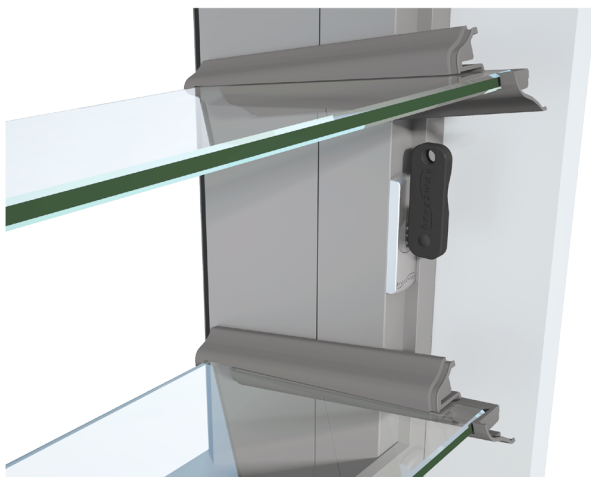
■ All metal construction and housing the mechanisms internally results in a strong, highly durable lock.

Easy operation with deep jambs or reveals

■ The folding key design allows easy locking and unlocking even when situated right beside deep jambs or reveals.

Maintenance free

■ No ongoing maintenance require besides normal cleaning. Tested and passed 15,000 lock & unlock cycles.



Keylock in unlocked position



Folding key

Off Standard Height Louvre Gallery (Extended Channel)

It is recommended that, wherever possible, Altair® Louvre Windows should be designed to a standard height. This will reduce the product cost and ensure effective opening of all blades.

In some circumstances this may not be possible. In these instances the Altair Louvre can be ordered with Extended Channel. The Extended Channel is a continuation of the channel that is cut to size, giving improved appearance and water performance in comparison to an add-on extension piece.

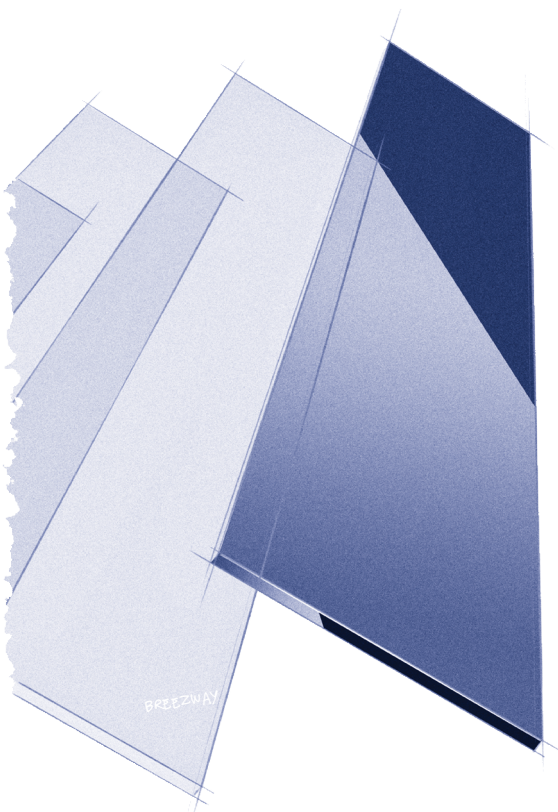
The Louvre is supplied with an Extended Channel that can be cut back to the required height. Note that the part to be cut down is located at the top of the gallery. All glass blades must comply with the requirements of AS1288 "Glass in Buildings".

Off-standard heights within 5mm of a standard height do not need a fixed blade but the shrouds of the top clips may need to be trimmed for off-standard heights between 5mm and 2mm below a standard height.

Off-standard heights that are not within 5mm of a standard height will be fitted with a top fixed blade.

For example, the louvre illustrated is ordered as 3 blade with Extended Channel.

Top extension can be achieved by cutting back to required height.



Glass Blades

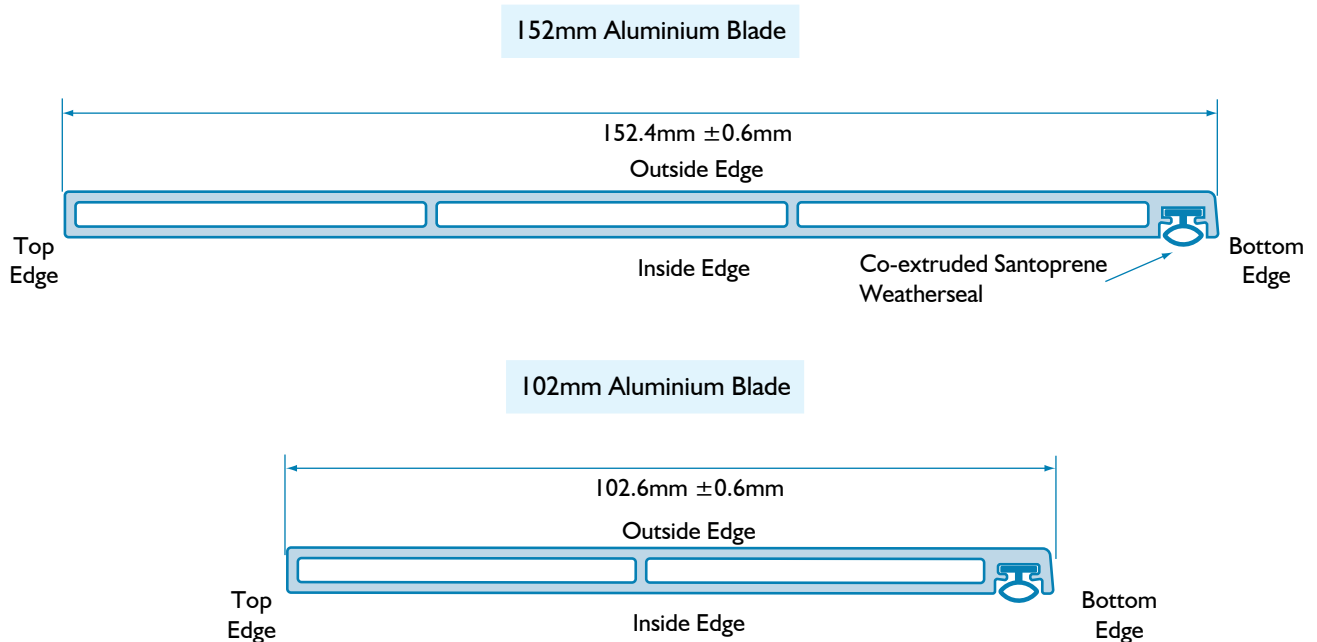
Exceptional Flatness To Resist Water & Air Infiltration

- Glass blades must be 6mm thick and monolithic. Laminated glass is not recommended for external use due to the risk of de-lamination.
- Exceptional flatness ensures excellent sealing and therefore improved wind and water performances.

Extruded Aluminium Blades

Refined Design

- Breezway aluminium blades feature low profile weatherseals and a clean design at the top of the blade for a minimalist, modern aesthetic.

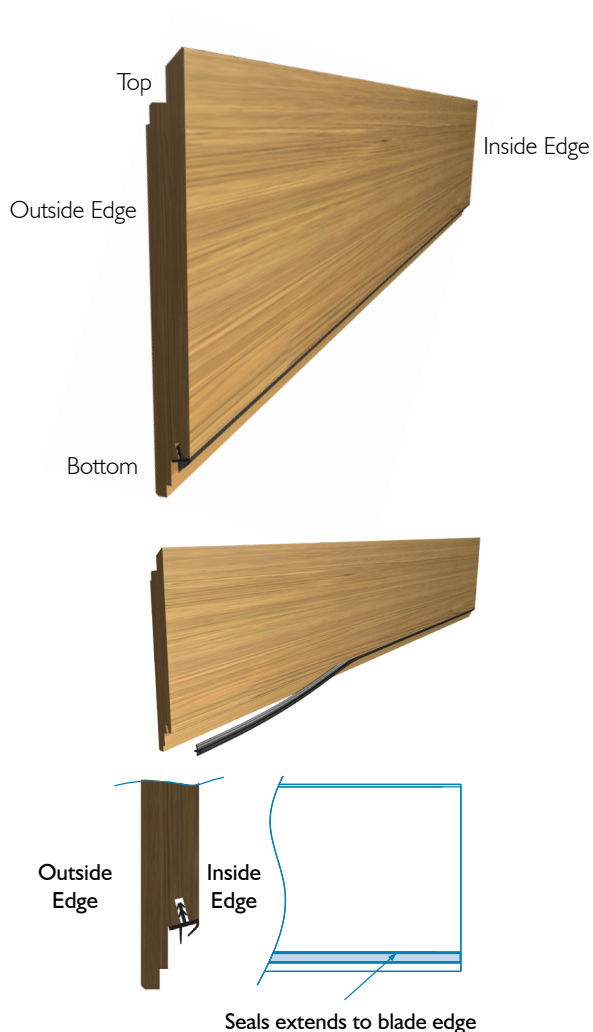


Design Registration applies.

Timber Blades

Species and Style

- Western Red Cedar
- Straight cut to suit 14mm clips



Straight cut timber blade

Finishing and Installation

Western Red Cedar blades are a natural material and as such will be susceptible to colour variations and natural movement. Prior to installation or exposure to weather, all timber blade surfaces must be finished with a suitable exterior grade finish. The finish used should be 'non-tacky' or 'abrasion resistant' to avoid blades sticking together when closed. Dark colours can cause timber movement. The surface sealant should be re-applied to the sealant manufacturers instructions to avoid weathering of the timber and minimise timber movement. The product warranty will become void if these actions are not adhered to.

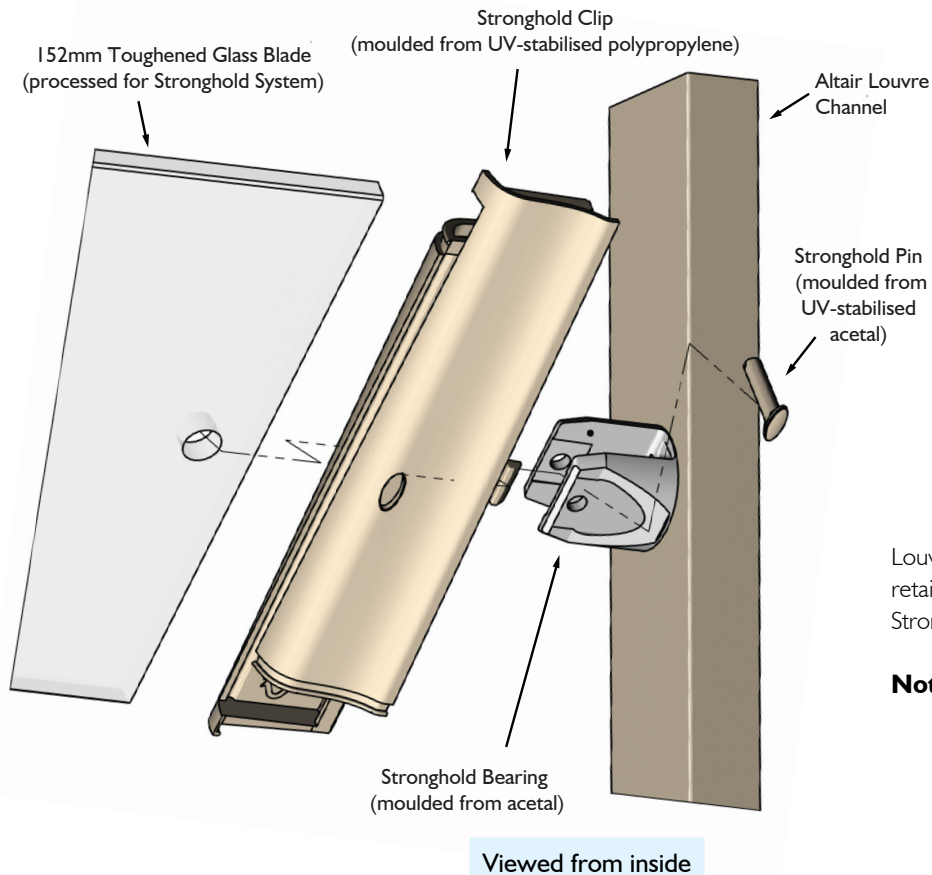
When installing the timber blades into the clips, care must be taken not to split the ends of the timber. Slide the blade slowly into the

top of both sides of the open clips. Flex one side and then the other in sequence while easing the blade into place. To help the blades to ease into the clips, spray the ends of the blades with clean water. When installed correctly the clip will flex back and firmly hold the timber blade. Ensure the seal is sitting correctly and not twisted once installed.

To remove straight cut blades use a paint scraper or butter knife to flex the plastic blade retainer out of the way.

Patents have been applied for.

Altair® Louvres with the Stronghold® System



Louvre blades are mechanically retained within the clips by the Stronghold System.

Note: Patents applied for.

Patented Blade Retention System

Blades are retained in Stronghold Clips by a pin that passes through the clips, bearing and blade. Once installed, the pins cannot be removed without tools and the blades are prevented from being removed from the clips. Pins are visible on the inside/underside of the clips.

Blade Options

Processed and toughened glass and processed aluminium blades can be used in the Stronghold System. The Altair Stronghold System is only available for use with 152mm high blades.

Safeguarding Against Falls

Breezway Altair Louvres with the Stronghold System are fit for purpose for locations where openable windows are required to safeguard against a fall of 1 metre or more. As the entire glazed area can be opened to allow airflow they can be used to maximise natural ventilation and cooling in multi level applications. They are also ideal for creating winter gardens as they can be opened for ventilation in warmer weather or closed for protection in colder weather.

Blade Type Compatibility with the Stronghold® System

	152mm High	102mm High
Annealed glass	N	N
Toughened glass	Y	Y
Aluminium	Y	Y
Straight cut timber	N	N
Rebated timber	N	N

Compliance with NZBC Requirements: Windows Safeguarding Against A Fall Of 1 Metre Or More

The Altair Louvres with the Stronghold System are windows, not a balustrade system. Altair Louvres with the Stronghold System have been tested to NZS 4211 "Specification for performance of windows" and have completed imposed load testing for barrier infills to AS/NZS 1170.1 "Structural Design Actions". Test reports are available from Breezway. It is the responsibility of the building designer to specify systems and products that meet the barrier and balustrade requirements for a building.

Window Sizes

Window Size Constraints

The Altair Product Performance Warranty size constraints for Ultimate Limit State Pressure, Serviceability Limit State Pressure and Water Pass must be adhered to in order to ensure compliance with NZS 4211-2008.

Standard Heights

The standard heights of Breezway Window Systems with Altair Stronghold Louvres are identical to the standard heights of Breezway Window Systems with regular Altair Louvres.

Off-Standard Heights

It is recommended that, whenever possible, Altair Louvre Windows with the Stronghold System should be designed to a standard height. This will reduce the product cost and ensure effective opening of all blades.

Some off-standard heights are unavailable when using the 102mm Altair Louvre Galleries with the Stronghold System.

	Unavailable Off-Standard Heights when using 102mm Altair Galleries with the Stronghold System
Altair Component System	Standard height + 19mm to standard height + 30mm

Maintenance

The Breezway Louvre Care and Maintenance recommendations must be adhered to.

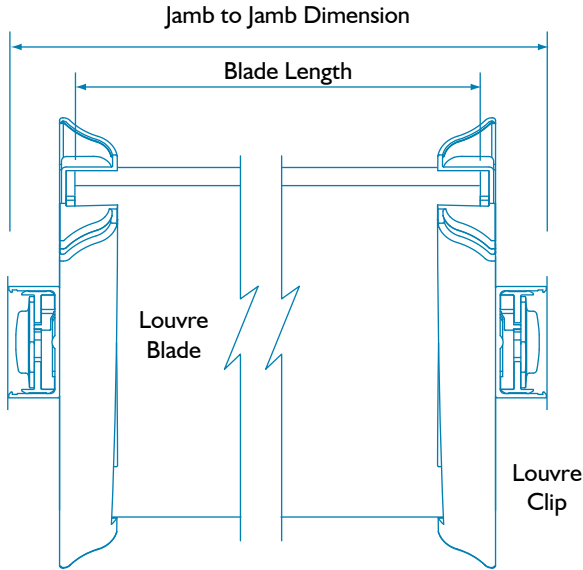
If blades need to be removed from an Altair Louvre with the Stronghold System or if broken blades need to be replaced, the pins must be removed. The removal process requires tools and will destroy the pins so new pins will be required when blades are re-installed.

Powerlouvre Compatibility

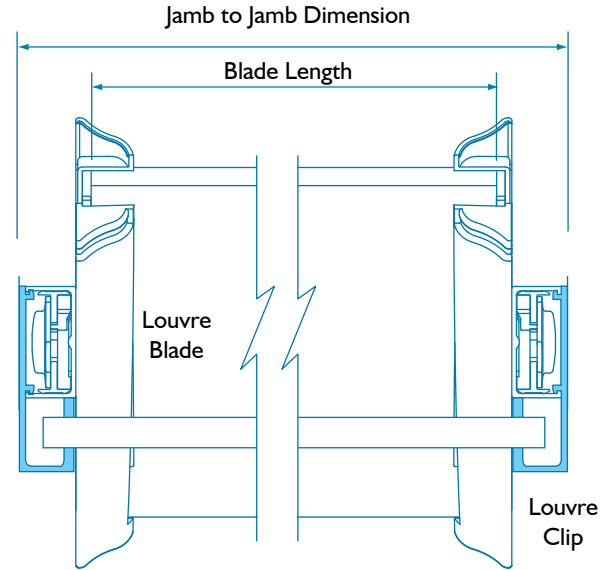
The Stronghold System are fully compatible with the Powerlouvre Systems and have no impact on minimum and maximum Powerlouvre Window sizes.



Blade Formulas



Blade Cut Length Standard Jamb



Blade Cut Length Breezway® Security Jamb

Glass, aluminium & rebated timber blades:

Blade Length = jamb to jamb – 52mm

Stronghold toughened glass & aluminium blades:

Blade Length = jamb to jamb – 48mm

Straight Cut Timber blades:

Blade Length = jamb to jamb – 72mm

Glass, aluminium & rebated timber blades:

Blade Length = jamb to jamb – 56mm

Straight Cut Timber blades:

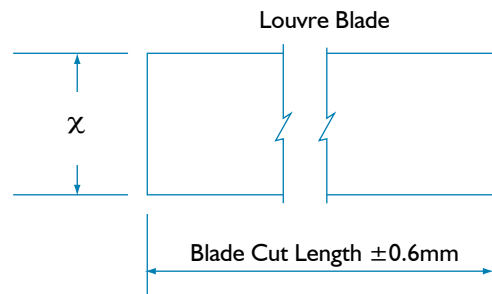
Blade Length = jamb to jamb – 76mm

Component Form — Manually Operated

Glass & Aluminium blades	x = Channel extension + 20mm
Timber blades	x = Channel extension + 24mm

Component Form — Powerlouvre®

Glass & Aluminium blades	x = Channel extension + 12mm
Timber blades	x = Channel extension + 19mm



Extension Blade Dimensions

For allowable length of blades refer to AS1288 and Breezway Louvre Windows's PRODUCT PERFORMANCE WARRANTY.

