

DESIGN MANUAL

BREEZWAY LOUVRE WINDOWS

breezway[®]
A JELD-WEN Company

Breezway Altair® General Information

Product Performance Warranty: Easyscreen™ Window Systems	1
Product Performance Warranty: Slimline™ Window Systems	2
Product Performance Warranty: ios™ Window Systems (Available in Philippines Only)	3
Product Performance Warranty: Altair® Component System	4
Warranty	5
Care And Maintenance	6
Selecting The Right Aluminium Finish	7
Energy Efficiency	8
Airborne Sound Isolation	8
Altair® Louvres	9
Breezway Altair® Louvre Systems	9
Altair® Louvre Gallery Features	10
Off Standard Louvre Gallery Heights (Extended Channel)	10
Handles	11
Standard Handle Positions: Altair® 152mm Louvre	13
Standard Handle Positions: Altair® 102mm Louvre	15
Extruded Aluminium Blades	17



Breezway Altair® Louvre Window Systems

Altair® Louvre Window Systems	18
Altair® Easyscreen™ Window Systems	19
Easyscreen™ Louvre	20
Window System Dimensions	20
Easyscreen™ Fixed Lite	20
Window System Dimensions	20
Easyscreen™ Window System Accessories	20
Slimline™ Window System	21
Slimline™ Window System Dimensions	21
ios™ Window System (Philippines Only)	22
ios™ Window System Dimensions	22
Standard Heights	23
Size Range	24
Extension Blade Dimensions	24
Maximum Bay Widths For Standard Sizes	25
Altair® Powerlouvre™ Window	26
Powerlouvre™ Window Operating Condition	27
Powerlouvre™ Window Opening Configurations	27
Powerlouvre™ Window Maintenance	27
Electrical Requirements	28
Breezway Transformer	28
Controlling Powerlouvre™ Windows	29
Powerlouvre™ Apptivate™ Control Unit	29
Apptivate™ Control Unit Standard Wiring	32
Building Management System Compatibility	33
Cabling Requirements	33
Easyscreen™ Powerlouvre™ Window Sizes	34
Window System Checklist	35
Recommended Specifications	35



Breezway Altair® Stronghold® System

Altair® Louvres with the Stronghold™ System (Available in Malaysia Only)	37
Blade Type Compatibility	38
Powerlouvre™ Compatibility	38
Maintenance.	38
Compliance With Balustrading Requirements.	38
Window Sizes	38
Recommended Specifications	39

Breezway Altair® Louvres for other Frames

Altair® For Other Frames	40
Altair® Louvre Component System	40
Standard Height Louvre Weatherstrip	41
Off Standard Height Weatherstrip	41
Standard Heights	42
Blade Formulas	43
Fixed Louvre	44
Altair® Mullions	45
Altair® Louvres For Other Frames Checklist	46
Altair® Louvre Window Recommended Specification	46
Installation Instructions	47



Product Performance Warranty: Easyscreen™ Window Systems

The following table outlines the maximum variations that Breezway will warrant per wind pressure. Exceeding these constraints will void this Warranty. The limitations have been generated through Australian Standard AS2047 test results generated in a National Association of Testing Authorities (NATA) approved testing laboratory and over 60 years of experience manufacturing louvre windows. The design constraints below only apply to product sold as a fully assembled Louvre Window System with Altair® Aluminium Blades or glass blades to Breezway's specifications that is maintained according to the Breezway "Louvre Care and Maintenance" instructions.

For commercial applications, please consult Breezway with your specific project requirements.

	Wind Speed		Wind Speed		Wind Speed	
	Design ¹	Ultimate ²	Design ¹	Ultimate ²	Design ¹	Ultimate ²
	<ul style="list-style-type: none"> • 1000Pa • 41m/sec • 146km/h • 91mph 	<ul style="list-style-type: none"> • 1500Pa • 50m/sec • 180km/h • 111mph 	<ul style="list-style-type: none"> • 1500Pa • 50m/sec • 180km/h • 111mph 	<ul style="list-style-type: none"> • 2300Pa • 61m/sec • 222km/h • 138mph 	<ul style="list-style-type: none"> • 2200Pa • 60m/sec • 218km/h • 135mph 	<ul style="list-style-type: none"> • 3000Pa • 70m/sec • 254 km/h • 158mph
	200Pa Water Pass		200Pa Water Pass		300Pa Water Pass	
	Max Blade Length ³	Max Window Height	Max Blade Length ³	Max Window Height	Max Blade Length ³	Max Window Height
Easyscreen Louvre Window System Single Bay						
152mm Altair Louvre	900	3031	750	3031	600	2471
102mm Altair Louvre	750	3061	750	3061	600	2521
Easyscreen Louvre Window System with the Stronghold System⁴ (Malaysia Only)						
152mm Toughened Glass	1127	2191	1127	2191	-	-
Easyscreen Louvre Window System Multiple Bays (maximum bay widths as per single bay windows)						
Easyscreen Mullion	-	3061	-	3061	-	2521
Easyscreen Louvre Window System Multiple Windows (coupled vertically)*						
Easyscreen Coupler	-	3061	-	3061	-	2521

*For horizontal coupling please consult Breezway.

Note:

1. Design Wind Speed = Serviceability Limit State Wind Pressure / Design Wind Pressure / Permissible Stress. The ability of the window to perform the intended function under normal service conditions avoiding excessive deflection or the appearance of buckling.
2. Ultimate Wind Speed = Ultimate Limit State Wind Pressure / Ultimate Strength Pressure. The maximum load carrying resistance of the window. Subjecting the window to wind pressures in excess of the Ultimate Wind Speed is likely to result in the window collapsing.
3. Maximum blade lengths apply regardless of whether annealed glass, toughened glass or aluminium blades are used. Glass blades must be 6mm thick and straight and flat within 0.35mm/m.
4. Using the Stronghold System for 152mm blade lengths greater than 900mm The Stronghold System is an optional feature of the Altair Louvre Window which mechanically fixes the blades into the clips. These mechanical fixings enable bay widths of up to 1200mm to be achieved in some regions. In other regions, the ULS and Water Pass requirements of AS2047-2014 prevent these wider bay widths from being warranted. Easyscreen, or Altair Component System High Profile Sills and standard heights are required.

Product Performance Warranty: Slimline™ Window Systems

The following table outlines the maximum variations that Breezway will warrant per wind pressure. Exceeding these constraints will void this Warranty. The limitations have been generated through Australian Standard AS2047 test results generated in a National Association of Testing Authorities (NATA) approved testing laboratory and over 60 years of experience manufacturing louvre windows. The design constraints below only apply to product sold as a fully assembled Louvre Window System with Altair® Aluminium Blades or glass blades to Breezway's specifications that is maintained according to the Breezway "Louvre Care and Maintenance" instructions.

For commercial applications, please consult Breezway with your specific project requirements.

	Wind Speed		Wind Speed		Wind Speed	
	Design ¹	Ultimate ²	Design ¹	Ultimate ²	Design ¹	Ultimate ²
	<ul style="list-style-type: none">• 1000Pa• 41m/sec• 146km/h• 91mph	<ul style="list-style-type: none">• 1500Pa• 50m/sec• 180km/h• 111mph	<ul style="list-style-type: none">• 1500Pa• 50m/sec• 180km/h• 111mph	<ul style="list-style-type: none">• 2300Pa• 61m/sec• 222km/h• 138mph	<ul style="list-style-type: none">• 2200Pa• 60m/sec• 218km/h• 135mph	<ul style="list-style-type: none">• 3000Pa• 70m/sec• 254 km/h• 158mph
	150Pa Water Pass		200Pa Water Pass		200Pa Water Pass	
	Max Blade Length ³	Max Window Height	Max Blade Length ³	Max Window Height	Max Blade Length ³	Max Window Height
Slimline Louvre Window System Single Bay						
152mm Altair Louvre	900	3005	750	3005	600	2445
102mm Altair Louvre	750	3035	750	3035	600	2495
Slimline Window System Multiple Bays (maximum bay widths as per single bay windows)						
Medium Duty (38 x 25) Mullion	-	1430	-	1320	-	1250
Slimline Louvre Window System Multiple Windows (coupled vertically)*						
Slimline Coupler	-	1451	-	1340	-	1261

*For horizontal coupling please consult Breezway.

Note:

1. Design Wind Speed = Serviceability Limit State Wind Pressure / Design Wind Pressure / Permissible Stress. The ability of the window to perform the intended function under normal service conditions avoiding excessive deflection or the appearance of buckling.
2. Ultimate Wind Speed = Ultimate Limit State Wind Pressure / Ultimate Strength Pressure. The maximum load carrying resistance of the window. Subjecting the window to wind pressures in excess of the Ultimate Wind Speed is likely to result in the window collapsing.
3. Maximum blade lengths apply regardless of whether annealed glass, toughened glass or aluminium blades are used. Glass blades must be 6mm thick and straight and flat within 0.35mm/m.

Product Performance Warranty: ios™ Window Systems (Available in Philippines Only)

The following table outlines the maximum variations that Breezway will warrant per wind pressure. Exceeding these constraints will void this Warranty. The limitations have been generated through Australian Standard AS2047 test results generated in a National Association of Testing Authorities (NATA) approved testing laboratory and over 60 years of experience manufacturing louvre windows. The design constraints below only apply to product sold as a fully assembled Louvre Window System with Altair® Aluminium Blades, Altair Timber Blades or glass blades to Breezway's specifications that is maintained according to the Breezway "Louvre Care and Maintenance" instructions.

For commercial applications, please consult Breezway with your specific project requirements.

	Wind Speed		Wind Speed		Wind Speed	
	Design ¹	Ultimate ²	Design ¹	Ultimate ²	Design ¹	Ultimate ²
	<ul style="list-style-type: none"> • 1000Pa • 41m/sec • 146km/h • 91mph 	<ul style="list-style-type: none"> • 1500Pa • 50m/sec • 180km/h • 111mph 	<ul style="list-style-type: none"> • 1500Pa • 50m/sec • 180km/h • 111mph 	<ul style="list-style-type: none"> • 2300Pa • 61m/sec • 222km/h • 138mph 	<ul style="list-style-type: none"> • 2200Pa • 60m/sec • 218km/h • 135mph 	<ul style="list-style-type: none"> • 3000Pa • 70m/sec • 254 km/h • 158mph
	200Pa Water Pass		200Pa Water Pass		300Pa Water Pass	
	Max Blade Length ³	Max Window Height	Max Blade Length ³	Max Window Height	Max Blade Length ³	Max Window Height
ios Louvre Window System Single Bay						
152mm Altair Louvre	900	3031	750	3031	600	2471
102mm Altair Louvre	750	3061	750	3061	600	2521
ios Louvre Window System Multiple Bays (maximum bay widths as per single bay windows)						
ios Mullion	-	3061	-	3061	-	2521
ios Louvre Window System Multiple Windows (coupled vertically)*						
ios Coupler	-	3061	-	3061	-	2521

*For horizontal coupling please consult Breezway.

Note:

1. Design Wind Speed = Serviceability Limit State Wind Pressure / Design Wind Pressure / Permissible Stress. The ability of the window to perform the intended function under normal service conditions avoiding excessive deflection or the appearance of buckling.
2. Ultimate Wind Speed = Ultimate Limit State Wind Pressure / Ultimate Strength Pressure. The maximum load carrying resistance of the window. Subjecting the window to wind pressures in excess of the Ultimate Wind Speed is likely to result in the window collapsing.
3. Maximum blade lengths apply regardless of whether annealed glass, toughened glass, aluminium or timber blades are used. Glass blades must be 6mm thick and straight and flat within 0.35mm/m.

Product Performance Warranty: Altair® Component System

The following table outlines the maximum variations that Breezway will warrant per wind pressure. Exceeding these constraints will void this Warranty. The limitations have been generated through Australian Standard AS2047 test results generated in a National Association of Testing Authorities (NATA) approved testing laboratory and over 60 years of experience manufacturing louvre windows. The design constraints below only apply to Altair Component Systems with Altair Aluminium Blades or glass blades to Breezway's specifications that are maintained according to the Breezway "Louvre Care and Maintenance" instructions.

	Wind Speed		Wind Speed		Wind Speed	
	Design ¹	Ultimate ²	Design ¹	Ultimate ²	Design ¹	Ultimate ²
	• 1000Pa • 41m/sec • 146km/h • 91mph	• 1500Pa • 50m/sec • 180km/h • 111mph	• 1500Pa • 50m/sec • 180km/h • 111mph	• 2300Pa • 61m/sec • 222km/h • 138mph	• 2200Pa • 60m/sec • 218km/h • 135mph	• 3000Pa • 70m/sec • 254 km/h • 158mph
	150Pa Water Pass		200Pa Water Pass		200Pa Water Pass	
	Max Blade Length ³	Max Louvre Height	Max Blade Length ³	Max Louvre Height	Max Blade Length ³	Max Louvre Height
Altair Component System Single Bay						
152mm Altair Louvre	900	2990	750	2990	600	2430
102mm Altair Louvre	750	3020	750	3020	600	2480
Mullion Type ⁵		Max Mullion Height		Max Mullion Height		Max Mullion Height
Mullionstrip	-	1307	-	1141	-	1080
Medium Duty Mullion (38 x 25)	-	1452	-	1346	-	1274

Note:

Max Louvre Heights include top and bottom Altair Weatherstrips.

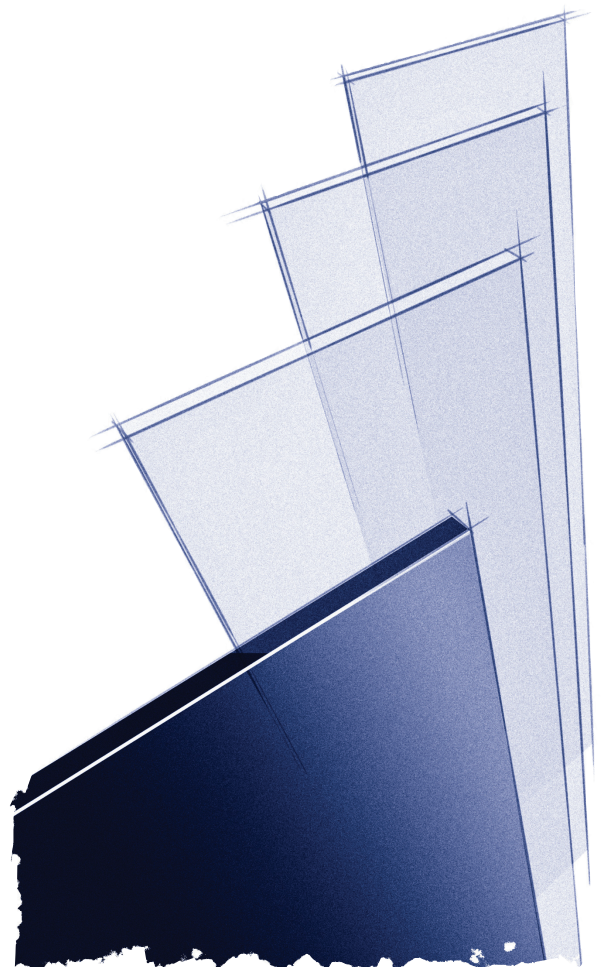
- Design Wind Speed = Serviceability Limit State Wind Pressure / Design Wind Pressure / Permissible Stress. The ability of the window to perform the intended function under normal service conditions avoiding excessive deflection or the appearance of buckling.
- Ultimate Wind Speed = Ultimate Limit State Wind Pressure / Ultimate Strength Pressure. The maximum load carrying resistance of the window. Subjecting the window to wind pressures in excess of the Ultimate Wind Speed is likely to result in the window collapsing.
- Maximum blade lengths apply regardless of whether annealed glass, toughened glass or aluminium blades are used. Glass blades must be 6mm thick and straight and flat within 0.35mm/m.
- Using the Stronghold System for 152mm blade lengths greater than 900mm The Stronghold System is an optional feature of the Altair Louvre Window which mechanically fixes the blades into the clips. These mechanical fixings enable bay widths of up to 1200mm to be achieved in some regions. In other regions, the ULS and Water Pass requirements of AS2047-2014 prevent these wider bay widths from being warranted. Easyscreen, or Altair Component System High Profile Sills and standard heights are required.
- Heavy Duty Mullions are not available with the Altair Component System. Heavy Duty Mullions can only be used within Breezway Window Systems.
- The Altair Component System Product Performance Warranty is applicable only when Breezway Altair Weatherstrips are used and the system is installed in accordance with Breezway recommended installation procedures.

