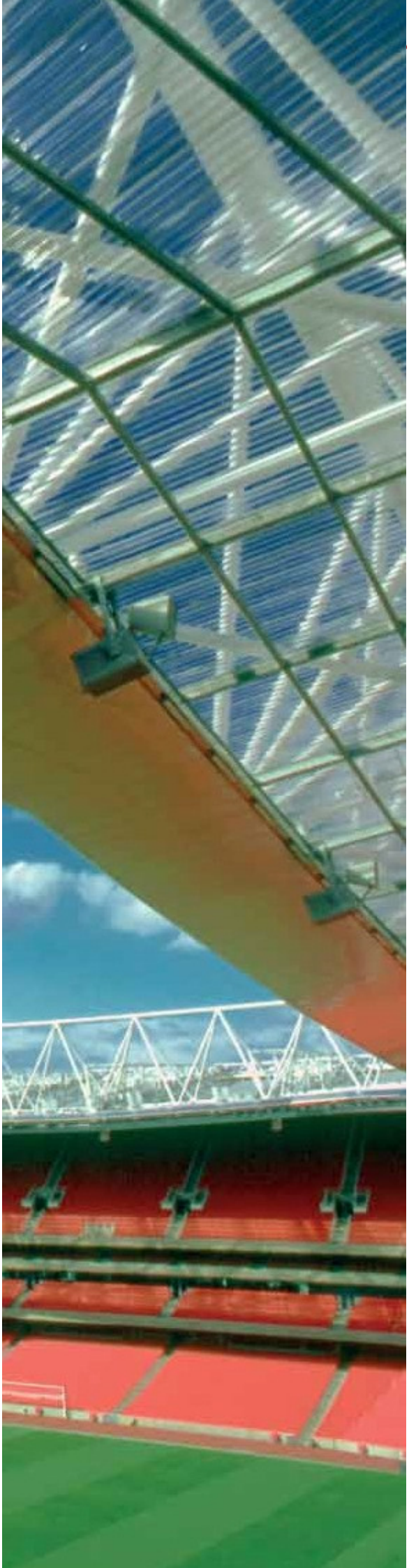
marlon

POLYCARBONATE SHEET

Corrugated Polycarbonate Glazing Installation Guide.



marlon cs
LONGLIFE

Contents

INTRODUCTION

Marlon CS Longlife is a range of high performance corrugated polycarbonate sheet offering superior light transmission, excellent impact resistance and is 200 times stronger than glass.

Marlon CS can be used to form complete roof coverings or can be incorporated into profiled metal roofing & cladding systems ranging from single skin to composite panel.

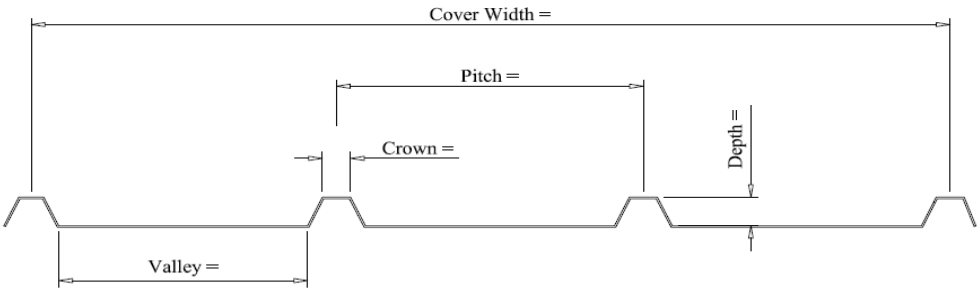
PROFILE MATCHING

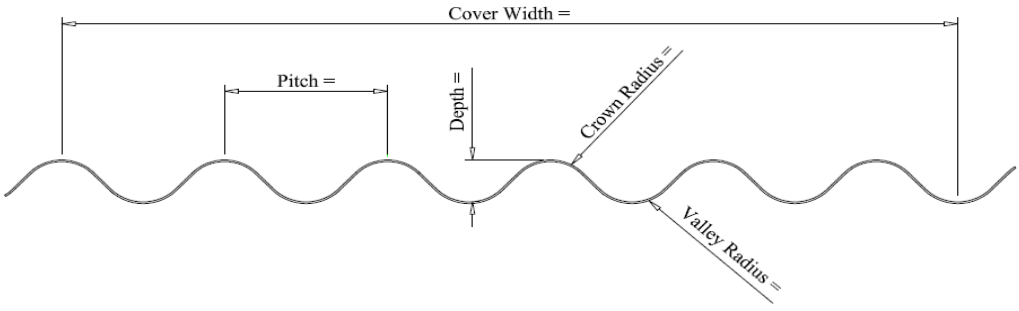
Marlon CS Longlife is available in a range of profiles and thicknesses. The extensive range provides the ideal glazing solution for a wide range of applications including DIY profiles, Agricultural, Horticultural, Industrial & Stadia.

Brett Martin holds the biggest profile database for corrugated plastic sheet and can profile match to any corrugated metal & fibre cement roofing & cladding system.

Certain profiles come in a variety of thicknesses. It is best to contact the Technical Services Department to determine what best suits your needs.

Minimum order quantities apply. Speak to your sales representative to discuss your specific requirements. A full library of our profiles is available to download from our website. Alternatively you can contact our Technical Services Department and they will be able to assist you. Please see below examples of key dimensions required to find a match:-





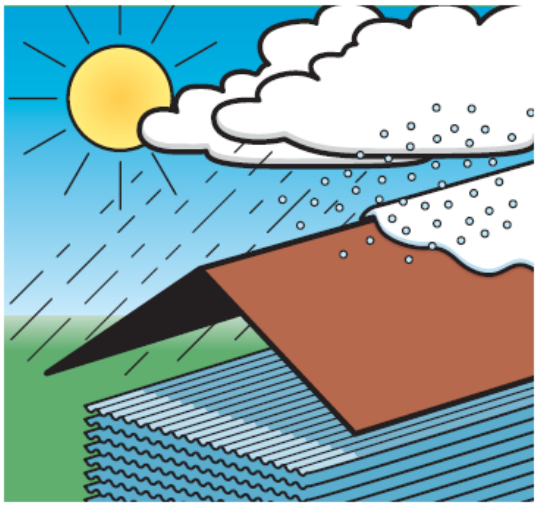
TRANSPORTATION, HANDLING & STORAGE

Transport Marlon CS sheets horizontally on flat, sturdy pallets, equal to or longer than the longest sheet. Short sheets should be stacked on top of the longer ones. All panels should be secured and properly fastened to the pallet during transportation.