Note: Allowable tolerance = +/-0.6mm

Fixed Louvre

No. of Blades	Height (mm) No Weatherstrip	Height (mm) With Weatherstrip
3	310	320
4	400	410
5	490	500
6	580	590
7	670	680
8	760	770
9	850	860
10	940	950
11	1030	1040
12	1120	1130
13	1210	1220
14	1300	1310
15	1390	1400
16	1480	1490
17	1570	1580
18	1660	1670
19	1750	1760
20	1840	1850
21	1930	1940
22	2020	2030
23	2110	2120
24	2200	2210
25	2290	2300
26	2380	2390
27	2470	2480
28	2560	2570
29	2650	2660
30	2740	2750
31	2830	2840
32	2920	2930
33	3010	3020

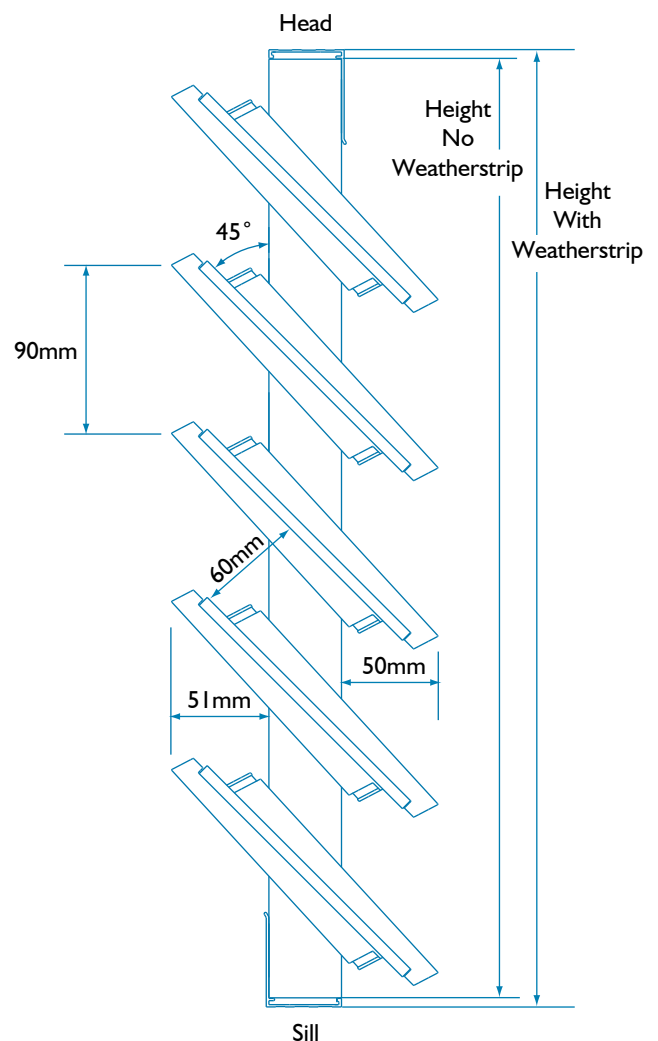
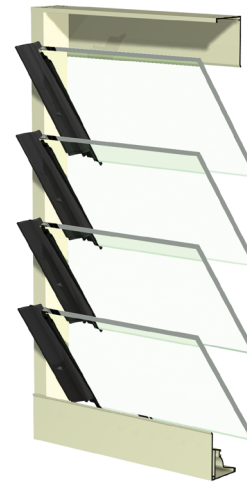
Note:

- Not Available in 102mm
- This product does not meet NZS 4211 water penetration requirements.
- Fixed louvres are only available in standard heights ie. extended channel not available.

Applications for Fixed Vent Louvres

Use fixed vent louvres where permanent ventilation, light, privacy and a degree of weatherproofing is required. Some typical applications include:

- Vented roofs
- Laundries (industrial, domestic)
- Bathrooms
- Public Amenities
- Housing for air conditioning units

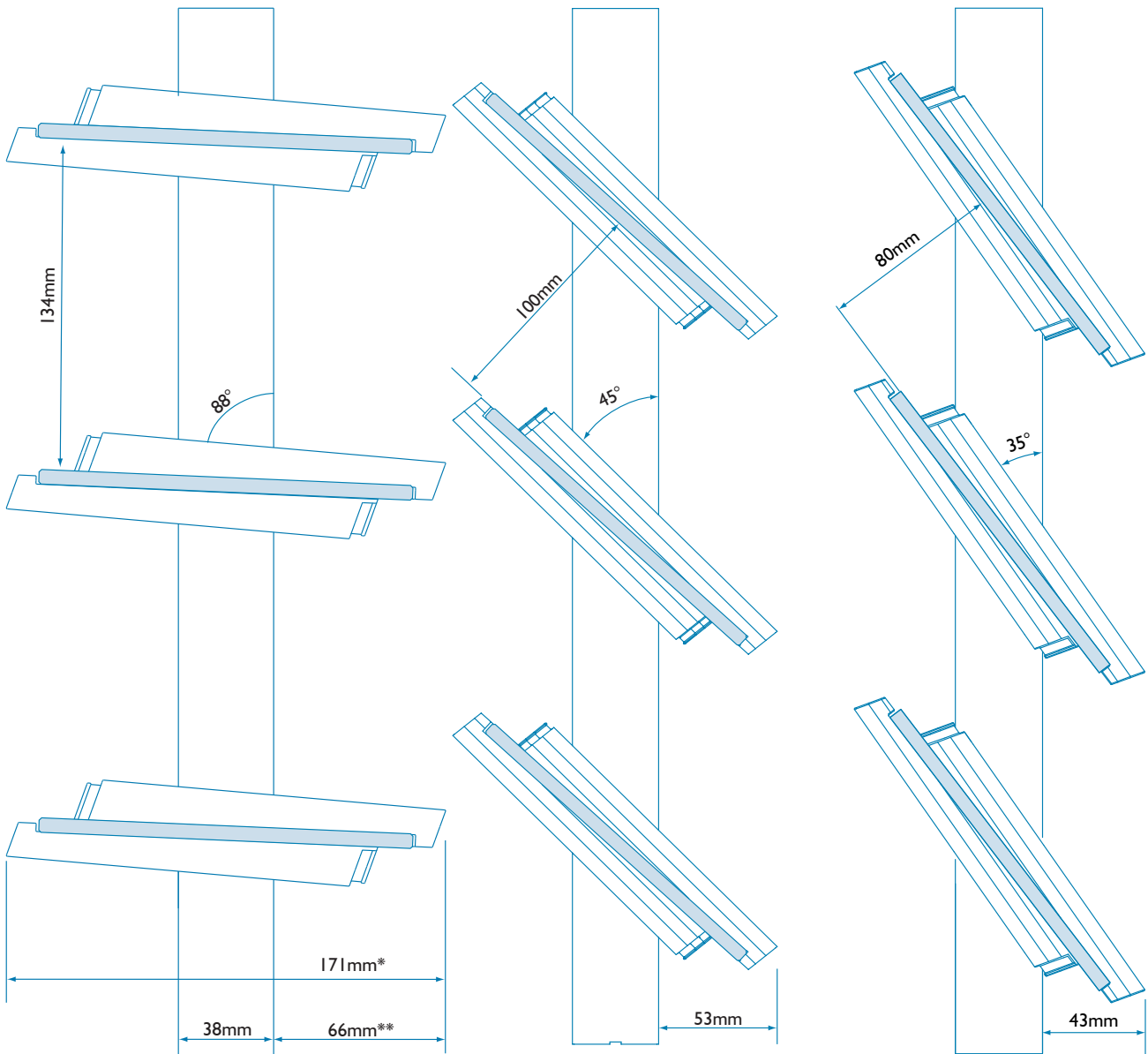


152mm Fixed Louvre

Restricted Openings

Altair Louvre Windows can be restricted to only allow a nominal opening of 80mm or 100mm between open blades.

Restricted openings can be used to prevent clips from impacting screens in some frames, or to limit the size of objects able to pass through the open window.



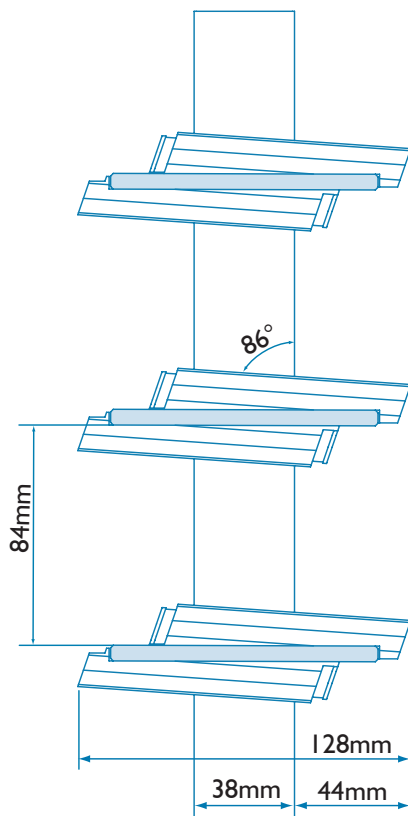
**152mm Louvre
Unrestricted Opening**

**152mm Louvre
100mm Restricted Opening**

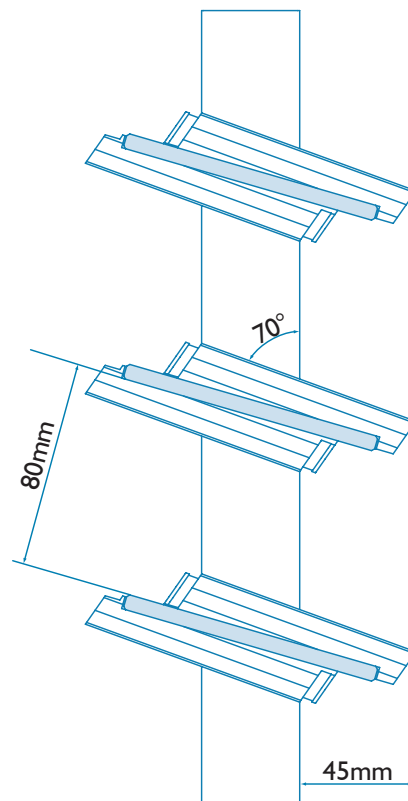
**152mm Louvre
80mm Restricted Opening**

*178mm when clips to suit 14mm thick blades are used.

**69mm when clips to suit 14mm thick blades are used.

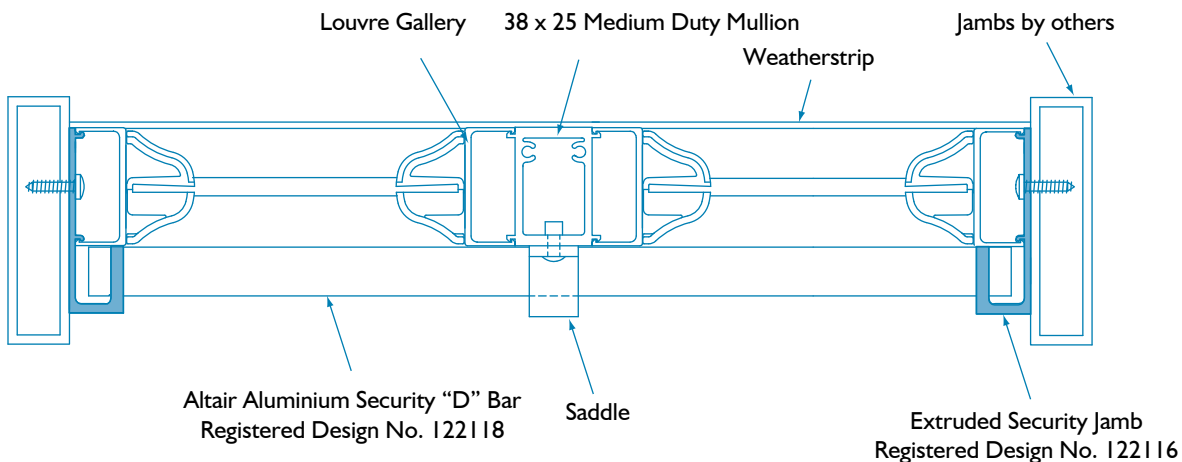


102mm Louvre
Unrestricted Opening



102mm Louvre
80mm Restricted Opening

Security Jamb: 152mm Louvres Only

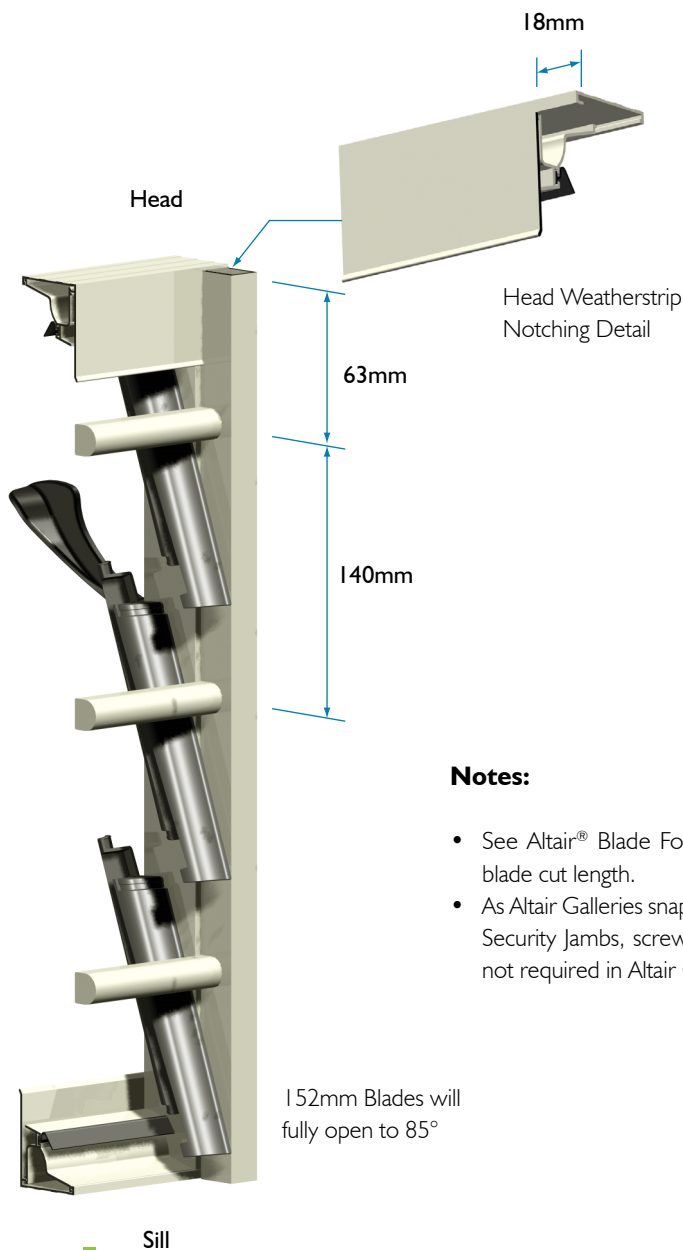
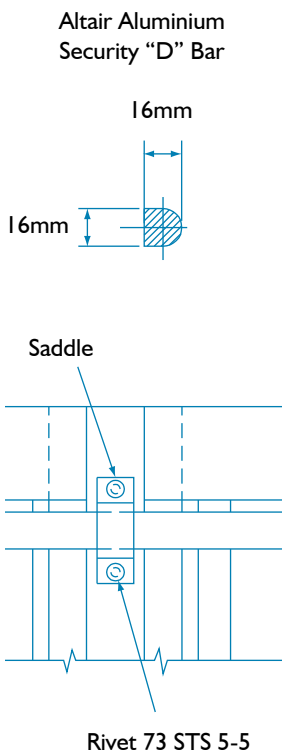


For Alum. or Steel Jamb Section

- M5 x 10mm long Trilobular Screw
- Stainless Steel, Pan Hd. 1A Pozi-Driv
- Ø 4.50mm in Alum, Ø 4.80mm in Steel

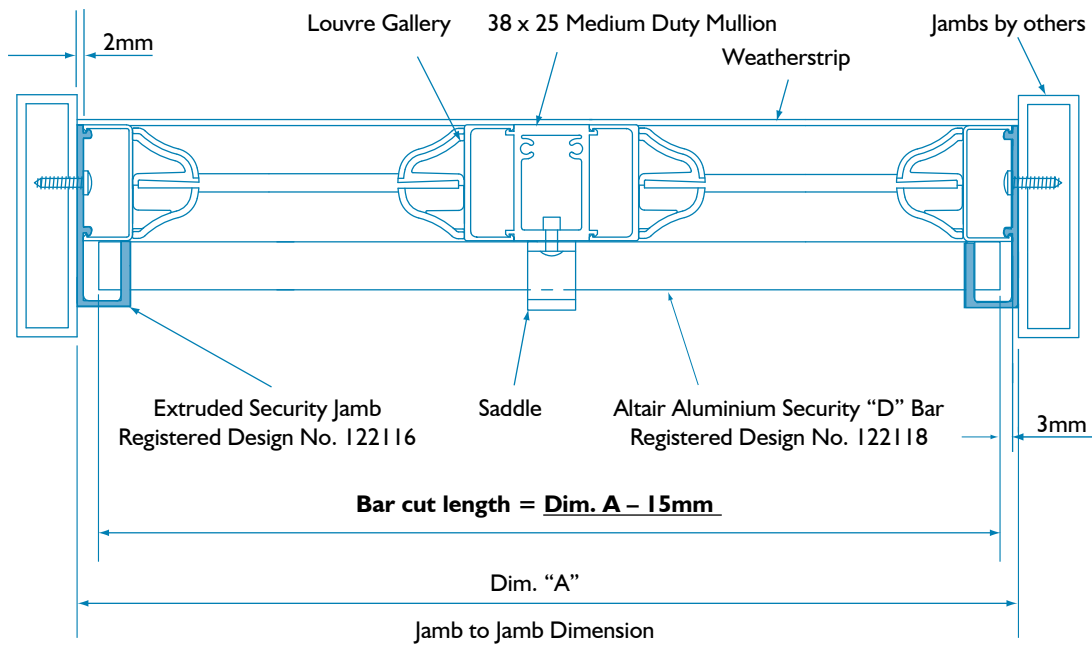
For Timber or Masonry

- 10 Gauge x 25mm Long Self Tapping Screw
- Stainless Steel, Pan Hd. 1A Pozi-Driv



Notes:

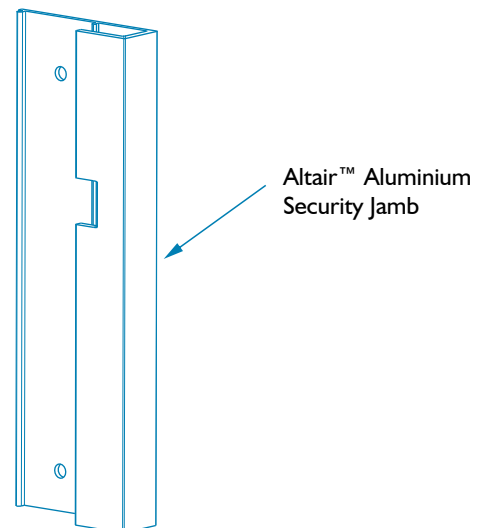
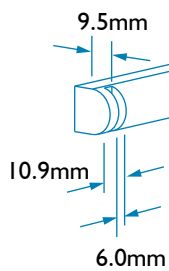
- See Altair® Blade Formulas for blade cut length.
- As Altair Galleries snap into Altair Security Jamb, screw holes are not required in Altair Galleries.