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 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), toughened and float glass is guaranteed against defects and degradation for three (3) years (if supplied by Breezway).
- f. Moving parts, which wear out as part of normal use, are guaranteed for seven (7) years. All electrical components are guaranteed for three (3) year.
- 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 the local laws.



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.

Louvre Maintenance

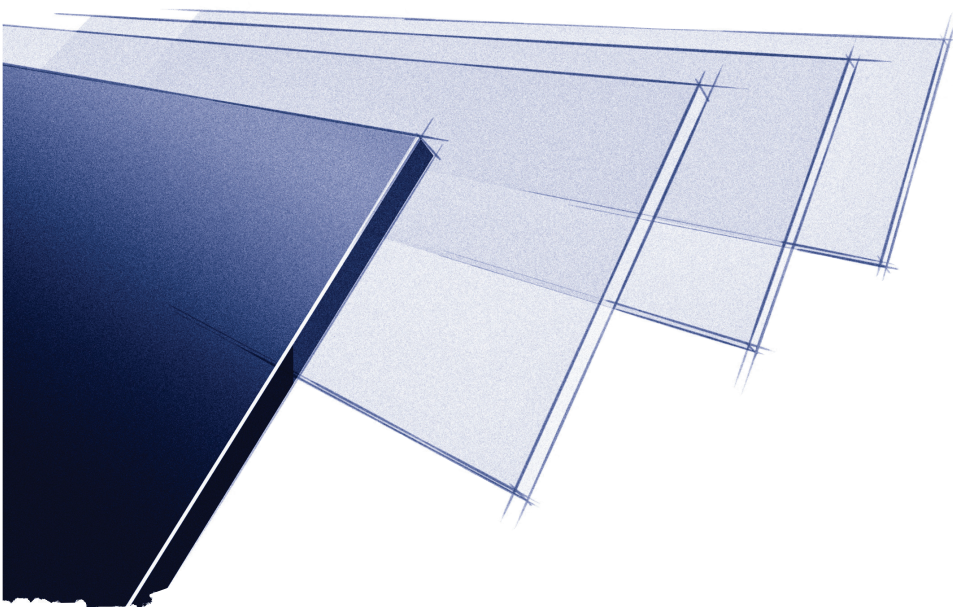
It is recommended that inspection be carried out at the time of installation and then at yearly intervals. This may be required more frequently depending upon the variation of location, and environmental conditions.

Inspection and checks

- Inspect all fittings and screw fixings for firmness.
- Where handle connectors are used, inspect all pivot points of linkages, connecting links, pins and split pins and/or clips for wear and secure fixings.
- 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.



Selecting The Right Aluminium Finish

The aluminium components of Altair® Louvre windows are available in two different surface finishes: anodised or standard powder coating.

Powder coatings are polyester coatings from leading powder suppliers applied to a thickness of 50-80 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 finish for the atmospheric conditions of the site and correct maintenance will be critical to the ongoing appearance of the finish.

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

Product	Film Integrity Warranty	Colour Integrity	Recommended End Use
Powder Coated	10 years	7 years	Residential and Light Commercial to 3 Levels; and more than 100 metres from any salt water or surf line
Anodised – 25 μm	10 years	10 years	Suitable for all environments including: severe, industrial, coastal or tropical environments

Energy Efficiency

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 (88°) 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 can be used to meet local requirements. For example, toned glass blades reduce the amount of hot sunlight that enters a building and the improved insulating properties of low e glass blades offer thermal performance comparable to clear double glazing.

Energy ratings of most windows sold in Australia can be found in the Window Energy Rating Scheme (WERS) website, www.wers.net. In Southeast Asia's warm, tropical climate the shading offered by tinted glass or aluminium blades will reduce the solar heat gain through those windows thereby reducing the temperatures within a building. Clear low e glass can similarly reduce the solar heat gain when clear glass is preferred. Low e glass blades offer insulating properties similar to those achieved by windows with clear double glazing.

Airborne Sound Isolation

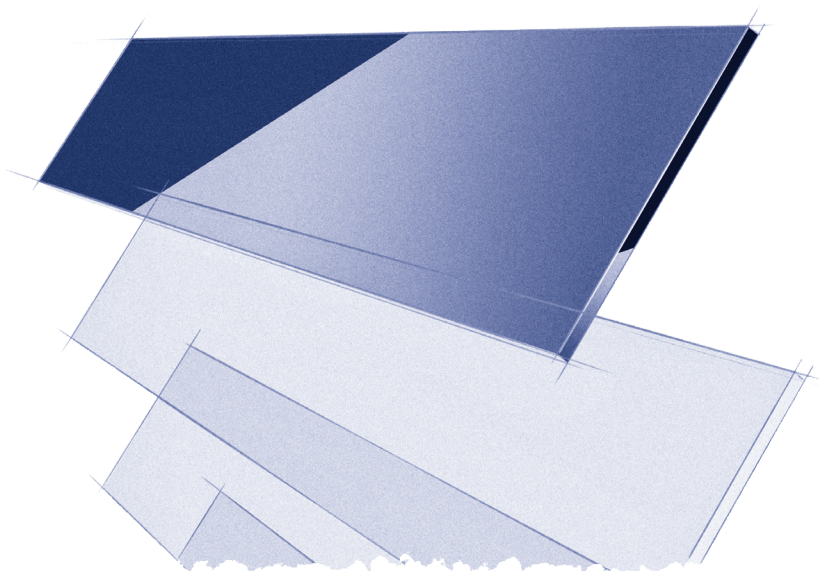
The Altair Louvre window system has been field tested for sound transmission loss.

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.

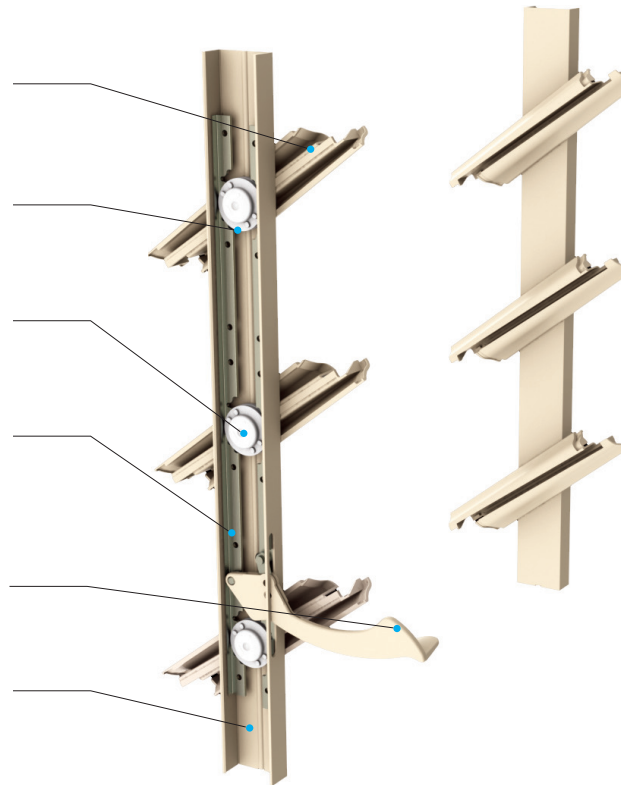
The results of these field tests gave the following sound transmission loss.

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



Altair® Louvres

- 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.
- For long and maintenance free use the operating & over centre locking mechanisms are manufactured from non-corrosive material, including all rivets and fasteners.
- 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.
- 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.
- 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. Handles and operating bars are supplied to one side only.
- The Altair Louvre channel is made from 6060-T5 extruded aluminium.



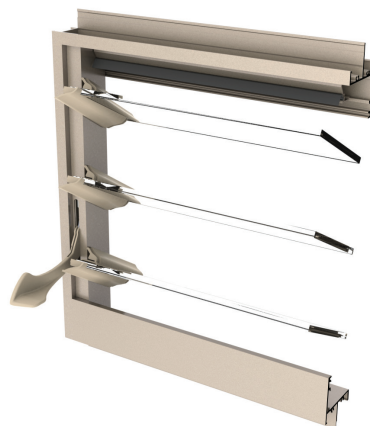
Breezway Altair® Louvre Systems

Altair Louvres are available in either the fully integrated Easyscreen™ Window System, the Slimline™ Window System or a Component System for other frames.



Louvre Window System

Altair Powerlouvre in a Breezway Easyscreen™ Frame.
(ex. Australia)



Louvre Window System

Altair Louvres in a Breezway Easyscreen or Breezway Slimline Frame.



Louvre Component System

Altair Louvres used in other Framing System.

Altair® Louvre Gallery Features

Gallery Type Options

- Single Operating Mechanism
- Powerlouvre™ (only available in the Easyscreen Window System)
- The Stronghold™ System (Malaysia Only)

“Standard” Inclusions

- Handle control: Left; single operating (viewed from inside);
- Standard Handle;
- Standard Heights;
- Clips: Suit 6mm or 14mm blades;
- Screw Holes: With or without.

“Off Standard” Features Available

- Handle Control: Right, single operating (viewed from inside);
- Low Profile Handle;
- Additional Handle or Variable Handle: e.g. 8 Blade with two handles;
- Inside Screen Handle;
- Ring Handle (A13);
- Remote Control Handles: Single control (A2) or dual control (A6).

Off Standard Louvre Gallery Heights (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.

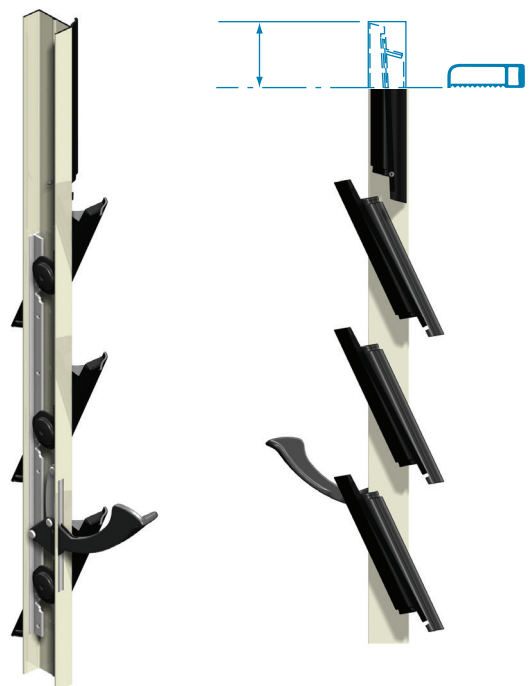
The Louvre is supplied with an Extended Channel that can be cut back to the required height. Note that the part to be cut down is located at the top of the gallery.

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.

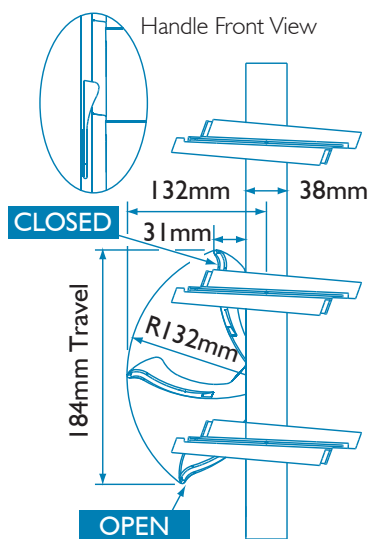
Off-standard heights that are not within 5mm of a standard height will be fitted with a top fixed blade.

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

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

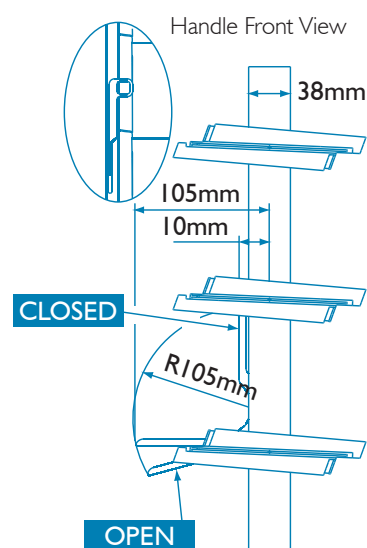


Handles



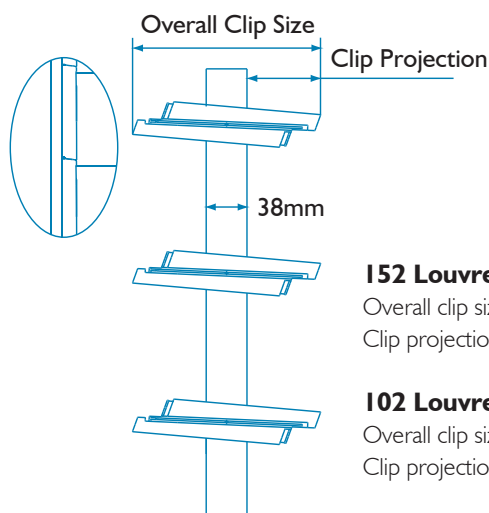
Standard Handle

- Acetal handle
- Ergonomic design for comfortable use



Low Profile Handle

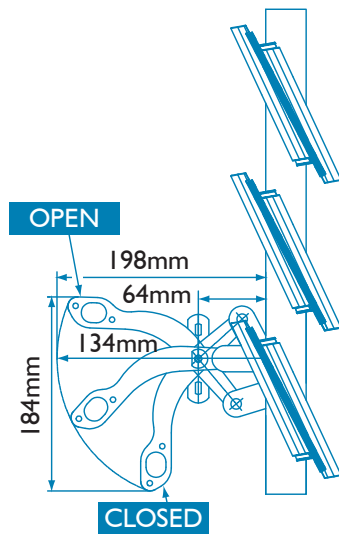
- Stainless steel handle
- Substitute for Standard Handle when inserting into bi-folding & sliding door panels



Powerlouvre™ Gallery*

- Concealed motors and connectors for use with Remote Window Control Systems

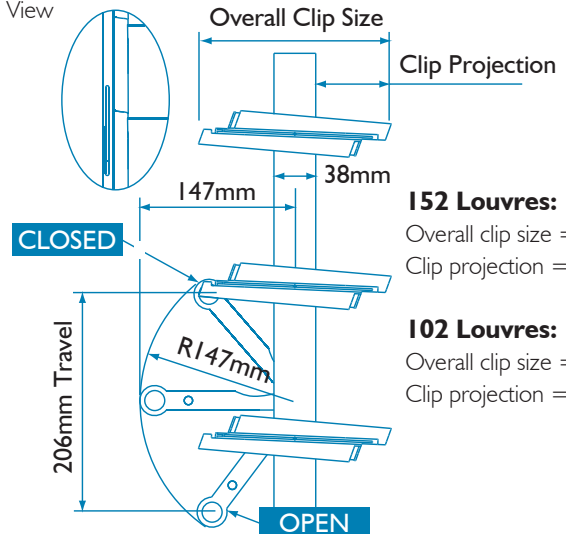
*Available ex. Australia only.