Handle Marlon CS with care at all times as it is a glazing material. NEVER walk on Marlon CS sheets. Where access across Marlon CS covered roof is necessary, use walking boards placed across at least three purlins to spread the load. Lift sheets cleanly off the stack. Sheets in excess of 3m long should be carried by more than one person.

Store Marlon CS sheets on a flat, horizontal and dry surface. Stack height should not exceed 1m. It is recommended that sheets are stored indoors where possible. If sheets are being stored outdoors they must be covered with an opaque cover, tightly secured, to protect from wind, rain and sun.

It is most inevitably found that poor standards of handling, storage and installation lead to the majority of problems encountered with rooflights in general.



SAFETY MEASURES

Of all glazing materials polycarbonate exhibits greatest resistance to impact over a temperature range of –20 to +100°C (short term = -40 to +120°C). It is approximately 200 times more resistant to impact than glass.

Marlon CS Longlife is however still a glazing material and therefore must be treated with appropriate care at all times.

Sheets up to 3m long can be safely handled by one person but larger sheets will require two or more persons. When handling and fitting sheets particular care must be taken in windy conditions.

Do not walk on Marlon CS Longlife sheets at any time.

Abrasion to the top surface of the sheet will damage the UV protective layer leading to discolouration and premature failure of the sheet.

CHEMICAL RESISTANCE & FIRE HAZARD

Marlon CS Longlife has, in general, excellent resistance to most chemicals; resistance to specific compounds depends on concentration and temperature, duration of exposure and stress within the sheet.

Contact with plastisol coated metal sheets, wet wood preservatives, solvents and alkali cleaners should be avoided. However Marlon CS Longlife has good resistance to acids, aliphatic hydrocarbons and alcohols; common environmental pollutants and marine environments do not have a detrimental effect.

For details on the chemical resistance of Marlon CS Longlife to a range of chemicals please refer to the Marlon CS Longlife product guide. Specific data sheets are also available from the Technical Services Department.

The fire performance of MARLON CS Longlife has been independently tested. For the most up to date certification please contact the Technical Services Department.

An important feature of MARLON CS Longlife is that its softening point is below 200°C. When a fire in a building is underneath a MARLON CS Longlife sheet it will soften and open allowing smoke, heat and gases produced by the fire to escape. This 'venting' property means that damage within the building can be reduced.

ATTACK FROM PVC COATINGS

Marlon CS Longlife rooflights are often used in roofs where the corrugated steel sheet has a PVC plastisol coating. The plasticisers used in the formulation of plastisol coatings can migrate into the polycarbonate sheet. This causes the physical properties of the sheet to deteriorate; most critically tensile strength and impact resistance will be reduced, and sheet failure can occur.

It is essential to avoid contact between Marlon CS Longlife and materials using such plasticisers. This can be done in two ways:

1. White or light coloured tape can be applied to the side and end laps so that the Marlon CS Longlife sheets rest on this tape and not directly on the plastisol coated sheet.

2. Paint can be applied to the roof sheet areas which will be under the Marlon CS Longlife rooflight. When this has dried and forms a barrier the rooflight sheet can be fitted in position. Epoxy or polyurethane based paints are generally suitable, but the compatibility of each paint with polycarbonate sheet must first be checked.

Application of these barrier materials is shown in the side and end lap details in the Installation Guidance section.

ADHESIVES AND SEALANTS

The compatibility of individual adhesives, sealants, and sealing tapes must be assessed, as plasticisers or other constituents used in their manufacture can migrate into the polycarbonate material and critically reduce its strength.

PANEL ORIENTATION

Ensure that the clearly marked UV protected surface of the Marlon CS Longlife sheet is to the outside.

Marlon CS Longlife sheets must always be installed with the corrugation running vertically, or up-slope.

CUTTING & DRILLING

Marlon CS can be cut with a variety of tools:

- Fine tooth hand saw: hold the saw at a shallow angle and cut with slow steady strokes.
- Jig saw fitted with a metal cutting blade
- Band saw fitted with a high speed metal cutting blade
- Circular saw fitted with a diamond grit blade.
- Angle grinder with thin metal slitting disc.

Support the sheet to avoid stress and vibration.

Cutting multiple sheets can be achieved but extra care must be taken.

The basic blade characteristics which we have used for multiple sheets is:

CIRCUMFERENCE SPEED = 2400 m/min

TOOTH SPACING = 10 mm approx.

DIAMETER = 250 mm approx.

CLEARANCE ANGLE = 20-30°

RAKE ANGLE = 15°

Below are some factors which can affect the quality of the cut:

• The blade should only protrude through the sheet by about 10 mm. If the blade is too far through the sheet, the blade 'chips' at the sheet producing a bad cut.

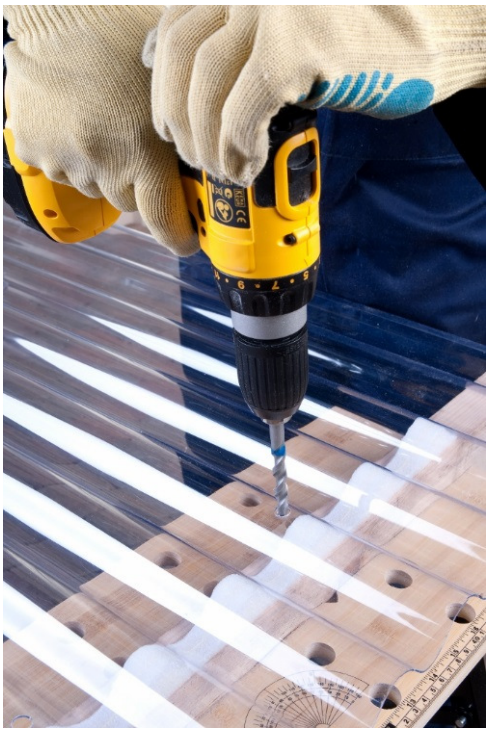
• If the blade speed is too slow and the feed rate too high chipping may occur.