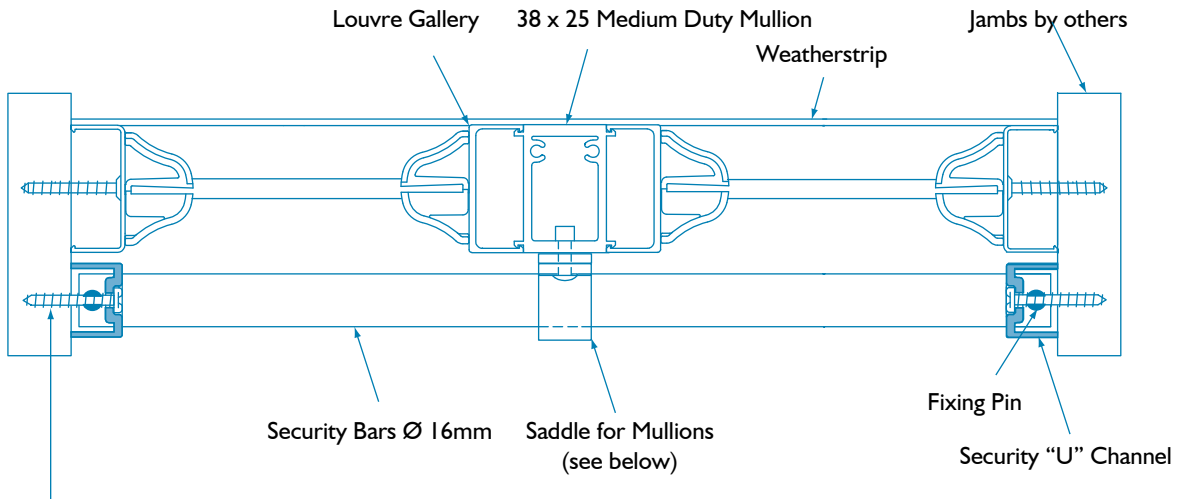
- Maximum permissible taper in jamb section is 4.0mm
- Tolerance on bar cut length to be $\pm 1.0\text{mm}$
- Maximum bar length unsupported is 900mm

Notching Details For Security "D" Bar

Altair™ Aluminium Security "D" Bar
Registered Design No. 122118



Aftermarket Security "U" Channels: 152mm Louvres Only

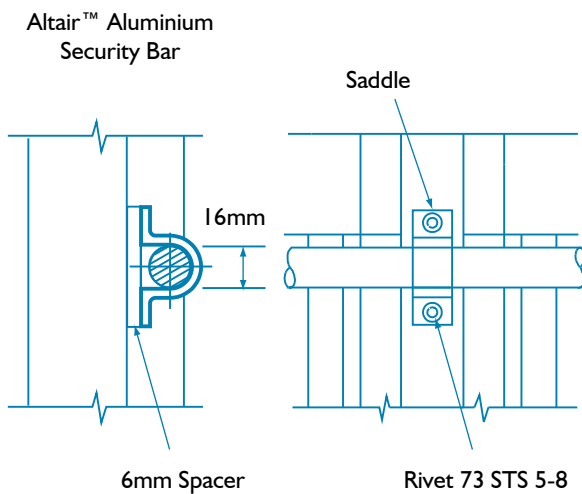
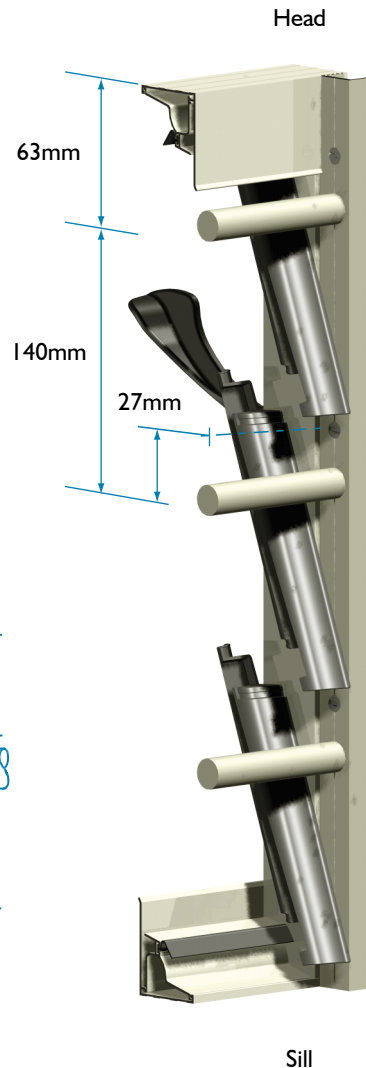


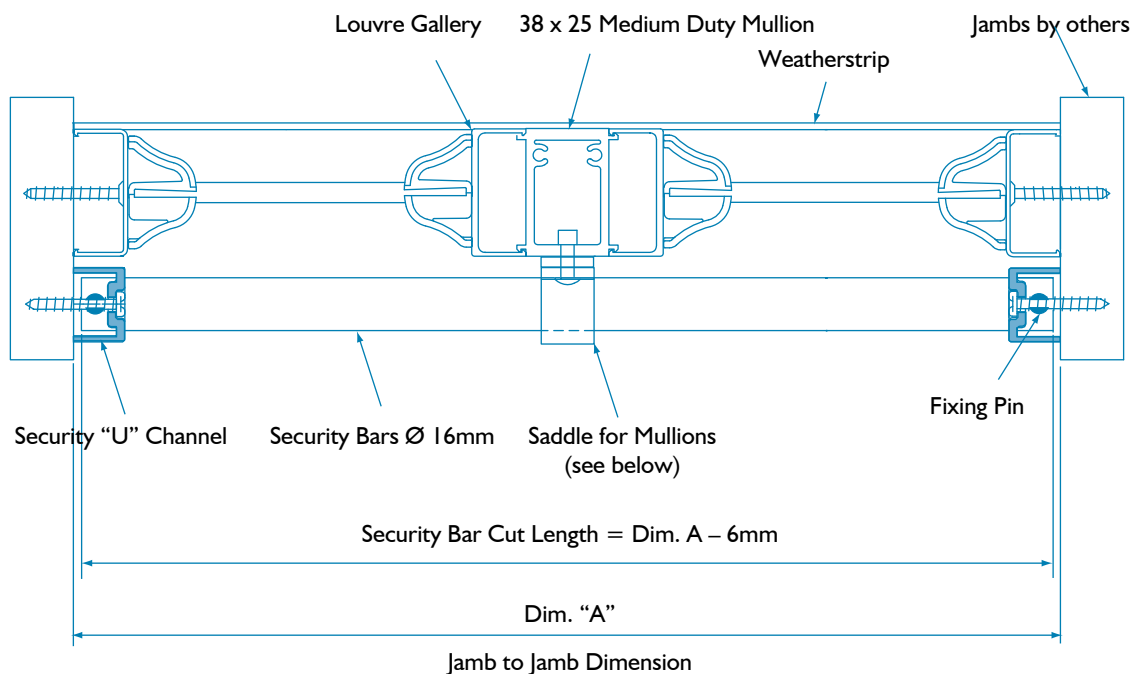
For Alum. or Steel Jamb Section

- M4 x 20mm long Trilobular Screw
- Stainless Steel, Pan Hd. 1A Pozi-Driv
- Ø 3.70mm in Alum, Ø 3.80mm in Steel

For Timber or Masonry

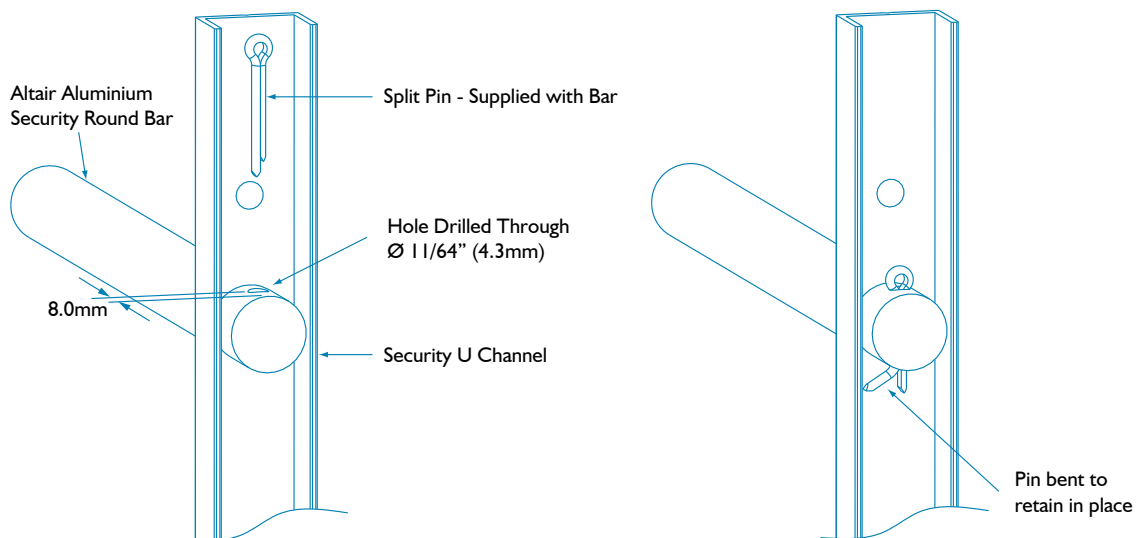
- 8 Gauge x 30mm Long Self Tapping Screw
- Stainless Steel, Pan Hd. 1A Pozi-Driv





- Maximum permissible taper in jamb section is 4.0mm
- Tolerance on bar cut length to be ± 1.0 mm
- Maximum bar length unsupported is 900mm

Split Pin Detail For Security Round Bar

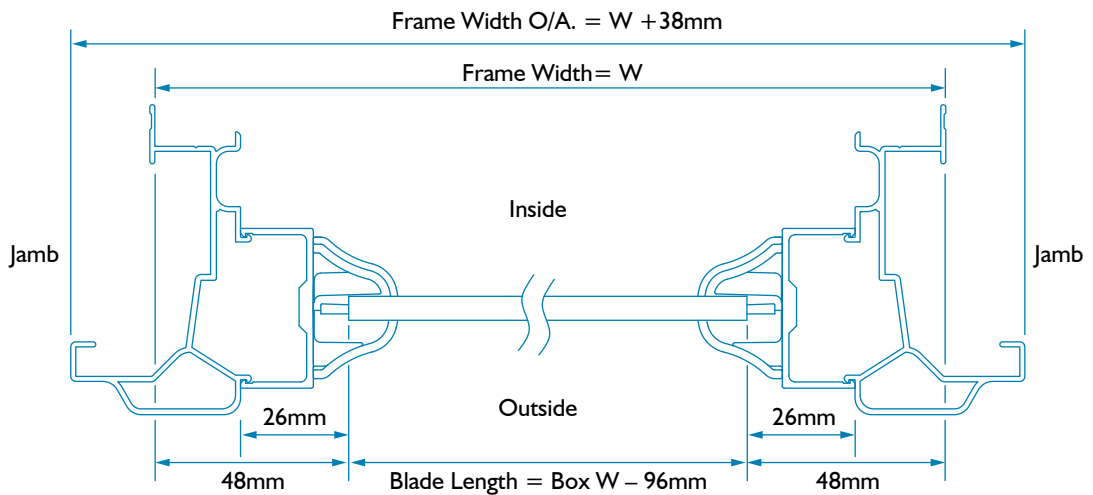
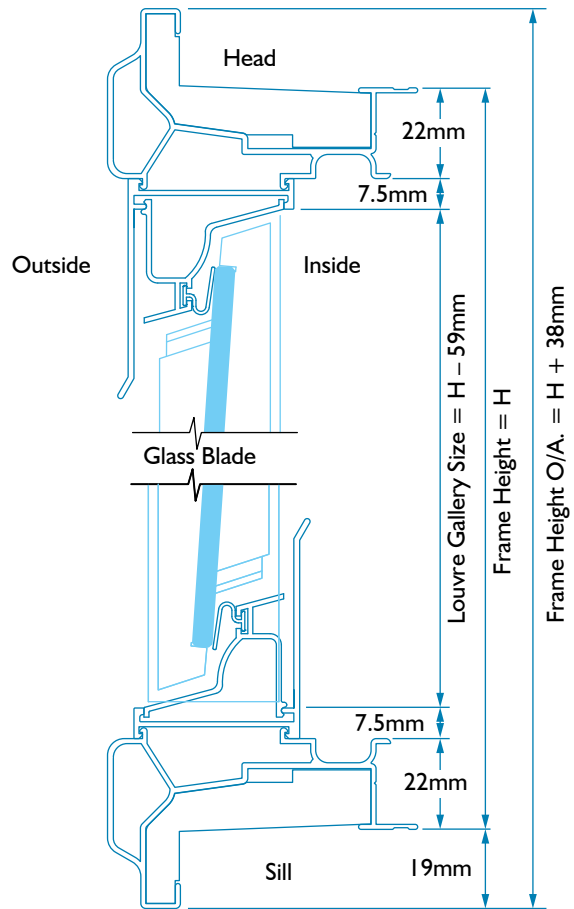


Altair™ Proprietary Frames

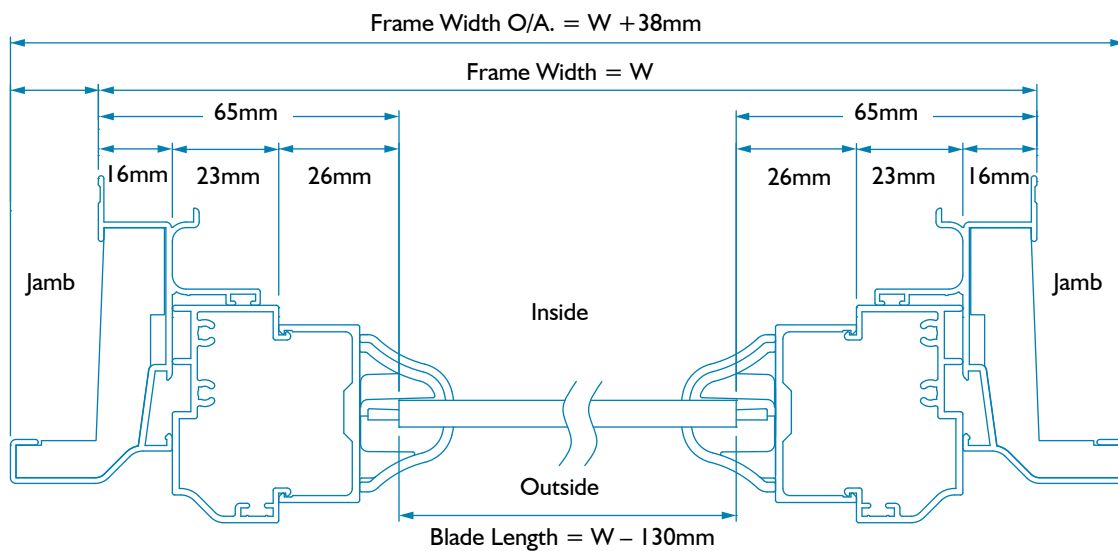
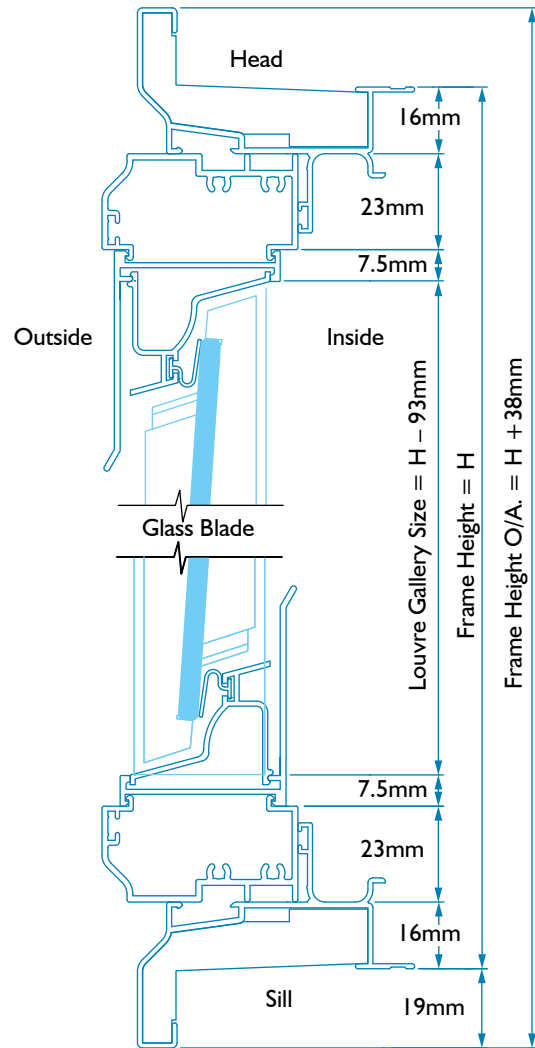
Many leading window fabricators, realising the value of Altair Louvres, have committed to maintaining compatibility between their proprietary frames and the Breezway Altair Louvre system.