Inside Screen Handle

- Aluminium handle. For manual operation when screens are positioned to the inside of the louvres.

Handle Front View



Ring Handle (A13)

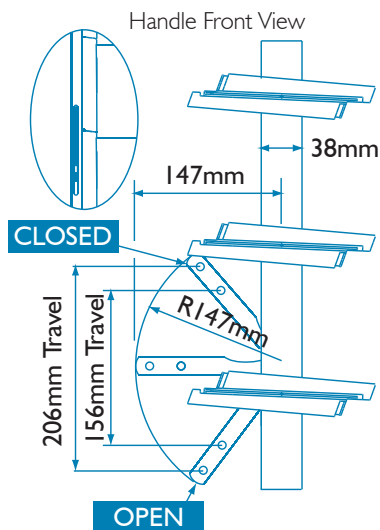
152 Louvres:

Overall clip size = 171mm
Clip projection = 66mm

102 Louvres:

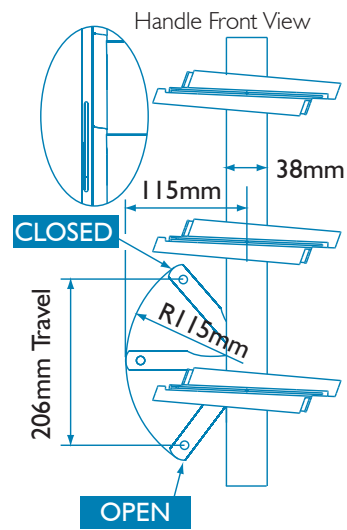
Overall clip size = 128mm
Clip projection = 44mm

- Stainless steel handle for manual operation with Breezway Map Rod when installed out of reach



Dual Control Remote Control Handle (A6)

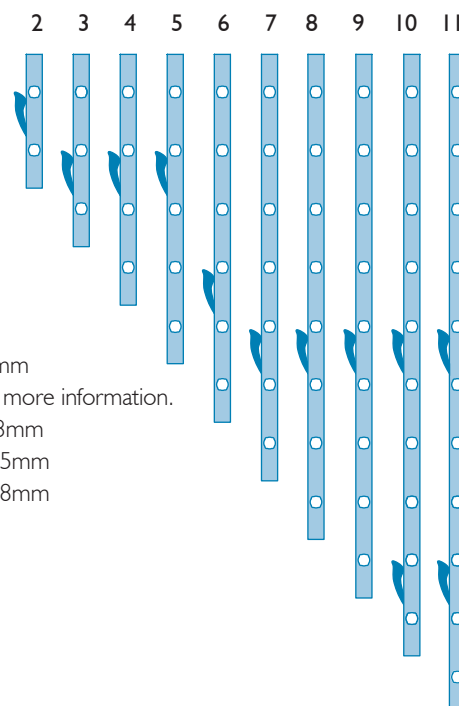
- Stainless steel handle.
- For use with Remote Window Control System.



Dual Control Remote Control Handle (A2)

- Stainless steel handle.
- For use with Remote Window Control System.

Standard Handle Positions: Altair® I 52mm Louvre



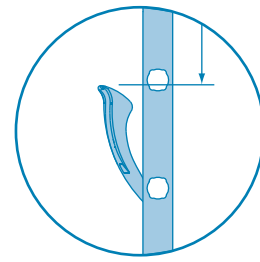
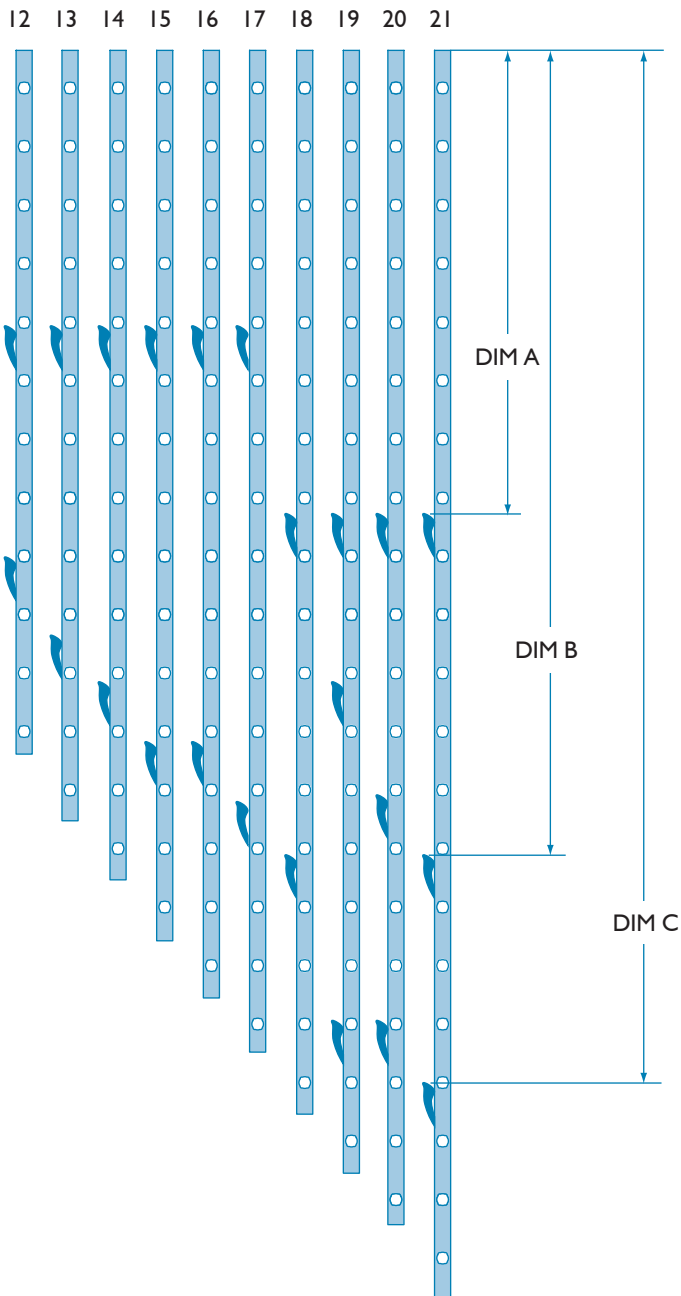
Formulas for Other Handle Positions

1. Low Profile Handle Position = Standard Handle Position – 3mm
2. Inside Screen Handle Position = Please call Breezway Sales for more information.
3. Ring Handle Position = Standard Handle Position + 18mm
4. Single Control Remote Control Handle Position = Standard Handle Position + 45mm
5. Dual Control Remote Control Handle Position = Standard Handle Position + 18mm

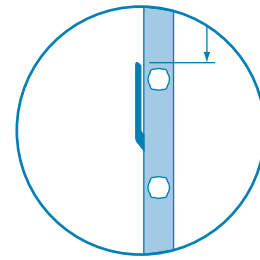
No. of Blades	Banks of Blades Controlled from Head Downwards	Channel Length	Dim A	Dim B	Dim C
2	2	320	72		
3	3	460	212		
4	4	600	212		
5	5	740	212		
6	6	880	492		
7	7	1020	632		
8	8	1160	632		
9	9	1300	632		
10	7 3	1440	632	1192	
11	7 4	1580	632	1192	
12	7 5	1720	632	1192	
13	8 5	1860	632	1332	
14	9 5	2000	632	1472	
15	7 8	2140	632	1612	
16	7 9	2280	632	1612	
17	8 9	2420	632	1752	
18	9 9	2560	1052	1892	
19	9 4 6	2700	1052	1472	2312
20	9 6 5	2840	1052	1752	2312
21	9 7 5	2980	1052	1892	2452

Note:

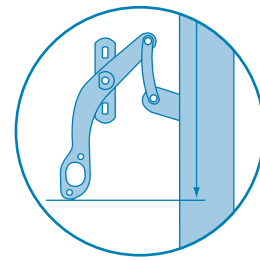
- Additional handles can be specified or relocated to another position. Each handle can operate a maximum of nine clips including at least one clip directly below the handle.



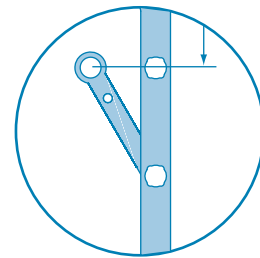
Standard Handle



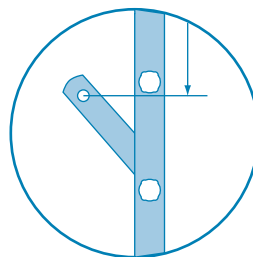
Low Profile Handle



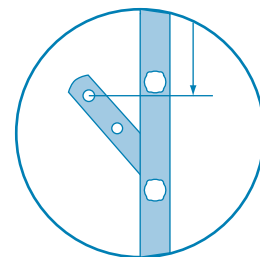
Altair Inside Screen Handle



Ring Pull Handle (A13)

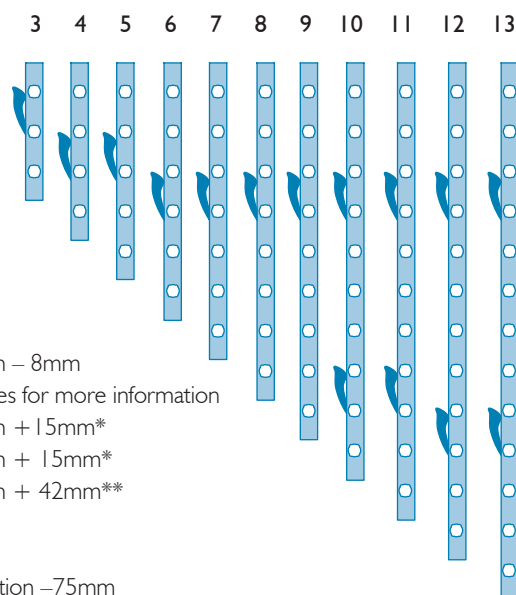


Dual Control Remote Control Handle (A2)



Dual Control Remote Control Handle (A6)

Standard Handle Positions: Altair® 102mm Louvre



Formulas for Positions of Non-Standard Handles

1. Low Profile Handle Position = Standard Handle Position – 8mm
2. Inside Screen Handle Position = Please call Breezway Sales for more information
3. Ring Handle Position = Standard Handle Position + 15mm*
4. Dual Control Remote Control Handle Position = Standard Handle Position + 15mm*
5. Single Control Remote Control Handle Position = Standard Handle Position + 42mm**

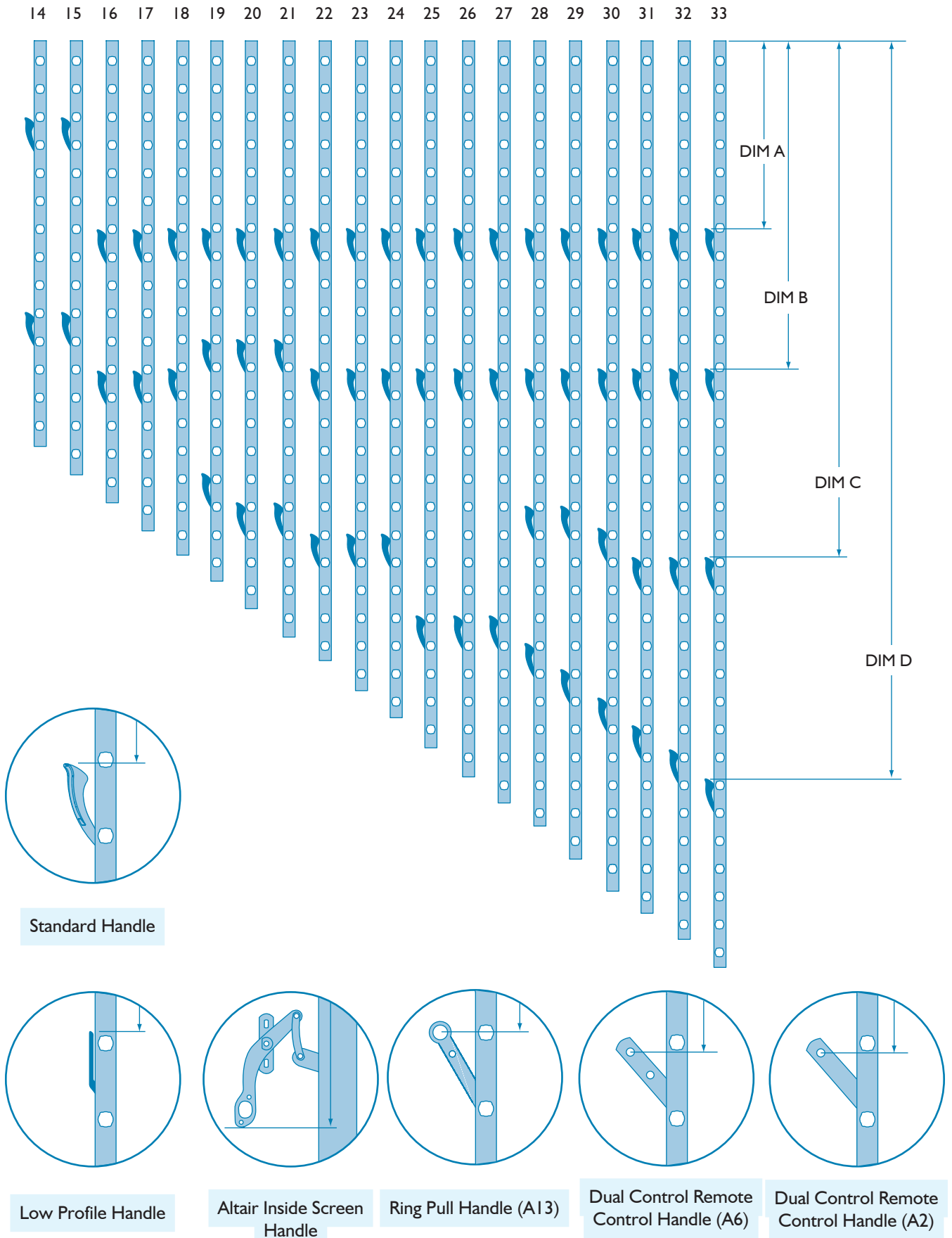
* For 3 and 4 blade galleries: Ring Pull Handle position = Standard Handle Position – 75mm

** For 3 and 4 blade galleries handle position = Standard Handle Position – 48mm

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

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.



Extruded Aluminium Blades

Refined Design

- Aluminium blades in solid colours can bring a sharp, modern aesthetic to your design and provide shading and privacy benefits.

152mm Aluminium Blade



102mm Aluminium Blade



Altair® Louvre Window Systems



Easyscreen™ Window System

Slimline™ Window System

ios™ Window System
(Available in Philippines Only)**Choice of Frames**

■ Easyscreen (131mm), Slimline (52mm), or ios (130mm) Surround Frames are available. A wide range of powdercoat colours with matching handles and clips are available.

Custom Designed for Altair Louvres

■ Altair Louvres clip neatly into the frame with no visible gallery screws.

