

DUOTHERM elite

*INTERNALLY and EXTERNALLY BEADED
CASEMENT WINDOWS*

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SPECIFICATION

GENERAL DESCRIPTION

The "Duotherm *elite*" window system described in this manual is suitable for both replacement windows for existing buildings and for installation into new building work.

The system incorporates externally beaded vent frames suitable for cockspur and espagnolette locking (ECC 70) and shootbolt locking (ECC85 & ECC 90) and an internally beaded vent frame suitable for cockspur and shootbolt locking (ECC88).

The system uses shuffle beads and flexible gaskets to accommodate double glazed units of thickness 6mm, 20mm, 24mm, 28mm and 32mm (the internally beaded vent frame uses a retained PVC-U bead and flexible gaskets to accommodate 24mm double glazed units only) to meet the requirements of BS 6262: Code of Practice for Glazing.

Weatherseals are Q-Lon set in undercut channels.

PROFILE SPECIFICATION

The window frames are constructed of profiles combining an external aluminium alloy extrusion to BS 1474: 1987, extruded from 6063 T6 alloy and an internal PVC-U extrusion.

The external aluminium alloy extrusion is pre-treated and finished either:-

- a) Anodised to BS 3987: 1987, grade AA25 to a natural self colour or other agreed colour.
- b) Polyester powder organic coating to BS 6496: White RAL 9910 High Gloss finish, Black RAL 9005 Matt finish, Brown RAL 8912 Satin finish or other agreed colour.

After finishing, the aluminium and white PVC-U extrusions are joined in a rolling machine to produce a permanent bond between the two extrusions.

GENERAL MANUFACTURING INFORMATION

Outer and vent frames are made by cutting the frame profiles with accurate 45° mitred ends using Tunsten Carbide Tipped Saw Blades, operating at approximately 3000 rpm.

The corners are joined using the Duotherm crimping tools to form a cold forged corner joint (made by deforming small slugs of metal into the groove of the corner cleat).

The ends of transoms and mullions are profiled to fit the frame and fixed using self-tapping screws.

On polyester powder coated finishes great care should be taken to avoid getting gap sealer on visible surfaces and should be removed as soon as possible with a clean cloth.

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Care should be exercised when using products not supplied by Smart Systems Ltd as no responsibility can be accepted.

WINDOW DRAINAGE

As with all dry glazed window systems, it is recommended that the window system is drained and ventilated as shown in this manual.

In order to get maximum performance and weather resistance it is recommended that drips are used over all vents.

OUTER FRAME MANUFACTURING INFORMATION

The outer frame members are cut with 45° mitred ends to the overall size required, measured to the longest point of the metal.

Q-Lon weatherseal is inserted into the retaining grooves at any position that vents occur in the finished window.

Prior to corner crimping the centre line position of any transoms or mullions should be marked on the outer frame members. Where the transom/mullion runs right through, it should be marked out on both jambs or head and cill members in pairs to ensure accurate alignment of the sections.

Using the marked centre line, Drill Jig WCJ 107 ZIZ should be attached to the outer frame member (taking care not to over-tighten the location screw) and the transom/mullion fixing holes drilled using a 4.3mm dia. drill bit.

Corners are formed by coating the cut faces to be joined with a suitable small gap sealer. Into the PVC-U part of the profile insert the special corner chevron moulding WCA 049 CLZ or WCA 050 CLZ. These also should be smeared with a suitable gap sealer. Into the aluminium part of the profile insert a corner cleat FSC 029 MFZ and, where required, the aluminium corner chevrons WUA 044 MFZ. The two mitred ends are then brought together and crimped. The small gap sealer ensures a permanent joint and guards against the ingress of moisture and joint movement. After crimping the corner joint, special care should be taken to ensure any excess sealer is removed from painted and PVC-U surfaces.

Transoms or mullions ECC 72 and ECC 86 are cut with square ends to the sizes calculated on the cutting formula sheets. The ends are then profiled to allow them to fit into the outer frame. Special tooling is available to profile the end of transom/mullion ECC 92.

Prior to fixing of transoms and mullions smear the cut ends with a suitable gap sealer. After fixing, special care should be taken to ensure any excess is cleared from painted and PVC-U surfaces.

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VENT FRAME MANUFACTURING

The vent frame members are cut with 45° mitred ends to the overall vent size required measured to the longest point of metal. In addition, if espagnolette or shootbolt locking is to be fitted the necessary vent frame members should be prepared to accept the hardware.

Prior to corner crimping, insert Q-Lon Weatherseal into the weatherseal channel of the vent frame.

EXTERNALLY BEADED VENT FRAMES

Corners are formed by coating the cut faces to be joined with a suitable small gap sealer. For ECC 70 insert the corner chevron moulding WCA 049 CLZ into the PVC-U part of the profile which should also be smeared with a suitable small gap sealer. Into the aluminium part of the profile insert a corner cleat FSC 029 MFZ and on ECC 85 and ECC 90 insert the aluminium corner chevron WCA 106 MFZ. To ensure the corners of the Q-Lon are sealed against entry of water a small amount of clear silicone should be applied to the cut ends. The mitred ends are then brought together and crimped. The small gap sealer ensures a permanent joint and guards against the ingress of moisture and joint movement. Care should be taken to ensure any excess water is removed from painted and PVC-U surfaces. Finally, to provide additional support, the corners of ECC85 and ECC90 should be drilled to accept a No.8 x 3/8" screw WCA 131 SSZ.

The cutting sizes produce vent frames with a cavity of 13.5mm for cockspur and espagnolette locking (ECC 70) or 16.5mm for shootbolt locking (ECC 85 and ECC 90). Use 13mm friction stays with ECC 70 and 16mm friction stays with ECC 85 and ECC 90.

When fixing the friction stays into both the outer and vent frame, care should be taken to ensure that holes are located on 'V' grooves in the aluminium extrusions.

INTERNALLY BEADED VENT

Corners are formed by coating the cut faces to be joined with a suitable gap sealer. Into the aluminium part of the profile insert a corner cleat WCC 051 MFZ. To ensure the corners of the Q-Lon are sealed against entry of water a small amount of clear silicone should be applied to the cut ends. The mitred ends are then brought together and crimped. The small gap sealer ensures a permanent joint and guards against the ingress of moisture and joint movement. Care should be taken to ensure any excess sealer is removed from painted and PVC-U surfaces.

The cutting sizes produce vent frames with a cavity of 13.5mm for cockspur and shootbolt locking for use with 13mm friction stays.

When fixing the friction stays into both the outer and vent frame, care should be taken to ensure that holes are located on 'V' grooves in the aluminium extrusions.

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INTERNALLY BEADED ADAPTOR FRAME

The internally beaded adaptor frame members (ECC 89) are cut with 45° mitred ends to the overall size required, measured to the longest point of metal. Care should be taken when measuring and cutting the frame members as only a nominal clearance is required when the assembled frame is fixed in the outer frame. Before cutting the bar length slide the retained gasket RUA 025 BLZ into the section ensuring it is not stretched. Cut both gasket and bar at the same time.

Corners are formed by coating the cut faces to be joined with a suitable small gap sealer. Into the mitred corner insert a corner cleat WTC 024 MFZ and an aluminium corner chevron WUA 044 MFZ. The small gap sealer ensures a permanent joint and guards against the ingress of moisture and joint movement. Care should be taken to ensure any excess sealer is removed from painted surfaces.

COCKSPUR LOCKING

If cockspur locking is to be used after the vents have been hung in the outer frames, the handle and wedge fixing holes can be drilled using jig WCJ 093 HSZ.

The ovolo profiles ECC 91 and ECC 92 are not suitable for cockspur locking.

TOP HUNG VENTILATORS WHEN USING COCKSPUR HANDLES

If the width of the ventilator frame is less than 750mm, fit one handle.

If the width of the ventilator is greater than 750mm, fit two handles.

Where height exceeds width, it is recommended that handles are positioned on the vertical rails approximately 200mm up from the bottom of the moving frame rather than the cill/transom rail.

SIDE HUNG VENTILATORS WHEN USING COCKSPUR HANDLES

If the height of the ventilator frame is less than 750mm, fit one handle.

If the height of the ventilator is greater than 750mm, fit two handles.

GLAZING

All beads are cut to suit the glazing aperture on the fully assembled window for glazing either at factory or on site as required.

EXTERNALLY BEADED GLAZING

Glazing beads are fitted to openings by cutting the horizontal beads square to head and cill of each vent and fixed light area. Vertical beads are cut at 45° both ends. When using glazing beads ECC80, ECC81, ECC82 & ECC84, ECC97 & ECC98 slide the retained WCA 139 BLZ gasket into section and ensure it is not stretched. Insert bottom beads and two setting blocks

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to ensure glass will be centralised in vertical dimension of opening (glazing blocks must be full width of cavity to fully support glass or sealed unit), then insert top bead followed by side beads. Finish glazing by insertion of internal gaskets all round.

INTERNALLY BEADED GLAZING

Glazing beads are fitted to openings by cutting the horizontal beads square to head and cill of each vent and fixed light area. Vertical beads are cut square at both ends. Insert bottom beads and two setting blocks to ensure glass will be centralised in vertical dimension of opening (glazing blocks must be full width of cavity to fully support glass or sealed unit), then insert top bead followed by side beads. Finish glazing by insertion of internal gaskets all round.

RECOMMENDED DESIGN LIMITATIONS

Side Hung Vents

Maximum Width: 600mm
Minimum Width: 450mm

Maximum Height: 1200mm
Maximum Weight: 18kg (Friction Stays)

Top Hung Vents

Maximum Width: 1000mm

Maximum Height: 1000mm
Minimum Height: 300mm

For window sizes above these recommended design limitations contact the Research & Development Department at Smart Systems Ltd.