As window frame fabricators do make periodic improvements to their frames, please contact each fabricator for the latest information on their proprietary framing system.

Weathertight™ Crimped Louvre Frame



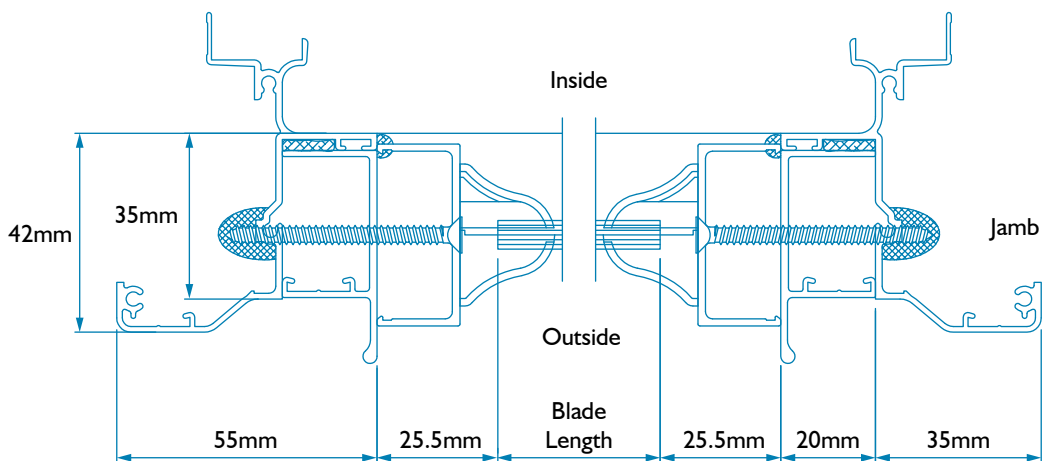
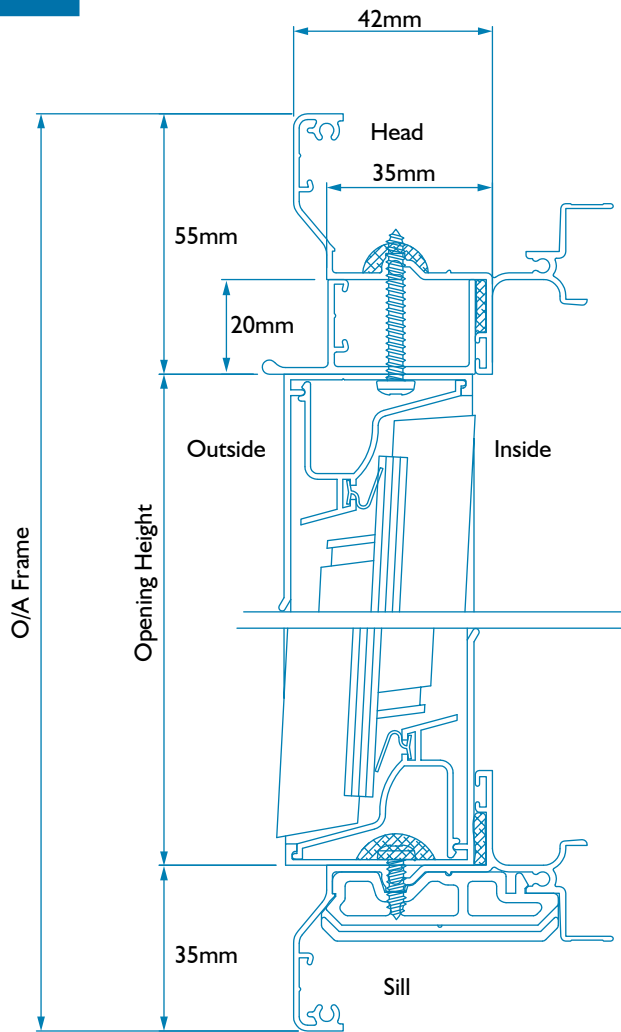
Company:	NALCO
Window System:	Weathertight™ Crimped Louvre Frame
More info:	www.nulook.co.nz
Contact:	09 272 1700



Company:
Window System:
More info:
Contact:

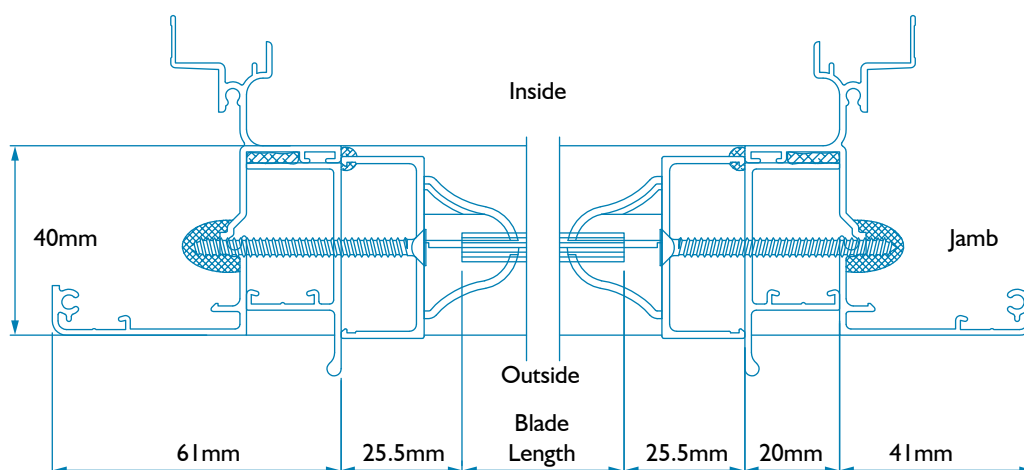
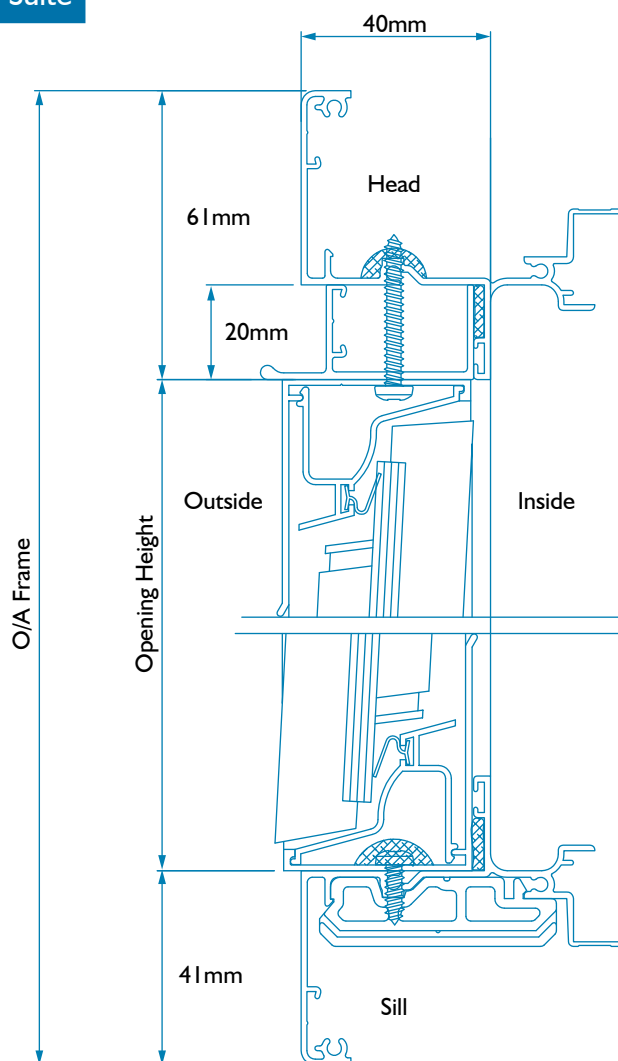
NALCO
 Weathertight™ Crimped Window Frame
www.nulook.co.nz
 09 272 1700

Pacific Residential Suite



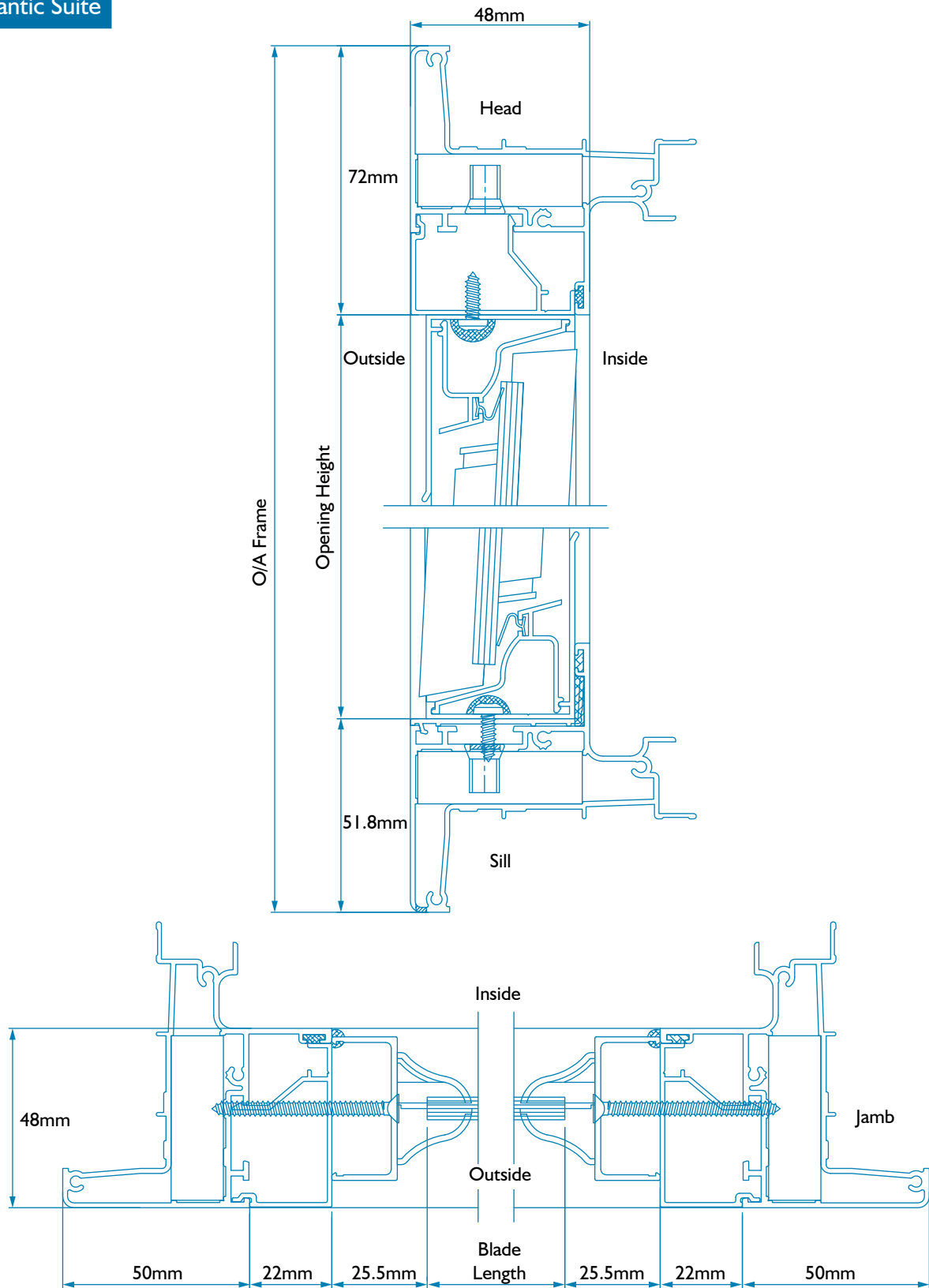
Company:	Fletcher Aluminium
Window System:	Pacific Residential Suite
More info:	www.fletcheraluminium.co.nz
Contact:	0800 551 100

Pacific Architectural Suite



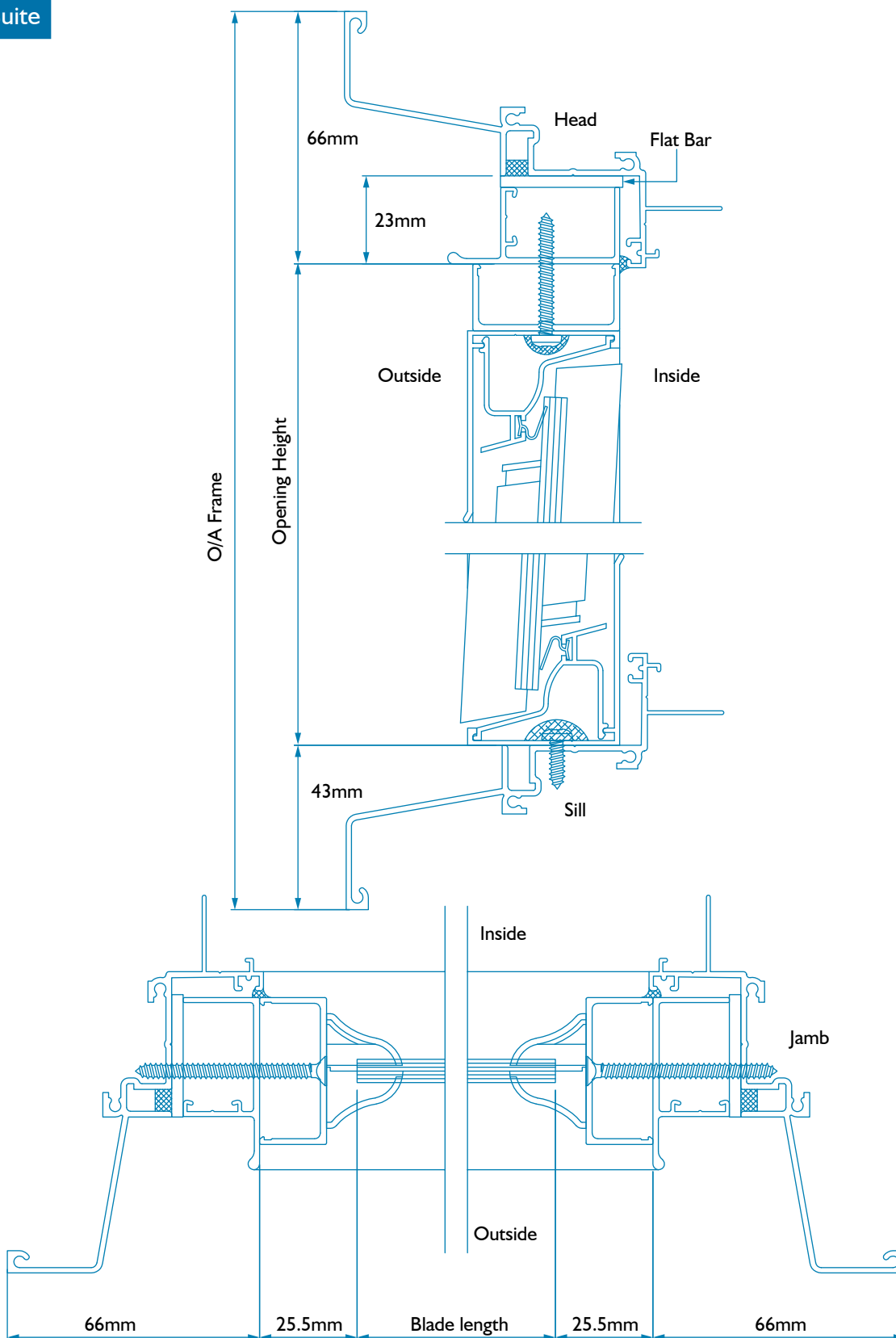
Company:	Fletcher Aluminium
Window System:	Pacific Architectural Suite
More info:	www.fletcheraluminium.co.nz
Contact:	0800 551 100

Atlantic Suite



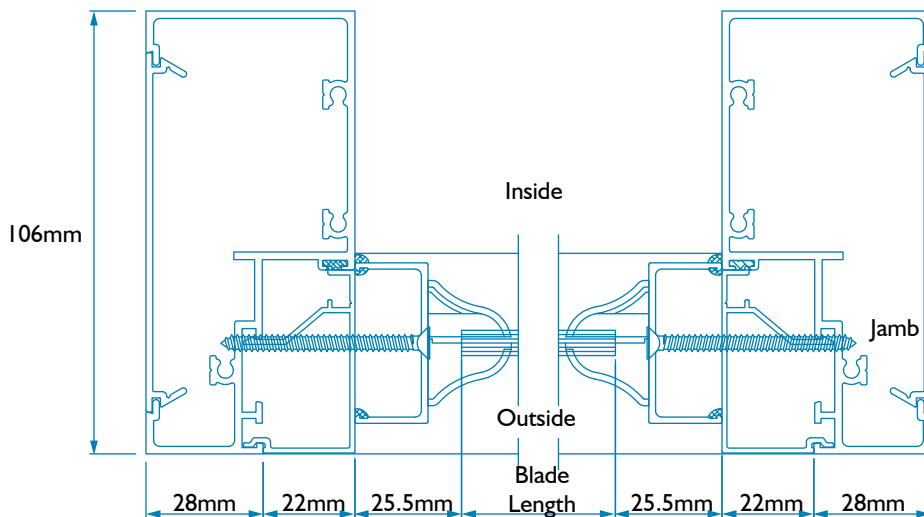
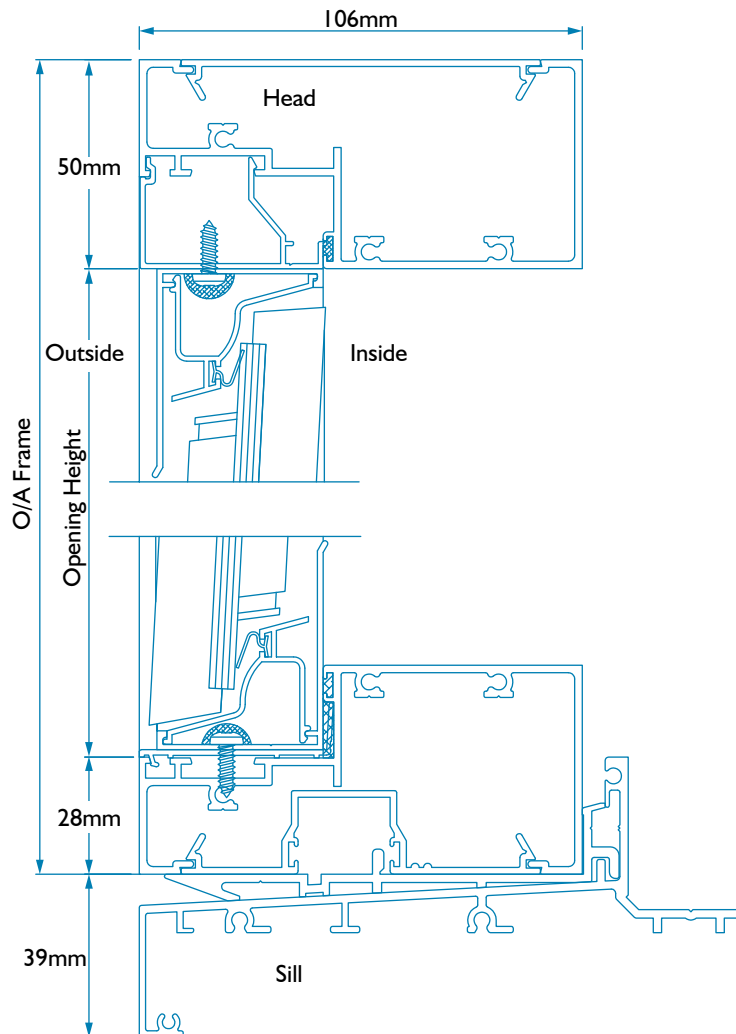
Company:	Fletcher Aluminium
Window System:	Atlantic Suite
More info:	www.fletcheraluminium.co.nz
Contact:	0800 551 100