• If the feed rate is too slow too much heat is generated leading to melting at the ends of the sheet.

• If the blade is worn or blunt too much heat can be generated.

Metal drill bits are suitable for drilling Marlon CS Longlife.

Marlon CS can be drilled by hand or power drills. If using a power drill, set to a slow speed. Support the sheet underneath the hole position to avoid vibration. When drilling holes always allow for thermal movement.



FASTENING AND SEALING

When installing any roofing material, including rooflights, ensure that safe working methods are adopted and appropriate safety equipment is used.

Thermal Movement.

Accommodating the thermal expansion of Marlon CS Longlife sheet cannot be over emphasised as this is generally greater than that of other popular glazing materials and affects both length and width.

Generally this is approx. 3.5mm per metre. It is always best practice to either consult the profile data sheet or contact the Technical Services Department.

IMPORTANT:

POLYCARBONATE SHEET EXPANDS WITH HEAT AND CONTRACTS WITH COLD.

Hole Size

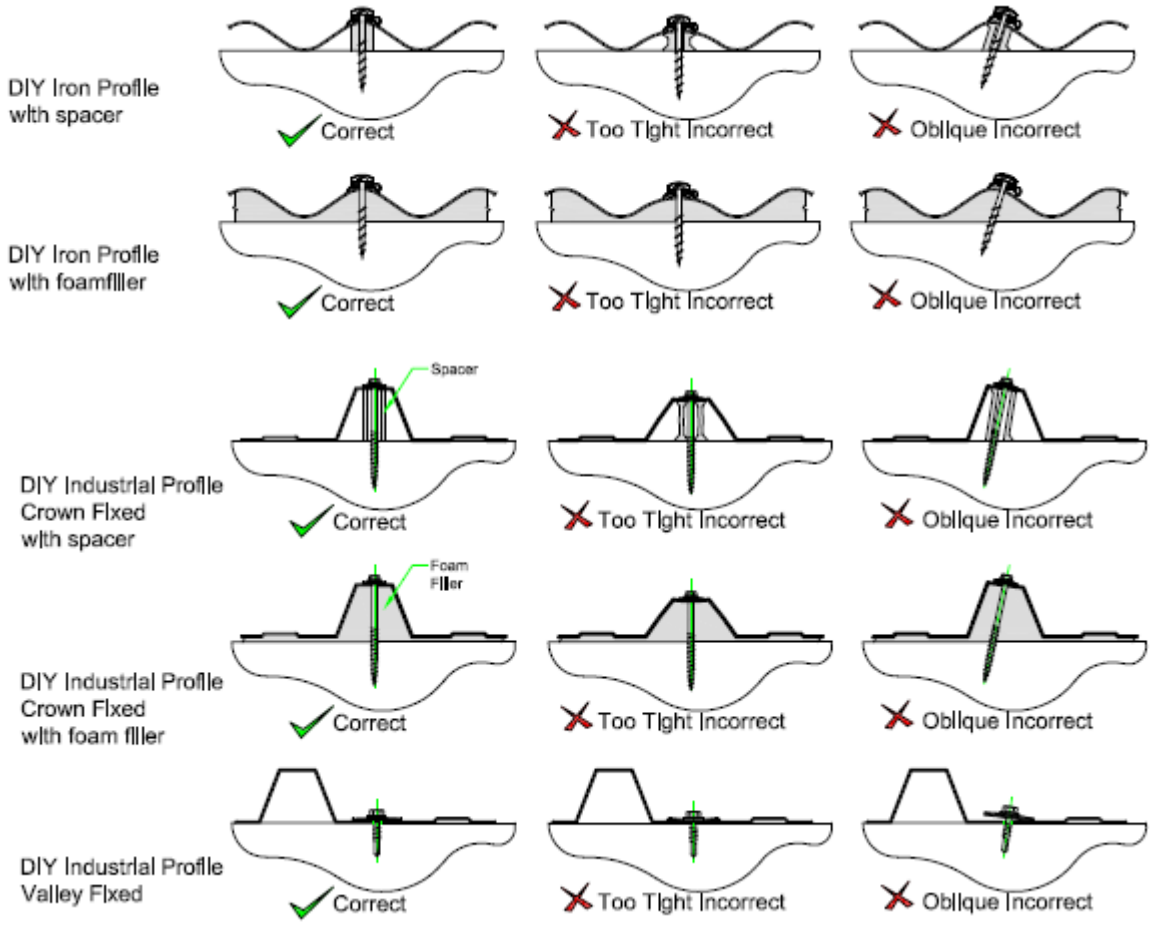
Holes must be oversized to allow for thermal movement. Holes for fixings should be drilled 6mm greater in diameter than the fixing shank for sheet lengths up to 2m and an additional 3mm per additional meter length of sheet. E.g. for a 4m long sheet, holes should be over drilled by 12mm. Failure to accommodate for thermal movement will cause buckling of the sheet or tearing around the fixing.

Securing the Sheet

Fasteners must not be over tightened as this will prevent thermal movement of the Marlon CS Longlife sheet with changes in temperature. Marlon CS Longlife sheet must be isolated from plastisol coatings using an aluminium barrier tape. Contrasting coloured fixings or caps should be used.

Note: Primary fixings should normally be located in profile valleys; however where profile geometry is restrictive or roof pitches shallow and exposed, crown fixing can at times be considered but firm support of the profile under the fixing is necessary. Wide valley profiles require two fixings per valley located close to the corrugations.