SPECIFICATION

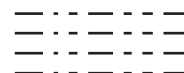
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PROFILES

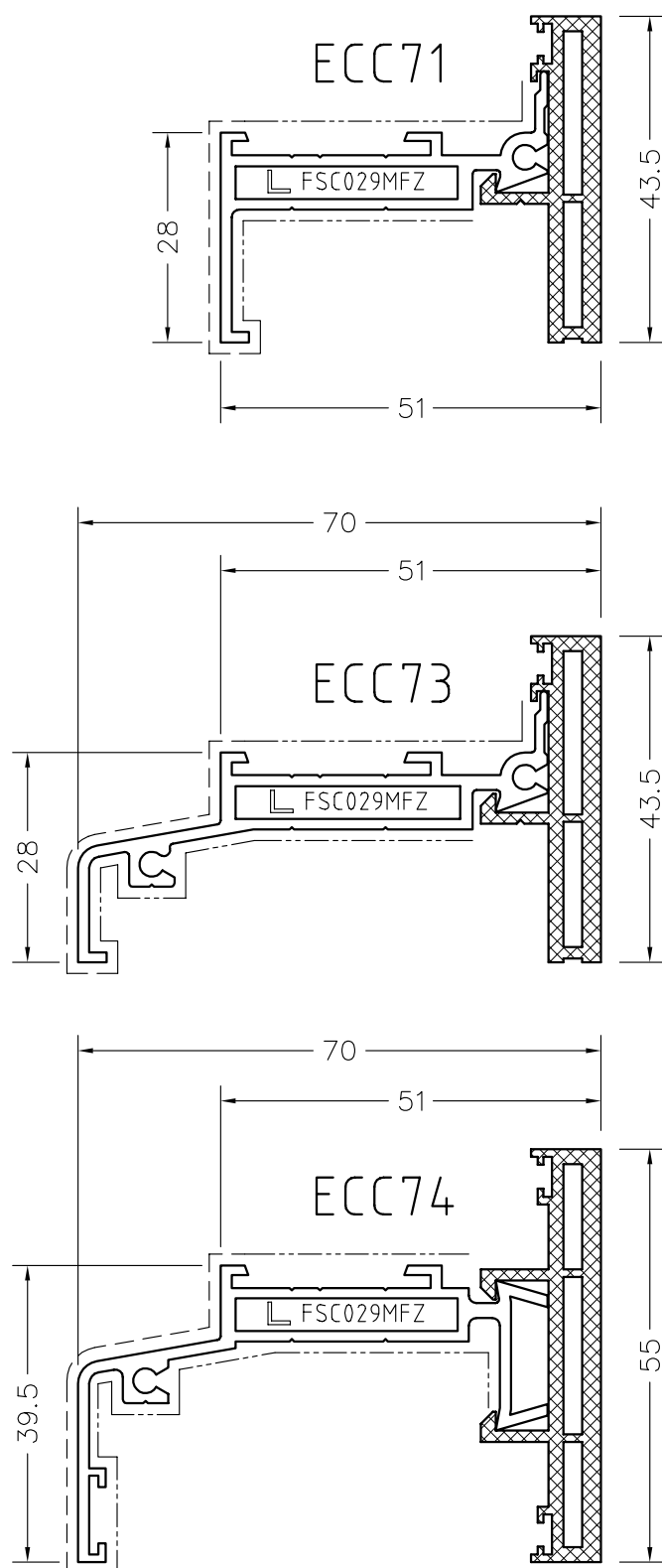
OUTER FRAMES



Primary visible side



Secondary visible side

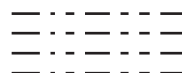


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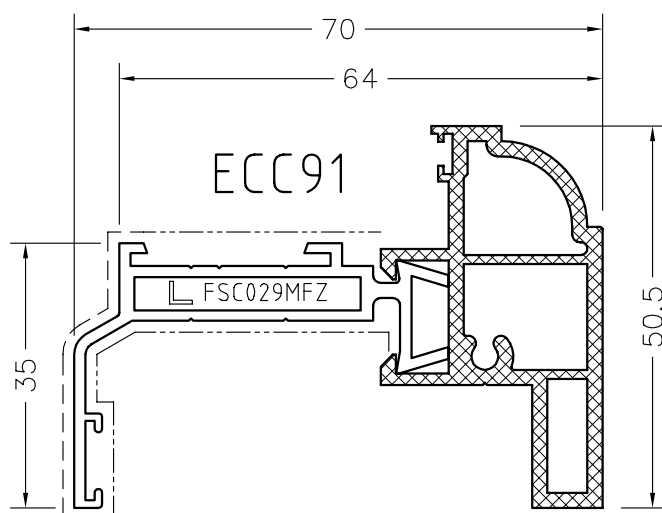
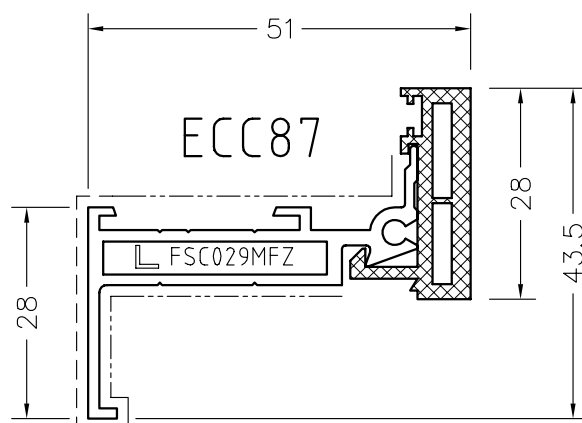
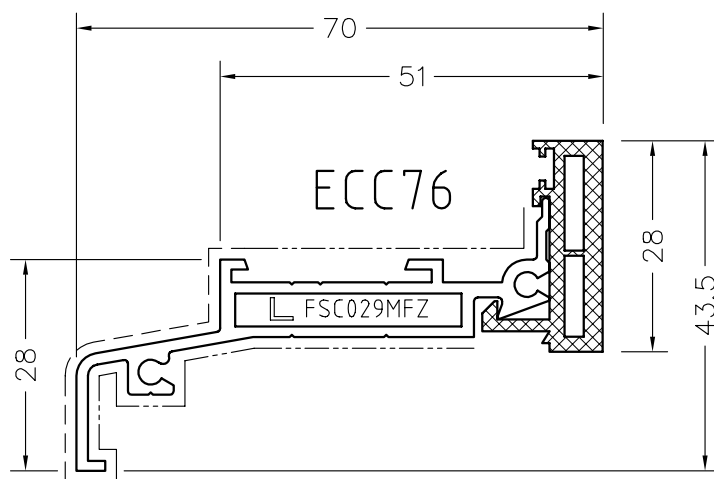
OUTER FRAMES



Primary visible side



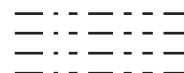
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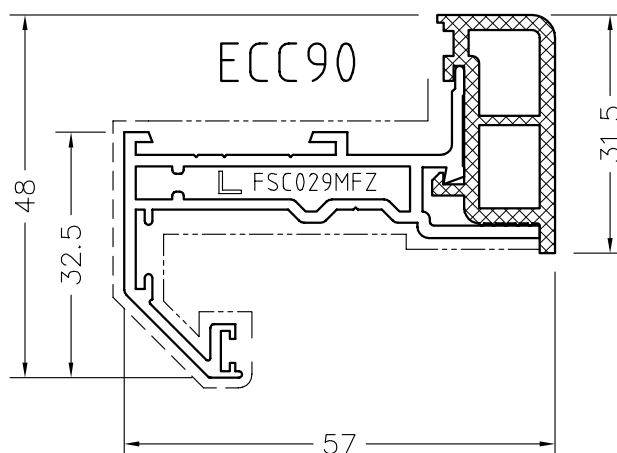
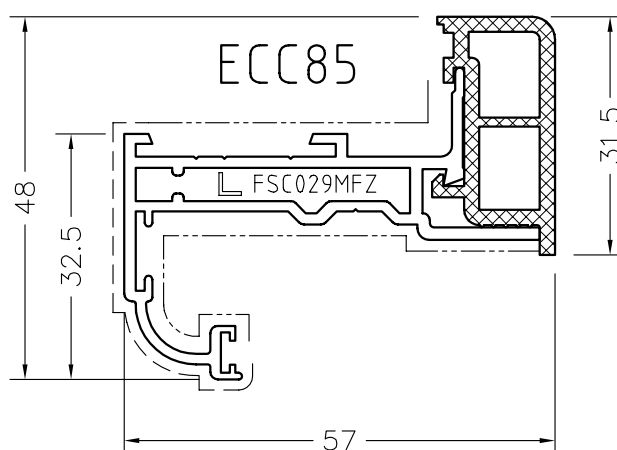
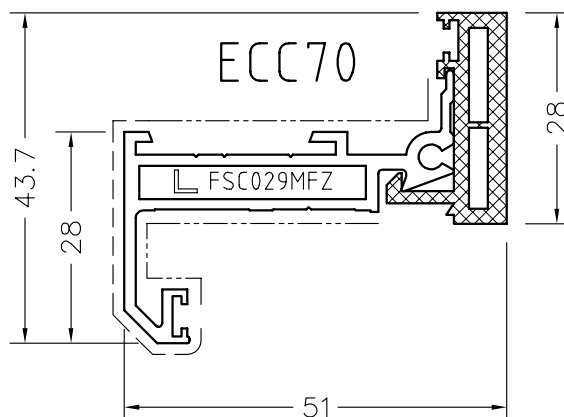
PROFILES
VENT FRAMES



Primary visible side



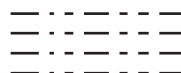
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PROFILES
BEADS

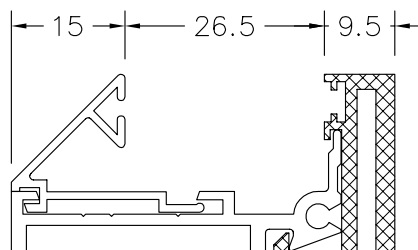
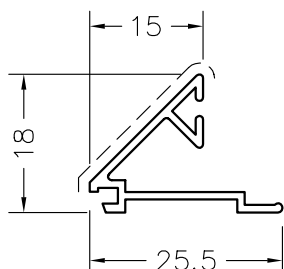