Durable

■ Constructed entirely of non-corrosive materials including 6060-T5 aluminium, stainless steel and industrial strength acetal and polypropylene plastics.

Strong

■ Structural components of the window system are manufactured from 6060-T5 aluminium alloy.

Supply of Extras

■ Reveals and flashing are available as an option. Breezway is able to supply smooth polished glass blades.

High Performance

■ Breezway Window Systems are purpose designed Louvre Window Systems. All frames are produced to AS2047-1999 and NZS. 4211-1985. See our Product Performance Warranty for ratings information.

Altair® Easyscreen™ Window Systems



Easyscreen™ Window System

Automated or Manual Options

■ With the optional Altair Powerlouvre™ Window System, Altair louvres can be automated via a motor concealed within the Easyscreen Window System.

Screen Housing

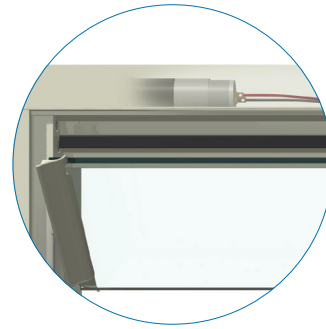
■ The Breezway Easyscreen Window System includes an integrated insect and security screen housing that allows easy fitting of screens to the frame. Screens can be installed from within the building and are positioned so that they will not interfere with the operation of the louvre blades. (Screens supplied by others).

Security Options

■ Integrated security bars are available as an option within the Easyscreen Window Frame. Security screens can be fitted into the Easyscreen Window System's screen housing.

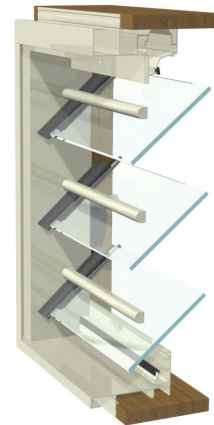
Glazing Options

■ The Easyscreen Window System can facilitate both louvre and fixed lite configurations, allowing for horizontal louvre fixed lite combinations in a single frame.



Powerlouvre™ Window Motor

The Powerlouvre Window motor is neatly concealed within the Easyscreen Window System.



Easyscreen™ with D Bar

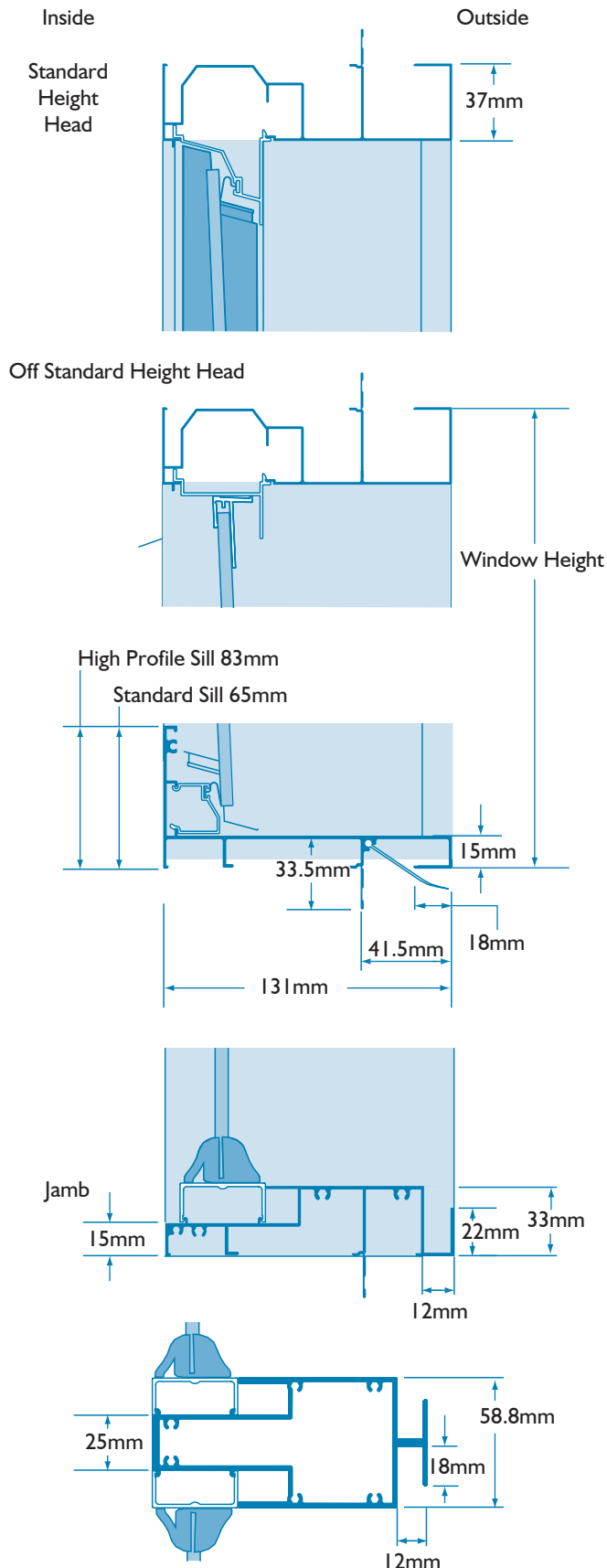
The Easyscreen Window System with optional integrated D bar security system. To suit 152mm louvre only. Longer lead times may apply, please contact your Breezway representative for more details.



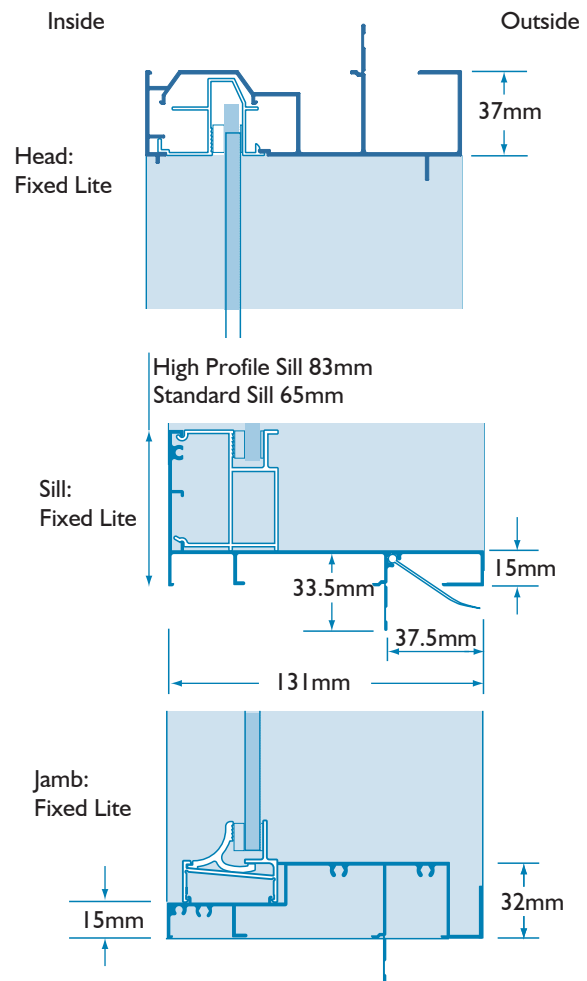
Easyscreen™ with Fixed Lite

The Easyscreen Window System can facilitate 5mm and 6mm fixed lite glazing, allowing for louvre fixed lite combinations. Recommended fixed lite glass sizes will display on Breezway quote confirmations.

Easyscreen™ Louvre Window System Dimensions



Easyscreen™ Fixed Lite Window System Dimensions



Easyscreen™ Window System Accessories

Easyscreen Coupler



Couple Easyscreen Window Systems together. (2mm extra height or width)

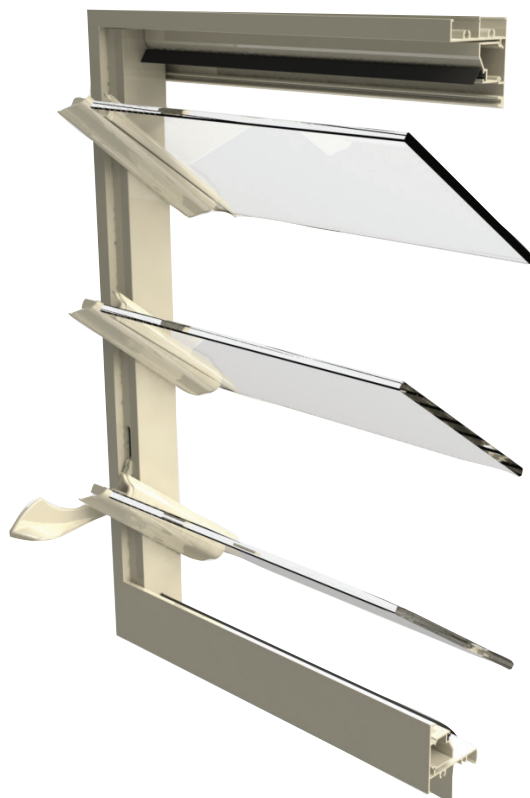
Easyscreen Cover Plate



When the Easyscreen Window System extends beyond the building frame, a cover plate can be used to trim the assembly. (2mm extra height or width)

Note: Design Registrations apply.

Slimline™ Window System



Altair® Slimline Window System

Custom designed for Altair Louvres

Altair Louvres clip neatly into the frame with no visible gallery screws.

Durable

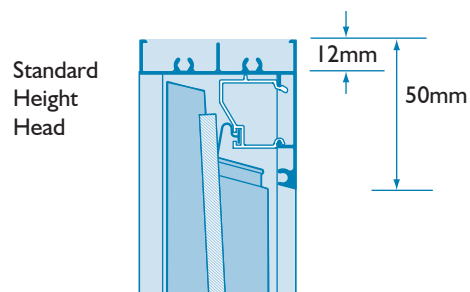
Constructed entirely of non-corrosive materials including 6060-T5 aluminium, stainless steel and industrial strength acetal and polypropylene plastics.

Strong

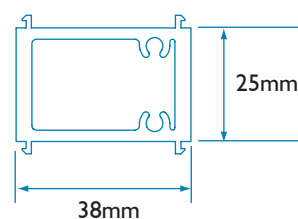
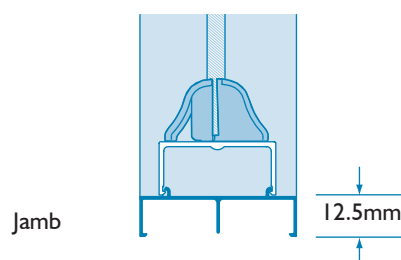
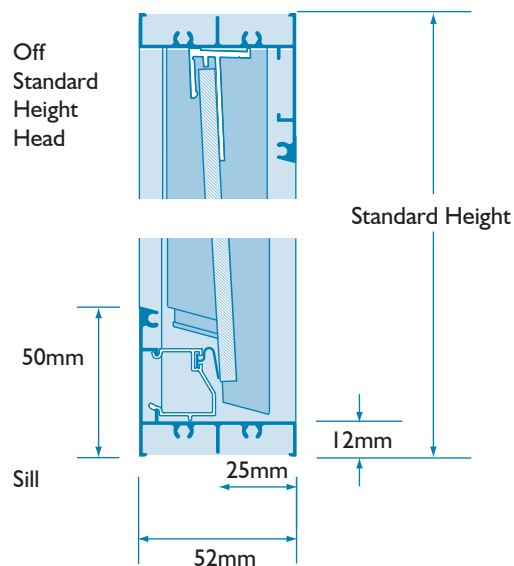
Structural components of the window system are manufactured from 6060-T5 aluminium alloy.

Slimline™ Window System Dimensions

Inside Outside



Example shows the Glass / Aluminium Fixed Blade Carrier. A Timber Fixed Blade Carrier is also available.



Medium Duty Mullion

ios™ Window System (Philippines Only)



Altair® ios Window System

Custom designed for Altair Louvres

Altair Louvres clip neatly into the frame with no visible gallery screws.

Durable

Constructed entirely of non-corrosive materials including 6060-T5 aluminium, stainless steel and industrial strength acetal and polypropylene plastics.

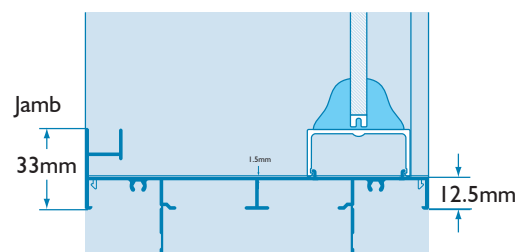
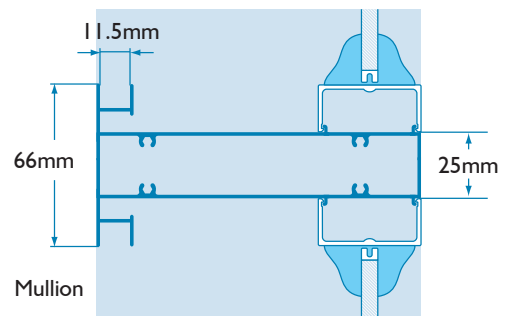
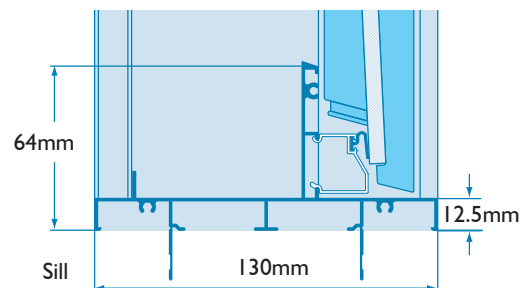
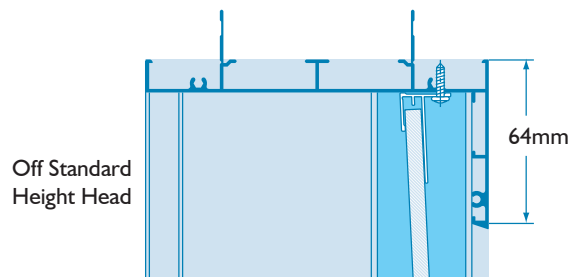
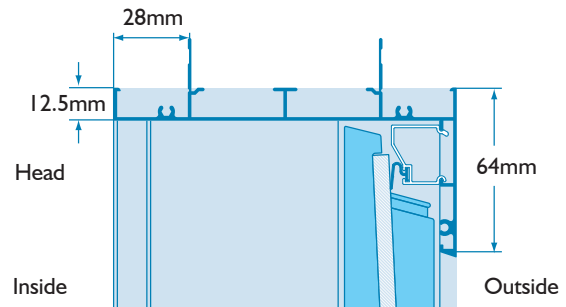
Strong

Structural components of the window system are manufactured from 6060-T5 aluminium alloy.

Screen Housing

The Breezway ios Window System includes an integrated insect and security screen housing that allows easy fitting of screens to the frame. Screens can be installed from within the building and are positioned so that they will not interfere with the operation of the louvre blades. (Screens supplied by others).

ios™ Window System Dimensions

**ios Coupler and Cover Plate**

Couple ios Window Systems together or trim assembly that extends beyond the building frame. (1.5mm extra height or width)

Standard Heights

Standard Height sizes are measured from bottom of visible metal to top of visible metal.