Some typical examples below:-



INSTALLATION GUIDE

Sheeting Sequence

The sheet profiles, fastener positions, sealant positions, and side and end laps are illustrated in diagrams 1 and 2.

Diagram 1:-

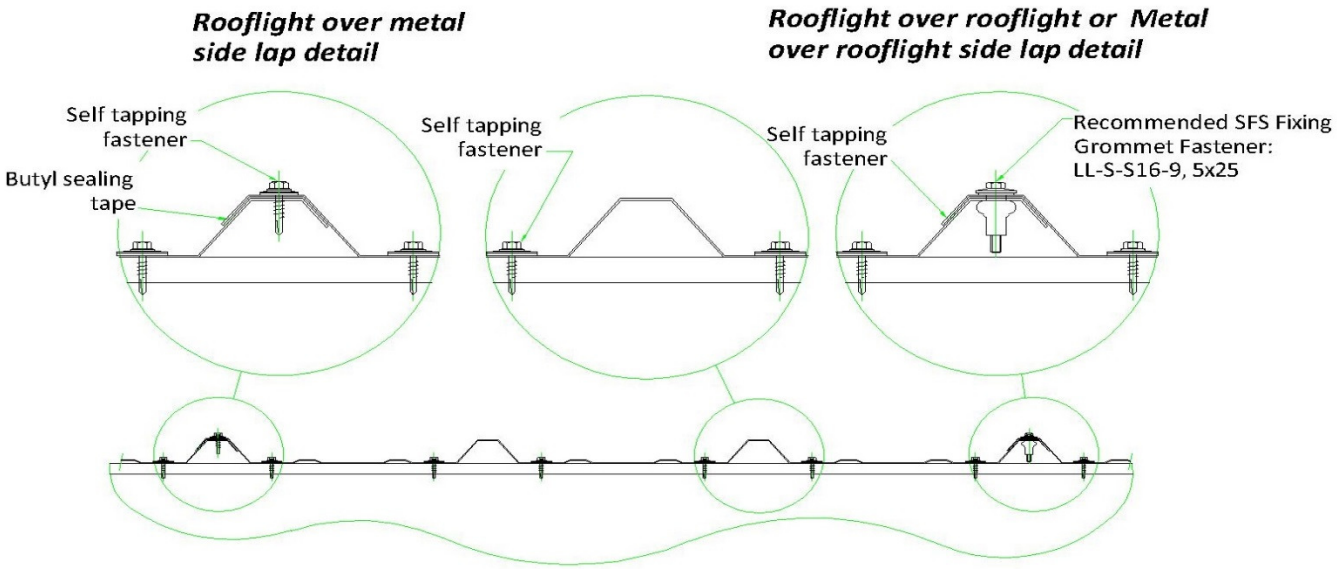
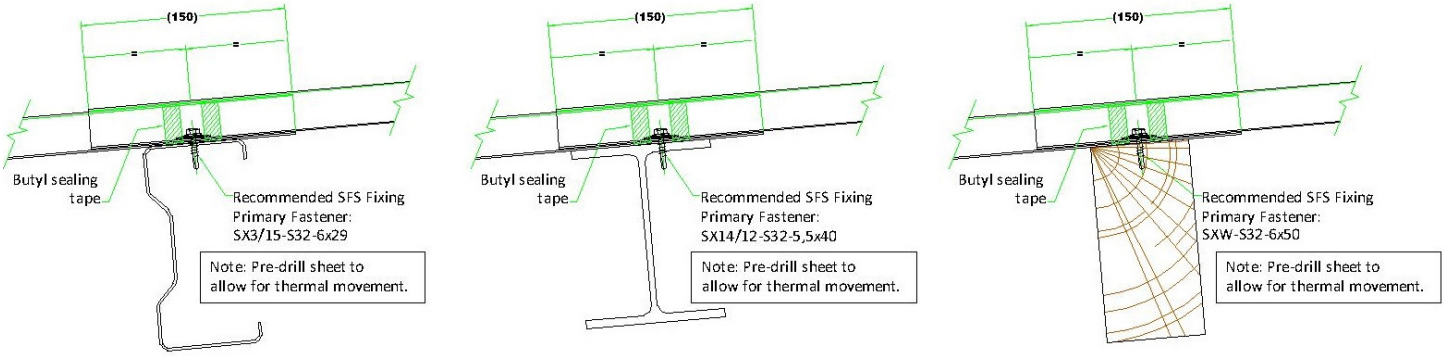


Diagram 2:-



Valley fixed profile end lap detail -Cold Rolled Steel Purlin 1.2mm-3mm

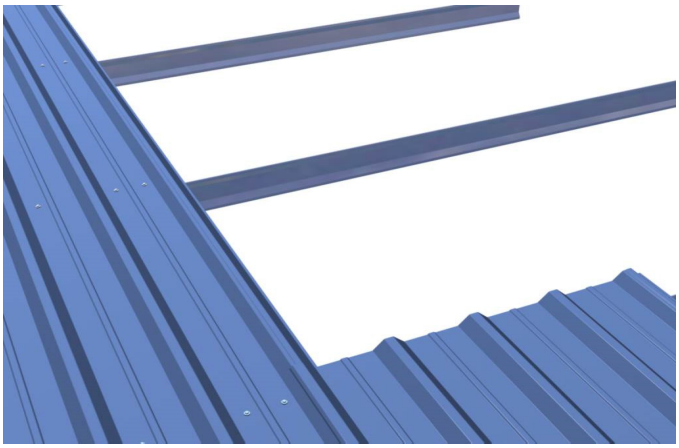
Valley fixed profile end lap detail -Hot Rolled Steel Purlin/Section 4mm-14mm

Valley fixed profile end lap detail -Timber Rafter / Purlin

The sheet fixing sequence detailed below and in the accompanying diagrams is based on fixing a Marlon CS rooflight of Icon profile valley fixed - in a double spanning rooflight configuration with metal profiled sheet all around.