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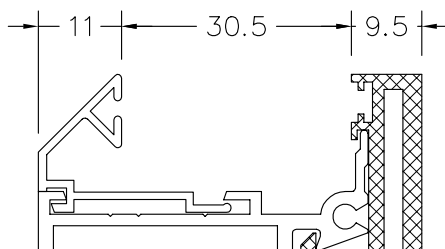
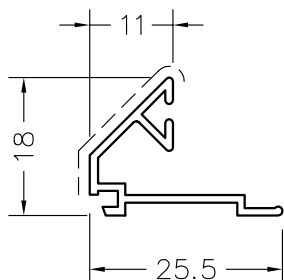


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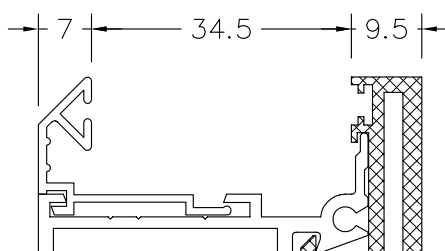
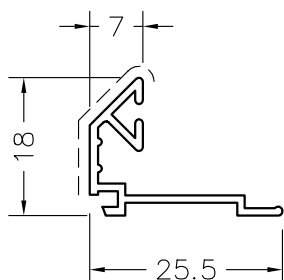
ECC80



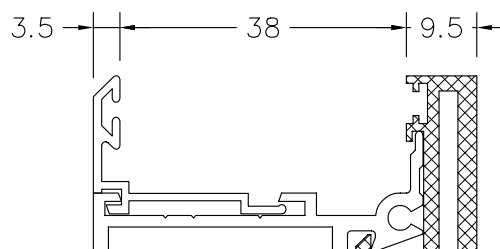
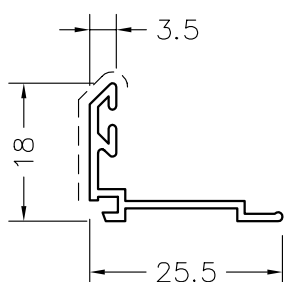
ECC81



ECC82



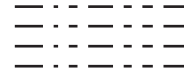
ECC84



**PROFILES
BEADS**

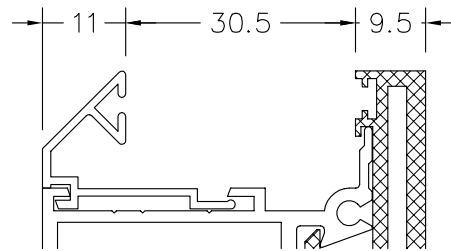
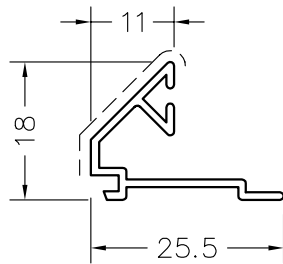


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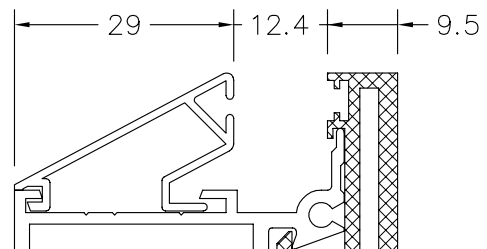
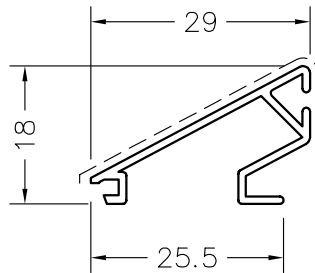


Secondary visible side

ECC97



ECC98

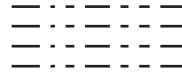


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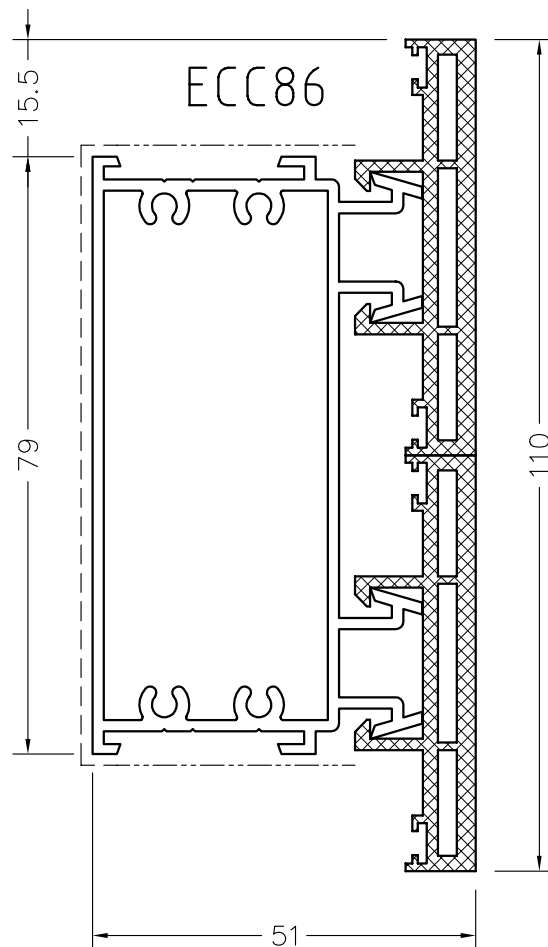
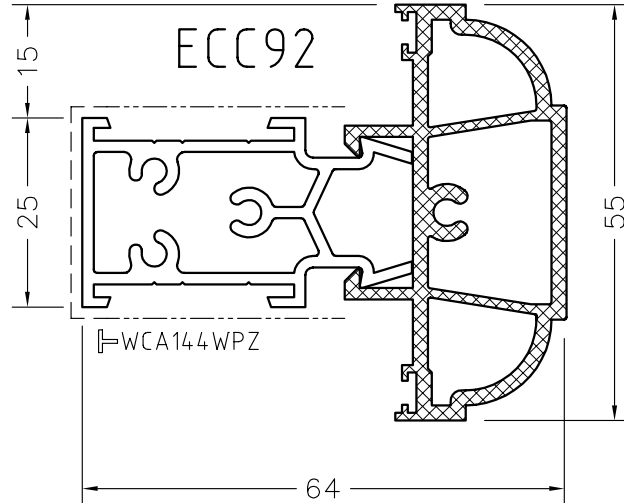
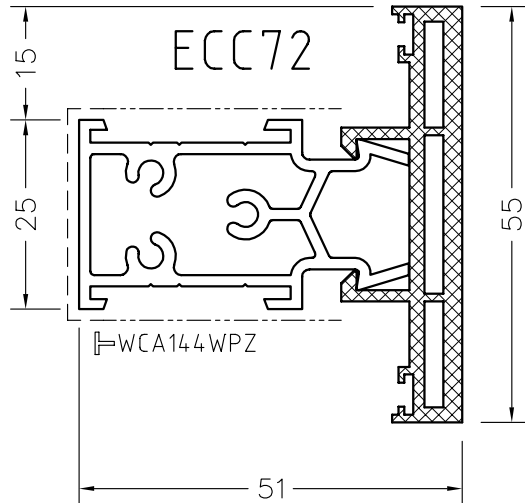
TRANSOMS / MULLIONS



Primary visible side



Secondary visible side

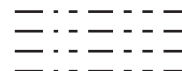


PROFILES

OUTER FRAME EXTENSIONS

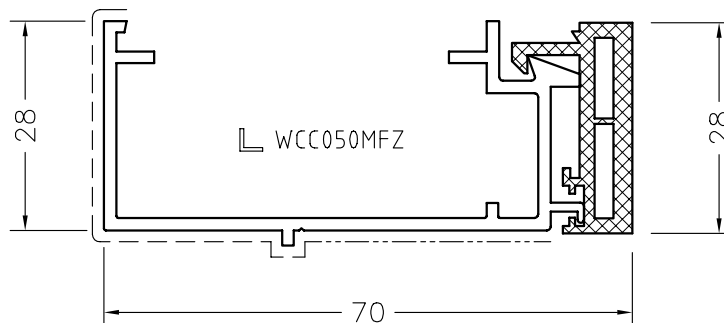


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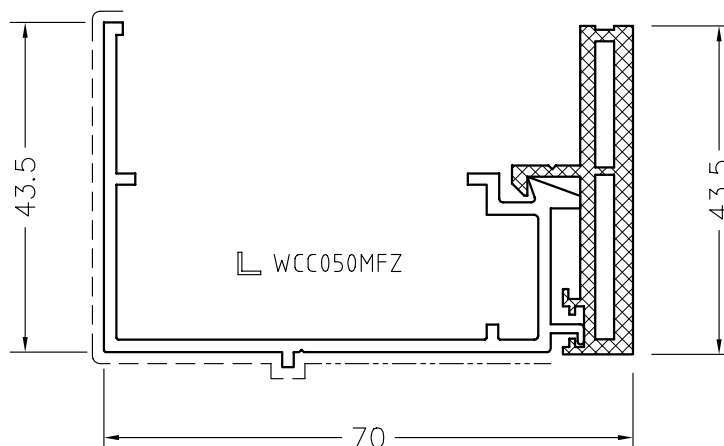


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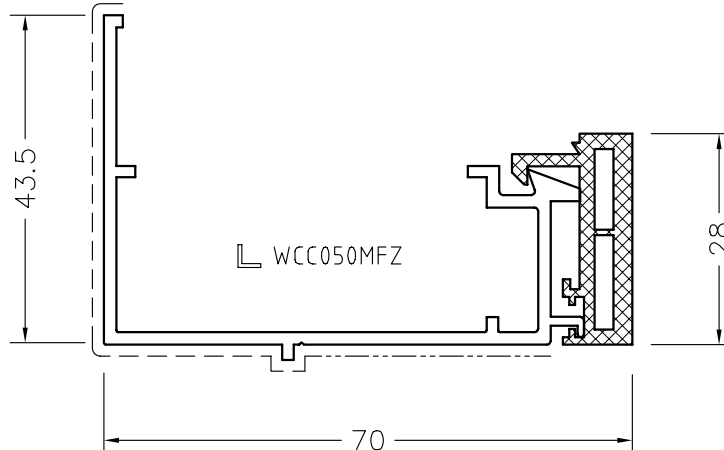
ECC22