No. of Blades	152mm Galleries		
	Easyscreen™ Window System	Slimline™ Window System	ios™ Window System (Philippines Only)
	Standard Height (mm)	Standard Height (mm)	Standard Height (mm)
2	371	345	346
3	511	485	486
4	651	625	626
5	791	765	766
6	931	905	906
7	1071	1045	1046
8	1211	1185	1186
9	1351	1325	1326
10	1491	1465	1466
11	1631	1605	1606
12	1771	1745	1746
13	1911	1885	1886
14	2051	2025	2026
14 Ext	2100	2100	2100
15	2191	2165	2166
16	2331	2305	2306
16 Ext	2400	2400	2400
17	2471	2445	2446
18	2611	2585	2586
19	2751	2725	2726
20	3891	2865	2866
21	3031	3005	3006

No. of Blades	102mm Galleries		
	Easyscreen™ Window System	Slimline™ Window System	ios™ Window System (Philippines Only)
	Standard Height (mm)	Standard Height (mm)	Standard Height (mm)
3	361	335	336
4	451	425	426
5	541	515	516
6	631	605	606
7	721	695	696
8	811	785	786
9	901	875	876
10	991	965	966
11	1081	1055	1056
12	1171	1145	1146
13	1261	1235	1236
14	1351	1325	1326
15	1441	1415	1416
16	1531	1505	1506
17	1621	1595	1596
18	1711	1685	1686
19	1801	1775	1776
20	1891	1865	1866
21	1981	1955	1956
22	2071	2045	2046
22 Ext	2100	2100	2100
23	2161	2135	2136
24	2251	2225	2226
25	2341	2315	2316
26	2431	2405	2406
27	2521	2495	2496
28	2611	2585	2586
29	2701	2675	2676
30	2791	2765	2766
31	2881	2855	2856
32	2971	2945	2946
33	3061	3035	3036

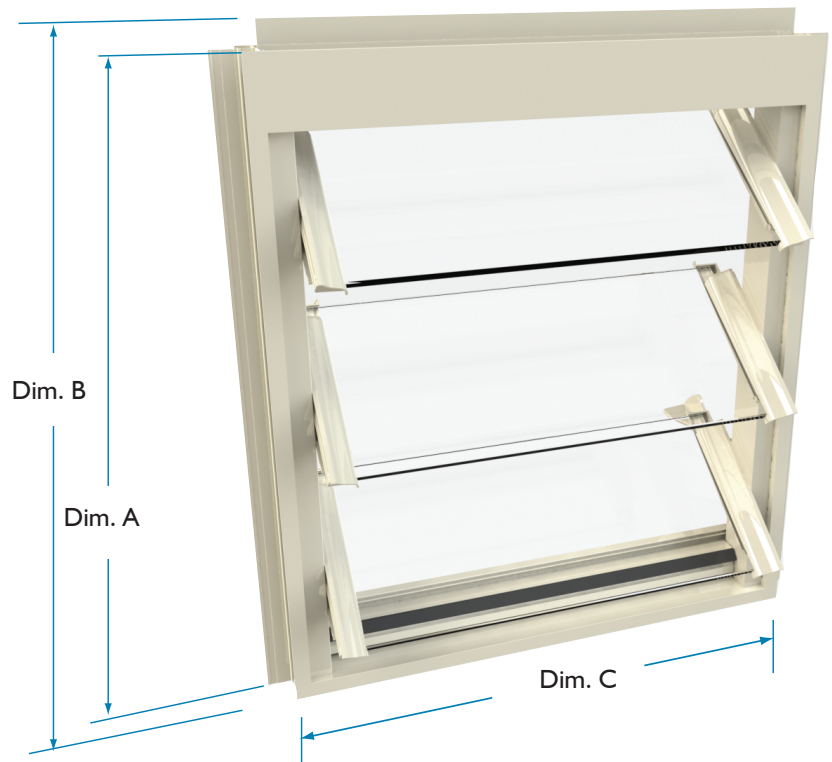
Notes

- Slimline windows with multiple bays and heights of over 10 and 16 blades respectively for 152mm and 102mm Galleries will require Heavy Duty Mullions.
- Off-standard heights that are not within 5 mm of a standard height have a fixed blade at the top to achieve the specific height.
- Refer to the product performance warranty on possible height restrictions for different blade types and bay widths.
- Standard sizes will save money and improve lead times.
- Maximum width = 4000mm (frames over these dimensions will need to be coupled together on site or at a window fabricator's factory).
- Up to 6 bays (sets of galleries) can be included in a single surround frame.
- Window Systems with Fixed Galleries consist of 152mm clips and blades spaced as far apart as 102mm clips are spaced on normal galleries. Fixed galleries are permanently fixed with the blades at a 45 degree angle.
- Window Systems with Fixed Galleries do not meet water penetration requirements.
- Window Systems with Fixed Galleries are only available in standard heights.

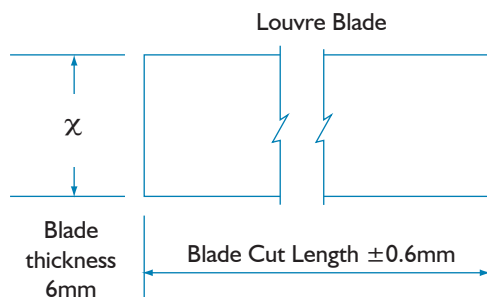
Size Range

Louvre Window System Dimensions

Frame Width	Dim. C
Stud opening	Dim. C + 10mm
Easyscreen™ Frame: Glass & aluminium blade length	Dim. C – 82mm
Slimline™ Frame: Glass & aluminium blade length	Dim. C – 77mm
Easyscreen™ Frame: Glass & aluminium Stronghold™ blade length	Dim. C – 78mm
Slimline™ Frame: Glass & aluminium Stronghold™ blade length	Dim. C – 73mm
ios™ Frame: Glass, aluminium and rebated timber blades length	Dim. C – 77mm



Extension Blade Dimensions



Dim. A = Actual Height / Standard Height

Dim. B = Dim A + 40mm

Dim. C = Frame Width

Easyscreen Frame

Glass & Aluminium blades x = Channel extension + 13mm

Slimline Frame

Glass & Aluminium blades x = Channel extension + 20mm

ios Frame (Philippines Only)

Glass & Aluminium blades x = Channel extension + 20mm

Maximum Bay Widths For Standard Sizes

This table indicates the maximum Easyscreen™ Window System width that Breezway will warrant, per wind category.

Blade Type		Easyscreen Window System Widths (mm)				
		1 bay	2 bay	3 bay	4 bay	5 bay
Up to 1000Pa Design Wind Speed	Glass, Aluminium - 152mm	982	1959	2936	3913	4000
	Glass, Aluminium - 102mm	832	1659	2486	3313	4000
Up to 1500Pa Design Wind Speed	Glass, Aluminium	832	1659	2486	3313	4000
Up to 2200Pa Design Wind Speed	Glass, Aluminium	682	1359	2036	2713	3390

Maximum Window System Dimensions (Before Coupling).

Maximum Dimensions supplied in one continuous window are 3061 mm high x 4000mm wide

This table indicates the maximum Slimline™ Window System width that Breezway will warrant, per wind category.

Blade Type		Slimline Window System Widths (mm)				
		1 bay	2 bay	3 bay	4 bay	5 bay
Up to 1000Pa Design Wind Speed	Glass, Aluminium - 152mm	977	1954	2931	3908	4000
	Glass, Aluminium - 102mm	827	1654	2481	3308	4000
Up to 1500Pa Design Wind Speed	Glass, Aluminium	827	1654	2481	3308	4000
Up to 2200Pa Design Wind Speed	Glass, Aluminium	677	1354	2031	2708	3385

Maximum Window System Dimensions (Before Coupling).

Maximum Dimensions supplied in one continuous window are 3035mm high x 4000mm wide

This table indicates the maximum ios™ Window System width that Breezway will warrant, per wind category (Available in Philippines Only).

Blade Type		ios Window System Widths (mm)				
		1 bay	2 bay	3 bay	4 bay	5 bay
Up to 1000Pa Design Wind Speed	Glass, Aluminium - 152mm	977	1954	2931	3908	4000
	Glass, Aluminium - 102mm	827	1654	2481	3308	4000
Up to 1500Pa Design Wind Speed	Glass, Aluminium	827	1654	2481	3308	4000
Up to 2200Pa Design Wind Speed	Glass, Aluminium	677	1354	2031	2708	3385

Maximum Window System Dimensions (Before Coupling).

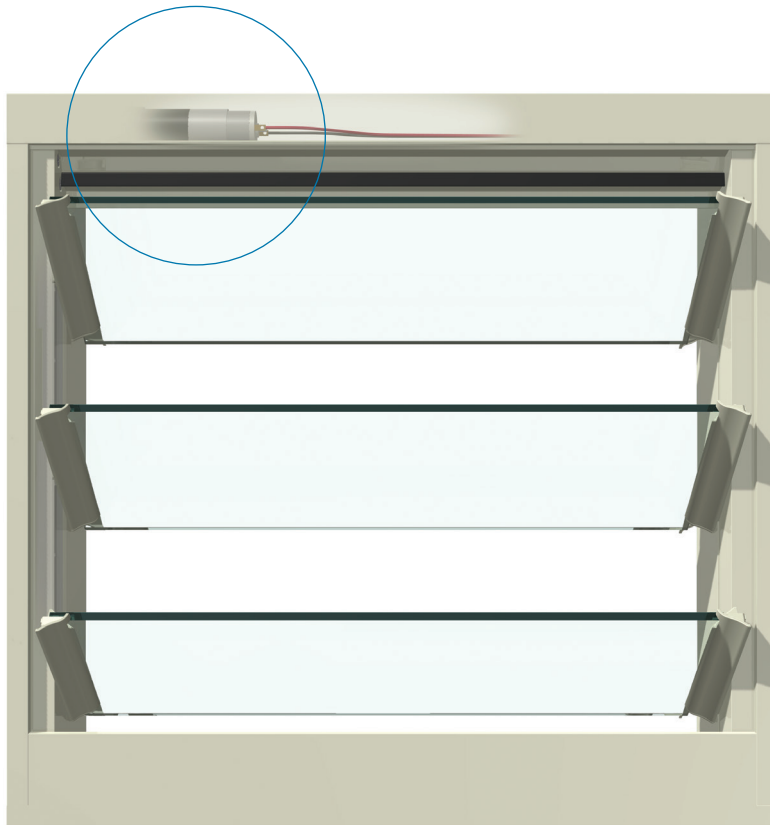
Maximum Dimensions supplied in one continuous window are 3036mm high x 4000mm wide

Note:

Frames over 4000mm wide will need to be coupled on site or at the window fabricators factory.

An additional 2mm will be included onto the overall window height & width with each Coupler or Cover Plate added.

Altair® Powerlouvre™ Window



The Powerlouvre Window motor is neatly concealed within the Easyscreen™ Frame.

Automated Windows

■ Automated windows allow integration of passive ventilation into automated climate control systems and also offer an easy way to operate windows that are high up and out of reach.

Durable Construction

■ Manufactured from 6060-T5 extruded aluminium for strength and long, low-maintenance life.

Integrated Motor and Gearbox

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

Integrated System

■ Altair Louvres clip neatly and flush against the frame, with no visible gallery screws. Security bars can be integrated as an optional extra.

Integrated Screen Housing

■ The Breezway Easyscreen Window System includes an integrated insect and security screen housing that allows easy fitting of screens to the frame. Screens can be installed from within the building and are positioned so that they will not interfere with the operation of the louvre blades. (Screens supplied by others).

Powerlouvre™ Window Operating Condition

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 tall contain one motor per bay and are wired such that the entire window opens and closes simultaneously.

Powerlouvre Windows that are 10-18 blades tall 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. Powerlouvre Windows with 10-18 blades are wired such that the top halves of all the bays open and close simultaneously and the bottom halves of all the bays open and close simultaneously.

Labelled wires emerge 1 metre from the top right hand side of the Easyscreen™ frame.

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



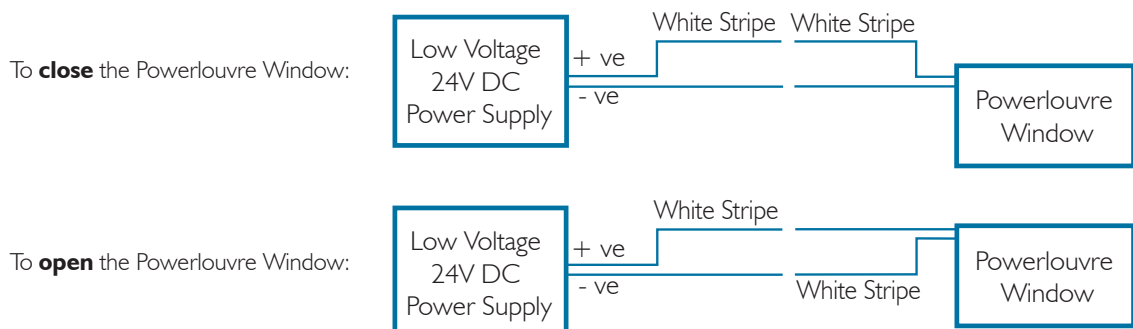
Electrical Requirements

- Operating voltage: 24V DC
- Maximum allowed voltage: 29V DC
- Maximum constant current: 0.25A per motor
- Maximum startup current: 0.4A 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 Without Remote Control	1	0.25 amps per bay
10-18 Blades High Without Remote Control	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.



Breezway Transformer

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

- 240V AC current transformed to 2.0 amp, 24V DC constant current, suitable for powering up to 6 Powerlouvre Motors.
- Able to provide sufficient instantaneous startup current for up to 6 Powerlouvre Motors.
- Built-in overload protection to prevent accidental short circuits from damaging the transformer.



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

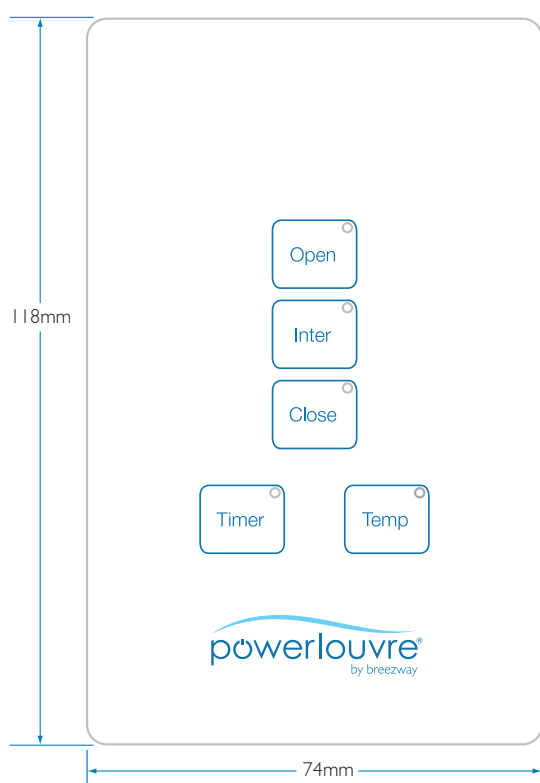
The Powerlouvre Apptivate Control Unit is a plastic, touch-sensitive wall switch.