The metal roof sheeting should be fixed to the roof up to the position where the first Marlon CS rooflight is to be installed. No fixings should be placed in the metal sheet on the slope below the rooflight position at the purlin where the rooflight will lap on to it. The top edge of this metal sheet should extend 75mm above the centre line of the purlin –

Diagram 3:-



Place the rooflight sheet in position, with side lap as per profile Diagram 1 or Diagram 2, and end lap of 150mm on to the metal sheet below.

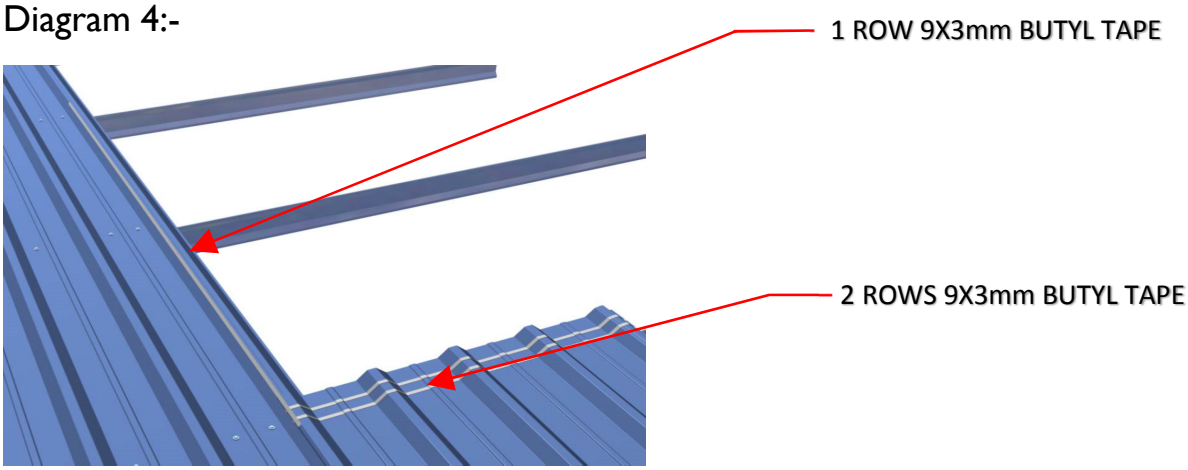
Mark the positions for drilling holes for primary fasteners in the profile valley as indicated in the profile Diagram 1 and at the centre line position of each support on each purlin.

Mark the positions for secondary fasteners, stitching screws and rubber grommets, at 350mm centres (pitch dependant) along the centre of the crown of the side corrugations

Remove the sheet; drill through it using the appropriate sized drill bit at all the hole positions for the primary fasteners and secondary fasteners. Support the sheet with a piece of timber under the hole positions when drilling. [Fasteners should always be positioned at the centres of these over-size holes to allow thermal movement]

Referring to Diagram 4, on the metal sheet down slope, place a row of 9mm x 3mm cross linked butyl tape either side of the purlin centre line, separated by about 10mm. These will seal the rooflight-to-metal end lap. Place a row of 9mm x 3mm cross-linked butyl tape on the metal sheet that will underlap the side of the rooflight. This strip should be positioned at the edge of the corrugation so that it will be beyond the line of side lap fixings as in Diagram 1.

Diagram 4:-



Place the Marlon CS sheet in position with a 150mm end lap on to the metal sheet down slope - the predrilled holes at the lower end should be between the applied sealant strips. Diagram 5 & Diagram 6

Diagram 5:-

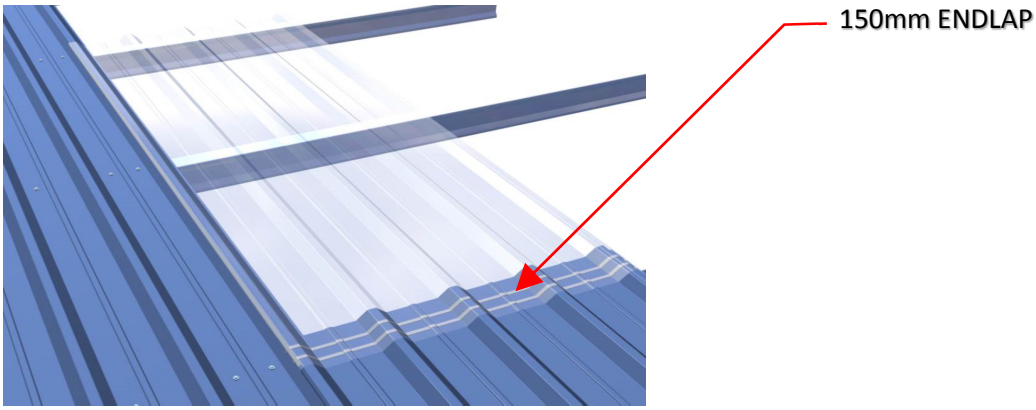
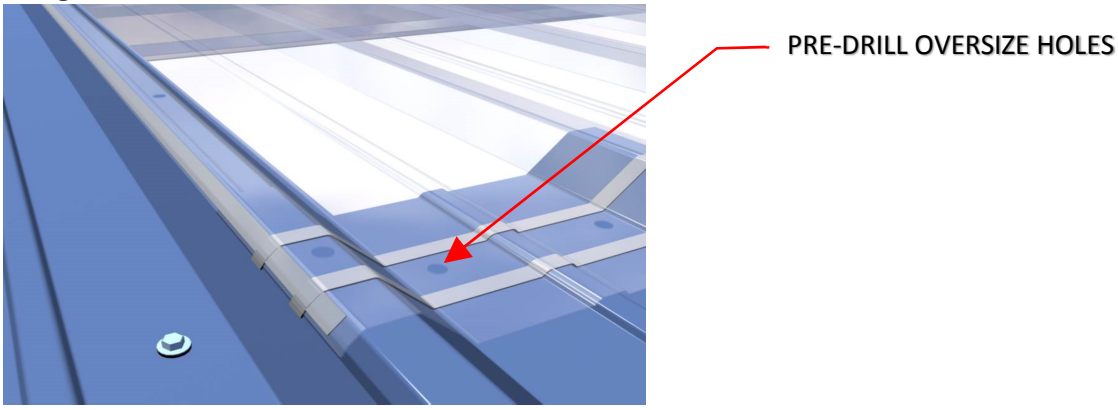
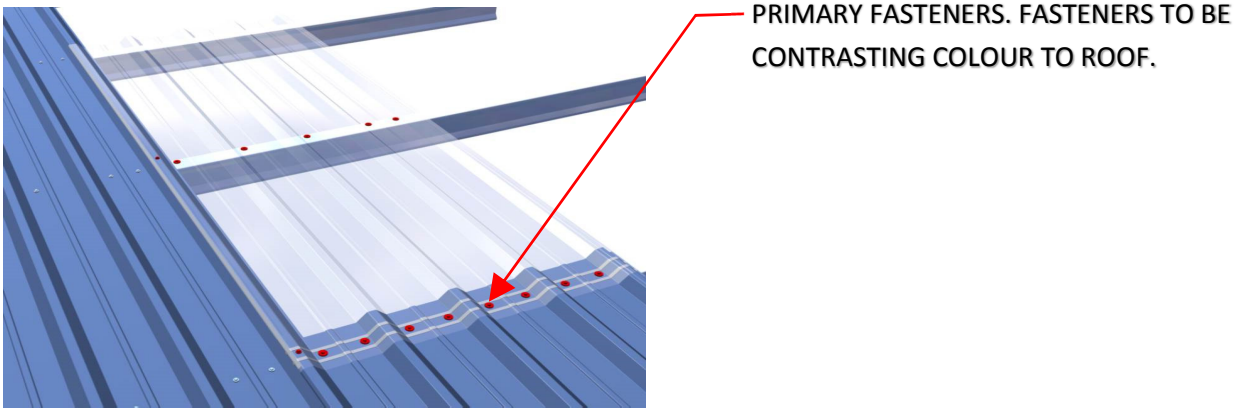