Alti Suite



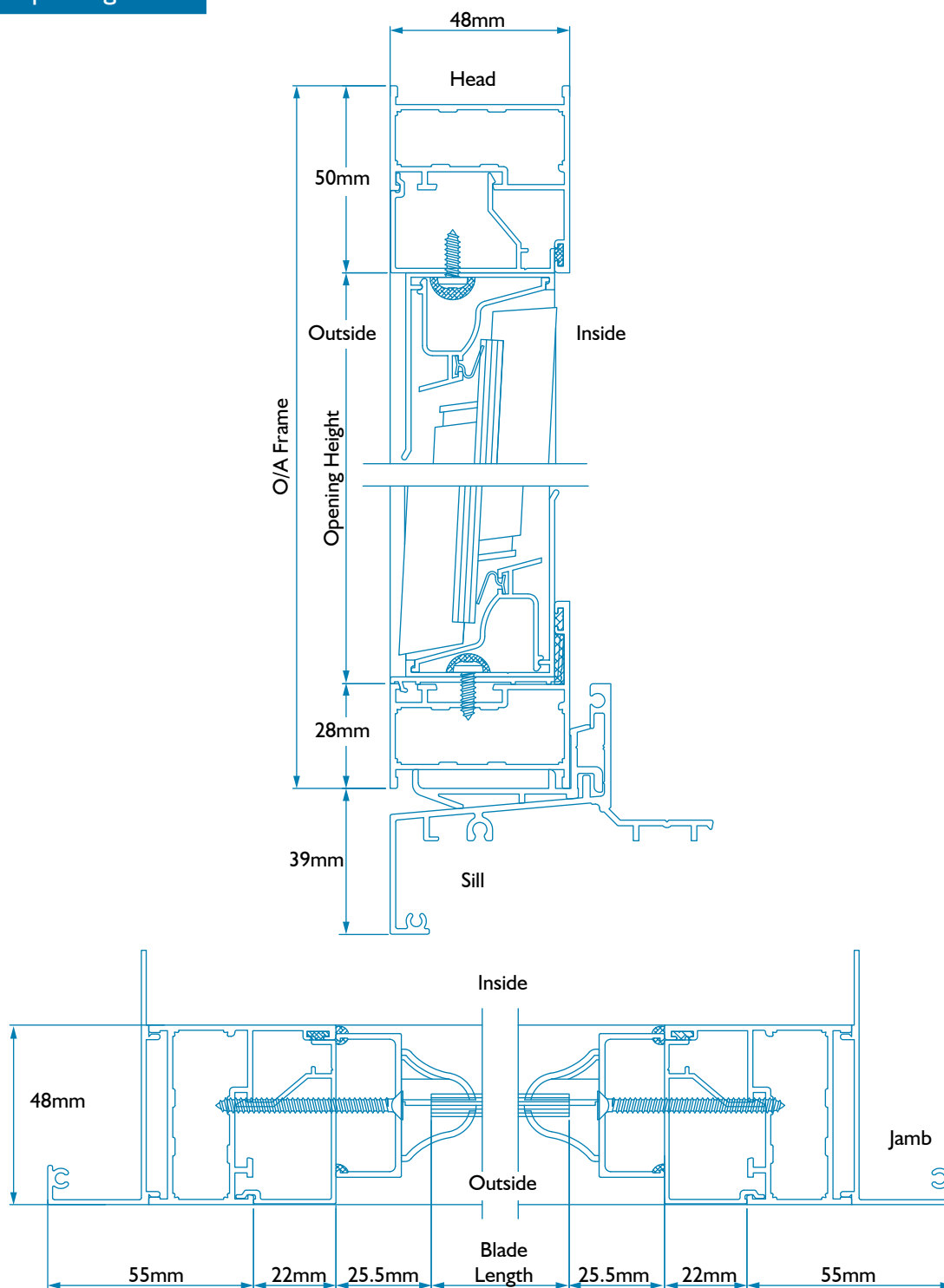
Company:	Fletcher Aluminium
Window System:	Alti Suite
More info:	www.fletcheraluminium.co.nz
Contact:	0800 551 100

Atlantic 106mm



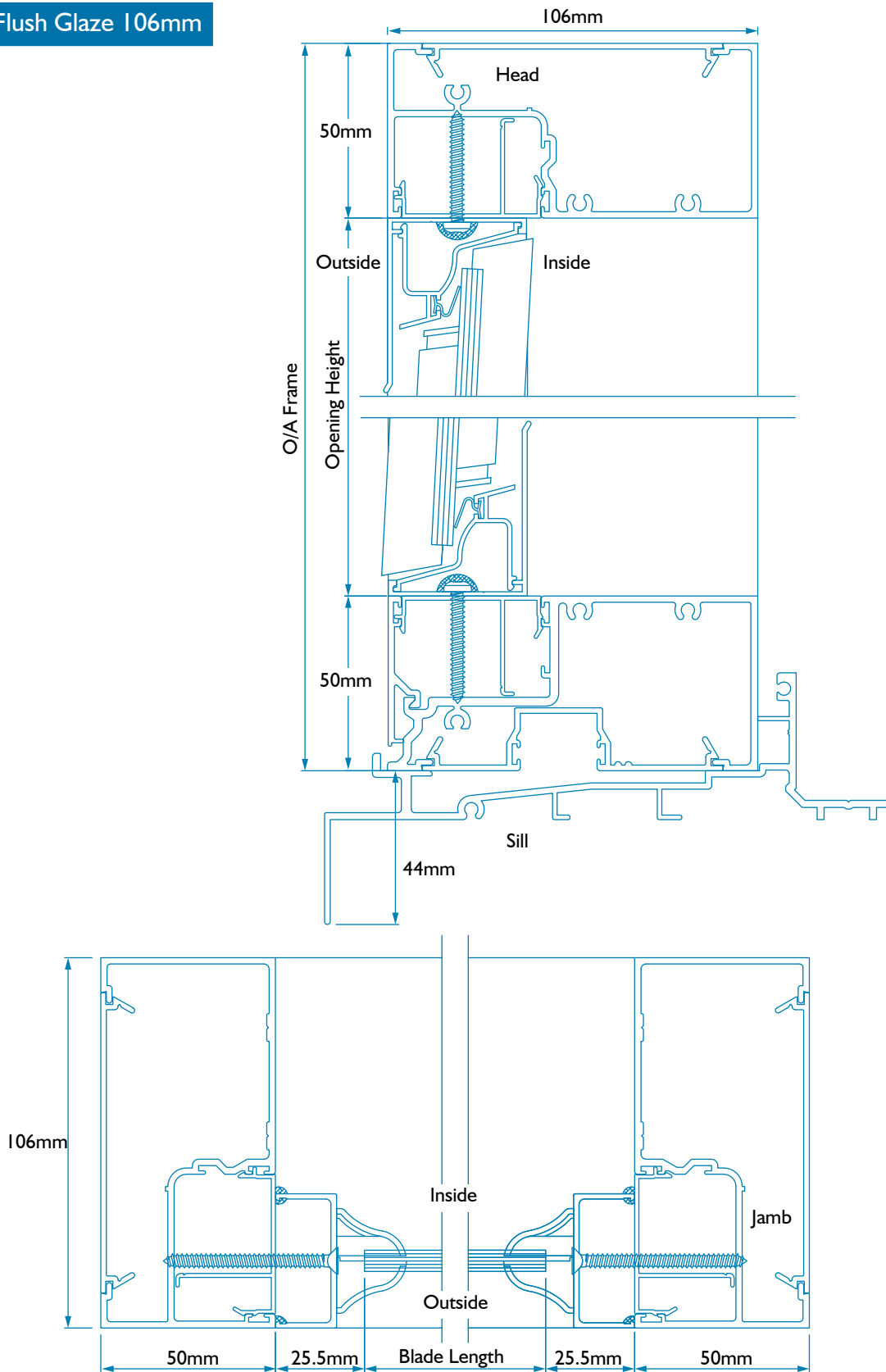
Company:	Fletcher Aluminium
Window System:	Atlantic 106mm
More info:	www.fletcheraluminium.co.nz
Contact:	0800 551 100

Atlantic Equal Leg Frame



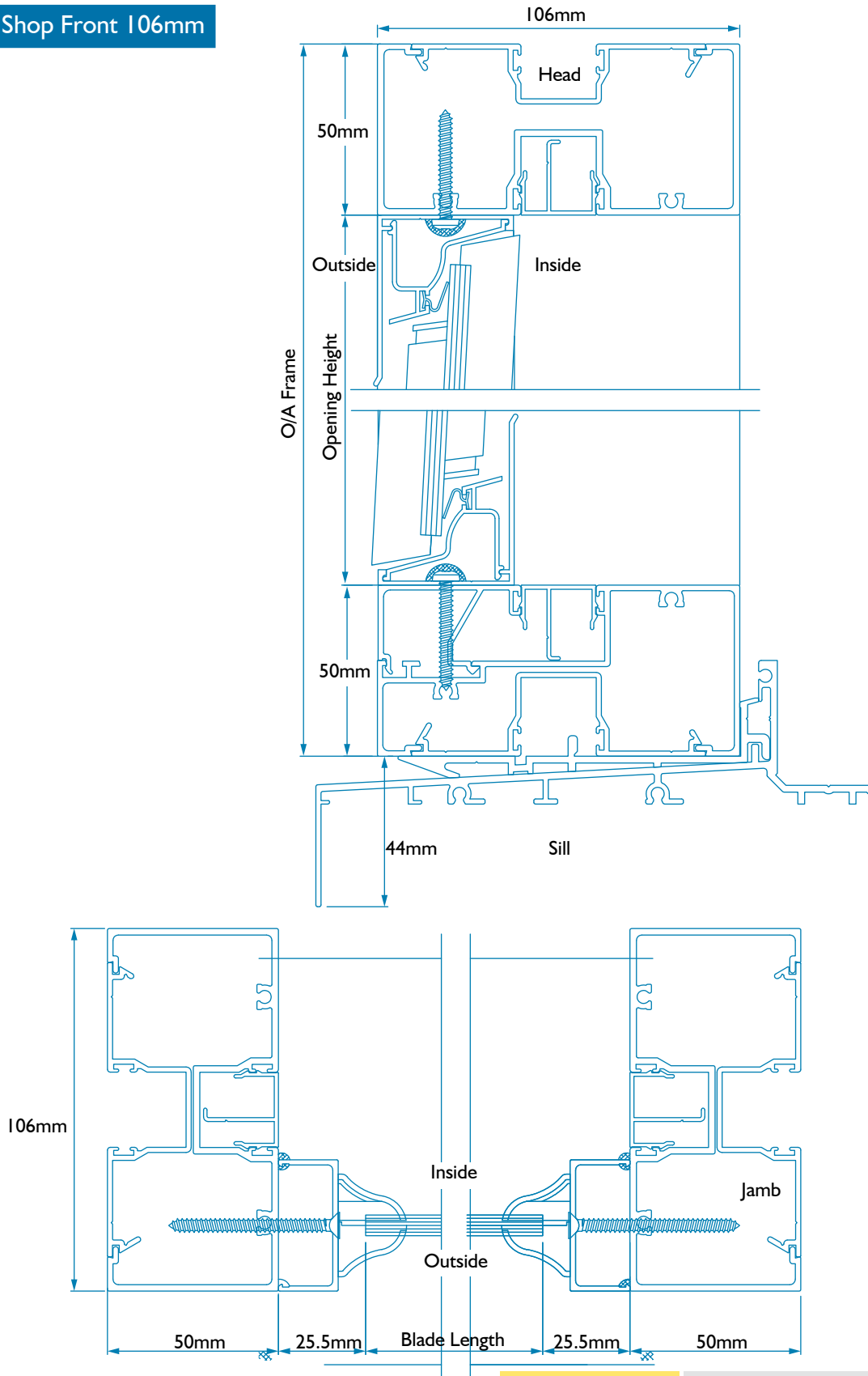
Company:	Fletcher Aluminium
Window System:	Atlantic Equal Leg Frame
More info:	www.fletcheraluminium.co.nz
Contact:	0800 551100

New Flush Glaze 106mm



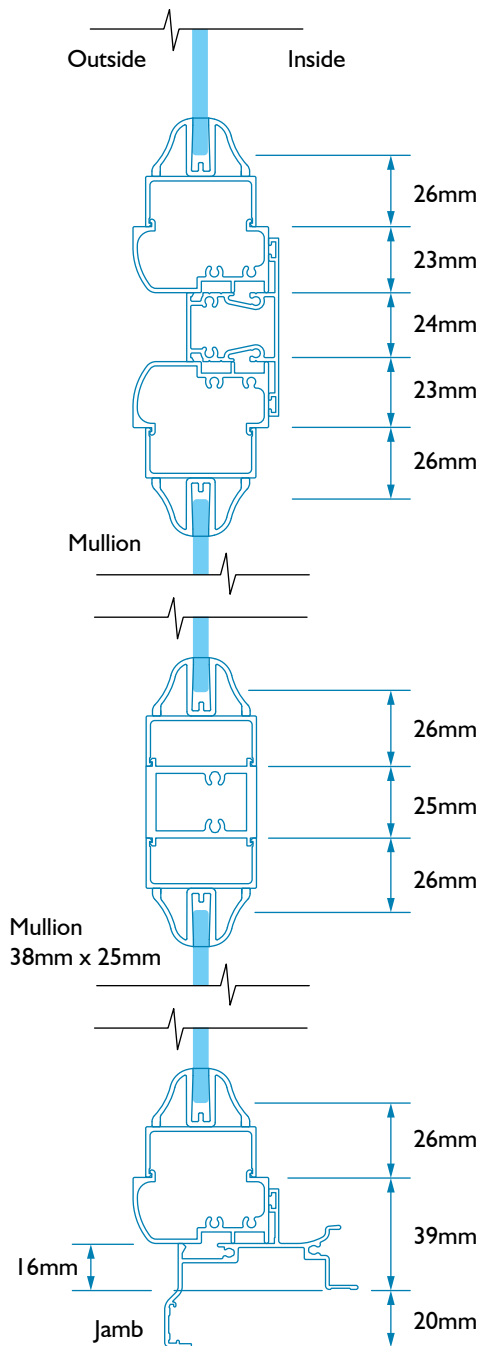
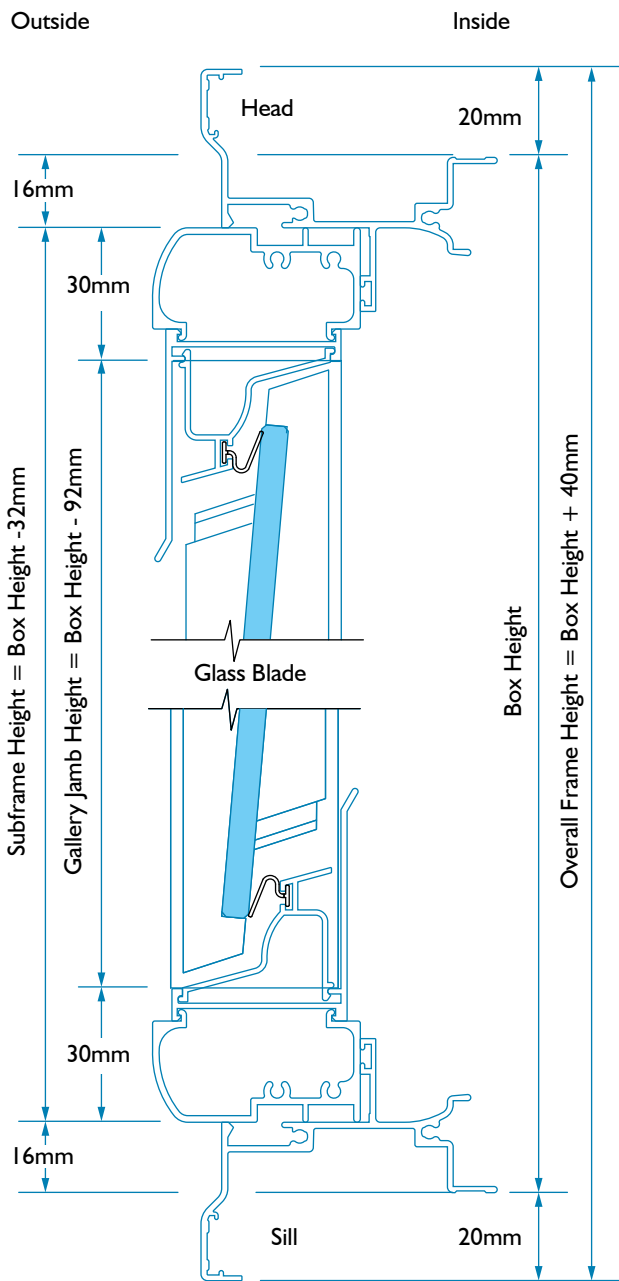
Company:	Fletcher Aluminium
Window System:	New Flush Glaze 106mm
More info:	www.fletcheraluminium.co.nz
Contact:	0800 551 100