ECC23

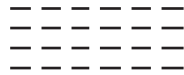


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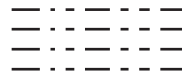


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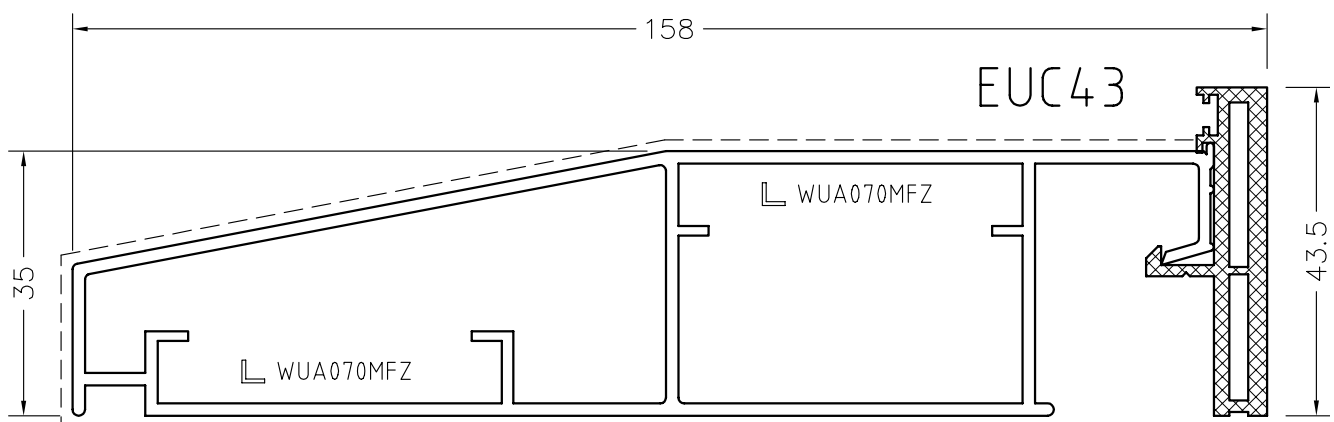
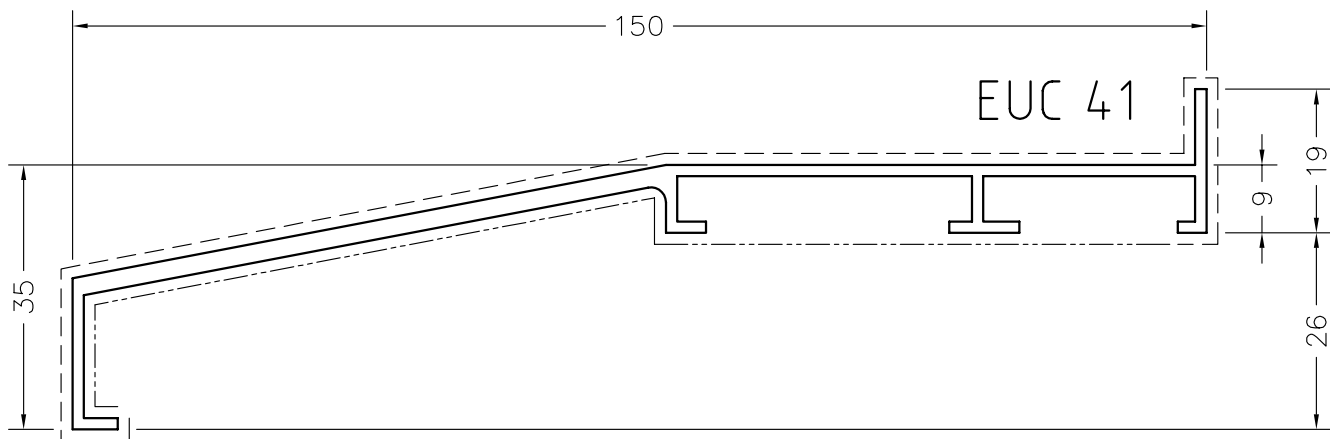
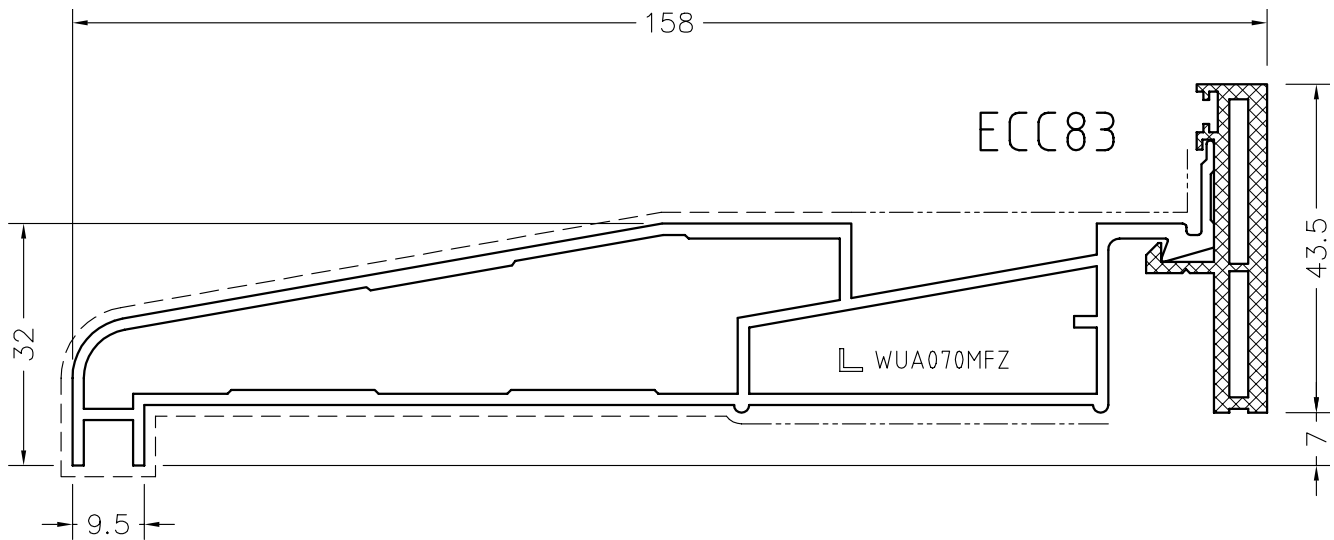
CILL



Primary visible side



Secondary visible side

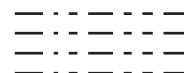


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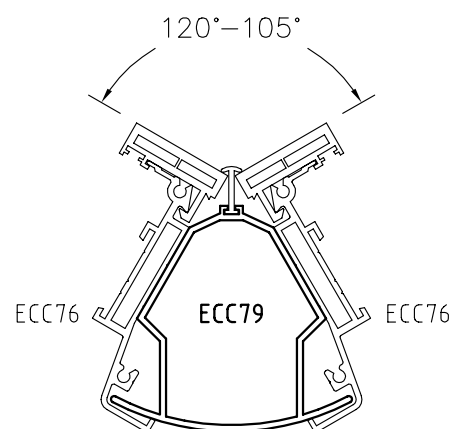
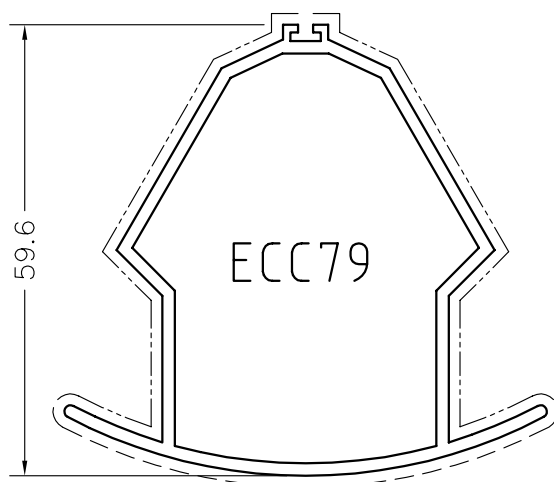
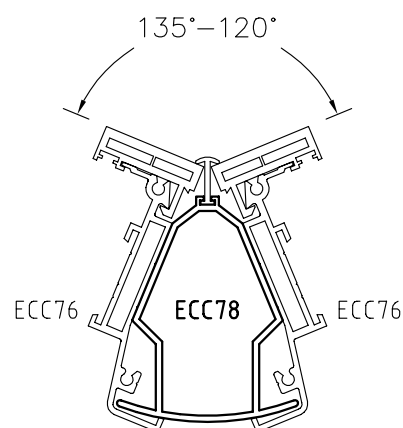
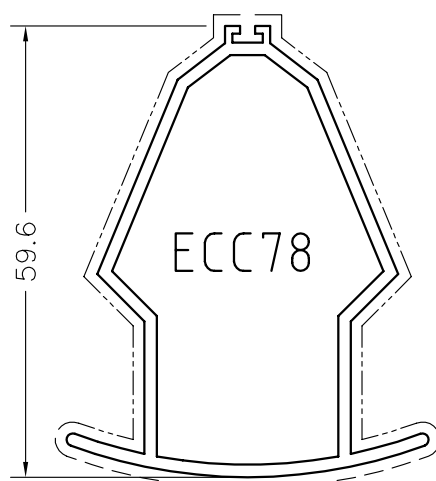
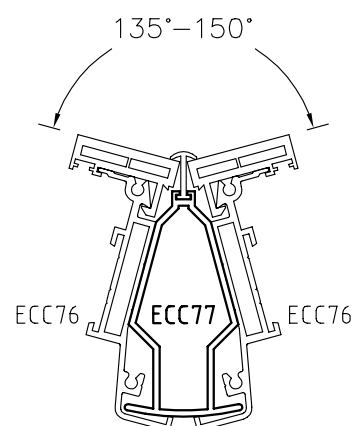
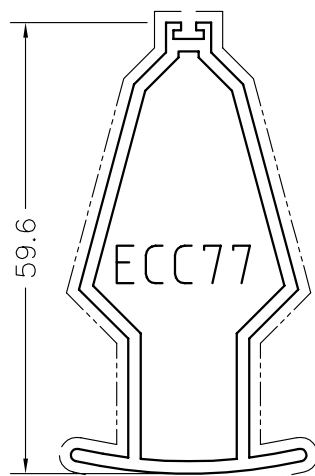
VARIABLE ANGLE MULLIONS