Features include:

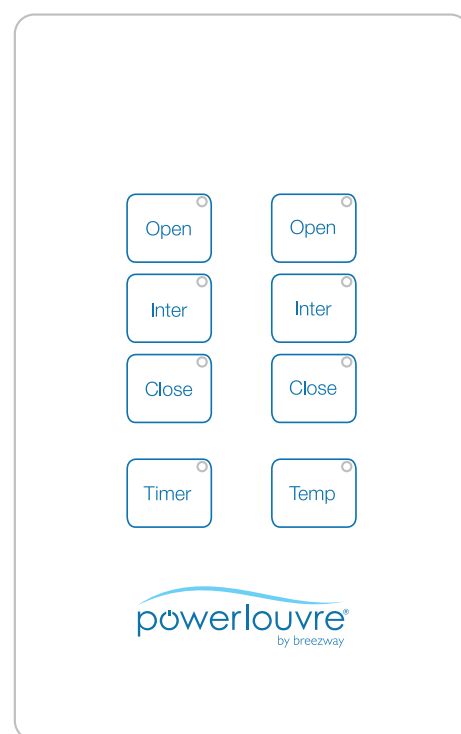
- White, standard sized wall switch.
- Single channel and dual channel models.
- Control of up to 6 Powerlouvre Motors per channel.
- Fully open, fully close or open to an intermediate (half-open) position at a single touch.
- Precise control of opening angle by touching and then releasing when the window 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 Xperia 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:

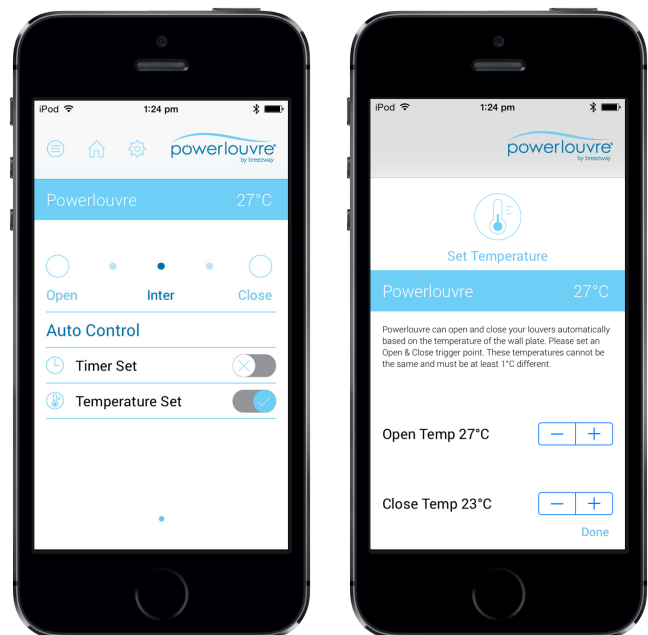
- Automatically open the windows to naturally cool the room, or
- Automatically close the windows to retain warmth within the room.

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.



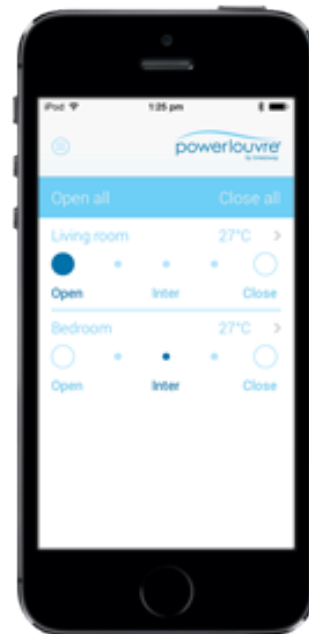
Control of multiple Apptivate™ Control Units.

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 independantly.



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.

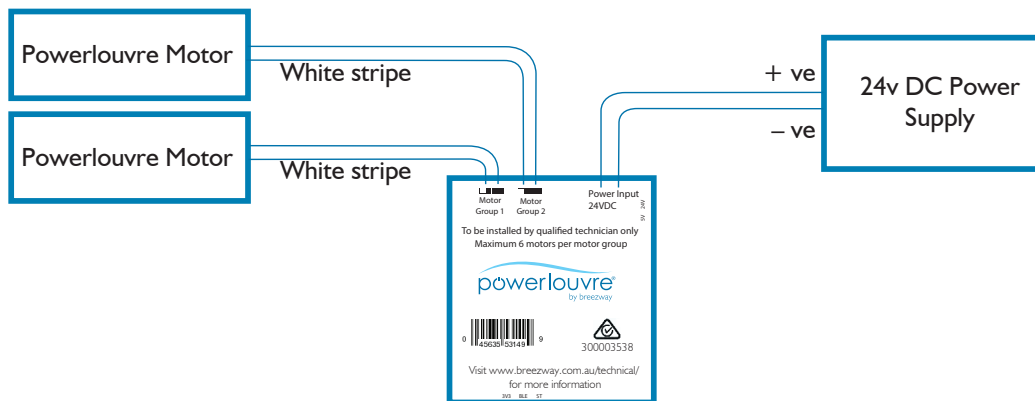
For example: Both John and Mary's Powerlouvre Apps are associated to the Apptivate Control Unit operating the Powerlouvre Windows in their living room. If John opens the windows using his Powerlouvre App, Mary will not be able to close the windows using her Powerlouvre App until John minimises the Powerlouvre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

Apptivate™ Control Unit Standard Wiring

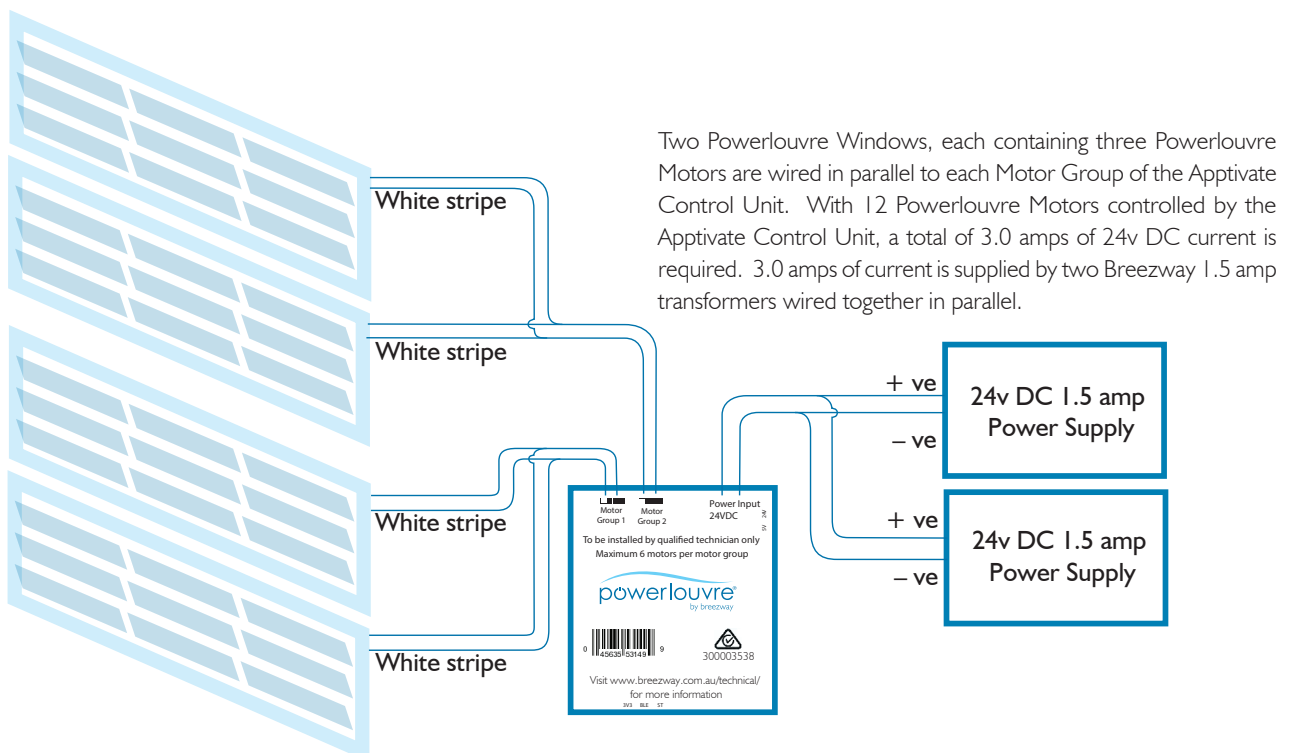
Powerlouvre™ Motors and Apptivate Control Units require 24v DC power. For ease of wiring the Apptivate Control Unit senses the polarity of the current provided from the transformer and automatically adjusts accordingly.

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

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



Dual Channel Apptivate™ Control Unit Wiring



Apptivate™ Control Unit Wiring With Multiple Transformers

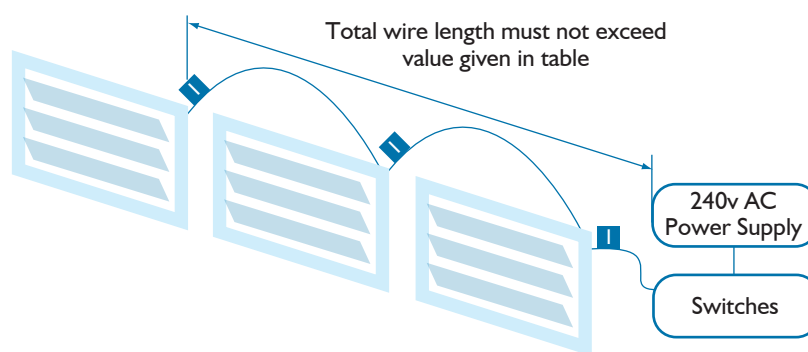
Building Management System Compatibility

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 Aptivate 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.

Aptivate Control Units are not compatible with building management systems.

Cabling Requirements



Multiple Windows in parallel

Note: Max of 4 Motors per 1 amp transformer.
Max of 6 Motors per 1.5 amp transformer.

Wire Size ↓	N° of Motors ⇒	Max Distance from Power Supply to Motor								
		1	2	3	4	5	6	8	10	12
0.5mm ²	20AWG	60m	30m	20m	15m	12m	10m	-	-	-
0.8mm ²	18AWG	90m	45m	30m	23m	18m	15m	-	-	-
1.3mm ²	16AWG	150m	75m	50m	38m	30m	25m	20m	15m	12m
2mm ²	14AWG	230m	120m	80m	60m	50m	40m	30m	24m	20m
3.5mm ²	12AWG	370m	185m	125m	90m	75m	60m	45m	35m	30m
4mm ²	10AWG	550m	294m	200m	150m	120m	100m	75m	55m	45m
10mm ²	8AWG	1000m	500m	330m	250m	200m	150m	120m	100m	80m
17mm ²	6AWG	1500m	750m	500m	375m	300m	250m	175m	150m	125m
26mm ²	4AWG	8000m	4000m	2500m	2000m	1500m	1250m	1000m	800m	650m

Tables calculated using a window current of 0.25A and a voltage drop of 5% or 1V @ 24V.

Battery Backup

The Powerlouvre Window has no integrated battery back up. If the power supply fails the window cannot be operated. If battery back up is required, systems are readily available and can be integrated by qualified suppliers.

Easyscreen™ Powerlouvre™ Window Sizes

Easyscreen Powerlouvre Window System Standard Heights		
Blade Count	152mm Gallery	102mm Gallery
2	371mm	NA
3	511mm	361mm
4	651mm	451mm
5	791mm	541mm
6	931mm	631mm
7	1071mm	721mm
8	1211mm	811mm
9	1351mm	901mm
10	1491mm	991mm
11	1631mm	1081mm
12	1771mm	1171mm
13	1911mm	1261mm
14	2051mm	1351mm
15	2191mm	1441mm
16	2331mm	1531mm
17	2471mm	1621mm
18	2611mm	1711mm

- Maximum width = 4000mm (Frames over these dimensions will need to be coupled on site or at a window fabricator's factory).
- Minimum bay width (2-9 blade tall windows) = 400mm
- Minimum bay width (10-18 blade tall windows) = 500mm
- Standard heights only.
- Up to 6 galleries (bays) can be included in a single surround frame.
- Combination louvre and fixed light bays are available.
- Off-Standard Frame Heights between 6mm and 42mm greater than a Standard Height are unavailable for 152mm Powerlouvre in the Easyscreen Frame.
- Off-Standard Frame Heights between 1mm and 5mm below a Standard Height are unavailable for 102mm Powerlouvre in the Easyscreen Frame.
- Off-Standard Frame Heights between 6mm and 44mm greater than a Standard Height are unavailable for 102mm Powerlouvre in the Easyscreen Frame.
- Some off-standard heights are unavailable when using the 102mm Altair Louvre Galleries with the Stronghold System. For the Easyscreen System these include: Standard Height + 26mm to Standard Frame Height + 36mm.



Ex. Australia Only

Four Powerlouvre Window bays within a single Easyscreen Frame

Window System Checklist

REQUIRED INFORMATION viewed from inside	OPTIONAL INFORMATION
Design Pressure Manual or Automated Frame Size Gallery Clip Size With or without the Stronghold™ System Height & Width Number of Bays Frame Color Gallery Color Clip & Handle Color Gallery Clip Size Handle Type Blade Type	Left or Right Handed Offset Mullions Couplers & Cover Plates

Recommended Specifications

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

Features:

- Unique drainage channels for superior water performance.
- Unique '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.
- Altair Louvres have passed AS2047 testing at 3,000mm high.

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

Features:

- Unique drainage channels for superior water performance.
- Unique '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.
- Controlled by touch sensitive Appivate Control Units and the Powerlouvre App, enabling automatic operation in response to timer events or an in-built temperature sensor.

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

Features:

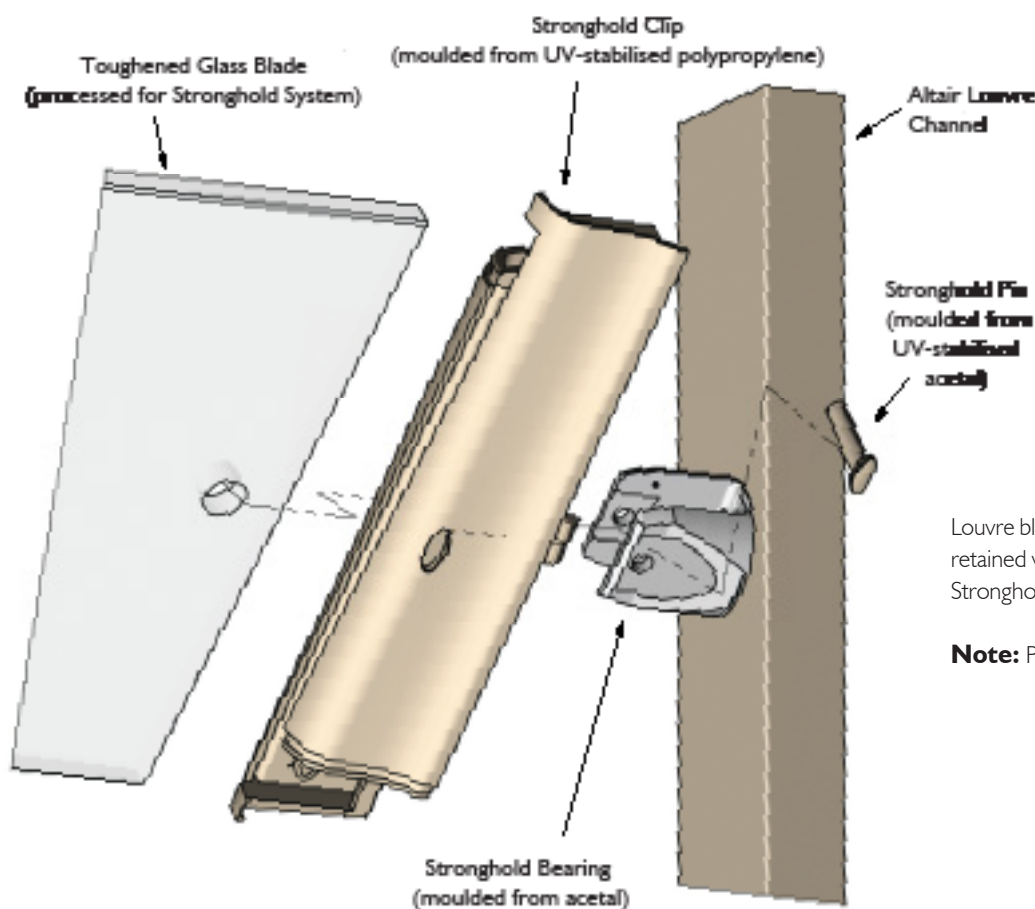
- Unique drainage channels for superior water performance.
- Unique 'Living Hinge' design that pulls the clips tightly against the channel when closed for superior water performance and air infiltration.
- Altair Louvres have passed testing to 40,000 open/close cycles for long operational life.
- Altair Louvre keylocks 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

Features:

- Unique drainage channels for superior water performance.
- Unique '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.
- Pinned design that mechanically retains blades within the clips to prevent blade dislodgement under human impact.