New Shop Front 106mm



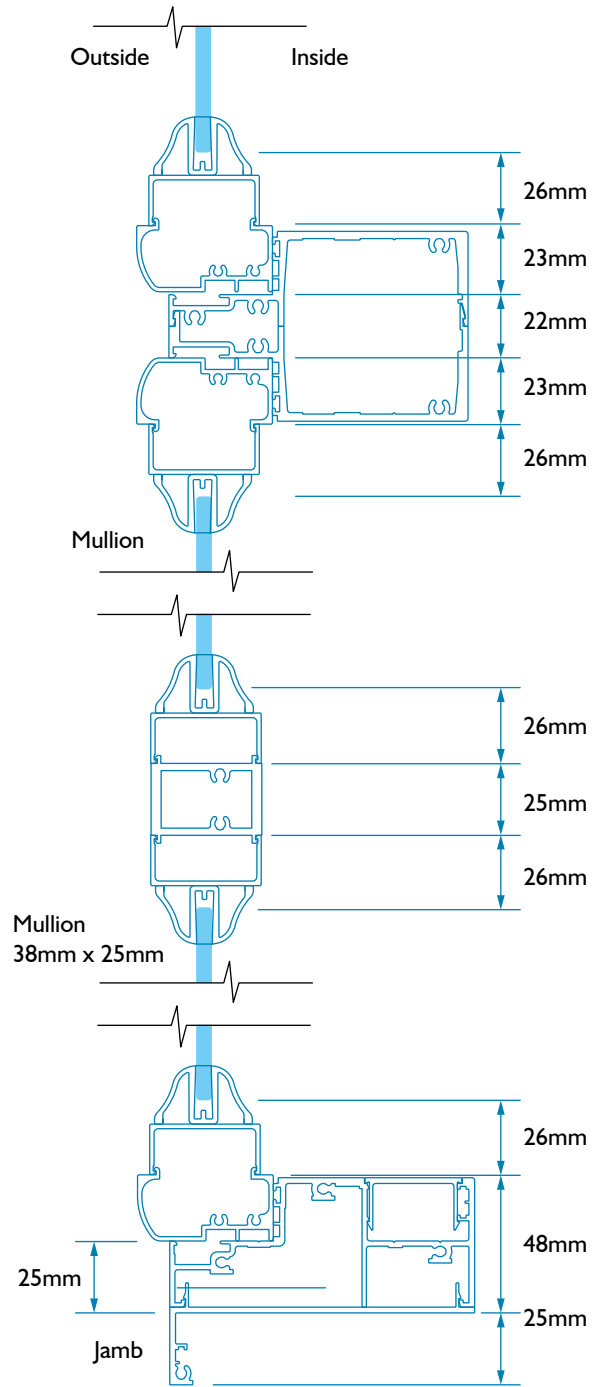
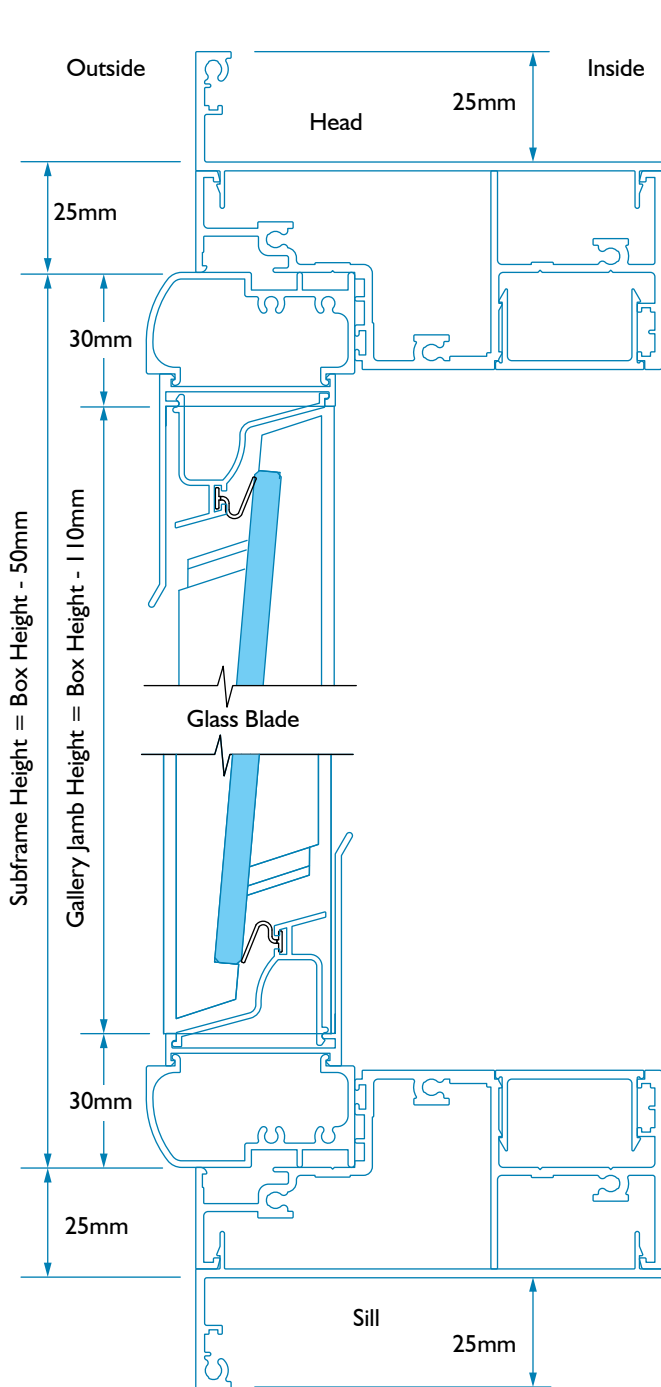
Company:	Fletcher Aluminium
Window System:	New Shop Front 106mm
More info:	www.fletcheraluminium.co.nz
Contact:	0800 551 100

APL Altherm Residential



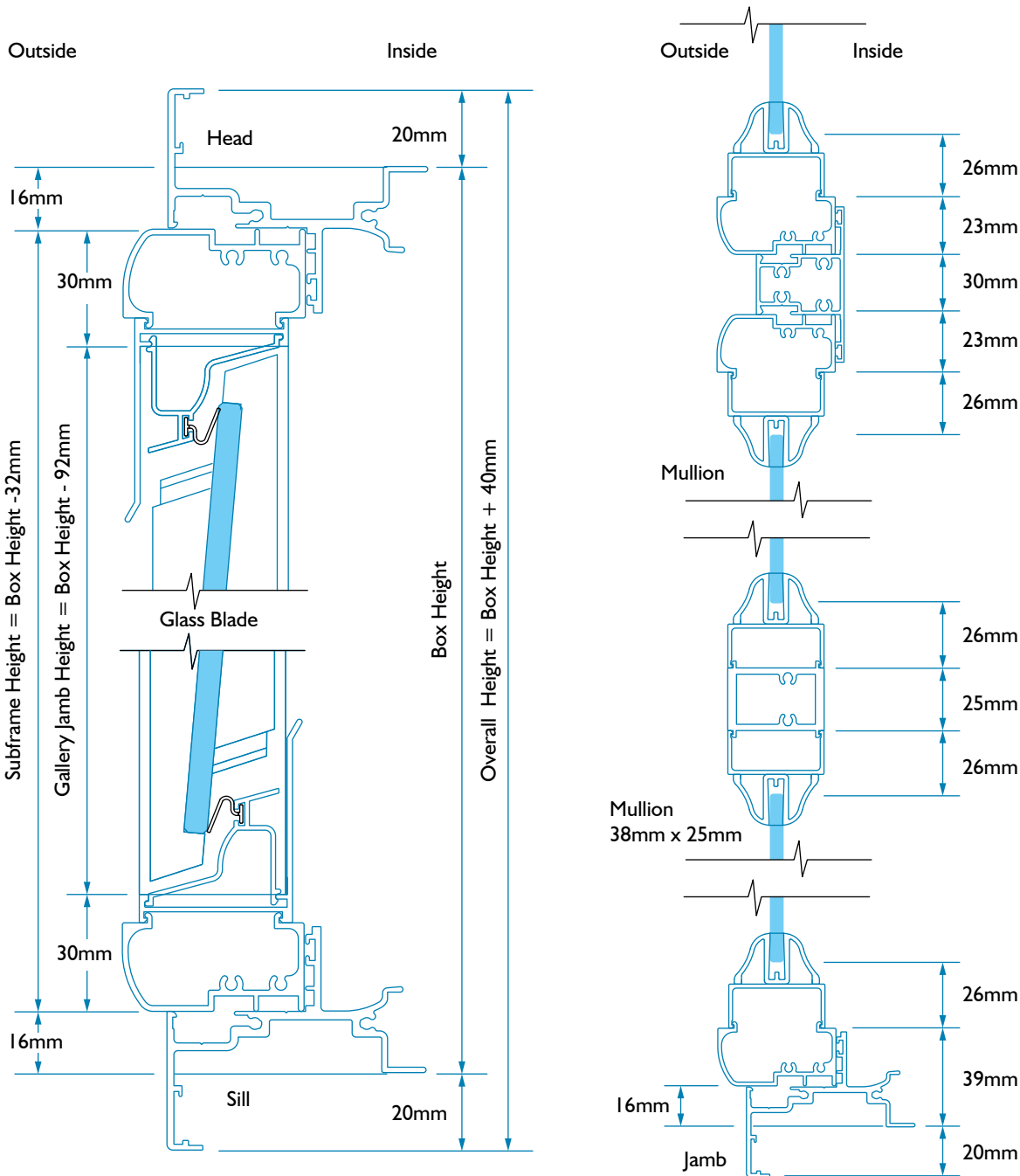
Company:	Architectural Profiles Limited
Window System:	APL Altherm Residential
More info:	www.aplnz.co.nz

APL Architectural Series



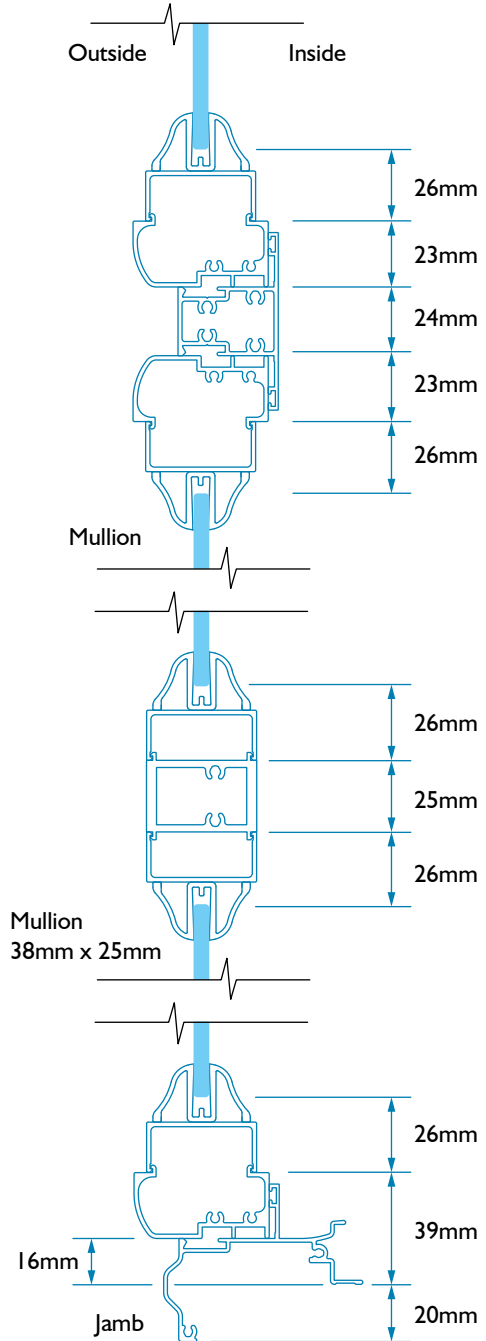
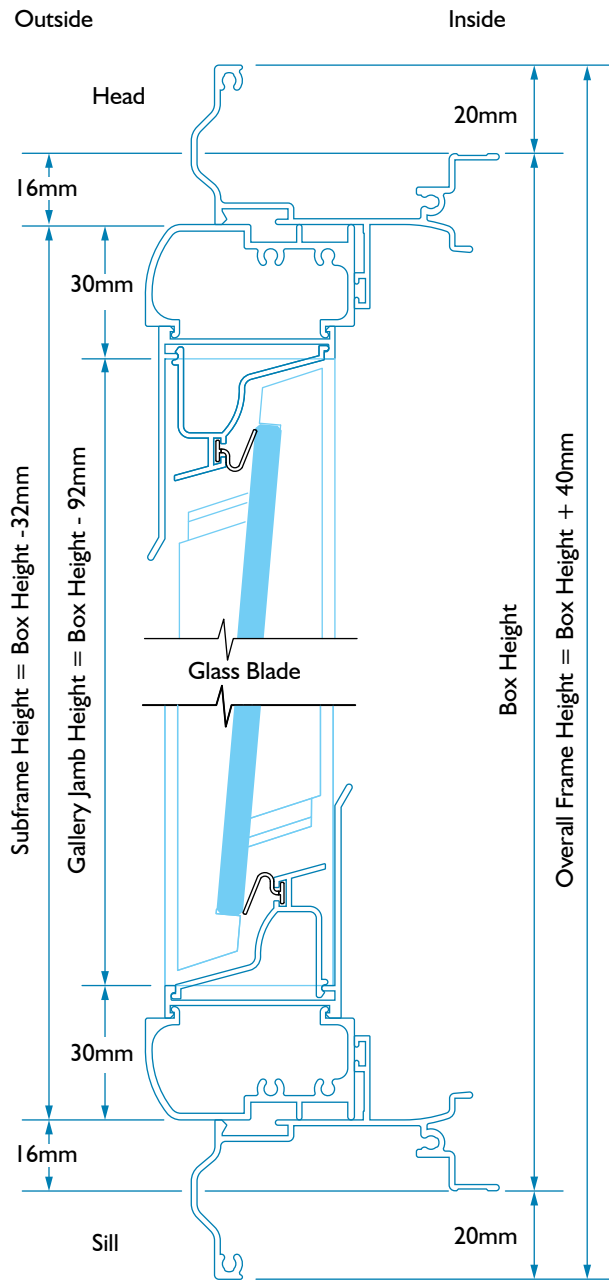
Company:	Architectural Profiles Limited
Window System:	APL Architectural Series
More info:	www.aplnz.co.nz

APL Metro Series



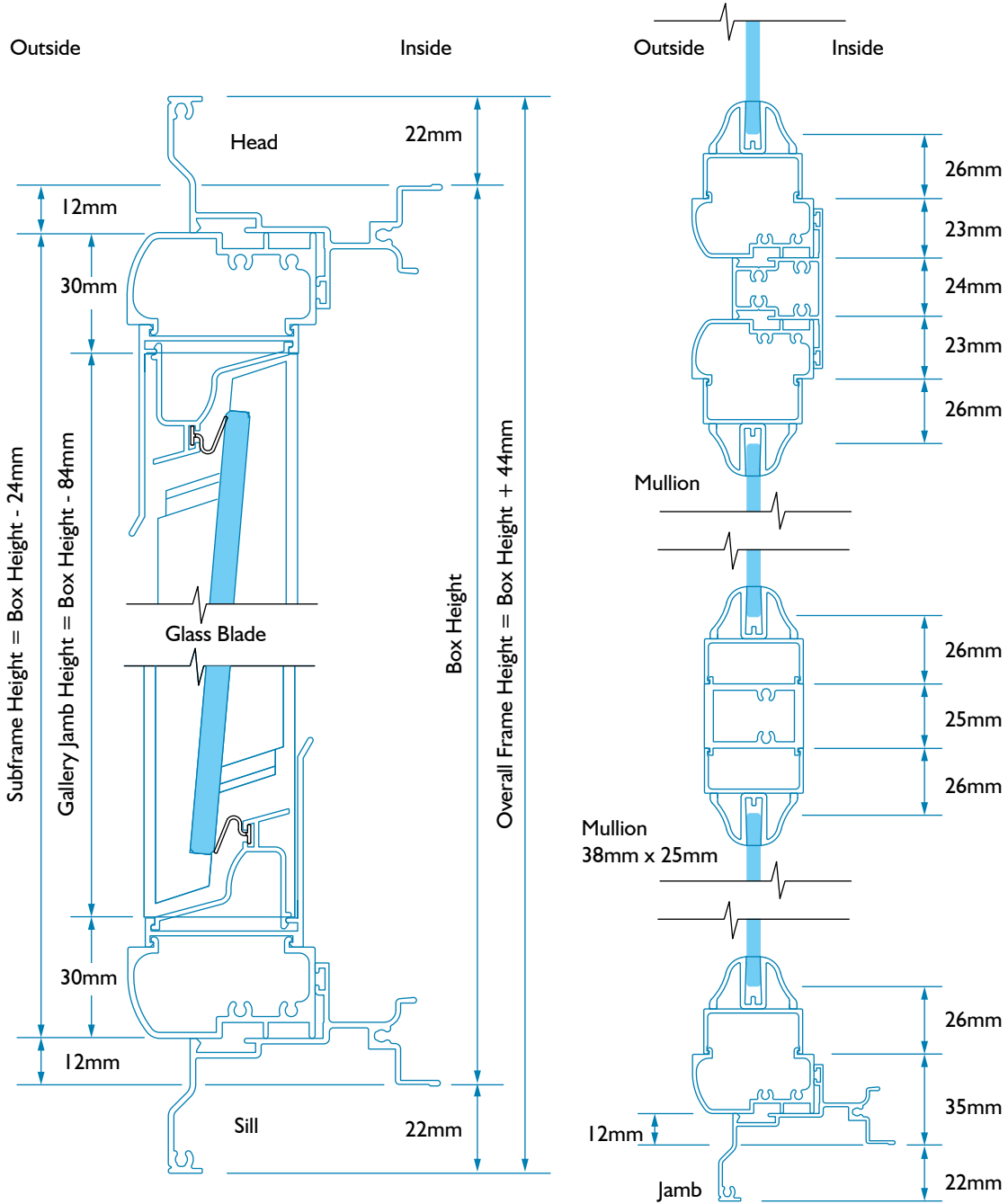
Company:	Architectural Profiles Limited
Window System:	APL Metro Series
More info:	www.aplnz.co.nz