Primary visible side



Secondary visible side

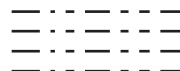


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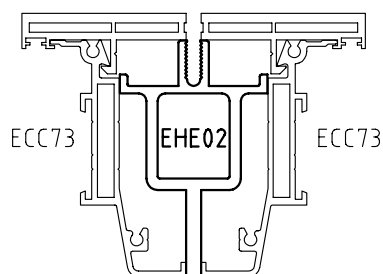
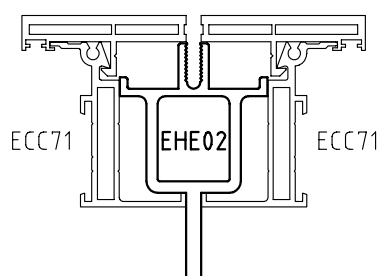
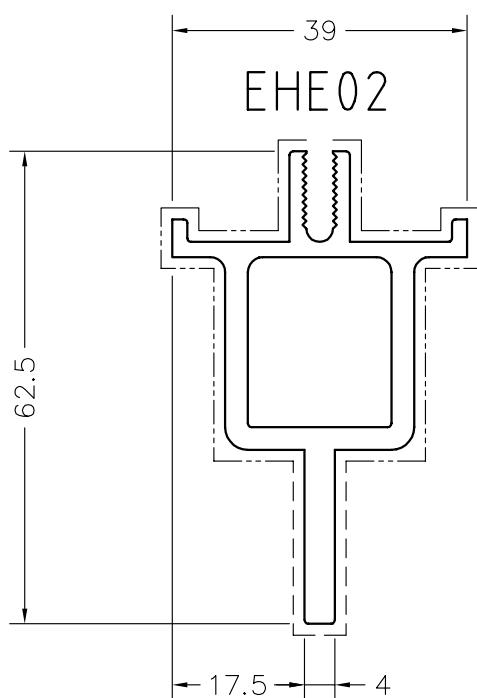
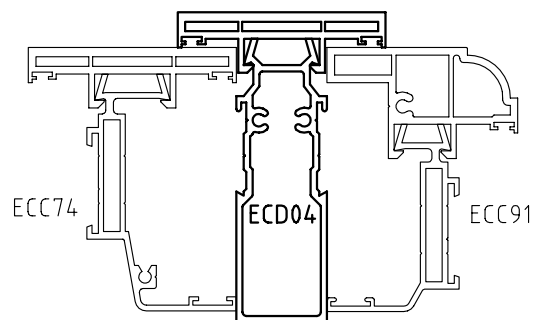
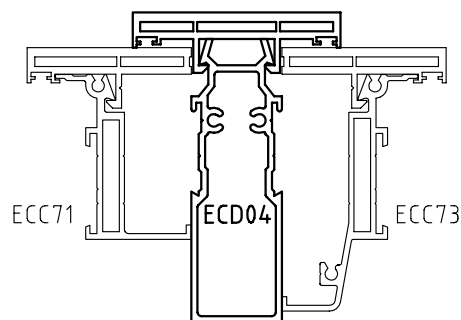
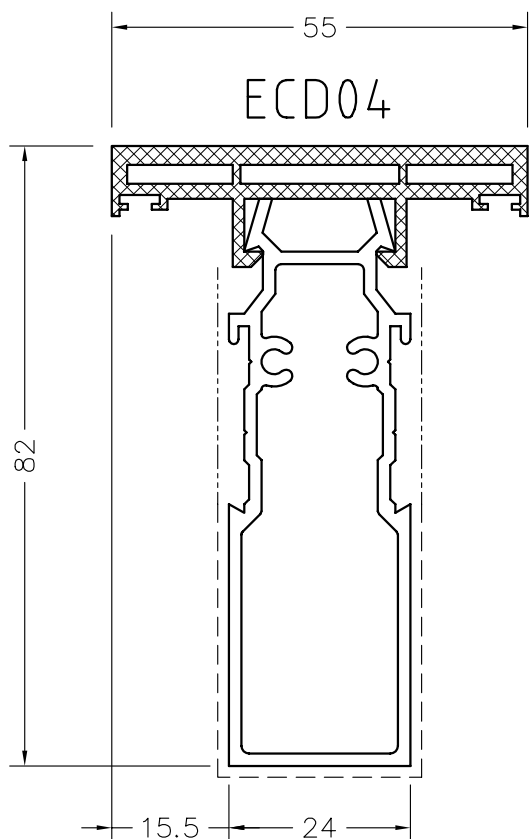
CONNECTING MULLIONS



Primary visible side



Secondary visible side

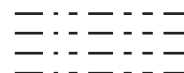


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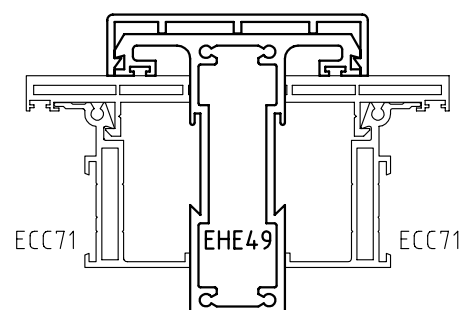
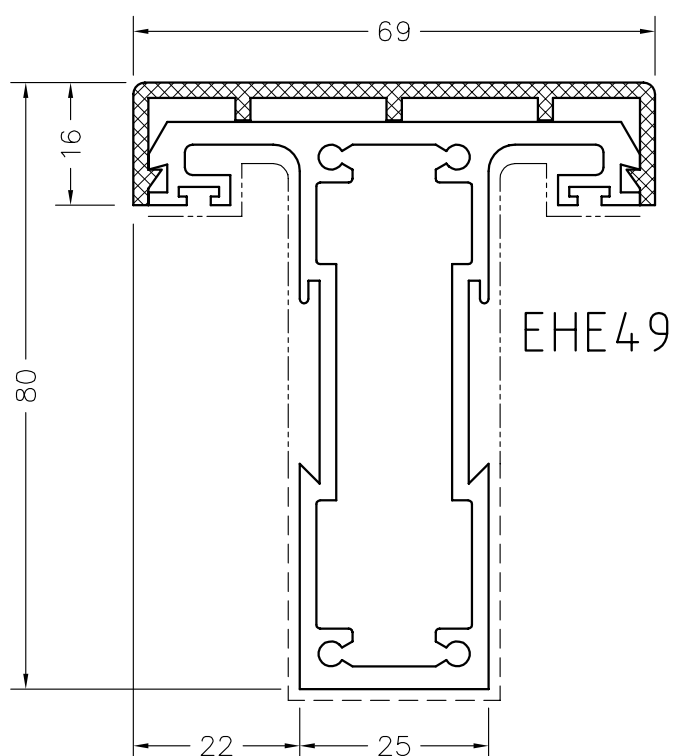
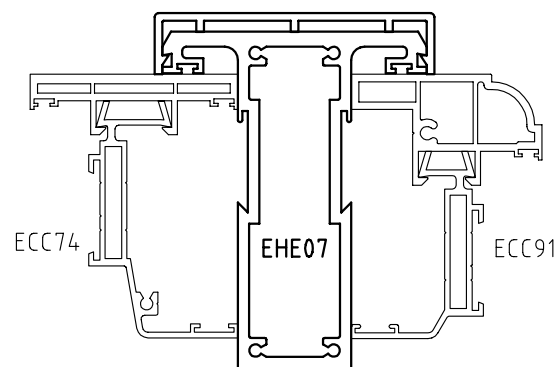
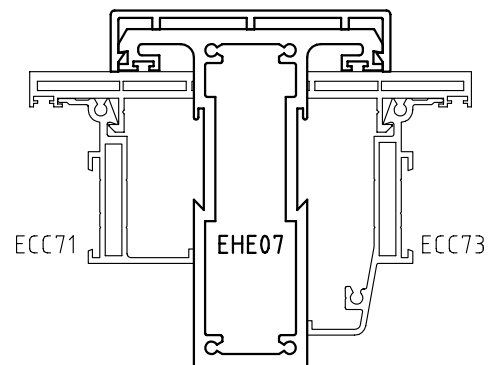
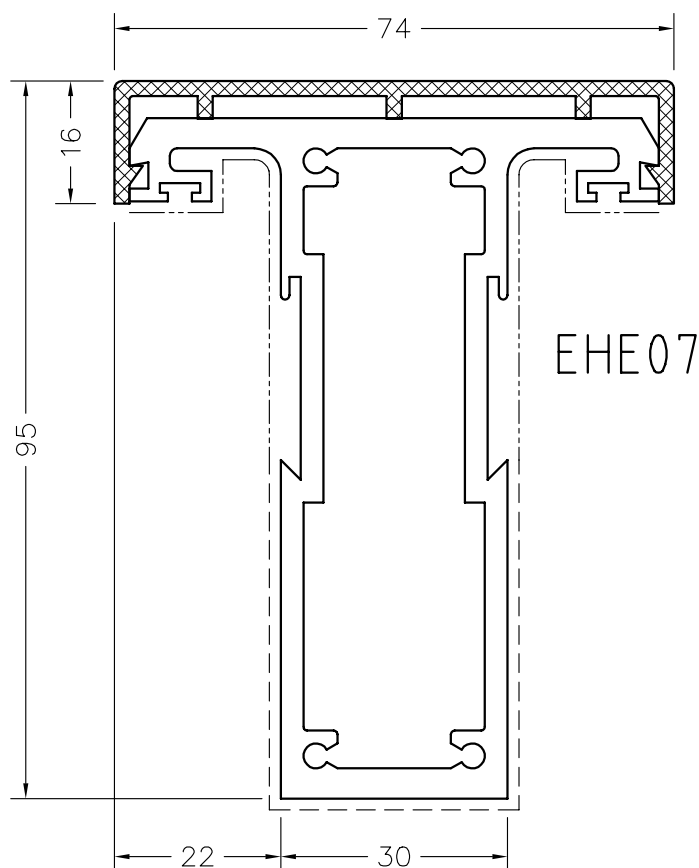
CONNECTING MULLIONS