Altair® Louvres with the Stronghold™ System (Available in Malaysia Only)



Viewed from inside

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.

High Rise Applications

Breezway Altair Stronghold Louvres are fit for purpose for installation more than 2 metres above ground level. 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.

Frame Options

Altair Stronghold Louvre Windows are available as complete window systems within the Breezway Easyscreen™ and Slim-line™ Window Systems, or in component form for installation into other manufacturer's framing systems.

Fall Prevention

Altair Louvre Windows with the Stronghold System are ideal for use in bedrooms, early childhood centres and other situations where there is a significant height from the window sill to the outside ground. With openings on both sides of every blade, they deliver real ventilation benefits for naturally cool, healthy and safe spaces. Performance is proven by successful testing to the Australian Industry Code of Practice "ICP005 - Protection of Openable Window Testing Specification" and AS5203:2016.

Blade Options

Processed and toughened glass and processed aluminium blades can be used in the Stronghold System. Heat soak testing of glass blades already processed for use with the Stronghold System is also available. The Altair Stronghold System is available for use with both 152mm and 102mm high blades.

Blade Type Compatibility

	152mm High	102mm High
Annealed glass	N	N
Toughened glass	Y	Y
Aluminium	Y	Y

Powerlouvre™ Compatibility

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

Maintenance

If blades need to be removed from an Altair Stronghold Louvre Window 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.

Compliance With Balustrading Requirements

The Stronghold System is a window, not a balustrade system. The Stronghold System has been tested to AS2047 "Windows in Buildings" and has completed static load, swing bag and sphere tests. Test reports are available from the Breezway website. 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 AS2047.

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	
Easyscreen Window System	Standard height + 26mm to standard height + 36mm
Slimline Window System	Standard height + 19mm to standard height + 30mm

Recommended Specifications

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 with the Stronghold™ System

Features:

- Unique drainage channels for superior water performance.
- Unique 'Living Hinge' design that pulls the clips tightly against the channel when closed for superior water performance and air infiltration.
- 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

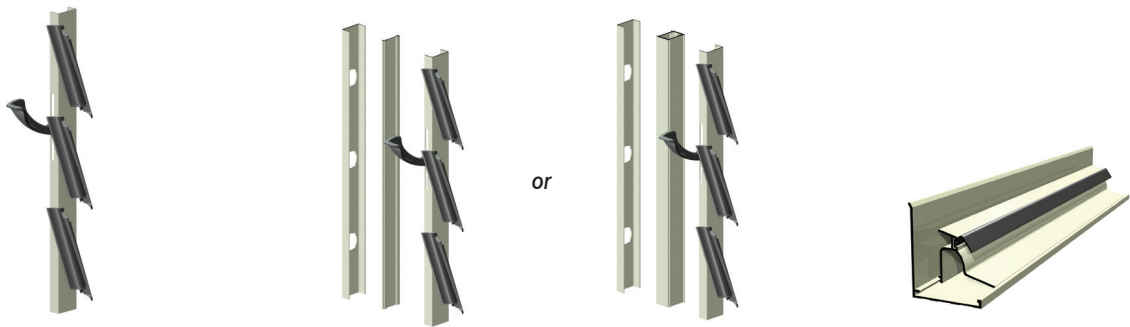
Features:

- Unique drainage channels for superior water performance.
- Unique '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.
- Pinned design that mechanically retains blades within the clips to prevent blade dislodgement under human impact.

Altair® For Other Frames

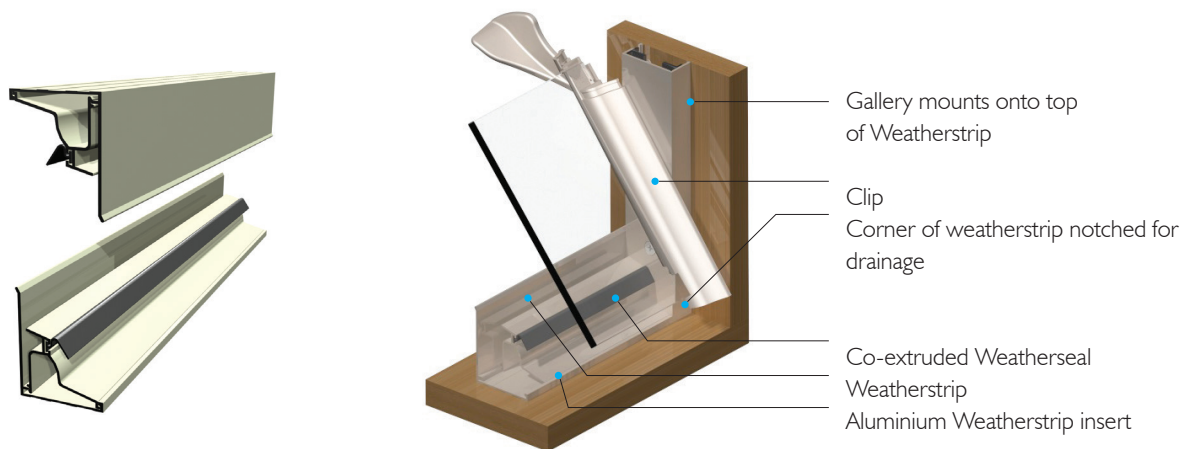
In component form, Breezway Altair louvre galleries can be used in most regular timber, aluminium and uPVC window frames. In such instances, Altair galleries and weatherstrips are simply screwed or clipped into place within the window frame. If installed in a frame that is plumb and true, and according to Breezway's installation instructions, the Altair performance warranty applies in full.

Altair® Louvre Component System



Gallery	Mullion Strip		Weatherstrip
Available in 102mm and 152mm heights to suit 6 mm thick glass or aluminium blades.	Mullionstrip 38 x 1.5 Louvre Gallery simply clips to Mullion.	Medium Duty Mullion 38 x 25 Louvre Gallery simply clips to Mullion.	Standard Weatherstrip and Insert.

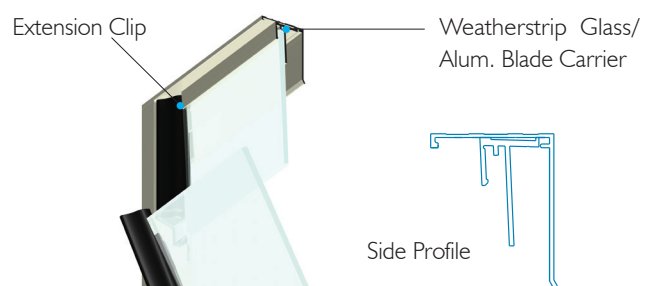
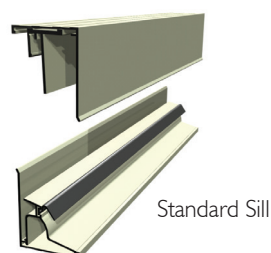
Standard Height Louvre Weatherstrip



- The same Weatherstrip is used on both the head and sill for standard glass and aluminium louvres.
- Weatherstrip, complete with seal, must be used to gain manufacturer's performance warranty.
- Altair Weatherstrip does not require notching to accommodate the louvre gallery.
- 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.

Off Standard Height Weatherstrip

Used in Conjunction with Extended Louvre Channel.



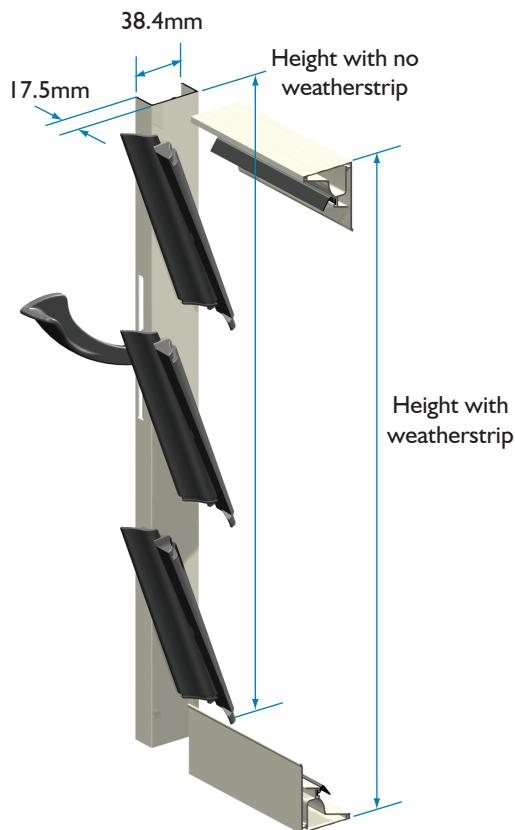
Off Standard Height Head for Glass or Aluminum Blades

- 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.

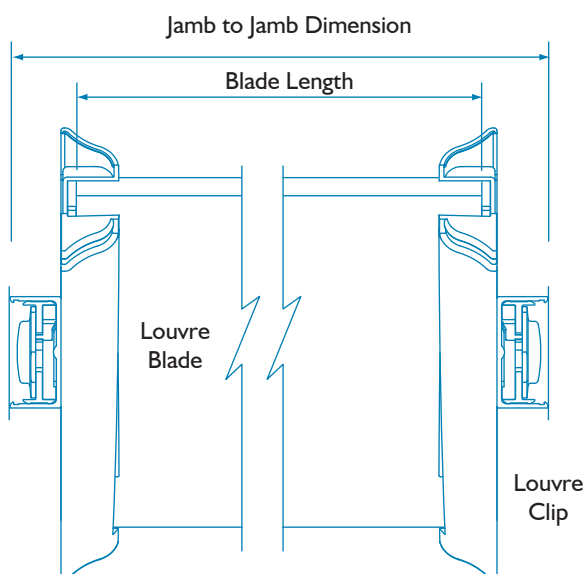
Standard Heights

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

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



Blade Formulas

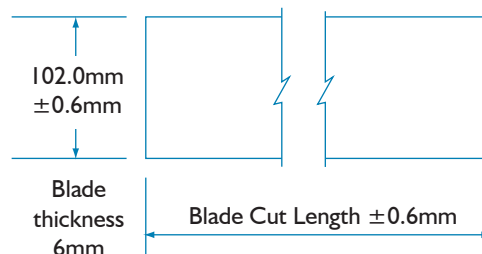


Blade Cut Length

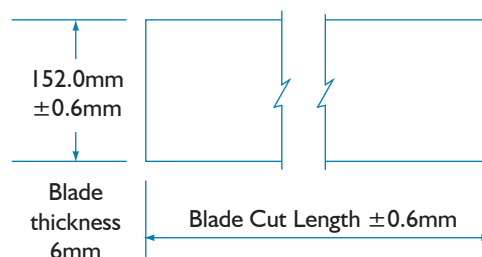
Glass & Aluminium Blades:

Blade Length = jamb to jamb - 52mm

102 Louvre Blade

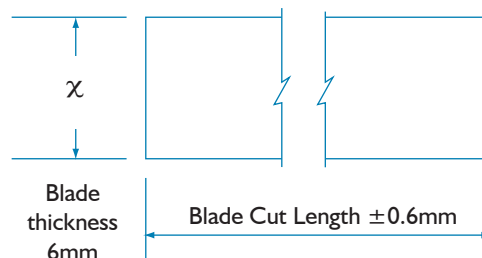


152 Louvre Blade



Standard Louver Blade Dimensions

Louvre Blade



Extension Blade Dimensions

Glass & Aluminium blades:

χ = Channel extension + 21mm

Note: Laminated glass is not recommended for external use due to the risk of de-lamination.

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

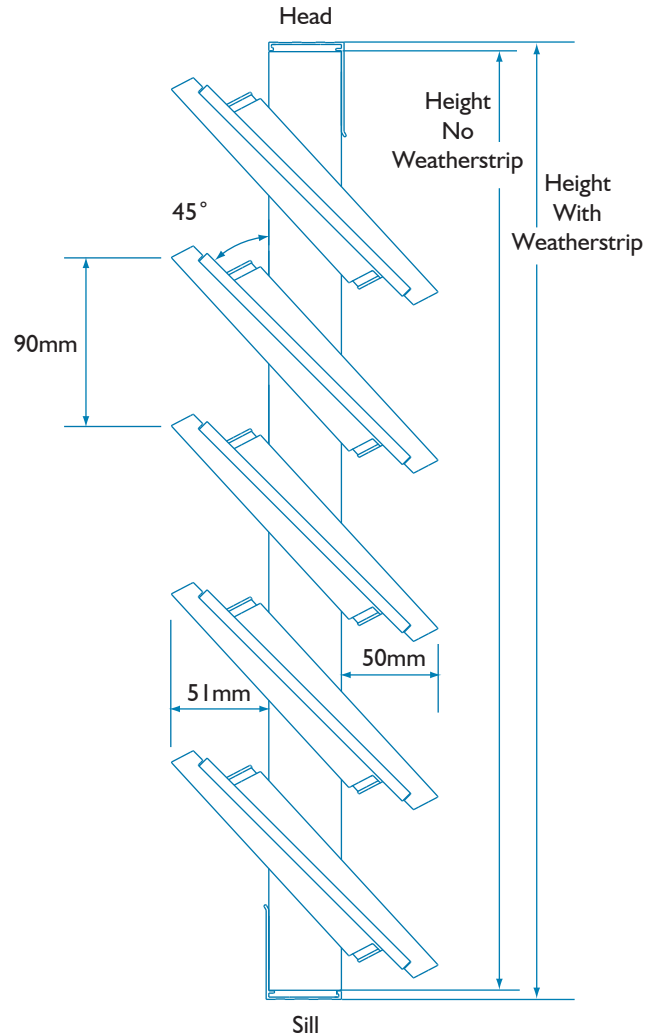
Note:

- Not Available in 102mm
- This product does not meet AS2047 water penetration requirements.
- Fixed louvres are only available in standard heights ie. extended channel not available.