Diagram 6:-



Fix the Marlon CS rooflight with primary fasteners in the valleys to the lower and centre purlins - Diagram 7. Ensure that the rooflight is pressed firmly onto the two rows of butyl sealant to seal the end lap

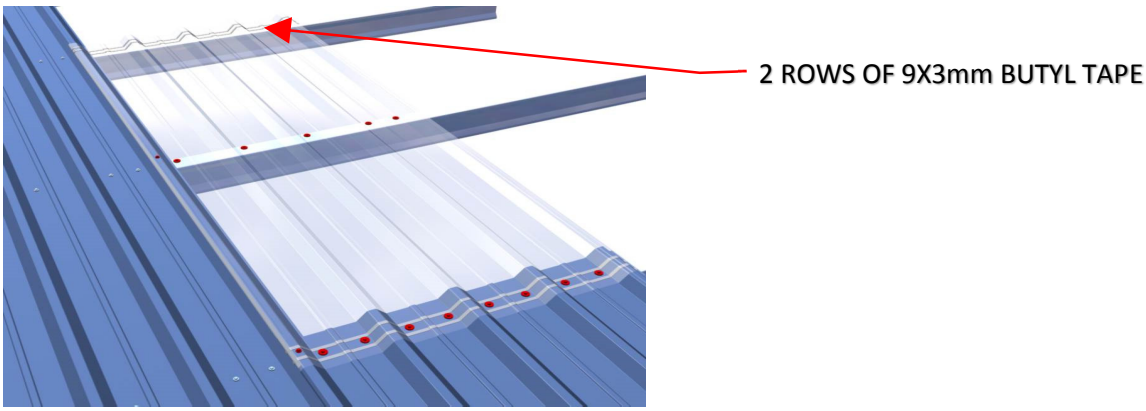
Diagram 7:-



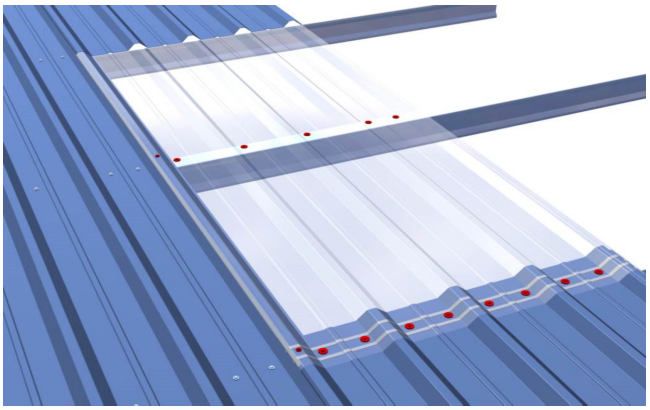
To mark the positions for primary fasteners in the end lap of the metal sheet upslope of the rooflight, position it on the roof slope, but slip the lower end of the metal sheet under the top end of the rooflight a distance of 150mm. At the centres of the holes already predrilled in the rooflight mark the centre positions for the holes in the metal sheet. Remove the metal sheet.

Referring to Diagram 8, on the rooflight sheet top end, where it will lap under the metal sheet up slope, place a row of 9mm x 3mm cross linked butyl tape either side of the purlin centre line, separated by about 10mm. These will seal the metal-to-rooflight end lap.