Primary visible side



Secondary visible side

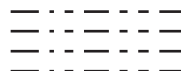


PROFILES

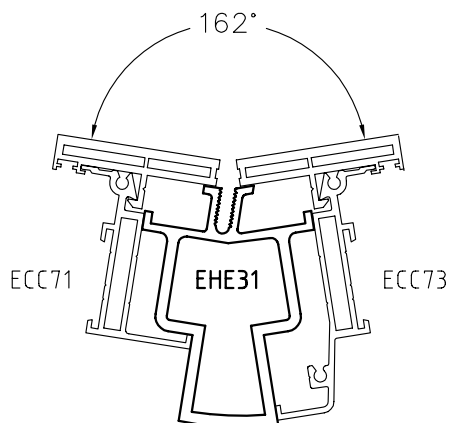
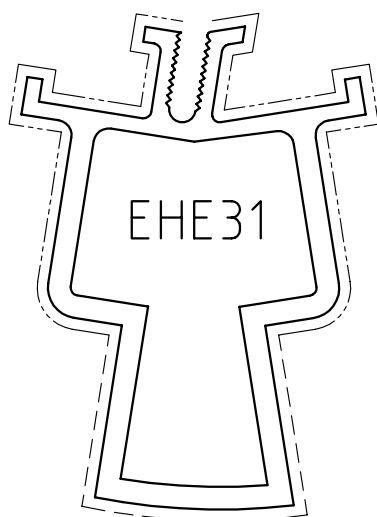
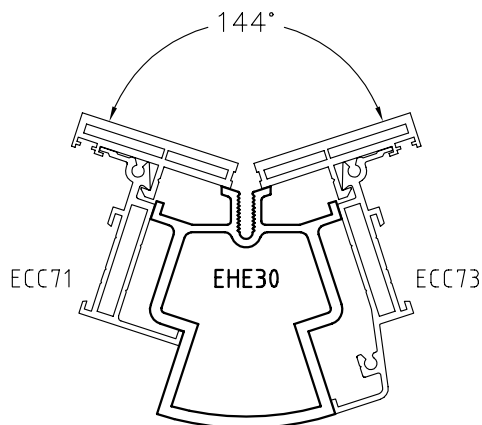
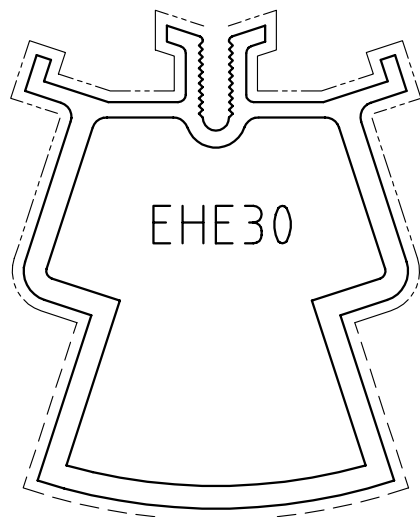
FIXED ANGLE MULIONS



Primary visible side



Secondary visible side

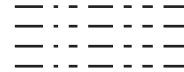


PROFILES

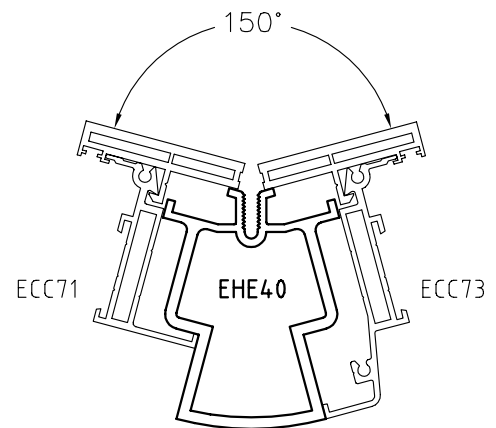
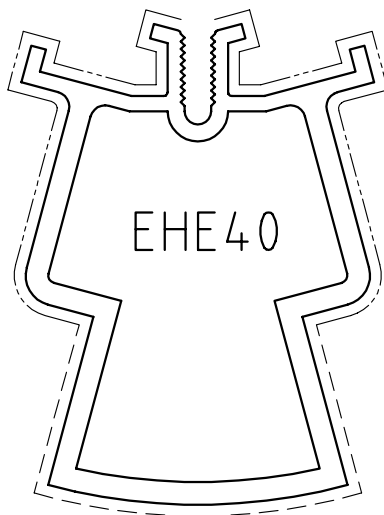
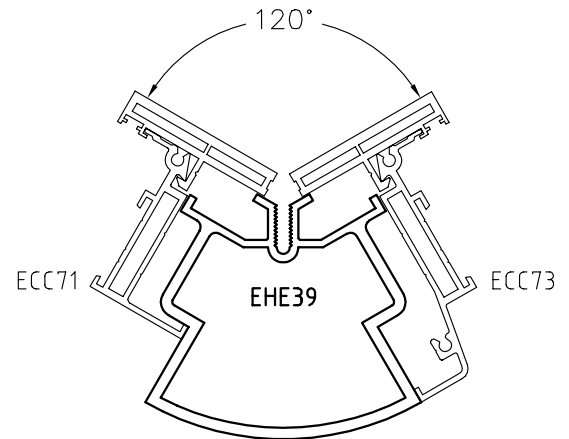
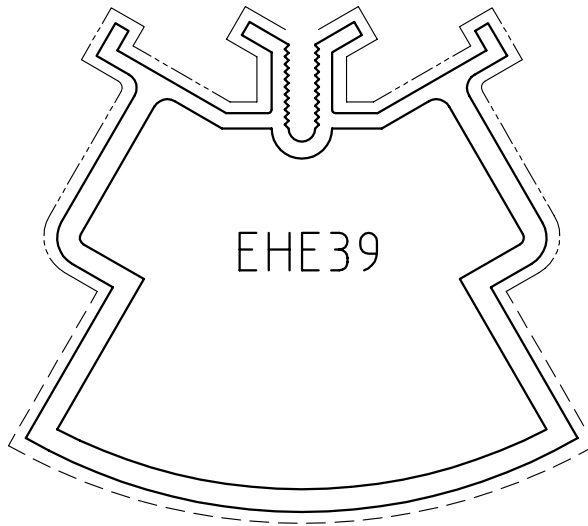
FIXED ANGLE MULLIONS



Primary visible side



Secondary visible side

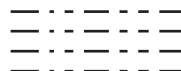


PROFILES

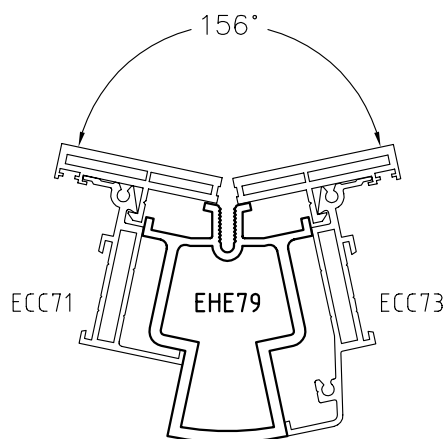
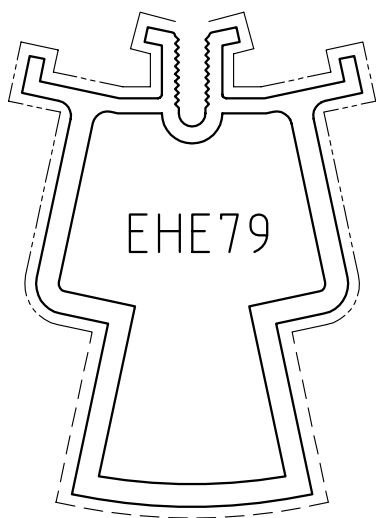
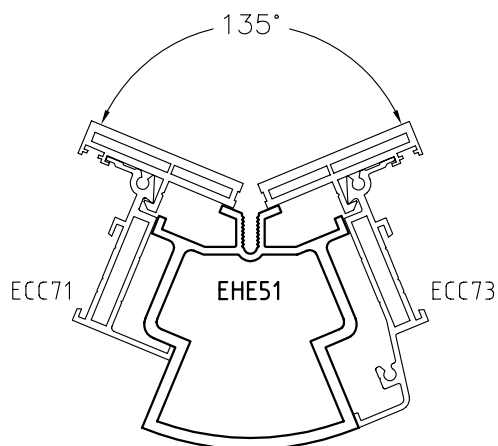
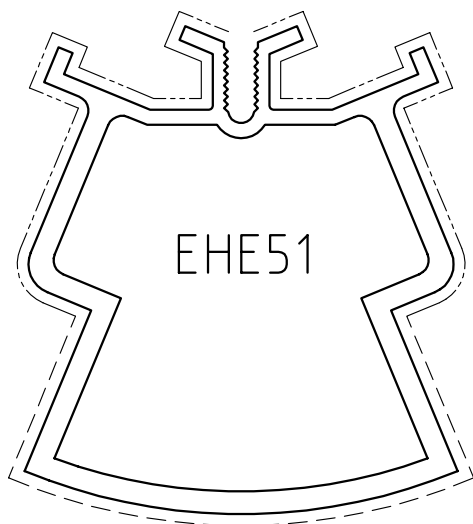
FIXED ANGLE MULLIONS