APL First Residential



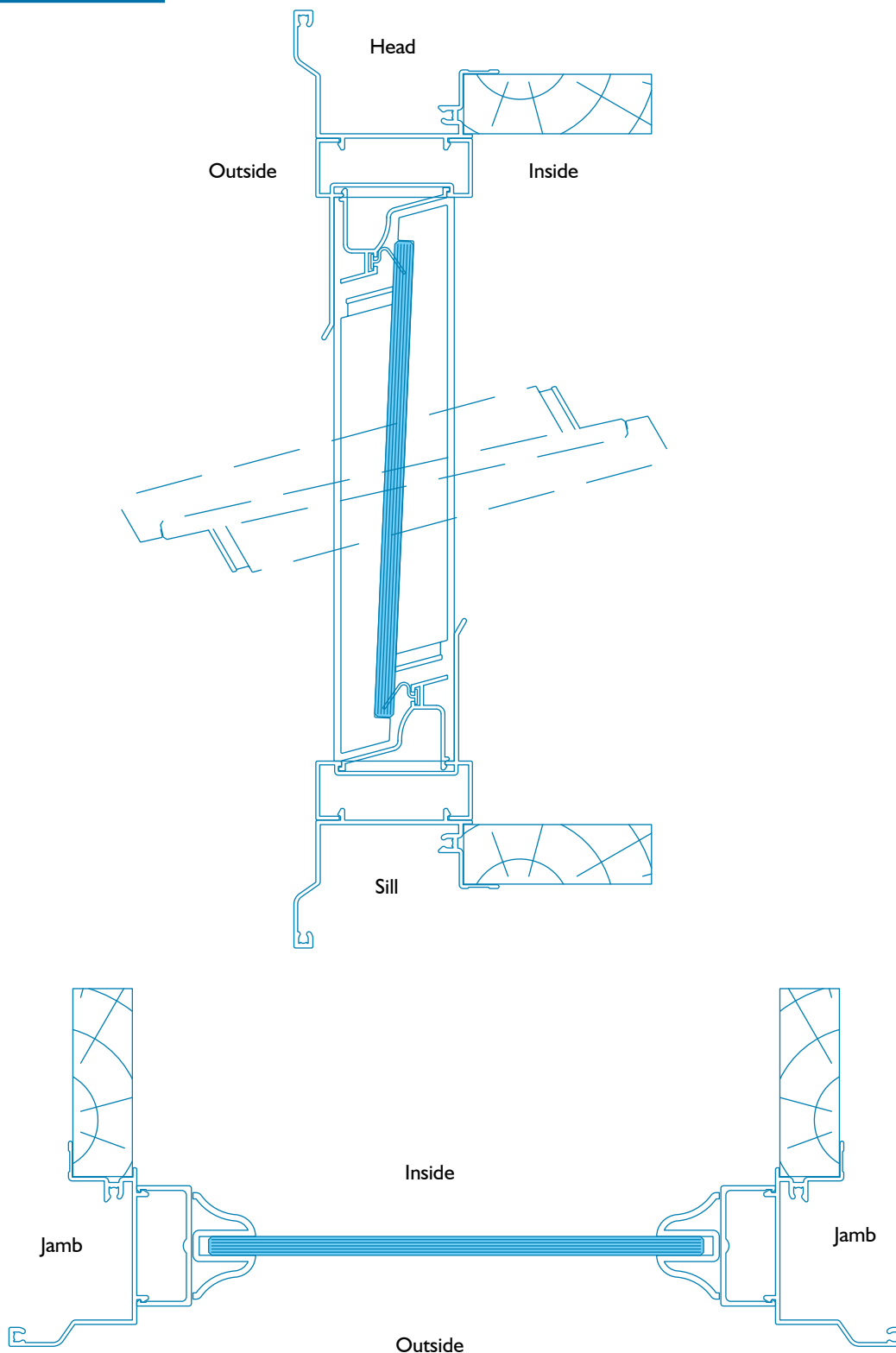
Company:	Architectural Profiles Limited
Window System:	APL First Residential
More info:	www.aplnz.co.nz

APL Vantage Residential



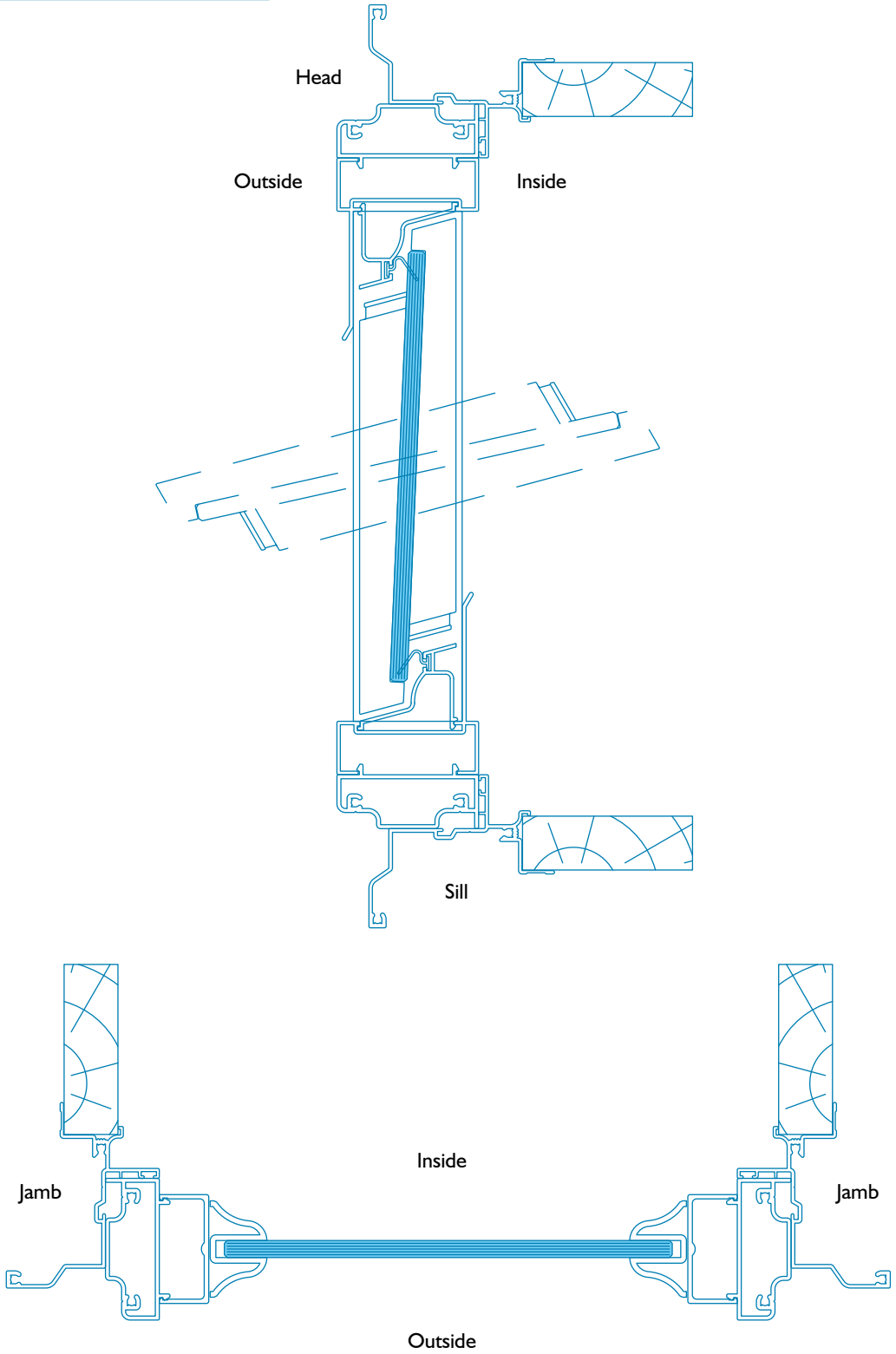
Company:	Architectural Profiles Limited
Window System:	APL Vantage Residential
More info:	www.aplnz.co.nz

Fairview Altair Louvre



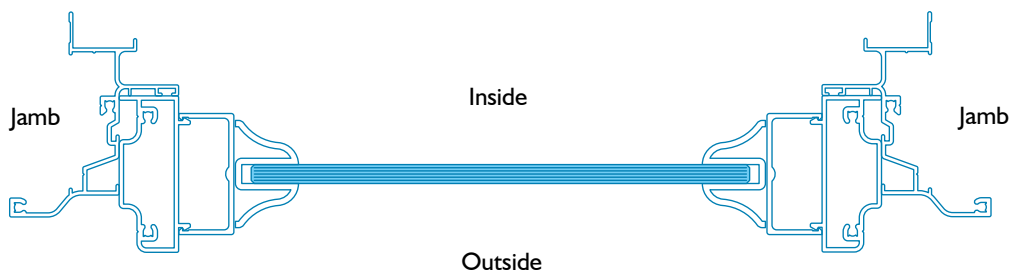
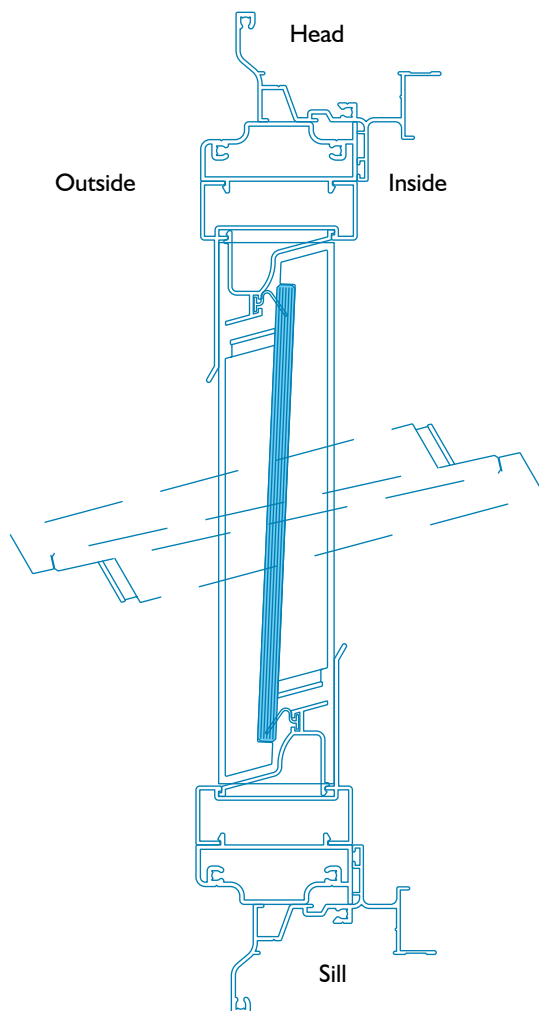
Company:	Fairview Systems Limited
Window System:	Fairview Altair Louvre
More info:	www.fabtech.co.nz
Contact:	customerservices@fairviewgroup.co.nz

Fairview Altair Louvre Insert Frame



Company:	Fairview Systems Limited
Window System:	Fairview Altair Louvre
More info:	www.fabtech.co.nz
Contact:	customerservices@fairviewgroup.co.nz

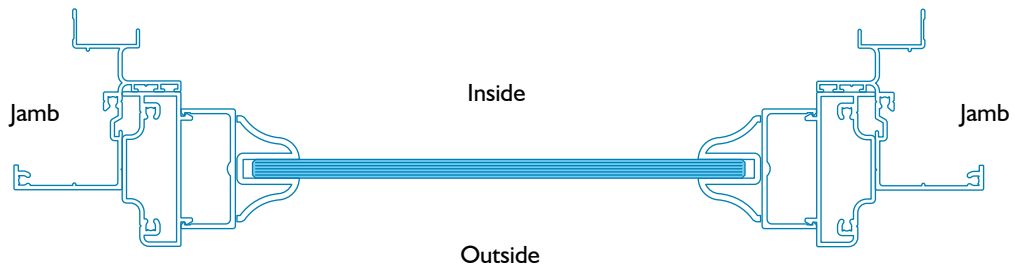
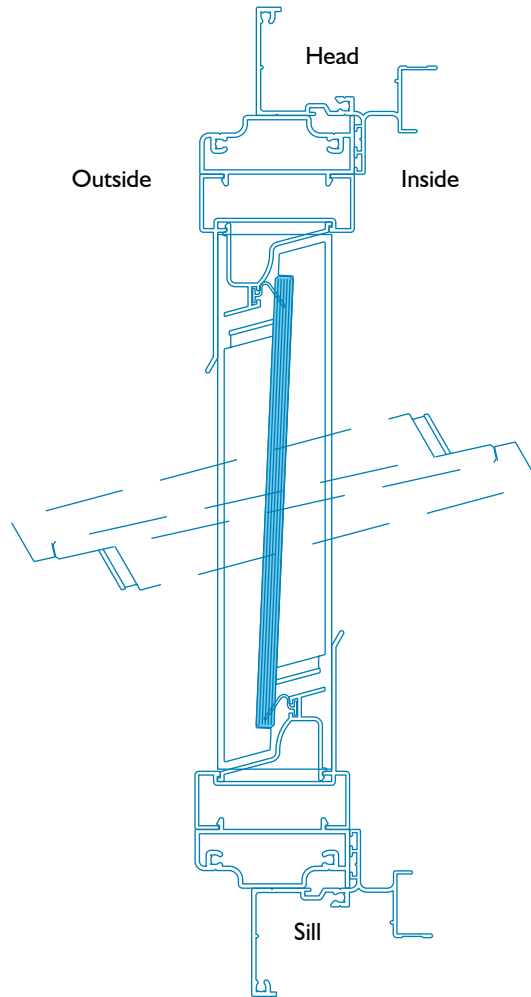
Fairview Classic



Company:
Window System:
More info:
Contact:

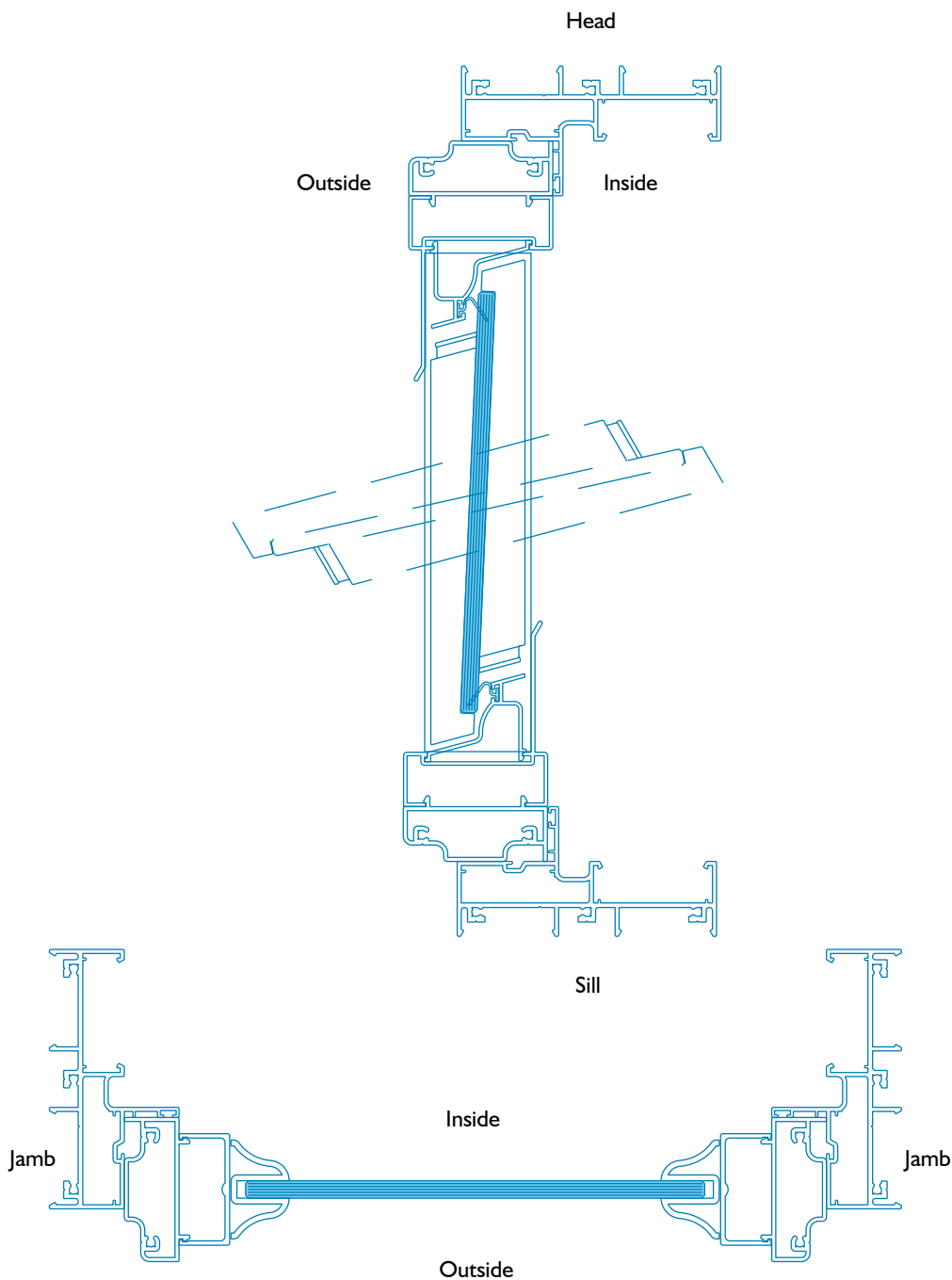
Fairview Systems Limited
Fairview Altair Louvre
www.fabtech.co.nz
customerservices@fairviewgroup.co.nz