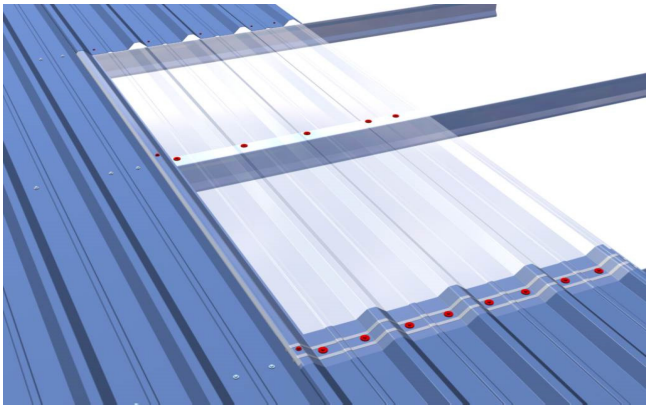
Diagram 8:-



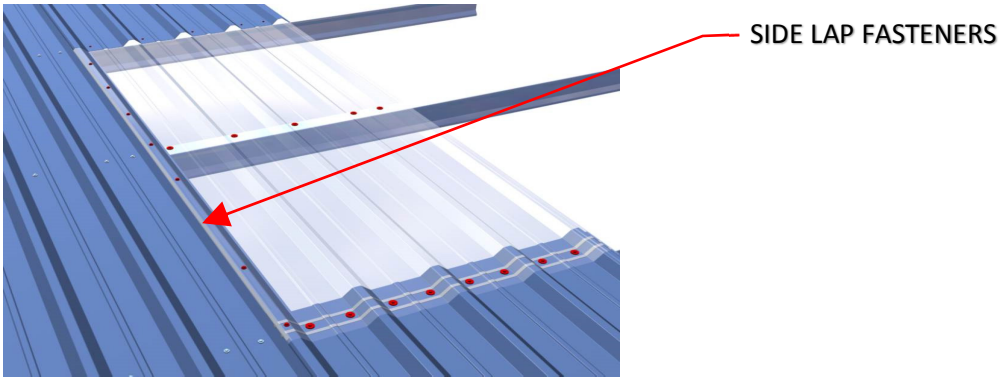
Position the metal sheet up slope, with an end lap of 150mm on to the top end of the rooflight. Diagram 9:-



Fix the metal sheet with primary fasteners having appropriate size washers for metal, in the valleys or crowns of the profile. Diagram1, Diagram 2, Diagram 10:-

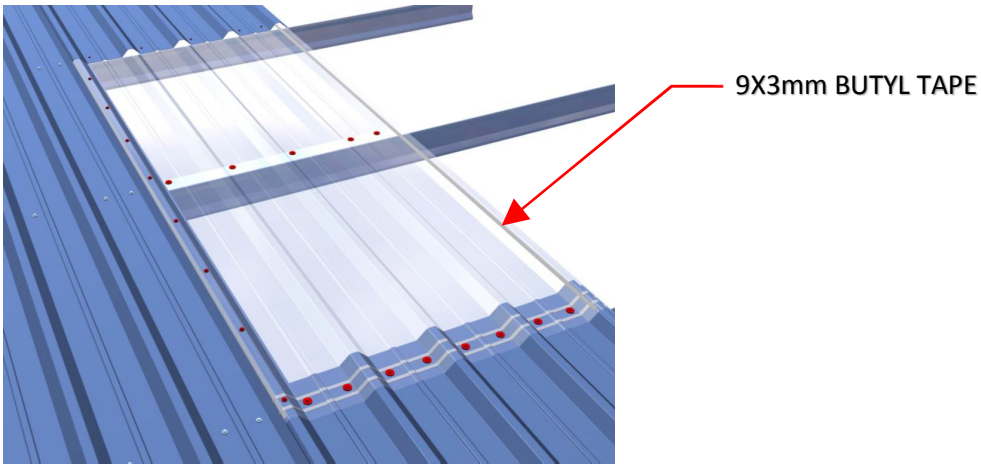


Where the Marlon CS rooflight side laps over the metal sheet, insert side lap fasteners stitching screws to the metal through the predrilled holes in the rooflight side lap. Ensure that the rooflight is pressed firmly onto the row of butyl sealant to seal the side lap. Diagram 11:-



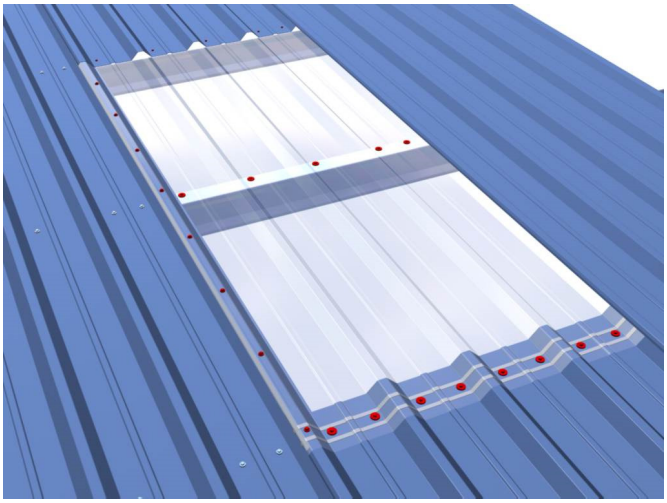
Complete fixing the metal sheet to the top of the slope, and in the next tier from the bottom of the slope up to the rooflight position. Where the metal sheet in the next tier is to side lap over the Marlon CS rooflight, first place it in position under the rooflight, with the correct end lap on to the metal sheet below. At the centres of the holes already predrilled in the rooflight mark the centre positions for the holes in the metal sheet. Remove the metal sheet.

Apply cross-linked butyl tape to the side lap corrugation of the rooflight where it will be overlapped by the metal sheet, outside the line of side lap fixings. Diagram 12:-



Position the metal sheet beside and side lapping over the rooflight sheet and fix in position with primary fasteners. Diagram 13. Continue fixing metal sheets to the top of the roof slope.