Primary visible side



Secondary visible side

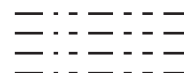


PROFILES

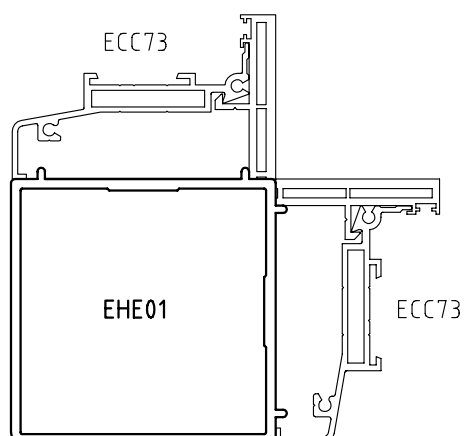
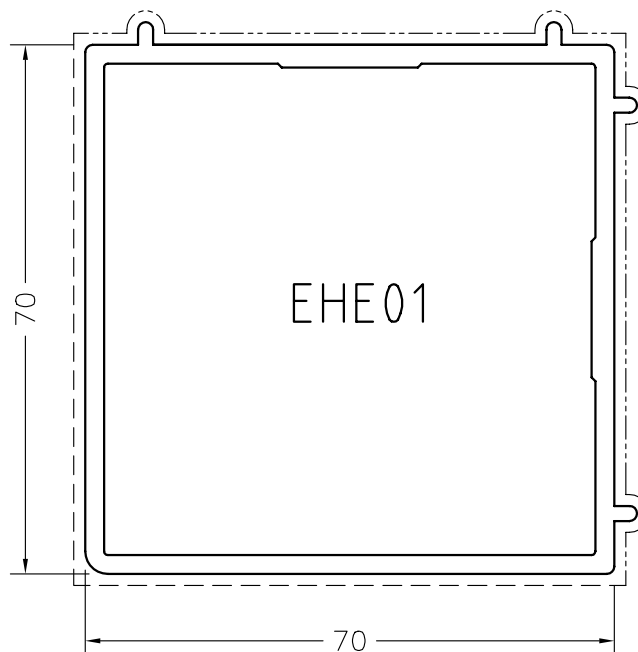
CORNER POST



Primary visible side



Secondary visible side

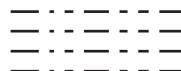


PROFILES

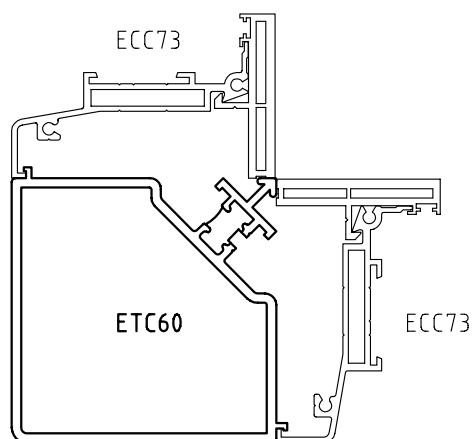
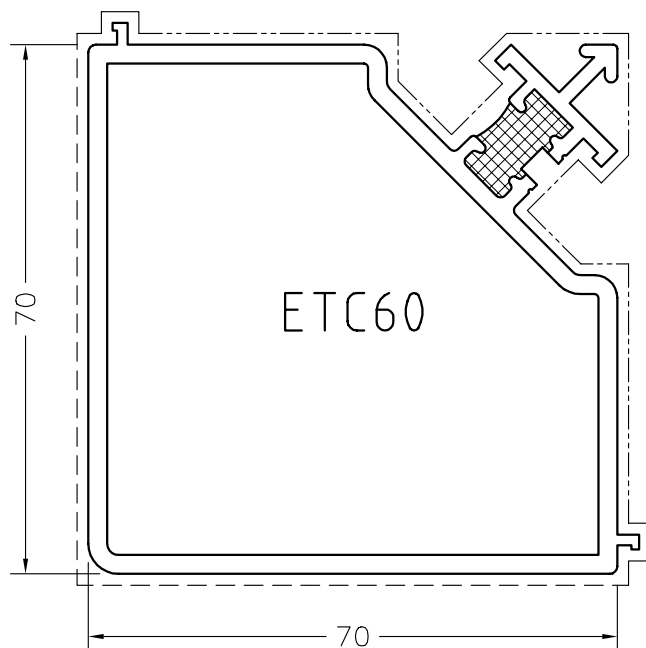
CORNER POST



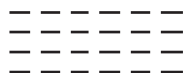
Primary visible side



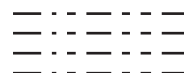
Secondary visible side



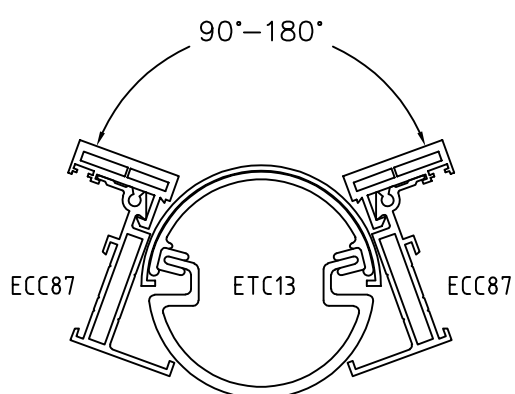
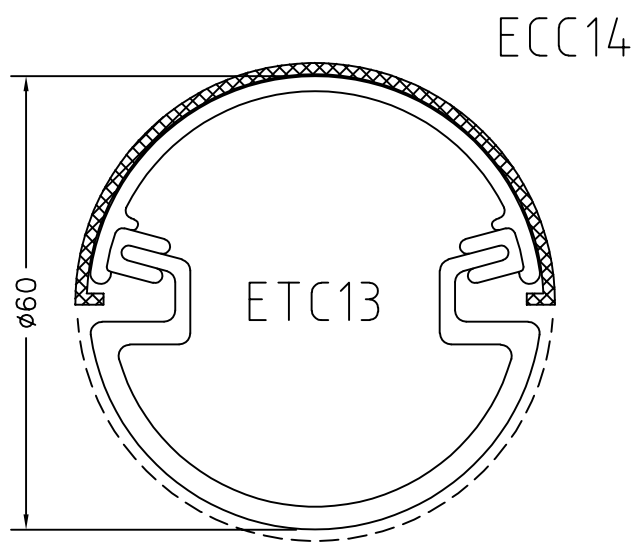
PROFILES
BAY POLE



Primary visible side



Secondary visible side

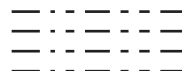


PROFILES

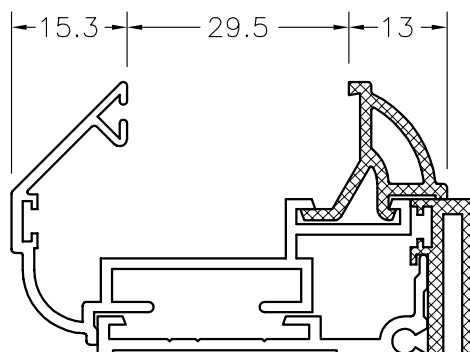
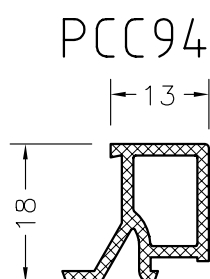
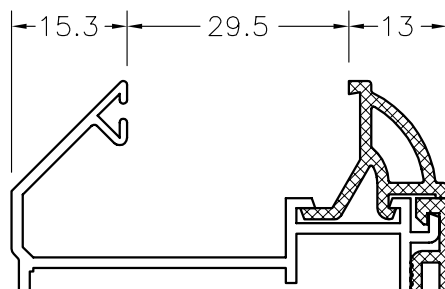
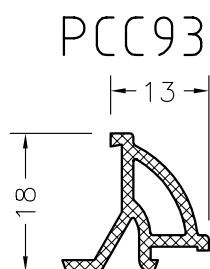
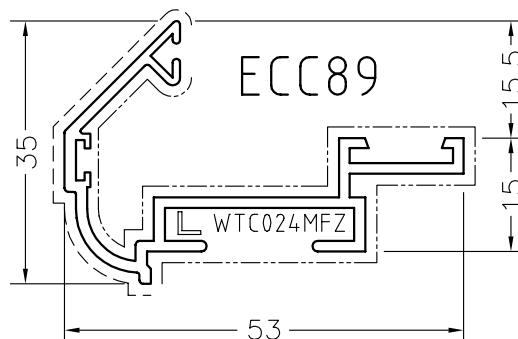
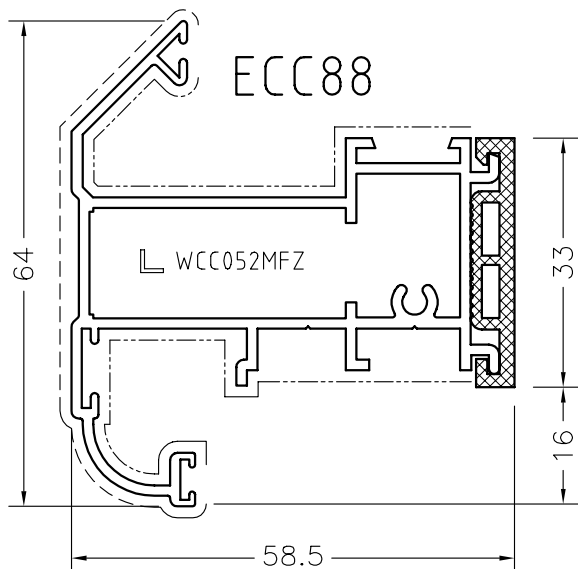
INTERNALLY BEADED SUITE



