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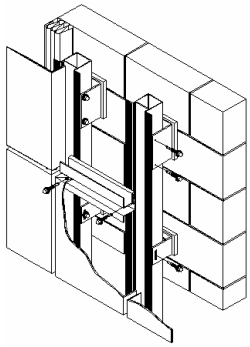

Ashtech *FREEDOM 1* Rain Screen

Warranty
Note: All fixings should be stainless steel and supplied/approved by Ash & Lacy Building Systems in order to validate the product guarantee.

Fixing Checklist

Wall Bracket to Structure	Qty:____No. Type:_____
Mullion to Wall Bracket	Qty:____No. Type:_____
Panel to Mullion	Qty:____No. Type:_____
Anti-Rattle Clips Present	YES:_____ NO:_____

Fixing Instructions

1. The *FREEDOM 1* system is an external wall over cladding with a base of either ACM or solid aluminium, crafted in the form of panels, which are attached by panel returns on a vertical framing of aluminium sections. The aluminium sections are fastened to the structure via adjustable brackets.
   A complementary insulation is usually positioned between the wall structure and the cladding. This insulation is ventilated by the layer of air circulating between the insulation and the rear face of the panels.

   The system is applicable on flat vertical substrates of masonry, concrete or steelwork, new construction or renovation, sheer or containing wall openings, located in upper storeys or on ground floor, protected from risks of impacts.

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3. It is imperative that the fixing sub structure is plumb and true and the omega mullions must be adjusted and aligned accordingly. It is vital that the omega mullions are correctly positioned plumb, true and vertical as they determine the final panel positions. The correct specification of fixings would be stainless steel or cadmium plated, either self-tapping or self-drilling/tapping, depending on substructure. The installer should satisfy himself that the size and quantity of fixings suits the project wind loading.

   Note: The panels will follow any undulation in the support system and it is essential the support system is true for a flat, flush façade to be achieved.

4. The design and installation of the aluminium framing is designed to be freely expandable.

   The layout study of the support system shall take into account the wind forces. The maximum on-centre between omega bars is determined either by a standard width of the panels (subtracting the dimensions of the panel returns and the upstands of the panels), or by standard lengths. The spacing of the wall brackets, and the omega bars shall be specified in such a way that the deflection of the omega bars will be equal to or less than 1/200 of the span. Practically speaking, spacings generally from 0.80 m to 1.50 m are admitted. Any cantilever of the omega bars with relation to the pintle of the extreme sliding brackets shall be limited to 250 mm. The support system can be adjusted thanks to the oblong holes.

   In every case, an air layer shall be provided, minimum thickness 25 mm next to the horizontal joints.

   The junctions of the omega bars shall be made, providing a spacing of 10 mm of expansion clearance by fish plating end to end with the aid of a sliding section, length 160 mm, incorporated on a single omega bar with the aid of two drive screws.

   Panels in 4 mm thick ACM are sized based on Tables which result from a computer programme based on finished elements, verified by experiments for current configurations.

   For non-specified formats, the performance under wind force shall be determined by testing according to the same criteria.

5. The omega sections are fastened to the structure with the aid of wall brackets, 'U' section manufactured from 3 mm mill finish aluminium. The wall brackets shall be sized according to the fixing of the façade insulation, and should allow for adjustment clearance of at least 30 mm. With a thermal pad behind the wall bracket where applicable. Dissimilar metals and cementicious structures should be isolated.

6. The omega section is an aluminium alloy extrusion, grade 6060 R19 – T5. The omega sections come in standard mill finish as 'extruded'.

   The system makes it possible to individually dismantle each panel (when standard 20 mm joints are utilised) and to make joints between panels in a range of 10 mm to 20 mm.

7. The panels have a flat surface, edged with perpendicular panel returns, providing coupling and giving them the necessary rigidity. The horizontal panel returns contain coupling extrusions. The top edge contains a coupling extrusion 'Z' section. The lower edge contains a coupling extrusion 'S' section.

   The panels shall be positioned and mounted on omega bars by fixings, in stainless steel or cadmium plated, either self-tapping or self-drilling/tapping, depending on substructure.

   With tray panel-elements based on a construction principle of 'S' – 'Z' principle, *FREEDOM 1* tray panels can be installed fast and simple with the tongue and groove joint.

   The maximum horizontal and vertical width of gap is 20 mm.

   The minimum horizontal and vertical width of gap depends on length of elements and construction conditions.

   The tray panel elements are fixed at each upper tray panel edge on the vertical arranged substructure section (omega section). To this the 'Z' – section is fixed by stainless fascia screws to the top hat section.

   To ensure the thermal expansion due to the changes in temperature, oblong holes are to be site formed in the top 'Z' section extrusion at the lateral fixing points. There should be one direct fixing point. The slot size should relate to the co-efficient of expansion of aluminium (0.000023/℃) and the panel length. As a general rule 1.0 mm / Lm should be allowed.

8. Commence at the bottom of the elevation and fix a starter bar/drip/guide bar to ensure horizontal alignment of the panels. Panels fixing sequence starts at the bottom of the elevation with the fixing of the base angle or starter bar (depending upon system chosen) to the omega mullions. Panels are generally fixed to the top edge. Check with the engineer regarding fixings, as there may be the need for intermediate fixings, dependant on panel size.

9. To avoid clatter noise between the horizontal sections as a result of wind loading it is recommended to use anti-rattle plastic clips in a distance of 1 m.
   The anti rattle clips are fastened to the male extrusion 'Z' section part of the system.

   It may be of some use to use a wooden spacer block to set the vertical and horizontal joint width as once the panels are fixed on, it will not be possible to slide them along the locating extrusions.

10. The panels then are located and fixed over the extrusions, ensure that each panel is fully located within the 'Z' & 'S' extrusions.

    Complete tiers of panels are fixed along to the end of the elevation.

11. In high wind load areas such as at corners/parapets it may be found necessary to fit additional fixing cleats. Check with engineer for this particular arrangement.

12. Openings for ventilating the air layer are to be provided at the lower and upper part of the cladding. However, the essential part of the ventilation is provided by the clearance on the periphery of each panel.

    At the foot of the cladding, the opening is protected by fine mesh or perforated sheet metal, constituting an anti-rodent barrier or by a bottom drip flashing, leaving an opening of about 20 mm.

    At the top of the cladding, the opening consists of a space of about 20 mm on the inside of the parapet between the downward extension of the coping and the parapet.

13. Panels around openings may require special treatment, please check detail drawings. Panels, flashings and extrusions may have a requirement for drainage holes, make sure they are clear.

14. Panels that are accidentally damaged after installation can be easily replaced.

    After unscrewing the fixing, the panel is easily freed by dismantling from the front.

    In the case of installation of variants with reduced joint dimensions, replacing a panel requires dismantling all or part of the panels above with relation to the opening of the horizontal joints.

15. If it is a requirement for the rain screen to have sealed joints, Ash & Lacy Building Systems can provide a purpose made EPDM push in sealing strip. An alternative is wet jointing such as silicone or polysulphide fill may be used.

If there are any queries with the fixing of the panels and panel supports, they must be checked with the panel layout and detail drawings first, and then raised with Ash & Lacy Building Systems Ltd. before commencing installation.

End of Procedure