Diagram 13:-



Drill 10mm diameter holes in the metal sheet side lap at the marked positions, to correspond with those predrilled in the rooflight sheet side lap, Diagram 14, and insert rubber grommet fasteners to these holes, and tighten correctly. Ensure that the metal is pressed firmly onto the row of butyl sealant to seal the side lap. Diagram 14:-

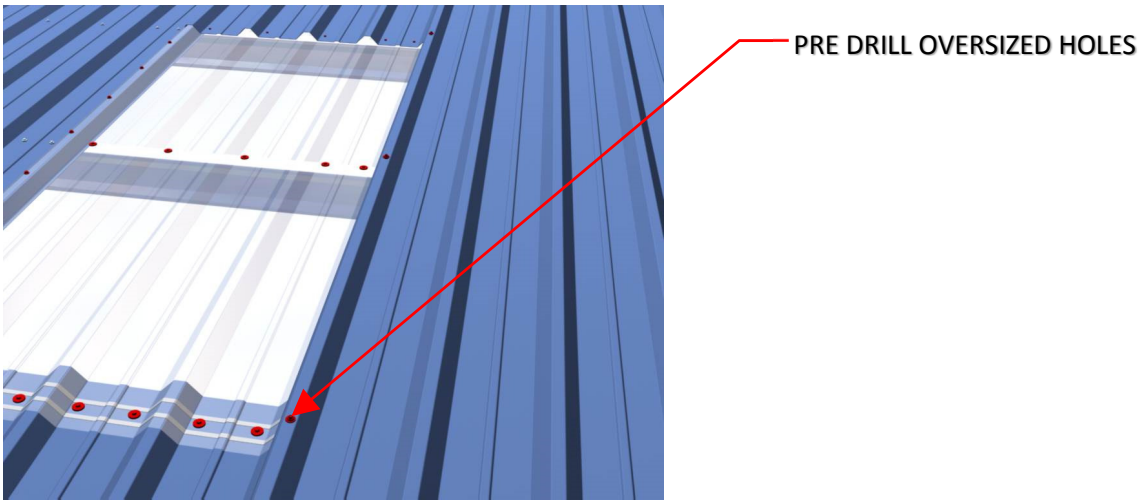
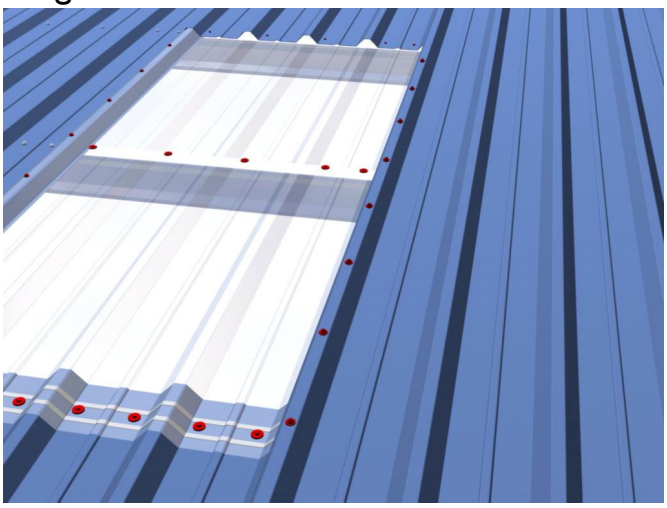
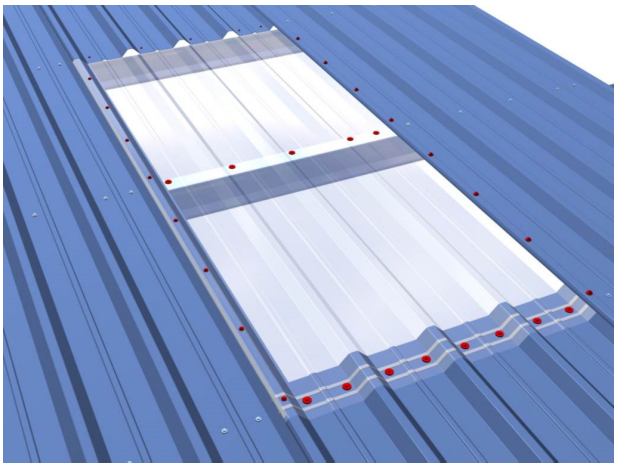


Diagram 15:-



The completed rooflight installation is illustrated in Diagram 16:-



GENERAL INFORMATION

- Roofs should always be designed with a minimum slope of 5° to allow adequate rainwater run-off.
- Ensure that all sealants and tapes are compatible with Polycarbonate.
- All accessory product should be light coloured, preferably white.
- Sheets which span up to two purlin spacings are of optimum length to cope with thermal movement.
- Maximum recommended sheet length for Marlon CS is 4m. Note that sheet lengths have to be limited so that excessive thermal movement does not make end laps unweatherable, or hole diameter requirements so large that the sheet is not secure under the washer.
- Ensure that the clearly marked UV protected surface of the Marlon CS Longlife sheet is to the outside.
- Marlon CS Longlife sheets must always be installed with the corrugation running vertically, or up-slope.
- A selection of accessories are available and a dedicated brochure is available for download from our website. These include but not limited to ridge and wall flashings, tapes, sealants, foam fillers and silicone sealant.
- Cold curving is profile and fixing method dependant. Please contact the Technical Services Department for specific guidance.

AFTERCARE

In order to maintain Marlon CS in a good condition it is recommended that the sheet be cleaned periodically using suitable detergent cleaning agents. Cleaning period will depend on local environment but should be at least once a year. The condition of the fasteners should also be inspected and replaced as necessary.

The recommended cleaning instructions are as follows:

- use lukewarm water to rinse and soften dirt
- make up a solution of lukewarm water and ordinary household cleaner or mild soap and use this to wash the sheet
- a sponge or soft cloth should then be used to gently remove dirt and grime
- for large areas a pressure washer may be used. Do not apply directly on laps and sealants as failure may occur.
- ethyl alcohol or white kerosene used sparingly can be used to remove paint and other such substances
- the cleaning process should then be repeated and the sheet rinsed with clean water and dried with a soft cloth.

Warning

The following precautions should be observed:

- do not scrub the sheet with brushes or sharp implements
- do not use squeegees
- avoid solvents, other than those listed, or any abrasive cleaners
- avoid cleaners of a highly alkaline composition
- avoid cleaning in the hot sun or high temperatures

It is advisable to test the suitability of any cleaner on a sample piece of Marlon CS Longlife first. After installation, labels, glazing compounds etc. can be removed using petroleum spirit, after which wash the sheet as described in the above procedure.

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Plastic Sheets

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