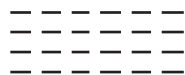
Primary visible side



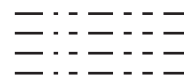
Secondary visible side



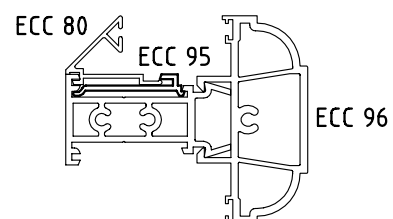
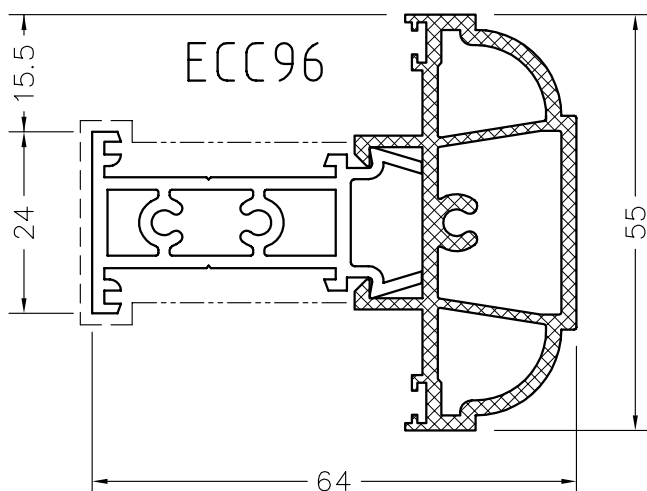
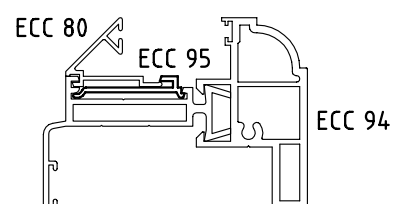
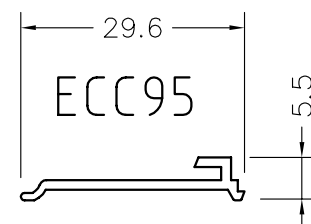
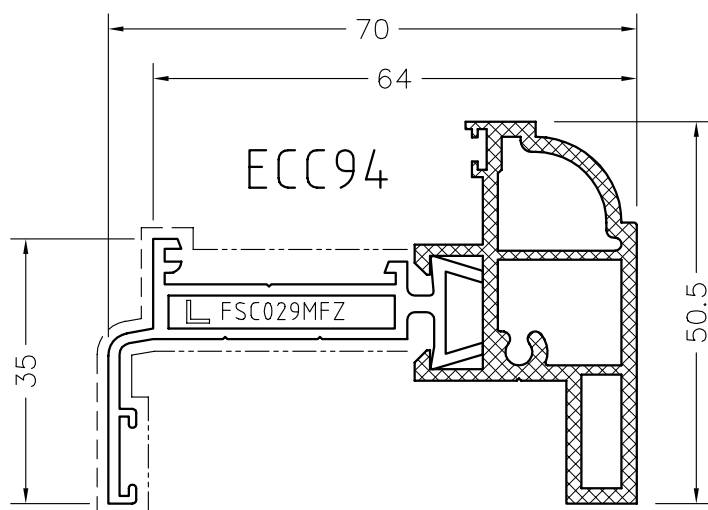
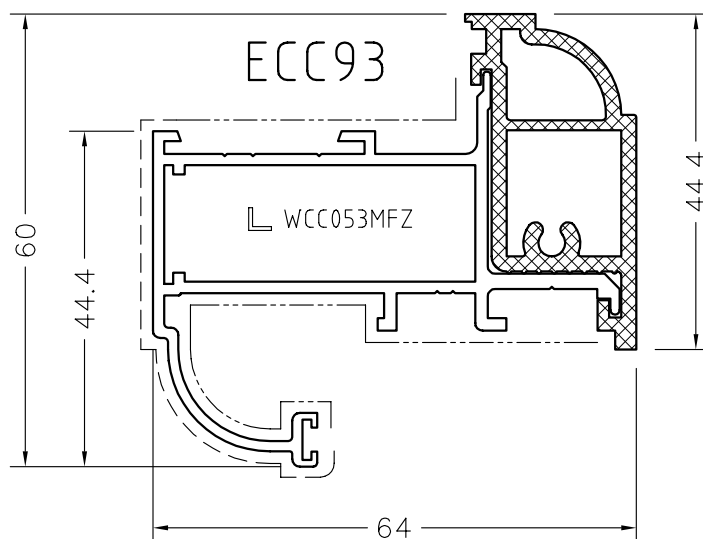
**PROFILES
HEAVY DUTY SUITE**



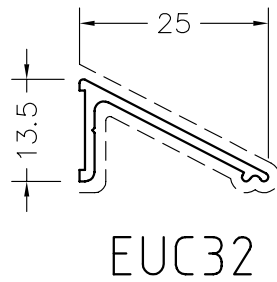
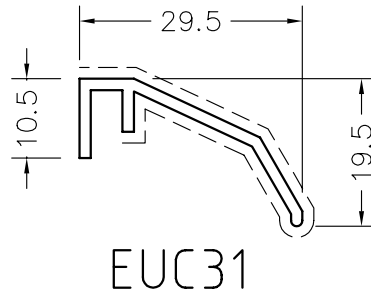
Primary visible side



Secondary visible side



PROFILES
WEATHERBARS



FABRICATION DRAWINGS
CLEANING, MAINTENANCE AND
REPAIR ON PAINT FINISH

CLEANING, MAINTENANCE AND REPAIR PROCEDURE FOR ORGANIC PAINT COATINGS (ACRYLIC AND POLYESTER) ON ALUMINIUM WINDOWS, DOORS AND ARCHITECTURAL PRODUCTS.

In compiling these guidelines we would also draw your attention to a publication by the Council for Aluminium in Building, 191 Cirencester Road, Charlton Kings, Cheltenham, Gloucestershire GL53 8DF (TelNo: 01242 578278).

"Guidance in the handling, care, protection, fixing and maintenance of aluminium windows and doors."

1. CLEANING AND MAINTENANCE

- a) In areas within the direct influence zones of salt water, industrial chemical plants, blast furnaces or other aggressive emission sources, the window should be cleaned at least every three months. In a relatively cleaner environment every six months should be sufficient.

In carrying out regular maintenance outside, the internal surfaces are frequently neglected. After a period of time, grime and deposits from tobacco smoke, coal and oil fires, etc. can discolour the inside of the window frame and it is recommended that these should be cleaned at least once per year.

**FABRICATION DRAWINGS
CLEANING, MAINTENANCE AND
REPAIR ON PAINT FINISH**

b) Procedure

(i) Wash down with clean warm water containing a non-alkaline liquid detergent (in a concentration which can be handled safely with bare hands) using a non-abrasive cloth, sponge or soft bristle brush. This will remove grime, grease and any excess chalking. All ridges, grooves, joints and drainage channels where salt or other deposits can collect should be well washed out, thus preventing corrosion sites from occurring!

(ii) Rinse thoroughly with clean water.

(iii) Dry using a soft cloth or leather.

c) Where a reduction in gloss is observed, chalking is evident or excessive staining has occurred, then an approved renovating cream may be carefully applied with a non-abrasive cloth.

Note: T-Cut or similar automotive paint restorer may be used provided it is not too abrasive!

Care must be taken not to abrade sharp corners of section or aris of beads too heavily where the paint film is normally thinner, and it should be remembered that this operation should not be carried out too frequently.

Polish with a soft cloth to restore gloss and colour uniformity.

d) For extra protection a wax polish can be applied once or twice a year again polishing with a soft cloth to restore gloss.

2. REPAIR

a) Blisters and corrosion sites may originate from areas where mechanical damage or scratches have penetrated the paint coating through to the aluminium, or from cut bar or butt ends, mitres, drill holes or drainage slots, where the aluminium is unprotected (see part 3c).

b) Procedure:

(i) Use fine grade 120-360 grit abrasive paper to remove corrosion products and any non-adherent paint.

(ii) Wipe with white spirit or approved cleaning solvent.

(iii) Ensure surface is absolutely dry before applying a thin priming coat. Allow 20-30 minutes to 'flash off'.

(iv) With a fine brush again, touch in the damaged and primed area with an air drying paint.

**FABRICATION DRAWINGS
CLEANING, MAINTENANCE AND
REPAIR ON PAINT FINISH**

It should be recognised that the air drying paint will not possess the same weathering properties as the stoved organic coating, but nevertheless will give a reasonable amount of protection. Their use should of course be confined only to small areas of damage.

3. AT THE FABRICATION AND INSTALLATION STAGE

- a) Grease marks, dirt and mastic spillage may be removed using white spirit or an approved solvent which will not soften the paint film or adversely affect its weathering properties.
- b) Self adhesive tapes and clear lacquers must not be applied as irreparable damage, under certain conditions, can occur to the organic coating.
- c) It is recommended that all cut bar ends, mitres and butt joints, drainage slots and drill holes should be coated with an air drying paint system including a primer/corrosion inhibitor and a top coat and/or suitable gap sealant to provide protection against the initiation of corrosion sites where the aluminium is exposed. This protection is particularly important if the units are to be fitted in coastal or other aggressive environments.
- d) Fabricators and installers should take maximum care during assembly, transit and fitting not to damage the paint coating.

Note: Beware swarf on benches, end damage of assembled frames in transit or on site and the careless use of sharp ended screwdrivers or other tools for forcing 'snap-fit' beads into position! If the paint film is unavoidably damaged and bare aluminium revealed, the damage must be repaired immediately using procedure 2b.

4. POINTS TO BEAR IN MIND WHEN SPECIFYING ORGANIC COATED ALUMINIUM

- a) No organic paint coating, whether polyester or acrylic (or indeed if the substrate is PVC-U) is 'maintenance free' and that especially when installing in coastal districts or areas with high industrial pollution, advice should be given at the time of installation regarding the frequency and nature of cleaning maintenance needed.
- b) Modern organic finishes which we apply to architectural aluminium are practically identical to the types used on motor vehicles and therefore require a similar degree of care and attention which people typically lavish on their car bodywork. The frequency of cleaning relates directly to the decorative standard which the householder wishes to maintain and also the particular environment where the units are situated.
- c) All paints 'chalk' to some extent in service and a reduction in gloss level will occur. The original finish can be easily restored using the procedure in 1c.