Fairview Architectural Linear 35



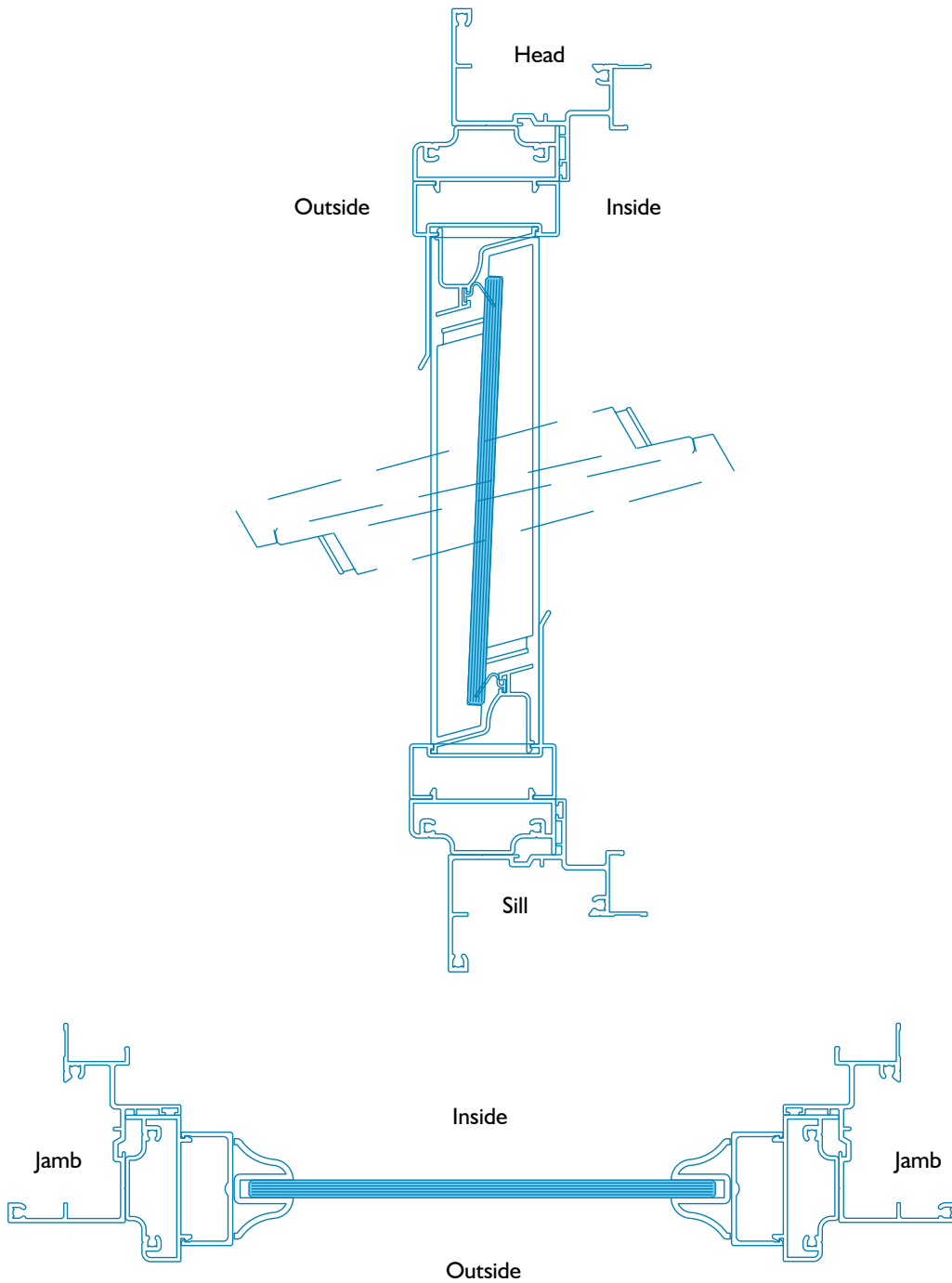
Company:	Fairview Systems Limited
Window System:	Fairview Altair Louvre
More info:	www.fabtech.co.nz
Contact:	customerservices@fairviewgroup.co.nz

Fairview Architectural Cubic 35



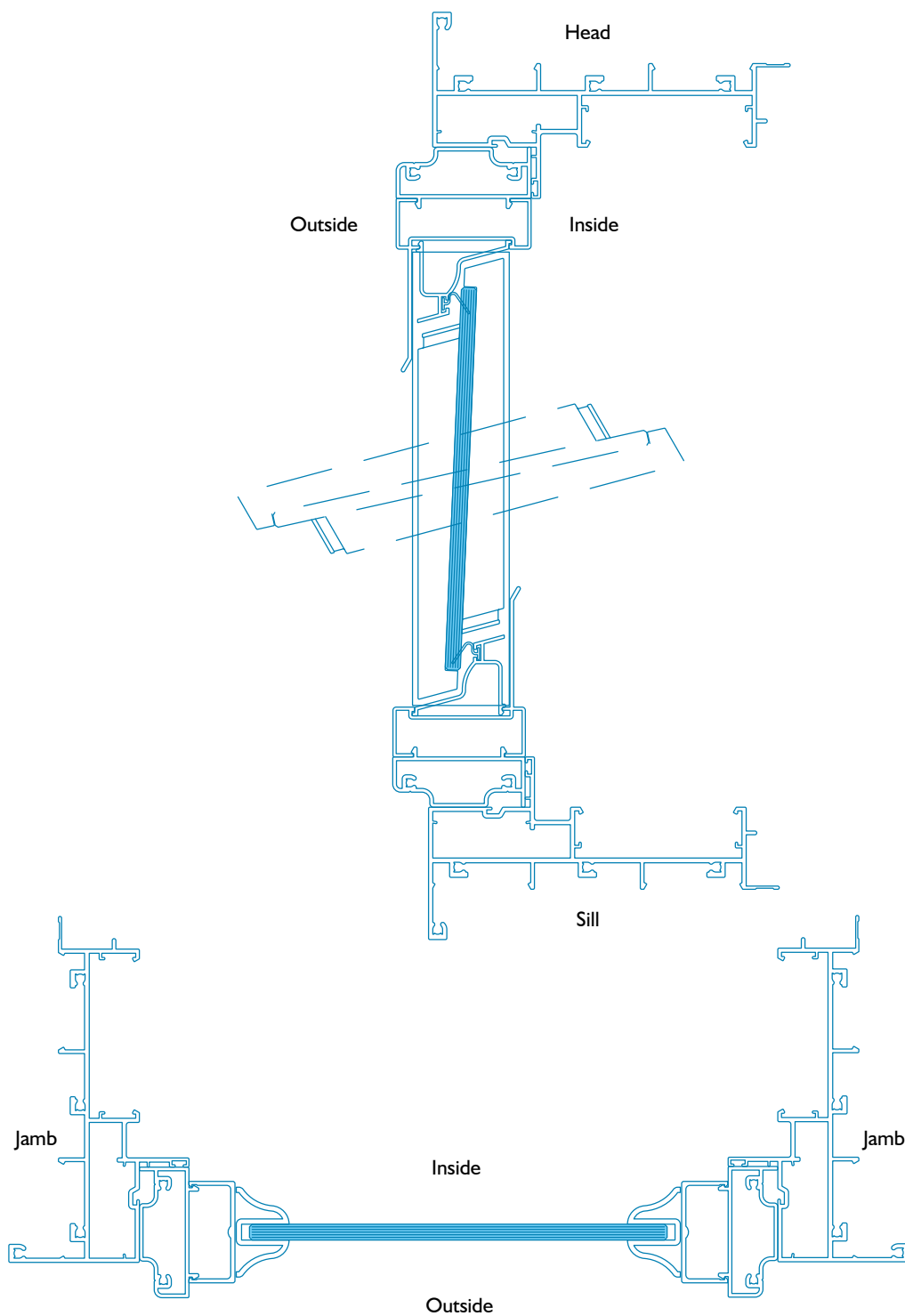
Company:	Fairview Systems Limited
Window System:	Fairview Altair Louvre
More info:	www.fabtech.co.nz
Contact:	customerservices@fairviewgroup.co.nz

Fairview Architectural Linear 40



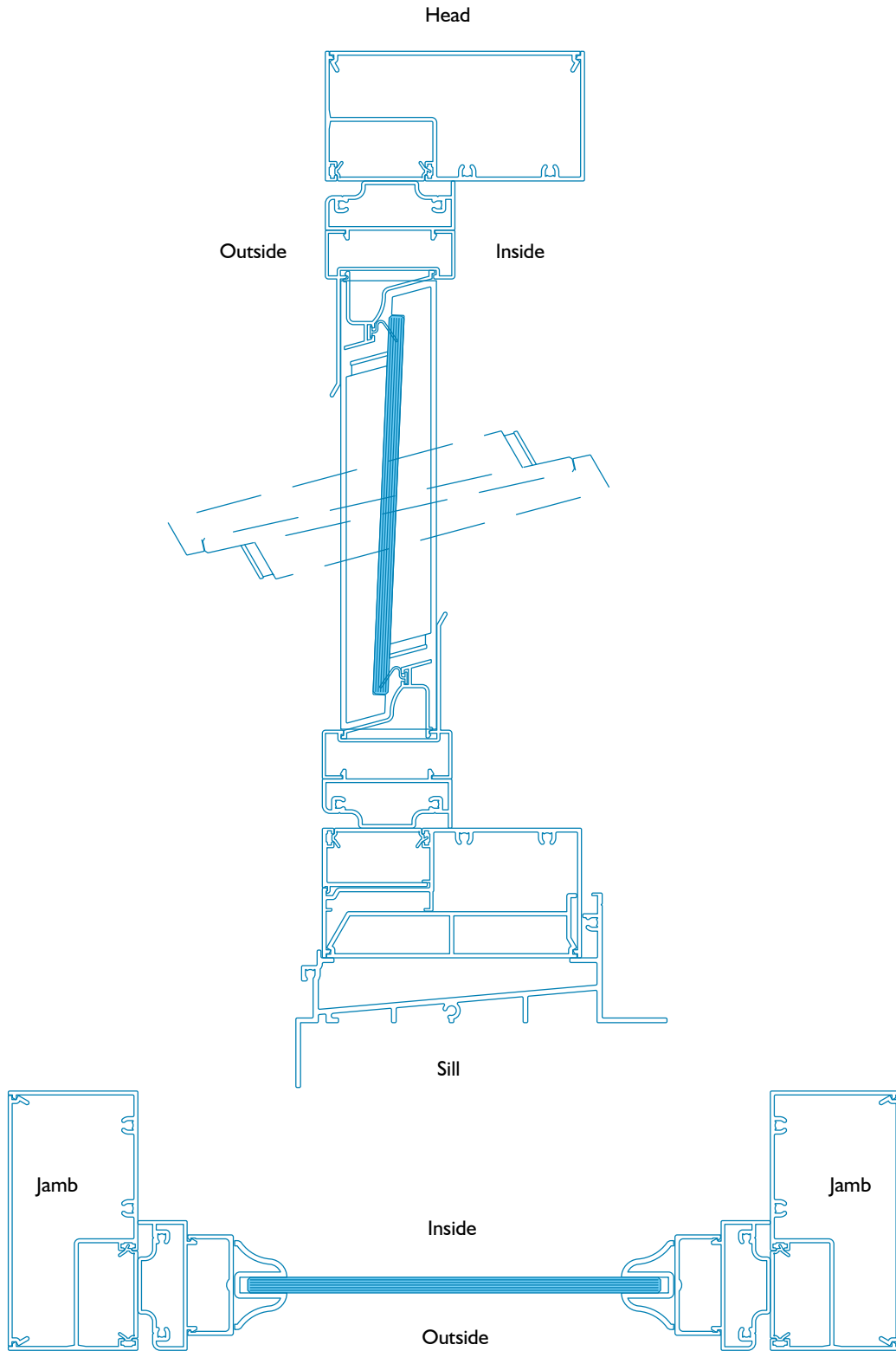
Company:	Fairview Systems Limited
Window System:	Fairview Altair Louvre
More info:	www.fabtech.co.nz
Contact:	customerservices@fairviewgroup.co.nz

Fairview Architectural Cubic 40



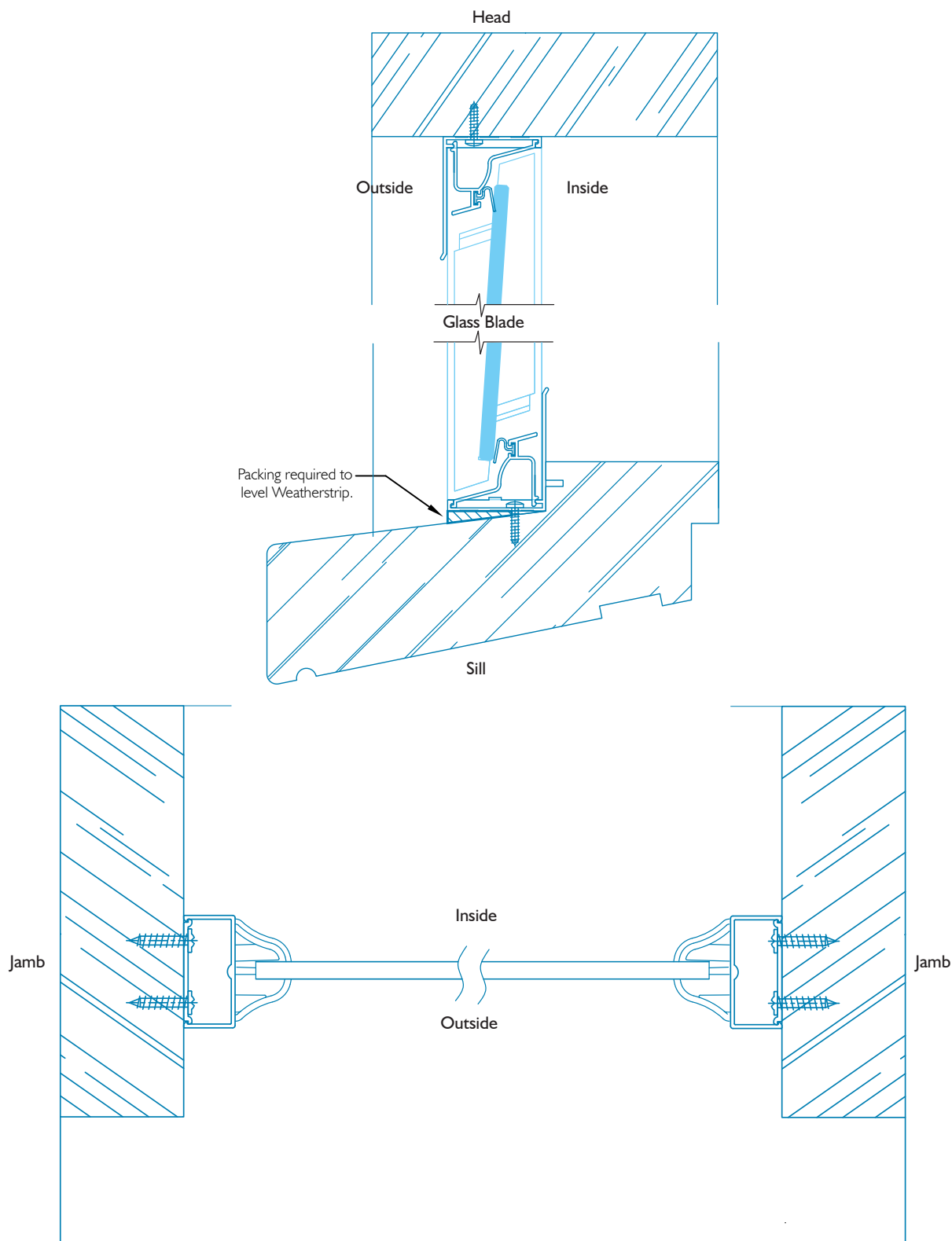
Company:	Fairview Systems Limited
Window System:	Fairview Altair Louvre
More info:	www.fabtech.co.nz
Contact:	customerservices@fairviewgroup.co.nz

Fairview Commercial Front Glaze



Company:	Fairview Systems Limited
Window System:	Fairview Altair Louvre
More info:	www.fabtech.co.nz
Contact:	customerservices@fairviewgroup.co.nz

JMFNZ Timber Frame



Company:	JMF NZ
Window System:	JMF NZ Timber frame using 5000 Sill
More info:	www.jmf.nz
Contact:	manager@jmf.nz

Checklist

REQUIRED INFORMATION viewed from inside	OPTIONAL INFORMATION
■ Gallery Clip Size	■ Left or Right Handed
■ Gallery Height	■ Restricted Opening
■ Gallery Colours	■ Handle Type
■ Manual or Powerlouvre® Galleries	■ Stronghold System
■ Clips & Handle Colour	■ Variable Handle Position/Additional Handles
■ Blade Length & Type	■ Screw Holes (Ref frame, mullion, security type)
■ Weather strip for head & sill	■ Security Bar System
	■ Keylock

Recommended Specification

A tight specification will help to make sure that what you specify ends up in your building thereby achieving your design objectives.

The louvre windows shall be Breezway® Altair® Louvre Windows

- Unique features:
- Patented drainage channels for superior water performance.
 - Patented 'Living Hinge' design that pulls the clips tightly against the channel when closed for superior water performance and air infiltration.
 - Passed testing to 40,000 open/close cycles for long operational life.
 - Passed testing to 15,000 lock/unlock cycles for long operational life.
 - Altair Louvres have passed AS2047 testing at 3,000mm high.

The louvre windows shall be Breezway® Altair® Powerlouvre™ Windows

- Unique features:
- Patented drainage channels for superior water performance.
 - Patented 'Living Hinge' design that pulls the clips tightly against the channel when closed for superior water performance and air infiltration.
 - Motors are concealed within the head of the window frame.
 - Motors are easily accessible for maintenance.
 - Each low voltage motor only requires 0.25 amps to reduce transformer and wiring requirements.
 - Motors can be powered by appropriately specified transformers from any supplier.
 - Available as either a fully assembled window system or as a component system for installation into window fabricator's framing systems.

The louvre windows shall be Breezway® Altair® Louvre Windows with the Stronghold® System

- Unique features:
- Patented drainage channels for superior water performance.
 - Patented 'Living Hinge' design that pulls the clips tightly against the channel when closed for superior water performance and air infiltration.
 - Altair Louvres have passed testing to 40,000 open/close cycles for long operational life.
 - Altair Louvres have passed testing to 15,000 lock/unlock cycles for long operational life.
 - Altair Louvres have passed AS2047 testing at 3,000mm high.
 - Pinned design that mechanically retains blades within the clips to prevent blade dislodgement under human impact.

The louvre windows shall be Breezway® Altair® Powerlouvre™ Windows with the Stronghold® System

- Unique features:
- Patented drainage channels for superior water performance.
 - Patented 'Living Hinge' design that pulls the clips tightly against the channel when closed for superior water performance and air infiltration.
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 - Motors are easily accessible for maintenance.
 - Each low voltage motor only requires 0.25 amps to reduce transformer and wiring requirements.
 - Motors can be powered by appropriately specified transformers from any supplier.
 - Pinned design that mechanically retains blades within the clips to prevent blade dislodgement under human impact.

light · air · space

breezway[®]

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Facsimile: +61 7 3397 8643
Email: sales@breezway.com.au
Website: www.breezway.com.au

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42200 Klang,
Selangor Darul Ehsan,
Malaysia.
Reg# 601783-T
Telephone: +60 3 3291 4885
Facsimile: +60 3 3291 9887
Email: malaysiasales@breezway.com
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Facsimile: 808 484 5959
Email: hawaiisales@breezway.com
Website: www.breezway.com/hawaii

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altair[®] louvres
by breezway

powerlouvre[®]
by breezway



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