Applications for Fixed Vent Louvres

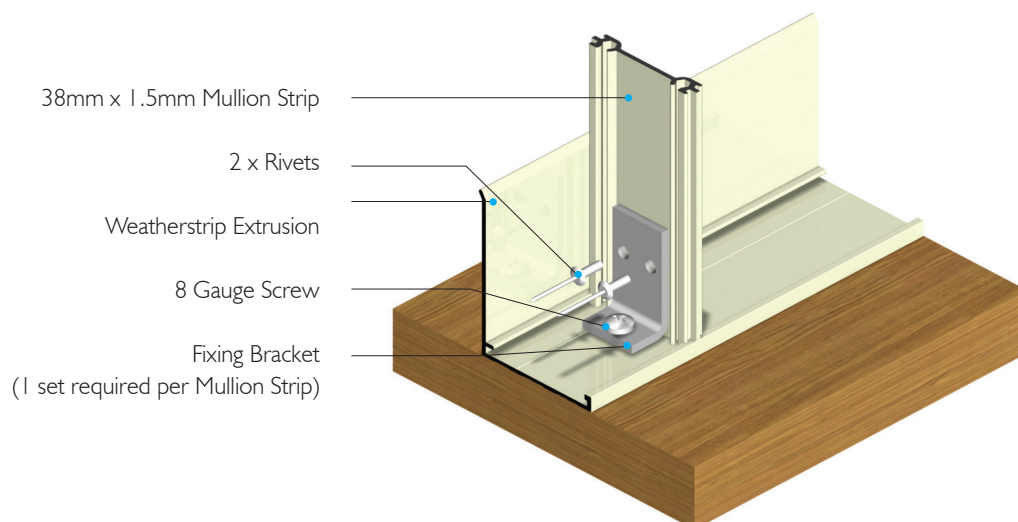
Use fixed vent louvres where permanent ventilation, light, privacy and a degree of weatherproofing is required. Some typical applications include:

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

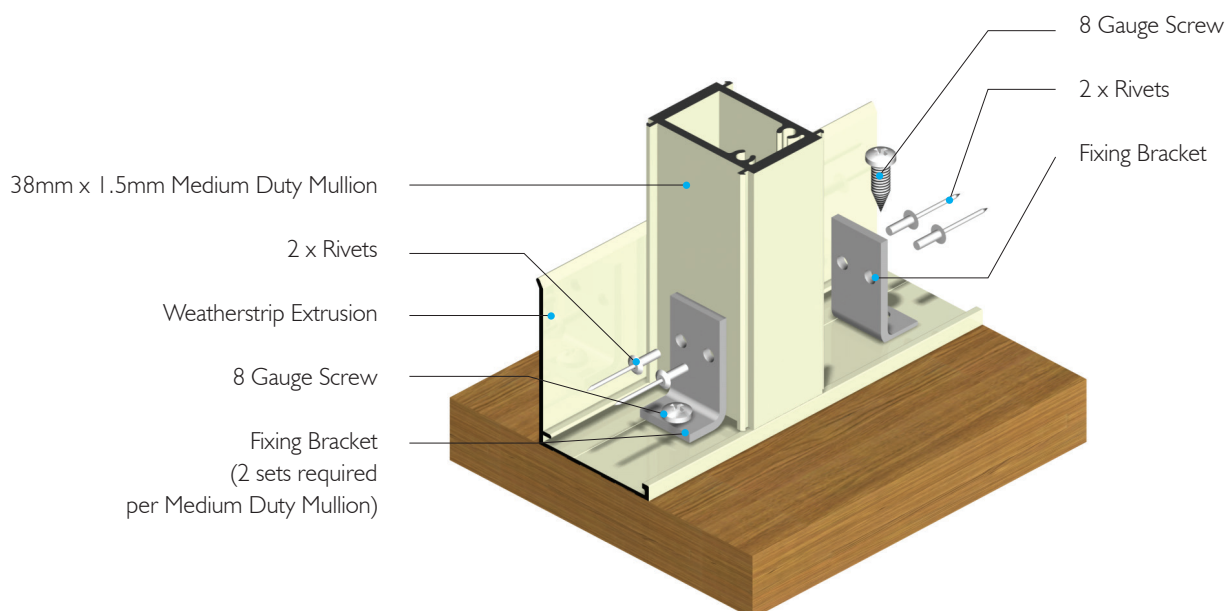
**152mm Fixed Louvre**

Altair® Mullions

Altair Mullions can be secured from the outside of the window frame using the screw flutes, or secured from the inside of the frame using brackets. Installers are responsible for ensuring that appropriate fixings are used for the frame and site wind ratings.



Bracket Details for Strip Mullion



Bracket Details for Medium Duty Mullion

Note: Heavy duty mullion is not suitable for use outside our window system.

Altair® Louvres For Other Frames Checklist

REQUIRED INFORMATION	OPTIONAL INFORMATION
<ul style="list-style-type: none"> ✓ Gallery Clip Size ✓ Gallery Height ✓ Gallery Colours ✓ With or without the Stronghold™ System ✓ Clips & Handle Colour ✓ Blade Length & Type ✓ Weather strip for head & sill 	<ul style="list-style-type: none"> ✓ Left or Right Handed ✓ Handle Type ✓ Variable Handle Position/Additional Handles

Altair® Louvre Window 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

Features:

- Unique drainage channels for superior water performance.
- Unique '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.
- Altair Louvres have passed AS2047 testing at 3,000mm high.

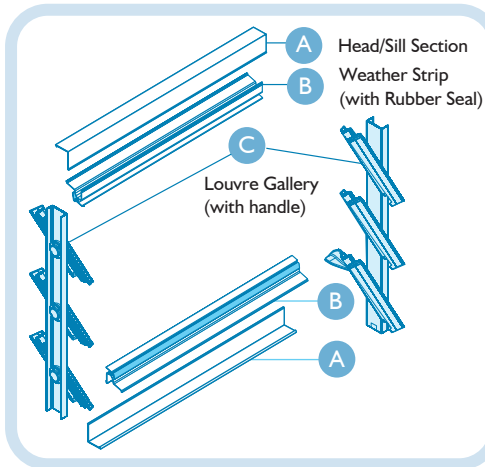
The louvre windows shall be Breezway® Altair® Louvre Windows with the Stronghold™ System

Features:

- Unique drainage channels for superior water performance.
- Unique '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 Louvre keylocks 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.

Installation Instructions

Standard Height Gallery



Fixings

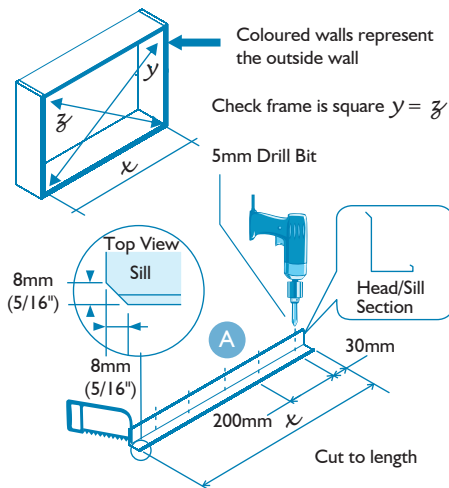
- D Stainless Steel Pan Head Screws 6 Gauge x 20mm Long
- E Stainless Steel Flat Head Countersunk Screws 8 Gauge x 30mm Long
- F Power Drill (long drill bit required)
- G Sealant
- H Spirit Level
- I Hacksaw (Off-Standard Gallery Only)

Off-Standard Height

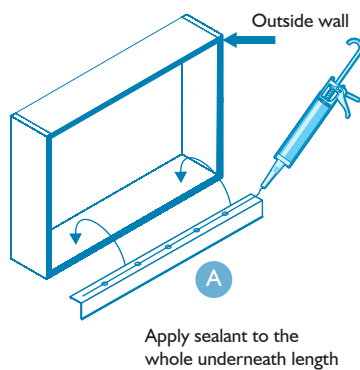


Glass or Aluminium Extension Blade Carrier

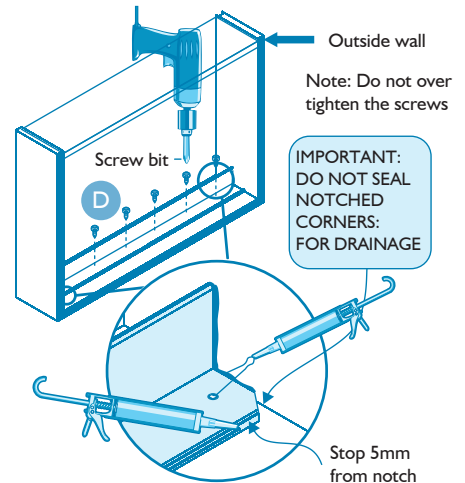
1 Check frame to be true, drill holes in sill



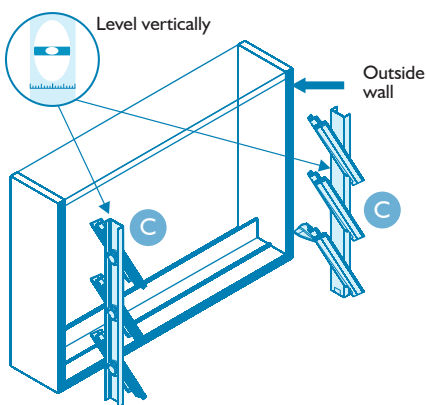
2 Apply sealant to sill



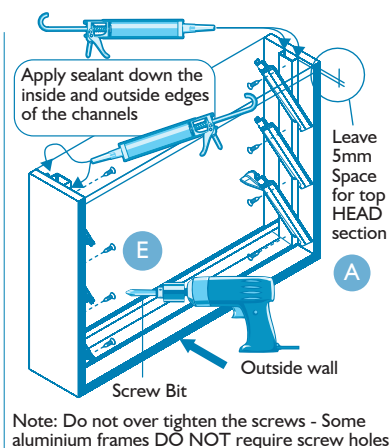
3 Attach sill



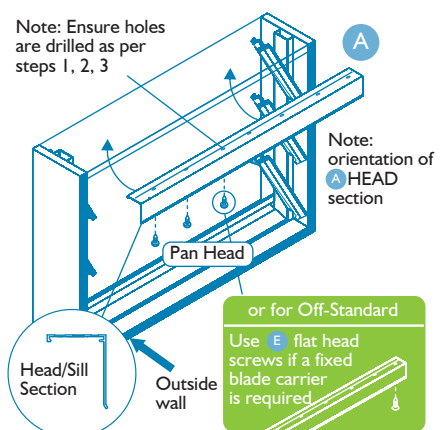
4 Insert louvre galleries



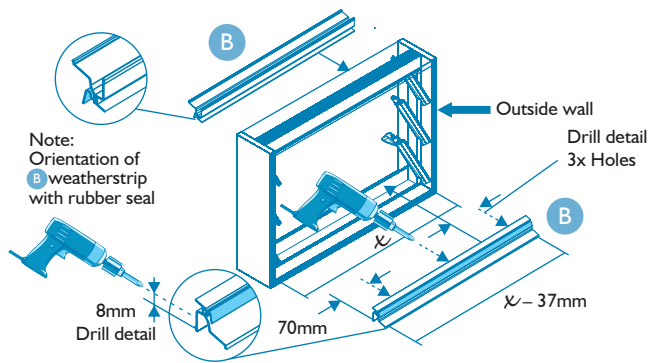
5 Attach Louvre galleries



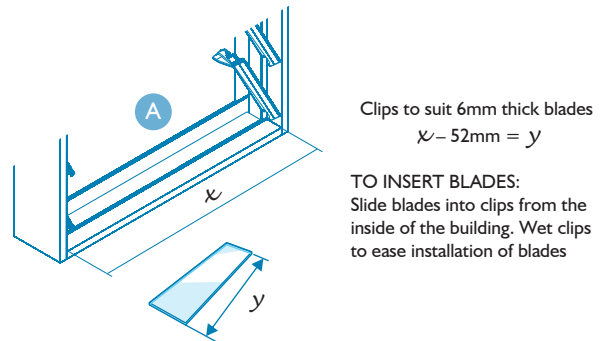
6 Insert and attach head section



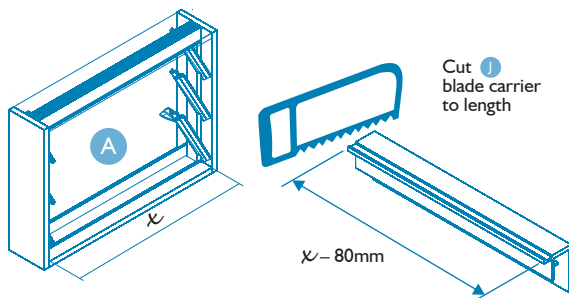
7 Check galleries to be true and plumb



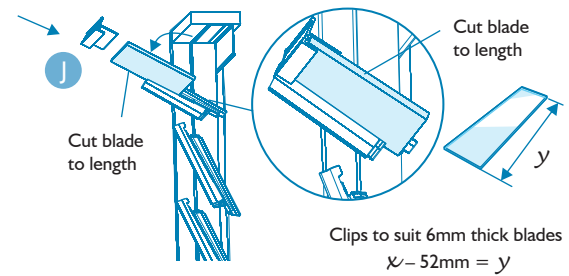
8 Calculation of blade width



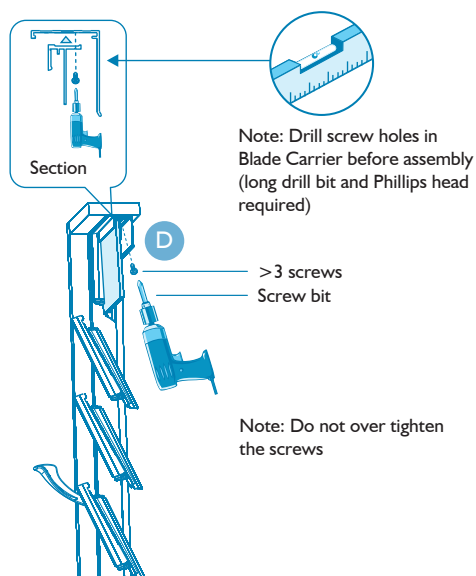
7a Cut blade carrier to length (Off-Standard Height Only)



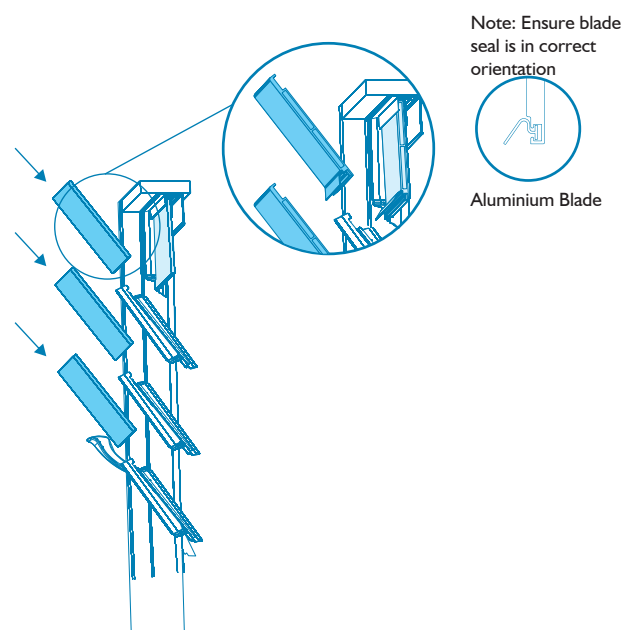
8a Assemble blade carrier and blade into galleries (Off-Standard Height Only)



8b Rotate blade and attach (Off-Standard Height Only)



9 Insert blades and close louvres (Off-Standard Height Only)



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